QAD Enterprise Applications
Enterprise Edition

User Guide
QAD Service/Support Management

70-3181A
QAD Enterprise Applications 2011.1
Enterprise Edition
September 2011

SSM_UG_v2011_1EE.pdf/hes/hes

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What's New?

The following table summarizes significant differences between this document and the version released with QAD 2011 Enterprise Edition.

Date/Version	Description	Reference
September 2011/2011.1 EE	Rebranded for QAD 2011.1 EE	--
September 2011/2011.1 EE	Parts 1 and 2 consolidated into single book	--

Chapter 1

Introduction to SSM

This chapter introduces business issues of customer service. The first part discusses differences between the service and the manufacturing perspective. The second part introduces business concepts unique to service environments. Next is an overview of how the QAD Service/Support Management (SSM) module is organized and how it integrates with other functionality.

What Is Unique About Service?

Service is usually the only way, other than product sales, for a manufacturing company to produce revenue. However, the way service revenue is produced differs from the way sales revenue is produced. Many individuals familiar with manufacturing have to adjust their thinking to see the service perspective.

Differences between sales and service extend through the setup of the service organization and affect business decisions you make at every level. In a service environment, classical manufacturing concepts can mean something entirely different. For example, a service price list determines the price of servicing an item, not the price of the item itself.

Another difference that is significant to service is an end-user orientation. End users are often the starting point for service decisions. In the rest of the manufacturing environment, however, delivering to a user represents the completion of activity. To accommodate this difference, many people think about service in reverse to how they think about the rest of manufacturing.

For example, in the rest of manufacturing and distribution activity, your software manages shipping *to* the customer. This is the result of planning, fabrication, and delivery. Service activity, however, can start with the shipping of an item back to you. Your software manages the shipment of a return *from* the customer.

Even if you manage distribution with similar functions, interface, and procedures as the servicing of returns, the direction of flow is the opposite.

Service: The Competitive Advantage

Companies in manufacturing and supply chain sectors can leverage a well-managed service and support strategy into long-term competitive advantages such as the following:

- *Service contracts provide ongoing revenue.* Probably the most obvious advantage is that service contracts provide revenue long after the original sale.
- *Service builds sales.* Manufacturing companies are discovering that service can drive sales or help penetrate new markets. Personal computers are a classic example: better service and support were critical to penetrating larger, less technical markets.
- *Service builds markets.* Service can help build long-term customer relationships and long-term customer loyalty. In this way, service helps build markets, not just sales.
- *Service can recoup quality control costs.* If quality control brings service costs down, profits from service contracts increase without impacting pricing. This is especially beneficial in markets where a considerable time exists between quality improvements and market recognition of them at a level that supports a price increase. Increased profits from service provide payback during this time.
- *Service can drive technology.* Those who service a product often learn as much about how it works as those who built it. Proper management of this service experience through a service request system can drive new product development. Historically, in sectors such as aerospace, automotive, and electronics, servicing competitors' products has been a key to major innovation and technology transfer.

Basic Service Business Concepts

This section introduces business concerns of service organizations that may differ from those in the rest of manufacturing. Concepts are presented in the order they typically occur during implementation. Later chapters explain the concepts in more detail.

Installed Base

The first business decision in service is *what* you are going to service. Will you service only what you make or also items manufactured by other companies? Will you service only items you sell directly or any item you manufacture, regardless of the distribution channel producing the sale?

A key concept in these decisions is the installed base. An installed base record matches end users with specific items and can control service policy. Whether you decide to service only the installed base or some other mix of items shapes your service business.

Level of Service

Once you decide what to service, you decide *how much* service to provide. What level of service are you providing and for which situations? A level of service typically is a percentage of either labor, item, or expense service costs.

Limits of Service

Typically, you explicitly limit service in terms of time and total service cost. The level of service and its limits represent the *level of coverage*. How much is an item covered for, and for how long? Does this coverage include replacement parts, labor, expenses for on-site visits, shipping?

Defining the level of coverage helps you effectively manage extra charges, as well as billing for labor and costs not covered, or partially covered. Service limits help you distinguish billing for different aspects of service, such as labor, parts replacement, and service expenses.

Service limits can include time limits, overall cost limits, and limits for specific items. For example, in SSM, you can set a maximum amount of service—all costs up to $1,000—limit coverage for a category of work—labor up to $1,000—or limit service on specific items—drive train not included.

Contractual Obligations for Service

You define and control service coverages by an agreement with your customer. This agreement states explicitly the level of coverage you are providing and takes the form of a warranty or a service contract.

A warranty typically does not produce revenue and is shorter in duration than a contract—often measured in days. You usually do not renew a warranty. Instead you replace it with a service contract.

Service contracts usually produce revenue, work over a longer time—often months or years—and are often renewable. Both warranties and service contracts explicitly state the level of service and its limits.

Service activity flows from the obligations in the warranty or service contract and continually refers back to these agreements when determining service response and billing.

Pricing for Service

Service organizations usually have separate pricing. A manufactured item needs a price list for *service* as well as sale of the item. Organizations selling service contracts need price lists for contract coverage and for service activities.

You may also need price lists for returned items you repair or refurbish and send back to customers. If you give credit for returns, you probably do not want to offer full price for the used item. A credit price list with lower prices takes into account the wear or age of the returned item.

Billing for Service Contracts

Since service contracts generate revenue, you need to decide how you are going to bill for contract coverage. The primary decision is whether to bill for service before you do it, or after. There are advantages and disadvantages to each approach, depending on the type of service. Also important is how often you bill, or the *billing cycle*, which determines when invoices are generated. Billing after the fact is called *billing in arrears*.

Call Management

Once you define what you are servicing and how much service you are providing, you need mechanisms for managing that service activity. You usually manage service and support activity through *calls*.

A service call may mean a phone call from a customer, a service visit, a call by a field technician, or any other contact with a customer or potential customer. A service call is contact that generates a service response, even a brief response to a customer’s question.

Note If you want to distinguish between calls that require service activity and those that may need a simple answer, you can design a pending call system to manage contacts before creating calls.

The call labels the service situation, and *call management* provides processes and tools for managing the service contact. You *close* a call when you have resolved the customer’s service problem.

Call Activity Recording and Call Invoicing

Calls can reflect a broad range of issues and problems. Part of call management is tracking the actions taken by an engineer to resolve an assigned problem. This includes recording the hours and kind of labor performed, any expenses incurred, and any service items consumed or returned.

This detailed record of activity is the basis of call billing. Service may be covered by a warranty or contract, or you may charge for it. Some organizations offer *fixed price* service. In this case, you charge a single, predetermined price for the service activity, regardless of the actual cost of time and material. An organization may choose to cover part or all of the cost of service as a goodwill gesture. These scenarios represent different ways of charging for service that tie into accounting and invoicing.

Service Quotes

Many service organizations require a quotation process in selling services to prospective customers. Quotations state the cost of a service contract or the cost of service activity generated by a call. A call quote outlines the labor, expenses, and replacement items required for service or repair work.

Queue and Escalation Management

Call management uses queues to categorize calls and assign them to service personnel. In some cases, the system forwards calls if you do not close them within a certain time. This forwarding is *call escalation*.

Call escalation tries to ensure that you resolve calls within defined rules. If a call is not solved, the system escalates it to a more visible queue, often managed by more highly skilled service personnel.

Each service organization must set up these queues based on business requirements. Once a queue structure is established, decide if you need call escalation. If you do, carefully plan the call escalation sequence.

Engineer Scheduling

Once you establish queues and escalation sequences, most service organizations need a controlled method for assigning service personnel to calls. SSM provides powerful engineer scheduling based on a point system. Your criteria for assigning points is used to recommend engineers to assign to calls.

Service Inventory

Tracking service inventory can pose special problems. You may manufacture some items used in service and already track them in inventory. Others you may need to set up.

Service inventory can be complex, including everything from tool kits to replacement parts to consumable items such as inks, fillers, reactants, and lubricants. Storing service inventory in multiple diverse locations—such as mobile field units, repair centers, service supply depots, workshops for refurbishing items—adds complexity. You also need to track items you return to *your* suppliers.

SSM has mechanisms for tracking and managing these situations. They are woven into the call activity recording, material orders, return material authorization (RMA), and return to supplier (RTS) functions.

Installation Service

Some equipment requires a technical professional to complete the installation. This need is addressed by an interface between sales orders and service. You can generate an automatic installation call when an item requiring installation service is sold.

Preventive Maintenance

While most service activity is in response to a breakdown, a company can try to prevent failure by offering *preventive maintenance*. Preventive maintenance is servicing an item at regular intervals *before* it breaks down, in the hope of preventing failure.

In industries such as aerospace manufacturing, preventive maintenance is an obvious necessity. In other industries, such as copiers, preventive maintenance has become standard. Preventive maintenance requires prescheduling preventive maintenance calls and supplying the personnel and inventory necessary. SSM fully supports preventive maintenance.

Returns and Repairs (Refurbishment)

Many service and support organizations have to process returned items. This requires a series of business decisions: Do you immediately ship back a new item and refurbish the return? How do you use the refurbished return? Do you refurbish the return and then ship it back? Do you offer loaner items while the returned item is repaired? Do you choose not to refurbish and ship back only new items? Do you ship a replacement item to your customer before the return is shipped to you? These decisions depend on your products and how critical they are to your customer.

Service Requests

SSM offers service request capabilities. Service requests report service experience to the rest of an organization. Typically, service requests record engineering changes and other suggestions from the customer base and from the service organization.

Service experience is then used for product improvement, process improvement, marketing adjustments, and strategic product decisions. In this way, service and support provide both revenue and valuable product experience.

Organization of the SSM Module

Service/Support Management sets up and manages the interactions required for supporting, maintaining, or repairing items, whether they are covered by warranty or service contract. The User Guide is organized around the primary functions of service and support: setup, warranties and contracts, calls, and service activity.

Setup

Setting up SSM depends on your implementation decisions. The three main areas are:

- *Installed Base.* Whether or not you maintain an installed base and how much detail you maintain in it impacts service activity.
- *Control Codes.* You manage the flow of service activity with combinations of control codes defined prior to using SSM. You tailor SSM functions with these codes and various control program settings.
- *Price Lists.* Service price lists determine prices for contracts and call invoicing.

Warranties and Contracts

Service types and warranties define basic relationships with your customers. The terms and conditions associated with service types drive service activity. Limits and levels of coverage determine how much you charge for service.

Service contracts define a particular relationship with an individual customer. The terms and conditions of the contract are based on a contract type, but you can tailor them for an individual customer. The contract's life cycle may begin with a quote, move to the contract, involve billing and invoicing, and continue with contract renewal or delete/archive functions. Contracts control the automatic scheduling of preventive maintenance calls.

Call Tracking

The service organization typically uses calls to manage customer contact and track service activity. Call management functions include engineer scheduling, escalation sequences to ensure timely response, and creating service requests for managing long-term product design issues.

Designing a pending call system and managing call quotes can also be part of the call process.

Managing Service Activity

Product Structures and Routings

Service product structures and routings specify the components required in a service activity and the sequence of steps to follow. You can define multiple service BOMs and routings for different activities, such as installation, preventive maintenance, and repairs. BOMs and routings streamline the process of recording activity for a call and can be used to manage repairs in a repair center.

Call Activity Recording and Invoicing

Call Activity Recording tracks the service activity that results from response to a call. Material orders (MOs) manage inventory consumed on a call. Once activity is complete, Call Invoice Recording creates billing for service activity.

RMAs and RTSs

Service organizations can manage the return, replacement, and shipment of items using return material authorizations (RMAs). You can release the RMAs to a repair work order to be completed in a repair center. Returns to suppliers (RTSs) manage items that must be repaired by another organization.

General Service Workflow

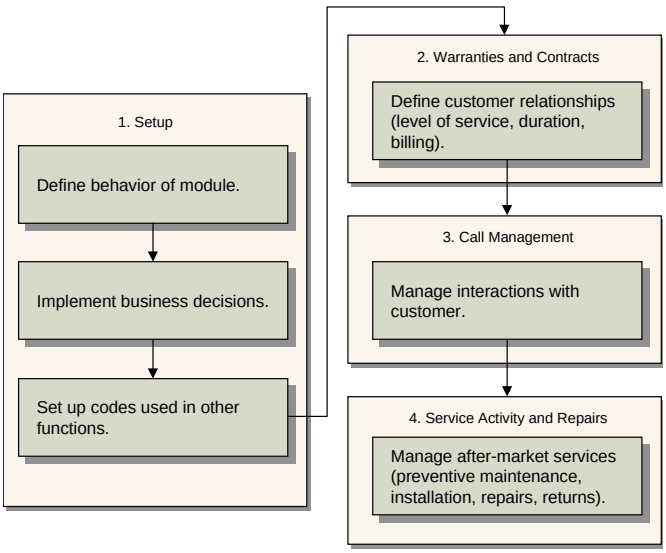
The four functional areas illustrated in Figure 1.1 determine a natural flow and logical progression from:

1. Defining the codes controlling service limits and variables to...
2. Defining the service relationship with the customer to...

3 Managing the contact that results through a call to...

4 Managing the physical response to a customer need, including repairs, installation, preventive maintenance, and returns.

Fig. 1.1
General Workflow in SSM



All service activity is driven by the relationships defined in the warranty, contract type, or service contract supplying the terms of coverage for a particular activity.

Interactions with Other Modules

Service/Support Management relies heavily on information that is set up and managed in other business areas and modules. Figure 1.2 illustrates how SSM draws on data from other modules. In the figure, striped modules are optional; solid modules are required to run SSM. Arrows indicate the direction of data flow.

Fig. 1.2
SSM and Other Business Areas and Modules

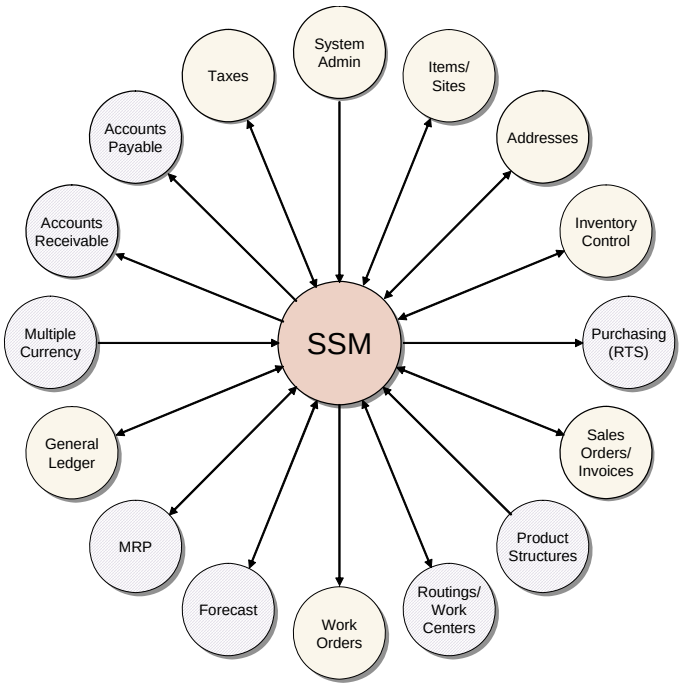


Table 1.1 summarizes these relationships. SSM uses the data listed in the second column in various service functions. The column labeled Data Output by SSM indicates ways that service functions may modify data managed in other modules.

SSM interactions with other business areas and modules are discussed in in detail in the relevant topics.

Table 1.1
SSM Interaction with Other Modules

Menu		Data Used by SSM	Data Output by SSM
1.	Items/Sites	Item records, item/site records, locations, location statuses, product lines, product line accounts, price lists for RMAs and RTSs, master comments, units of measure, Regulatory Attributes features	Item service attributes
2.	Addresses	Customers, suppliers, salespersons, trailer codes	End users (type of customer record), engineers (type of employee), customer open balance.
3.	Inventory Control	Inventory balances	Inventory transactions: issues, transfers, unplanned receipts, unplanned issues, ORD-SO, ISS-SO, ORD-PO, RCT-PO, ISS-WO
5.	Purchasing	None	RTSs are a type of purchase order

Menu		Data Used by SSM	Data Output by SSM
7.	Sales Quotations/Orders/ Invoices	Source for contract quote and contract line items Installed base updates from Invoice Post and Print Installation calls from sales order shipments Sales Order Control settings (RMAs and material orders) Credit hold/removal for RMAs	Coverage for quoted item RMAs and MOs are a type of sales order. Call and contract invoices represent types of sales order invoices. Invoices for calls, contracts, and RMAs are printed and posted here.
8.	Configured Products	Source for information in installed base Can be used in RMAs	Installed base records created from posting sales orders for configured products
13.	Product Structures	Standard BOM as source for service BOM	Service BOMs
14.	Routings/Work Centers	Standard work center (for labor rate)	Service work centers
16.	Work Orders		CAR reports RMA release to work order
22.	Forecast/Master Plan	Forecast	Forecast consumption from RMA issue lines and expensed MOs
23.	Material Requirements Plan		Gross requirements from RMAs, CAR, MOs
25.	General Ledger	Accounts, sub-accounts, cost centers, projects	GL transactions from call, RMA, and contract invoices, MO shipments between sites
26.	Multiple Currency	Currencies, exchange rates, and rounding methods	
27.	Accounts Receivable	Customers, ship-tos, end users	Amounts from call, RMA, and contract invoices; new end users and ship-tos
28.	Accounts Payable	Suppliers	RTS payables
29.	Tax Management	Tax setup data, Intrastat reporting codes	Tax transactions for reporting, Intrastat data for RMAs, RTSs, and material orders
36.	System Administration	Default accounts, generalized codes, language codes, security, printer setup, batch processing, SSM Accounting Control settings	

Chapter 2

Installed Base

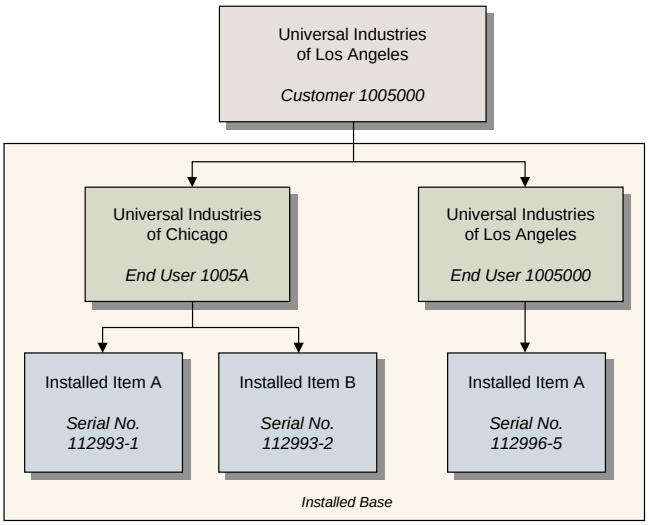
Service/Support Management (SSM) enables service organizations to maintain information about the products they sell or service and the individuals who own them. Collectively, this information is the *installed base* (ISB). This chapter introduces business considerations related to the installed base and describes how to manage it.

Understanding Basic Terms

The installed base is a repository of information about items and the organizations that own and use them. An installed base record links three essential elements: an item, the customer who purchased it, and an end user. It also maintains details about an item, including serial number, installation date, warranty coverage, and how often maintenance is required.

The customer is the organization that purchased the item, and represents the parent record to which end users and installed items relate. Each end user must be linked to a customer and, in turn, each installed item must be linked to an end user. As shown in Figure 2.1, the customer can also be an end user.

Fig. 2.1
Installed Base Records



When the installed base is updated from sales orders, the customer is the sold-to address in Sales Order Maintenance. If you do not sell directly to customers but market your products through retail outlets, you can define a single customer record to use as a place holder in this relationship.

End users are the people who most often use an item, request maintenance for it, and report problems. When the installed base is updated from sales orders, the end user is the ship-to address in Sales Order Maintenance (7.1.1). The end user is not necessarily the customer.

Each customer can have many end users, but a given end user is linked to only *one* customer. Typically, the end user possesses the item, even though it might have been purchased by the main office.

Example A parent company buys a forklift and ships it to a warehouse. The parent company is the customer. The warehouse is the end user. The warehouse did not buy the forklift, but uses it at that location. Someone at the warehouse usually reports service problems.

A customer can also be the end user, but an end user *cannot* exist by itself—it must be linked to a valid customer record. The end user is always connected to the customer who purchased the item that the end user possesses.

Business Considerations

When implementing Service/Support Management, you must decide if you need to track an installed base. If you decide to track an installed base, you must further consider:

- How detailed should the installed base records be?
- What is the relationship between the installed base and service call policy?

Your answers to these questions affect many other business decisions.

Should You Track an Installed Base?

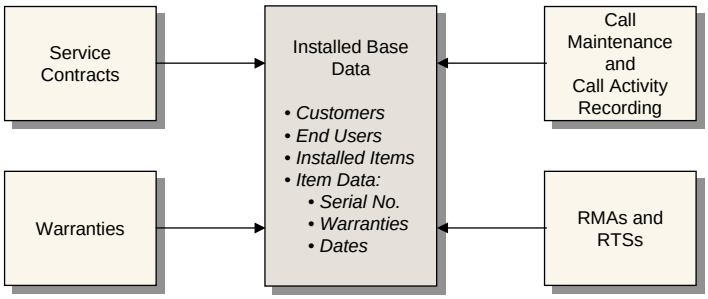
The installed base consists of records that combine an item with an end user. To maintain the integrity of these records, items must be uniquely identified in the installed base. Tracking an installed base is best suited for items controlled by serial or lot numbers. If you add an item that is not serial number or lot number controlled to the installed base, the system creates unique identifiers by using an installed base reference number. However, this may not effectively identify the item when you provide service for it.

Example Two warranted air conditioners are installed simultaneously at an end-user location, and identified with ISB reference numbers 1 and 2. When the end user calls with a problem, the caller cannot easily identify which of the air conditioners requires service. This makes it hard for the service organization to tie the request to a particular item.

You do not need an installed base to use Service/Support Management. However, most service activities refer to and can derive important information from it. Figure 2.2 illustrates how the installed base is central to service functions.

- Service contracts can be built items in the installed base.
- Warranties apply to items in the installed base.
- Call Maintenance and Call Activity Recording derive coverage information from installed base data.
- RMAs and RTSs can reference specific serial numbers in the installed base.

Fig. 2.2
Service Functions Referencing the Installed Base



Answering the following questions can help you decide if you should implement an installed base:

- Can you identify the items you service with a unique serial or lot number?
- Do you offer aftermarket services of any kind for items sold?
- Do you register products? Do you service only registered products?

- Do you offer warranties?
- Do you offer product upgrades?
- Are your products subject to recall?
- Do any of your products require scheduled maintenance?
- Do you need a complete audit trail for a government or supervisory agency, common in the medical market?

A yes to any of these questions indicates that you need to track an installed base in some way.

Important If you offer warranties, you *must* track items in the installed base. Warranties only apply to installed base items.

What ISB Details Are Required?

The answers to the previous questions also indicate how detailed the installed base records should be and which details are important.

For example, if you offer warranties from the date of purchase, your installed base records need a date of purchase for each item sold. If you limit the warranty to customers who register the product, you need to track which items are registered.

Detail also addresses coverage of the components of an item. Especially with configured products, certain options may have warranty coverage distinct from the parent item.

How Large an ISB Do You Plan to Have?

The primary way to find information in the installed base is by end-user address, item number, serial/lot number, or ISB reference number. When a database includes many ISB records and the serial number and end-user code are not known, it is difficult to find the exact item you are looking for.

If you expect to have a large number of items to search, you should consider creating a hierarchical classification of installed base data. This lets users limit the number of records returned from installed base searches by narrowing the search criteria based on user-defined item classifications.

How Should the ISB Affect Service Policy?

Apart from the obvious advantages of knowing what you have sold and to whom, you can use the installed base to control service activity. For example, you can refuse service calls for items not in the installed base. The installed base serves as a validation database, since certain programs, such as Call Maintenance, Contract Maintenance, and RMA Maintenance, depend on what is there.

A primary business decision when implementing SSM is determining how the installed base should relate to service policy. Other decisions flow from this major one. There are three basic approaches:

- Limit service calls to an installed base of items you manufacture, distribute, or sell—items already in your item master.
- Limit service calls to an installed base, but include items in the installed base that are not in your item master.

- Do not consider the installed base when taking calls.

Each service organization must set up SSM according to one of these three practices.

End Users

Define end users in End User Create (27.20.3.1); use End User Data Maintenance (11.9.1) to create an operational address record for each user and specify addition data used in service functions.

The existence of two programs related to setting up end users supports segregation of duties required by many organizations. Address details are maintained in one place and updated by one group. Customer and end-user creation is part of the Accounts Receivable module. The system supports an automatic e-mail feature that lets service users that belong to a designated role know whenever a new end user is created so that the record can be completed in the service organization.

Each end user must be associated with a valid customer. Both customer and end user are specified on service quotes, contracts, and RMAs. The end user only is referenced on calls. Although service is performed for the end user, the customer (or customer bill-to address) receives the invoice.

End-user information helps identify items in the installed base. You create end users:

- Directly with End User Create
- Indirectly through the interface between service and the Sales Orders/Invoices module
- From other service functions such as Call Maintenance, Call Quote Maintenance, RMA Maintenance, and Contract Maintenance

  Note To create end users indirectly, the user must have appropriate permissions for both the current function, such as Call Maintenance, and for End User Create.

Regardless of which approach you use for creating end users, use End User Data Maintenance to specify detailed service information.

The engineer scheduling function in Call Maintenance awards points to engineers based on how certain attributes of the engineer match the end-user record. Area and primary and secondary engineer are important for scheduling. If you plan to use engineer scheduling, it is important to define these attributes correctly for each end user.

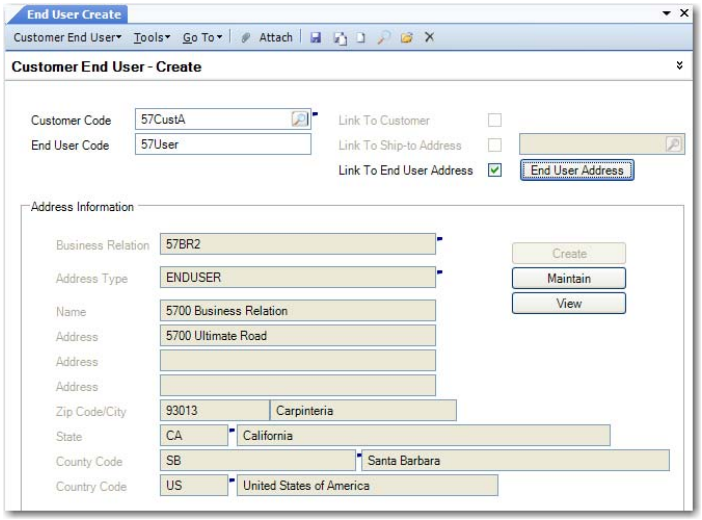
This section first discusses creating end users directly with End User Create and End User Data Maintenance, and then creating them indirectly.

End User Setup

Use End User Create to define an end-user record and link it to a customer. You also define end user contacts and their related information in End User Create or Modify in Accounts Receivable. This address and contact information then displays in End User Data Maintenance.

See *User Guide: QAD Financials* for complete information on setting up end user records.

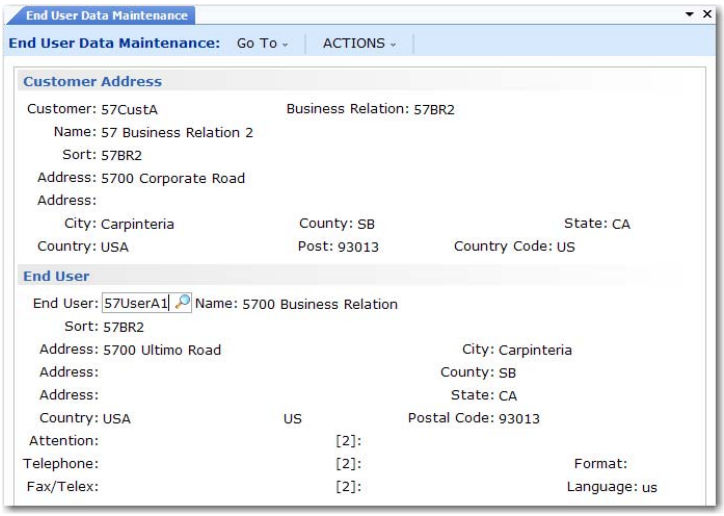
Fig. 2.3
End User Create (27.20.3.1)



If you choose to use a customer or ship-to code as the end user code, the address information defaults from that record and only the sort name can be changed. Use Customer Modify (27.20.1.2) and Customer Ship-To Modify (27.20.2.2) to maintain these addresses. If you define a new code for the end user, you can maintain the address, tax, and contact information.

Use End User Data Maintenance (11.9.1) to complete the end-user setup by specifying details used in SSM functions

Fig. 2.4
End User Data Maintenance (11.9.1)



Customer Address and End User Frames

Specifying a customer in End User Data Maintenance displays the customer's address fields in the Customer Address frame.

In the End User frame, select an end user from those that have been created and linked to the customer in End User Create.

End User Detail Frame

The End User Detail frame displays next, where you specify details related to this end user that affect other service activities.

Fig. 2.5
End User Detail Frame

Modem Phone and Login. Specify an optional phone number for the end user's modem and a login user ID. These fields are for reference and may appear on some reports and inquiries.

Note Enter a modem number for companies that provide software or hardware support. Performing remote diagnostics via modem can save time and expense of an on-site visit.

Type. Enter an optional code set up with Generalized Codes Maintenance for field eu_type. End-user type codes group end users in categories. You define warranty types and default charge codes based on the end-user type: You might have one warranty for priority end users and one for regular end users. Or you might categorize foreign and domestic end users using the end-user type field.

Operating Schedule. Specify a master schedule for the end user. End user master schedules are defined in End User Master Schedule Maintenance (11.9.13). If required, you can customize the schedule for the end user's needs using the Edit Schedule field. See "End User Schedules" on page 22 for more information on defining end user master schedules.

Edit Schedule. Select this field and click Next to edit the schedule specified in the Operating Schedule field. The End User Schedule frame opens.

If the Operating Schedule field is blank, you can create a new schedule for the user using the End User Schedule frame.

See "Creating a Personal Schedule for an End User" on page 23 for information on the End User Schedule frame.

Call Priority. Priority indicates the importance of calls from this end user. Lower numbers indicate a higher priority. If you specify a nonzero value, it displays as the default in Call Maintenance (11.1.1.1). The end-user priority takes precedence over the priority associated with any contract or warranty in effect for this end user, or the priority defined as a user preference.

Time Zone. This field displays when Multiple Time Zones is active. It defaults from the end user's customer if a value has been defined there; otherwise, it defaults from the Time Zone field in the domain record. Enter a time zone defined with Multiple Time Zones Maintenance (11.21.22.1).

This field determines how times are displayed and stored in Call Maintenance when a call for this end user is taken. The end user's time zone also affects engineer scheduling, service coverage, and service pricing.

You can only update this field when you create an end user. After an end-user record exists, change the time zone with the End User Time Zone Change Utility (11.21.22.20). This utility updates calls for the end user to reflect the new time zone.

See Chapter 4, “Multiple Time Zones,” for details.

Message. Enter an optional, brief message regarding this end user that displays in various call-related programs for calls associated with this user. For example, when you create a call or record service activity, the message displays at the bottom of the window. It also appears on printed calls, which the engineer often uses as a kind of work order.

End Date. If the message becomes obsolete after a certain date, enter that date in this field. When the system date matches or exceeds the end date, the message no longer displays.

Service Office Detail Frame

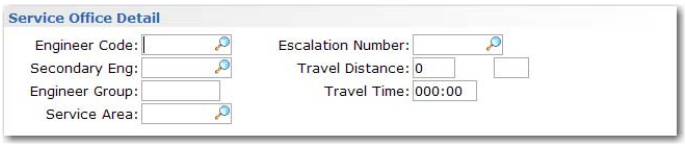
The Service Office Detail frame stores information for assigning and scheduling engineers for this end user, as well as managing calls.

When you associate a primary or secondary engineer with an end user, the system checks settings in Engineer Schedule Control. A warning displays under these conditions:

- If Limit by Service Area is Yes and the engineer’s service area does not match the end user’s area
- If Limit by Time Zone is Yes and the engineer’s time zone either does not match the end user’s or is outside the range in Range of Hours to Consider

Note To limit by time zones, MTZ must be active.

Fig. 2.6
Service Office Detail Frame



Engineer Code. This code specifies the engineer usually assigned to calls for this end user—perhaps the one closest to this end-user site, or the one preferred by the customer. The engineer scheduling function in Call Maintenance awards points to this engineer based on twice the Primary Eng Points field in Engineer Schedule Control.

Secondary Eng. The engineer scheduling function in Call Maintenance awards points to this engineer based on the Primary Eng Points field in Engineer Schedule Control.

Engineer Group. Enter an optional code to group engineers. Set up code values in Generalized Codes Maintenance for field fsgroup. You might, for example, group engineers who do only telephone support separately from those who work in the field.

Service Area. Enter the code you set up with Area Maintenance to identify the geographical area of this end user. Usually the area relates to a service center. For example, a service center may service North America, Canada, or just the province of Ontario. You can define call queues and assign engineers for each service area.

The engineer scheduling sequence in Call Maintenance awards points to engineers with an area matching the end user initiating the call.

Escalation Number. Enter an optional code indicating the escalation sequence for calls initiated by this end user. Any sequence here overrides escalation defaults set in Call Default Maintenance, Service/Support User Preferences, or the standard escalation in Escalation Control. Specifying unique escalations lets you give extra priority or special handling to certain callers.

Travel Distance and UM. Enter the distance, in the travel unit of measure, from the service center to this end user. The unit of measure is M (miles) or K (kilometers) and defaults from Call Management Control. Values specified here display in the Travel and Estimated Time frame of Call Maintenance.

Travel Time. This value designates the number of hours required to travel between an end-user installation and the service office. It also sets the default for the Travel Time field in the Travel and Estimated Time frame of Call Maintenance, and can help calculate the estimated time for the call. Note that the system does not include travel time when calculating engineer load; it is only for reference.

Processing Defaults

The next frame of End User Data Maintenance defines defaults for an end user that are used by other functions.

Fig. 2.7
Processing Defaults Frame

Create ISB. The value of Create ISB in End User Control determines the default for a new end user. This field indicates whether to create installed base records for this end user. The setting in this field and the value in the Installed Base field of Service Item Maintenance must both be Yes for the system to add an item to the installed base.

These two fields affect the default value for the Update Installed Base field in the Installed Base Detail frame of Sales Order Maintenance, Pending Invoice Maintenance, and RMA Maintenance. They also affect the Update ISB field in Call Maintenance, Call Quote Maintenance, and Call Activity Recording.

PO Required. Yes in this field indicates that you cannot record service activity for this user without a purchase order. This feature is for organizations that do not use service contracts, but purchase service on a case-by-case basis. The value for the end user defaults from the associated customer. This field affects the following:

- RMAs and Service Contracts. If a PO is required, you must enter it before the line items can be updated.
- Contract Quotes. If no purchase order exists, a warning states that a PO is required. You cannot release the quote to a contract without a PO number.
- Call Quote Maintenance and Call Maintenance. You can create calls and quotes without a PO, but a warning displays.
- Call Activity Recording. If the end user requires a PO, you cannot get past the header without entering it.

- Call Quote Release to Recording. If an end user requires a PO and none is specified, the quote cannot be released.

Auto Renew Contracts. The value in this field determines the default displayed in Contract Maintenance (11.5.13.1) for the Auto Renew field when you add this end user to a contract. Renewal Process/Report (11.5.13.10) examines this field to determine which contract lines should be renewed.

Invoice Format

The Invoice Format frame of End User Data Maintenance defines the level of detail displayed on printed invoices for this end user. You define the level of detail initially when each invoice sort is set up. The detail level you specify for an end user overrides the level associated with the invoice sort.

Fig. 2.8
Invoice Format Frame

Ln. Line number created by the system.

Invoice Sort. Enter the name of an invoice sort. You can specify a level of detail for this invoice sort for this end user that is different from the default for this invoice sort in general.

Det. The Det (detail) column determines whether detailed or summarized invoice information is printed on invoices for this end user. The value here is the default for the Invoice Detail column in Call Invoice Recording when calls for this end user are reviewed.

Contacts Frame

Contacts are created for the end user in End User Create or End User Modify; you cannot add them here. You can only display details defined in the other functions. Primary contacts display with a Name Type of P. Each contact name has its own title, telephone, and fax numbers.

Note To determine which end user a caller is associated with, search by contacts in the End User Selection frame of Call Maintenance.

The first primary contact and associated phone number display by default in the Caller and Phone fields when you create a call for this end user. This information prints on the call for the engineer.

Fig. 2.9
Contacts Frame

Creating End Users Indirectly

You can also create end users during other service functions or when updating the installed base. You may know little about the end user, basically the name and address. Use End User Data Maintenance later to specify details about end users the system creates.

Creating End Users During Invoice Post

If Ship to Installed Base is Yes in Service Management Control, Invoice Post and Print can create installed base records for items shipped. If you have not already defined the ship-to on the sales order as an end user, Invoice Post and Print also creates an end-user record.

Update Installed Base defaults to Yes if both:

- Installed Base for the item in Service Item Maintenance is Yes.
- Create ISB for the end user is Yes.

If a ship-to address is not an end user, the item is an installed base item, and Create ISB in End User Control is Yes, Update Installed Base defaults to Yes in Sales Order Maintenance.

If SO Edit ISB Defaults is Yes in Sales Order Control, a pop-up window lets you update this value. Otherwise, it takes effect when Invoice Post and Print adds the item to the installed base and creates the end-user record.

See “Creating ISB Records During Invoice Post” on page 47.

Note Invoice Post and Print (7.13.4) adds records to the system as customer ship-to addresses. You cannot change the address information with End User Data Maintenance but you can add end-user details. Change address details in Customer Ship-To Modify (27.20.2.2)

Creating End Users from Other Service Functions

When a business sells only to retailers or distributors, direct knowledge about end users may be unavailable. To identify end users, the business might use product registration cards, phone-in registration, or a contest registration.

Even with these mechanisms, such a business often finds out about end users when they call or attempt to start a service contract or return an item. Service personnel making the first contact are likely to be using one of the following:

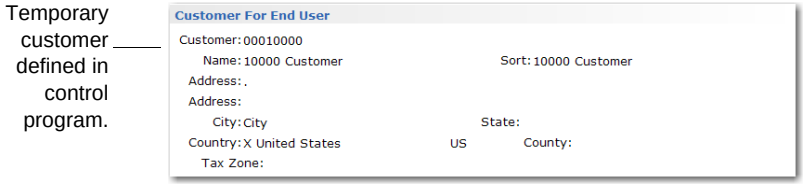
- Call Maintenance
- Call Quote Maintenance
- Contract Maintenance and Contract Quote Maintenance
- RMA (Return Material Authorization) Maintenance

Since service personnel can add end users in these functions, the process is streamlined.

Note Whether you can create end users in Contract Maintenance and Contract Quote Maintenance depends on the setting of Bill End Users. When you are billing end users, they must be set up previously in Customer Data Maintenance. See “Billing Customers or End Users” on page 233.

Figure 2.10 illustrates the frame that displays in Call Maintenance when you leave End User blank and indicate that you want to add one.

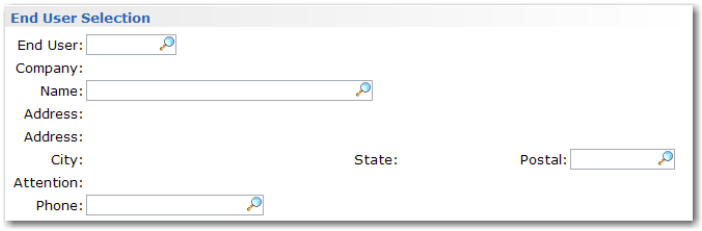
Fig. 2.10
Customer for End-User Frame



By default, the first frame displays information about the temporary customer, as defined in Call Management Control. This lets you define an end user, and you can define an end user without a valid customer. This is essential if you service items sold through distributors or retailers and end users contact your company for service.

Figure 2.11 illustrates the frame for specifying end-user information.

Fig. 2.11
End-User Frame



You can specify minimal information for the new end user.

End User Schedules

Setting Up End User Master Schedules

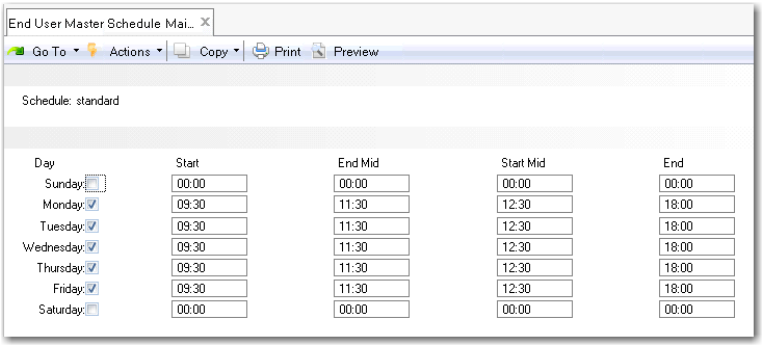
Use End User Master Schedule Maintenance (11.9.13) to set up end user schedules. You can define a schedule to use as a company-wide default, which ensures that engineer visits are scheduled at times that are appropriate for the end user.

You can define a single break in the end user's daily schedule, such as a lunch break, using the End Mid and Start Mid fields. The system considers the interval between the times defined in the End Mid and Start Mid fields to be non-working time. If you do not define a break, the system assumes that the end user is available all through the working day.

Fields in End User Data Maintenance (11.9.1) enable you to assign a schedule to an end user. You can also modify an existing schedule or create a new schedule for the end user's needs. See "Creating a Personal Schedule for an End User" on page 23.

Use End User Control (11.9.24) to set a particular end user master schedule as the company-wide default. If no schedule is assigned to a user in End User Data Maintenance, the end user will follow the default master schedule defined in End User Control. See "End User Control" on page 660.

Fig. 2.12
End User Master Schedule Maintenance (11.9.13)



Schedule. Enter an eight-character code to identify the end user master schedule.

Day. Select the days for which you want to define an end user schedule.

Start. Enter the start time for the end user's working day.

End Mid. Enter an end time for the first period of the end user's day. Use this field to define the start of a non-working period, such as a lunch break. If you do not define a break, the system checks the Lunch Duration field in Engineer Schedule Control (11.13.15.24). If the Lunch Duration field contains a value, the system deducts this value from the total daily time available for scheduling calls. If the Lunch Duration field is also blank, the end user will be available for the entire working day.

Start Mid. Enter a start time for the second period of the end user's day. Use this field to define the end of a non-working period, such as a lunch break. If you do not define a break, the system checks the Lunch Duration field in Engineer Schedule Control (11.13.15.24). If the Lunch Duration field contains a value, the system deducts this value from the total daily time available for scheduling calls. If the Lunch Duration field is also blank, the end user will be available for the entire working day.

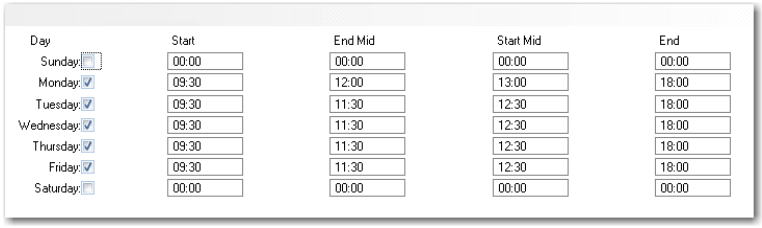
End. Enter the time at which the end user's working day ends.

Creating a Personal Schedule for an End User

If you assign a master schedule to an end user in End User Data Maintenance, you can edit the schedule using the Edit End User Schedule frame. To open the Edit End User Schedule frame, select the Edit Schedule field in End User Data Maintenance and click Next.

Note You can also define a personal work schedule for an end user, even if you have not specified a master schedule in End User Data Maintenance. Leave the Operating Schedule field blank, select the Edit Schedule field, and click Next to display the Edit End User Schedule Frame.

Fig. 2.13
Edit End User Schedule Frame



Day	Start	End Mid	Start Mid	End
Sunday:	00:00	00:00	00:00	00:00
Monday:	09:30	12:00	13:00	18:00
Tuesday:	09:30	11:30	12:30	18:00
Wednesday:	09:30	11:30	12:30	18:00
Thursday:	09:30	11:30	12:30	18:00
Friday:	09:30	11:30	12:30	18:00
Saturday:	00:00	00:00	00:00	00:00

You can edit the fields as described in “Setting Up End User Master Schedules” on page 22.

Deleting End User Records

You can delete obsolete end user records with End User Delete (27.20.3.4). The system checks for service contracts, service quotes, calls, service requests, or RMAs associated with the end user. If any of these exist, an error displays. If call history exists, a warning displays.

When you delete an end-user record, the system removes all installed base records associated with the end user, as well as end-user contact information, and any comments associated with the end user.

Note If end user records are associated with a customer record, you cannot delete the customer in Customer Delete until you delete the end users using End User Delete.`

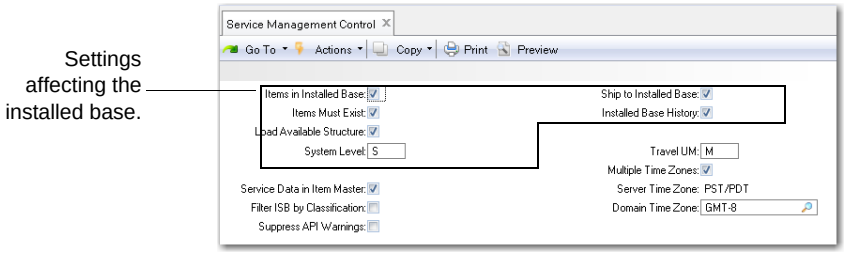
Implementing the Installed Base

If you decide to track the installed base, you must make a number of other business decisions such as the following:

- Do you want items added to the installed base when they are sold, or will you manually add them, perhaps when registration cards are returned?
- Will items you do not manufacture be added to the installed base?
- Will you support only those items recorded in the installed base? Do you normally support only a special subset of items marked as system level?
- Do you have different installed base requirements for items that you cover on service contracts?
- Of the items you manufacture, which ones do you want included in the installed base?
- Do you want to track items in the installed base for all end users, or only for certain end users with special requirements?
- Do you need to track parent items only or also components in the installed base?
- Do you want to classify installed base items to facilitate searches in related functions?
- Will you track replacement parts when an item is repaired and add them to the installed base?
- Do you want to keep an audit trail of manual updates to the installed base?

Your decisions regarding the installed base are implemented in through control program settings. Figure 2.14 illustrates settings in Service Management Control that affect the installed base.

Fig. 2.14
Service Management Control (11.24)



Restricting Support to the Installed Base

If you want to use the installed base as a validation database, set Items in Installed Base to Yes. This prevents the creation of call quotes and calls referencing an item not in the installed base. When set to No, only a warning displays in these functions. When you take calls for items not in the installed base, the installed base record is created before you record activity or when you close the call.

If you do not know your end users until they call the support department, you should set this field to No.

A similar field also exists in Contract Control (11.5.24), which determines how items added to contract and contract quotes are validated. The contract value defaults from Service Management Control. The two fields support a flexible approach to managing the installed base. For example, you can set the field in Service Management Control to No so that you can take calls for any item. Then set the field in Contract Control to Yes so you provide coverage for items in the installed base only.

You can define any combination of Yes and No values for the two Items in Installed Base fields. However, setting Items in Installed Base to Yes at the system level and No at the contract level can create problems if you do not ensure that covered items are added to the installed base later. Otherwise, you will not be able to create a call for an end user with valid contract coverage.

See “Items in Installed Base” on page 654.

Restricting the Installed Base to Inventory Items

When implementing SSM, you must decide which items to include in the installed base. When Items Must Exist is Yes in Service Management Control, the installed base includes only inventory items.

For installed base records to be created when you ship inventory items on a sales order, you must also use Service Item Maintenance (11.3.7) to set Installed Base to Yes.

See “Service Item Maintenance” on page 35.

Effect of Setting Items Must Exist to No

When Items Must Exist is No, service personnel can take calls for items not in your item master. This means you service items that you do not manufacture and sell. Consider carefully servicing third-party items and the consequences of having items that you do not manufacture or stock in your installed base.

Items not in the item master are *memo items*. ISB records for memo items are the same as inventory items. You can add records in Installed Base Item Maintenance (11.3.1) or indirectly in programs such as Call Activity Recording. Invoice Post and Print does not create ISB records for memo items through sales orders, since they are not items you manufacture and sell.

Example A customer purchases a disk drive from another vendor and adds it to the system they bought from Ace Computers. The customer wants Ace Computers to service the disk drive. Ace Computers wants this service business, so they set Items Must Exist to No and add this component to the installed base.

Effect of Setting Items Must Exist to Yes

If you usually service only items you produce, you can restrict the installed base to items defined in the item master by setting Items Must Exist to Yes. Then you cannot take calls or provide other service such as RMAs or contract coverage for an item unless it is set up in the item master. This, in turn, prevents items that are not in your item master from being entered into the installed base.

Note You can still leave the Item Number field in Call Maintenance blank when Items Must Exist is Yes. This lets you take calls such as telemarketing inquiries when an item number is not applicable. You can also take a call when the item number is not initially known but will be recorded later.

Tracking Manual ISB Updates

When updates are made to the installed base automatically during invoice post, an audit trail is available through standard audit mechanisms such as invoice and call history records.

The Installed Base History field enables you to maintain a separate audit trail of manual updates to the installed base. This can provide an important element in tracking additions, changes, and deletions performed through Installed Item Maintenance, Installed Item Move, and Installed Configuration Maintenance.

When this field is set to Yes, the system creates history records whenever an ISB record is manually added or deleted, or when the serial number is changed. ISB history records contain the following information:

- The address code of the end user who owns the item.
- The effective date of the event. For installed base moves, this may be different than the system date.
- The date the record was created.
- The ID of the user performing the update.
- The number, serial number, and model of the item.
- A transaction number and transaction type (either ISB-ADD, ISB-MOVE, ISB-DLET, or ISB-SERL).

When a serial number change occurs, both the old and new numbers are recorded. When an item is moved, the old and new end-user codes are recorded.

Installed base history records can be displayed with ISB History Browse (11.3.22.2), ISB History Report (11.3.22.3), or ISB Item Tracking History Report (11.3.22.5 or 11.22.3). They can be deleted and archived with ISB History Delete/Archive (11.3.22.23).

Including Product Structures in the Installed Base

You must decide whether to include both components and parent items in the installed base. There are several advantages to having the product configuration in the installed base:

- Customer service can determine exactly what is in the configuration.
- If you move the item to a different end user, the entire configuration moves.
- If you replace one or more components during a service activity, you can update just those components in the installed base.

Tracking components is common in two situations:

- If the items you sell are subject to recall or contain components whose failure presents potential hazards, you may need to track individual components. Companies subject to government regulations often must keep detailed records about items and their components.
- If you sell configured products, you may want to keep track of which options an end user has. Some of the options may also be sold separately, and may have warranty terms that differ from the parent item. A personal computer is a good example of a configured product that can contain items also sold as products. For example, monitors and disk drives may be sold separately and tracked separately in the installed base.

The system can add product configurations to the installed base automatically if Load Available Structure is Yes in Service Management Control. This update occurs during invoice post or from Call Activity Recording.

Adding as-built configurations to the installed base automatically is possible only for items you manufacture or configure. If you track third-party items, use Installed Configuration Maintenance (11.3.5) to add configuration information for them.

Note When you add items to the installed base while you are recording service in Call Activity Recording, the system always adds them as first-level components of the call line item with which they are associated.

If SO Edit ISB is Yes in Sales Order Control, you can also indicate that an item sold is a component of a parent by specifying the parent item's serial number and item number. The system then adds it as part of that item's installed base configuration. The same is true in RMA Maintenance if Edit Installed Base is Yes in RMA/RTS Control.

Load Available Structure

The Load Available Structure field determines whether Invoice Post and Print adds product structures to the installed base. Setting this field to Yes only has an effect if certain other conditions are also true:

- The item must be one you manufacture or configure.

- Ship to Installed Base must be Yes.
- Installed Base must be Yes and the parent and each component to be added to the installed base must be service items in Service Item Maintenance.
- The item must be added to the installed base with a quantity of 1. The shipment quantity for configured items must be 1 and the work order quantity for serialized or lot controlled items must be 1 for the system to uniquely identify the as-built structure. Since lots seldom have a quantity of 1, Load Available Structure usually does not affect lot-controlled items.
- The parent item must be serial-number controlled, unless it is a configured product. A configured product on a final assembly work order can be identified without a serial number if it is shipped with a quantity of one.

If the product structure contains subassemblies, the parent item of the subassembly must be serial-number controlled for the system to attempt to find and add its components to the installed base.

If these conditions are met, the system attempts to add components of the parent item to the installed base as derived from the sales order BOM or the work orders used to build it and its components. This information is derived from the transaction history.

If Load Available Structure is No and Ship to Installed Base is Yes, only the parent generates ISB records. The components generate no details.

Transfer of Item Information from Sales and Work Orders

The installed base inherits item information based on the way the item was made or sold. This *as-built configuration* information comes from records generated in the Sales Orders/Invoices and Work Orders modules.

You can use either a final assembly process or a discrete work order to create configured items. Either process creates the transactions necessary to update the installed base with the actual components.

Note Use Sales Order Release to Work Order (8.13) to create discrete work orders.

Components can only be added to the installed base when transaction history uniquely identifies the parent and components:

- A single work order for multiple parent items does not provide enough information in the transaction history to determine which serialized components belong to which parent.
- Transaction history is ambiguous if the work order for a component item is for a quantity greater than that required by the parent. The system loads components until the history becomes ambiguous.

Setting ISB Unit Quantity

The ISB Unit Quantity field of Service Item Maintenance affects how non-serial-controlled items are added to the installed base on an item-by-item basis. This field does not affect serialized items, which are always added with a quantity of one.

- When the field is No and you ship a quantity greater than one on a sales order line, the system creates only one ISB record for the shipment quantity. If you ship three items, the system creates one ISB record for a quantity of three.

- When the field is Yes, the system creates unique ISB reference numbers for each item shipped and each record has a quantity of one. The shipment line with a quantity of three creates three records for the same item number (and lot) but with three reference numbers.

Recording Call Activity for Multiple Items

ISB Unit Quantity affects how items in the installed base can be repaired in Call Activity Recording. If the quantity of the item to be repaired does not match the ISB record, components issued and returned in CAR do not update the installed base.

If ISB Unit Quantity is Yes and you always create a call line for each item to be repaired, you will not encounter quantity mismatches in CAR. Otherwise, change the quantity on the line item to match the installed base record if you want components to update the installed base.

Using the System Level Setting

One other setting helps manage information in the installed base. Each service item can have an item type code in Service Item Maintenance. Set up the codes in Generalized Codes Maintenance for field pt_sys_type. In Service Management Control, the System Level field designates a code indicating a system-level item.

Normally, system level refers to the parent or top-level item in a configured product structure. However, you can use this attribute in any way that is meaningful to your organization.

Select System Level Only in the Installed Base Report (11.3.3) to view only system-level installed base items.

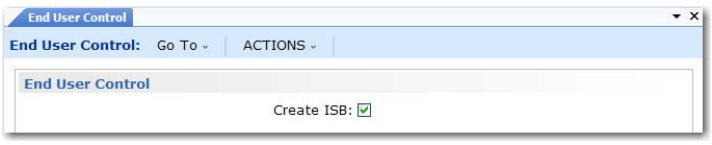
Call Management can handle system-level items differently. When System Level on Calls in Call Management Control is Yes, using Next/Previous in the Item Number field in Call Management displays only items with a system type that matches the value in System Level in the control program.

Use this feature if your service department takes calls only for certain kinds of items, or to ensure that calls always refer to top-level parent items, not components.

Setting a Default Value for Creating ISB Records

The Create ISB field in End User Control, illustrated in Figure 2.15, also affects installed base updates.

Fig. 2.15
End User Control (11.9.24)



Create ISB sets the default value for the Create ISB field for new end users. Create ISB for an end user determines, in turn, whether the system normally adds items associated with the end user to the installed base.

This field gives you more control over how items are added to the installed base. If you usually add items to the installed base regardless of the end user, set Create ISB to Yes and this value will flow to the functions that create ISB records. To more tightly control ISB updates so that records are created only for a predefined set of end users, set this field to No and change the field in End User Data Maintenance.

This setting is especially important if you are shipping sales order line items to the installed base. The system looks at Create ISB in the control program whenever a ship-to address is not defined as an end user. If you want to add items by default to the installed base in this situation, make sure Create ISB is Yes in the control program.

See “Creating End Users During Invoice Post” on page 21 for additional details.

Classifying ISB Records

To facilitate finding items in the installed base, you can use user-defined item classifications. To do this, follow these steps:

- Create classification codes that are meaningful to your own business needs using Classification Maintenance (11.3.18). Order classifications in a hierarchical structure by linking child classifications to parent classifications.
- Enable ISB filtering for the entire system in Service Management Control (11.24) and then tailor the system setting for individual users in Service/Support User Preferences (11.21.23).
- Associate a default classification code with the items you typically track in the installed base using Service Item Maintenance (11.3.7), described on page 35.
- Update any existing installed base records with the correct classification code using Installed Base Item Maintenance (11.3.1), described on page 42.

After this setup is complete, you can choose a classification code from any level of the hierarchy before using ISB lookups in the programs listed in Table 2.1. The system finds and displays only the records that have the specified classification or any classification linked below it in a hierarchy.

Table 2.1
Programs with ISB Lookups

Menu Number	Description	Program Name
7.1.1	Sales Order Maintenance	sosomt.p
11.1.1.1	Call Maintenance	fscamt.p
11.1.1.7	Call Quote Maintenance	fscqmt.p
11.1.1.13	Call Activity Recording	fscarmt.p
11.1.3.1	Pending Call Maintenance	fspcmt.p
11.1.6	Call Queue Manager	fsquemg.p
11.1.8	Call Generator	fscagen.p
11.3.1	Installed Base Item Maintenance	fsisbmt.p
11.3.5	Installed Configuration Maintenance	fsbmismt.p
11.3.12.1	Field Notification Maintenance	fsfnmt.p
11.3.12.2	Field Notification Inquiry	fsfniq.p
11.3.13	Installed Item Move	fsisbmv.p
11.5.1.1	Contract Quote Maintenance	fsqomt.p
11.5.13.1	Contract Maintenance	fssamt.p

Menu Number	Description	Program Name
11.7.1.1	RMA Maintenance	fsrmamt.p
11.7.1.13	RMA Receipts	fsrmais.p
11.13.15.8	Engineer Assignment Maintenance	fsegtmt.p

Use Classification Inquiry (11.3.19) to view the hierarchical relationship of classifications. You can also use classification code to select records to display in Installed Base Inquiry (11.3.2), Installed Base Report (11.3.3), or ISB by Classification Inquiry (11.3.20).

When items in the installed base are classified, you can optionally generate calls based on classification code in Call Generator.

Additional reference information about the fields that support classification filtering and alternative browses is provided in “Installed Base Classification” on page 686.

Plan a Classification System

The way you set up classifications depends on your manufacturing environment, how many different product types you want to track and their relationships with each other, and how many users have access to your ISB.

Begin your analysis by first considering and listing which parent items need to be tracked. From this list, identify which parent items require further definition. Continue this identification process until you identify all the items you want information about.

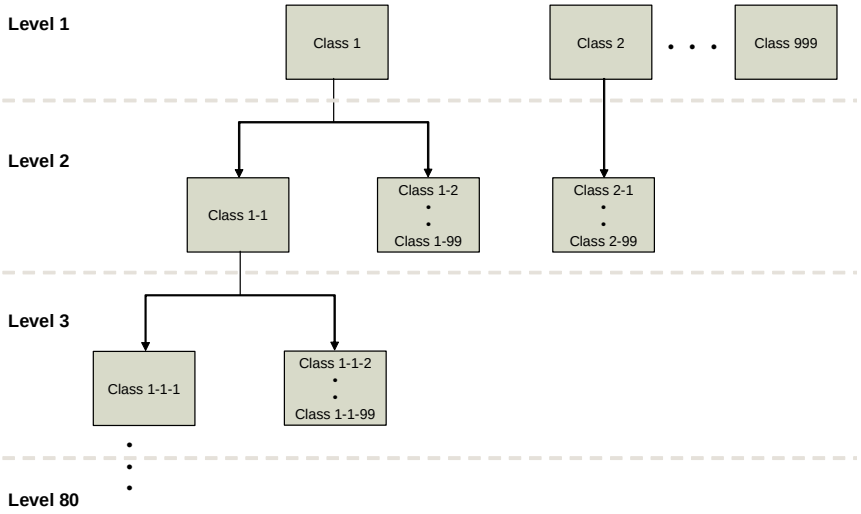
When you design your coding system, keep the following guidelines in mind:

- You can have up to 999 classification hierarchies.
- One parent can have 99 children.
- One classification can have 80 subordinate levels.
- A classification code cannot have more than one parent.
- Parent and child classification codes cannot be the same.
- Blank classification codes are not allowed.

Note Additional technical details about classification codes is included in Chapter 26, “Reference,” on page 677

Figure 2.16 illustrates the hierarchy concept.

Fig. 2.16
Classification Code Hierarchy



Classification Example

You manufacture meters and electronic controls. Use Classification Maintenance to create classifications for all meters (001) and one for electronic controls (002).

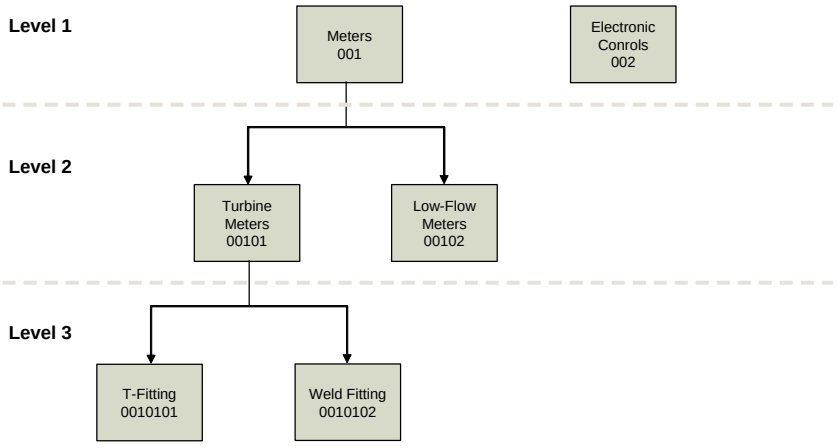
In have two types of meters, so you create two additional classification codes that are lined to code 001:

- Turbine meters (00101)
- Low-flow meters (00102)

Because your turbine meters can be packaged with T-fittings or weld fittings, two more codes are needed linked to 0010101 and 0010102, respectively.

Figure 2.16 illustrates this classification hierarchy.

Fig. 2.17
Classification Code Example



Note While 80 subordinate levels are supported, it is unlikely that you will need more than a few.

Create Classification Codes

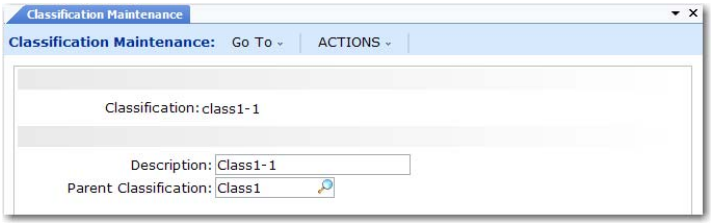
After you have planned your hierarchy, use Classification Maintenance (11.3.18) to create and maintain codes for classifying installed base records. Define the hierarchical relationships between classifications by entering parent classification codes.

You can also use this program to delete codes, with the following restrictions:

- The code is not referenced in an installed base record.
- The code is not associated with a service item in Service Item Maintenance.

When you delete a code that is in a parent relationship to other codes, the child codes are then associated with the deleted code's parent. If the deleted code has no parent, the child codes become top-level codes in the hierarchy.

Fig. 2.18
Classification Maintenance (11.3.18)



Classification. Enter a classification code (maximum 12 characters) you want to use to classify ISB records.

Description. Enter the description (maximum 24 characters) of the classification code. Description displays in the lookup and prints on reports and inquiries as space permits.

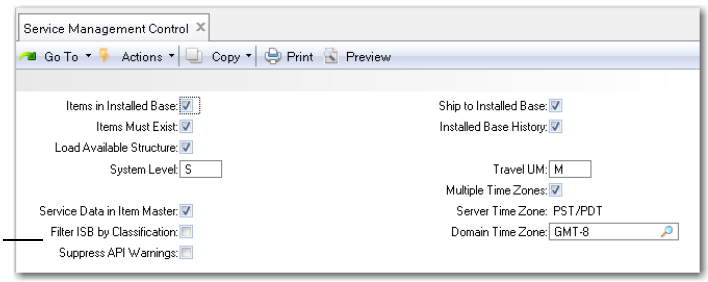
Parent Classification. Enter an existing classification code to create a hierarchical relationship between codes. The parent code cannot be the same as the code entered in the first frame.

Parent code is optional. Each code can have only one parent.

Set Filtering Default

Use Service Management Control (11.24) to enable or disable ISB filtering by classification code at the system level. The value of this setting affects all programs that have a field with an associated installed base lookup.

Fig. 2.19
Service Management Control (11.24)



Enable filtering by classification code.

Filter ISB by Classification. Specify whether you want to filter ISB records based on classification codes before displaying ISB lookups.

No: All ISB records are displayed.

Yes: You can select a classification code to limit records included before an ISB lookup displays.

This field defaults to Service/Support User Preferences (11.21.23) where you can specify a different value for individual users as needed.

Using the Classification Lookup

When a service program includes a field that references installed base items, lot/serial numbers, or ISB references, the system checks the value of Filter ISB by Classification for the user in Service/Support User Preferences. If this is Yes, a classification lookup displays.

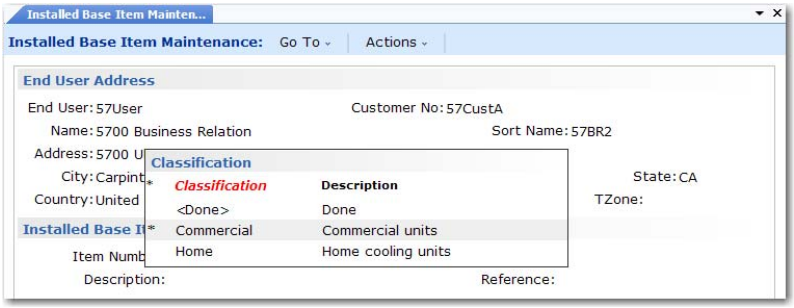
If no user preference exists, the system checks the value of Filter ISB by Classification in Service Management Control. Again, if this is Yes, the classification lookup displays.

When you select a value from the Classification lookup, ISB data is filtered using that code. When you press Help to request a lookup on any of the fields related to the ISB, only records associated with the selected classification code or any child codes beneath it display in the lookup.

See “User Preferences” on page 91.

Figure 2.20 illustrates the Classification lookup in Installed Item Move (11.3.13). The lookup is the same in all supported programs.

Fig. 2.20
Classification Lookup



All top-level codes (those without parents) initially display. If a classification has codes beneath it in a hierarchy, an asterisk (*) displays next to it in the lookup. You can drill down to see codes at the next level by pressing Enter with the code selected. Press Enter with <Done> selected to use the selected code as a filter.

When you press Enter with a selected code and no lower codes exist, that classification is used as the filter.

To bypass filtering, press <Done> when the lookup first displays. The system will display all ISB records without filtering by any classification code.

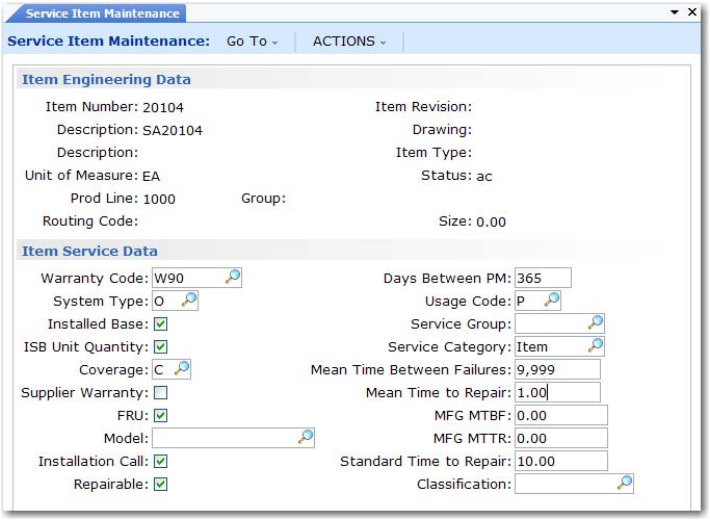
You can move quickly to a particular value in the lookup by typing the first letter of the code you want to use. Then press Enter to select it. You can also type < to move to the <Done> selection.

Service Item Maintenance

If you typically provide service for a well defined set of items, you can define service attributes for them with Service Item Maintenance (11.3.7). First define the items in Item Master Maintenance, even if Items Must Exist is No in Service Management Control. Use Service Item Inquiry (11.3.8) to review item service data.

If you set Service Data in Item Master to Yes in Service Management Control, these same frames display in Item Master Maintenance (1.4.1) and in Item Master Inquiry (1.4.2).

Fig. 2.21
Service Item Maintenance (11.3.7)



Service Item Maintenance influences key service activities including managing the installed base, recording service activity in Call Activity Recording, determining coverage for items in the installed base, the creation of installation calls, and definition of standard service BOMs and routings.

For example, to add inventory items automatically to the installed base during sales order shipment, set them up with the Installed Base field in Service Item Maintenance set to Yes. This indicates to the system that the service organization supports this item and prevents cluttering the installed base with items the organization does not service.

If Ship to Installed Base is Yes (11.24), many service attributes are used when Invoice Post and Print creates an installed base record. If SO Edit ISB Defaults is Yes in Sales Order Control (7.1.24), you can change the default values when you generate the sales order. Otherwise, the system creates the record in the background using default values. To make changes later, use Installed Base Item Maintenance (11.3.1).

Item Engineering Data Frame

After you enter or select a valid part number, the system fills in the fields in this frame from the item record, for display only.

Item Service Data Frame

In this frame, specify information the system uses during service of this item.

Warranty Code. Enter a warranty code set up with Warranty Type Maintenance. This code supplies the default for new installed base records for this item.

You can modify the default in the Installed Base Detail pop-up in RMA Maintenance, Sales Order Maintenance, and Pending Invoice Maintenance if control program settings permit editing of the installed base record. If not, the system applies the defaults. For ISB records created during invoice post, the warranty start date defaults from the ship date. For installation calls, the warranty start date is the call closure date.

System Type. Validated against generalized codes for pt_sys_type. Three values are supplied: software (SW), System (S), or Other (O). You can set up additional codes in Generalized Codes Maintenance.

The System Level field in Service Management Control determines which system type code is considered system level. You can choose to see only system-level items on the Installed Base Report (11.3.3). If System Level on Calls is also Yes in Call Management Control, Call Management is affected. During next/previous processing in the Item field, only items with this system type display.

Note System level normally indicates the top-level item in an installed configuration, but it can have any application suitable for your system.

Installed Base. Yes indicates you want this item in the installed base. The system considers this field in conjunction with the Create ISB field for an end user for new sales orders or calls, or when a repair uses the item. If both are Yes, the system assumes the item should be in the installed base.

Depending on the function, the system either creates an installed base record in the background, or supplies a default you can change.

Note The system looks at the value of Create ISB in End User Control for a sales order ship-to address not yet defined as an end user.

ISB Unit Quantity. The system reviews this field when it adds items to the installed base—when you post sales orders or RMAs, close calls, or record activity in Call Activity Recording. The field is effective only when Installed Base is Yes and the item is not serial-number controlled. Records for serialized items always have a quantity of 1.

No: The system creates one installed base record for multiple items on a line using the line-item quantity.

Yes: Each installed base record has a quantity of one. If a given sales order or RMA shipped more than one item or a call line contains more than one item, the system creates multiple installed base records, each with the same item number (and lot), but with a different installed base reference number.

Coverage (S/C/N). Indicate whether the same warranty covers both the parent item and components of this item.

- If S (subassemblies covered), the same warranty covers the finished product and its lower-level subassemblies.
- If C (covered), this warranty covers only this item. You can associate different warranty information with separate installed items for each of the components.
- If N (not covered), there is no warranty coverage.

Supplier Warranty. A reference-only field indicating whether this item normally comes with a supplier warranty. Yes indicates that if a problem with this item occurs during the supplier warranty period, the original supplier will repair the item.

FRU. Indicate if this item is a field-replaceable unit. Yes means that if this unit is defective, you can replace wit. This field is for reference only and appears on reports and inquiries to help the engineer handle a service call.

Model. Enter the model number associated with this item. Many organizations service products by model. In Call Default Maintenance (11.1.21.10), you can create separate call defaults for each model you service. This is useful if calls associated with various product models follow different paths.

Installation Call. Specify Yes if this item must be installed by a service engineer. This field is used with the Auto Install Calls field in Call Management Control (11.1.24). If both are Yes, the system creates an installation call during invoice post of sales orders and RMAs.

The system uses the Install Work Code in Call Management Control and the installation BOM and routing in the Service Structure Data frame for the call.

Repairable. Indicate whether this item is repairable. Yes has the following effects:

- You can attach a repair BOM and routing to this item in the Service Structure Data frame without a warning.
- When a repairable item is issued in Call Activity Recording, the system assumes one will be returned and defaults a value into the quantity returned field of the Item Usage frame.
- The value of repairable affects the default return locations suggested by the system during return processing in CAR.

Days Between PM. Specify the length of the preventive maintenance (PM) cycle for this item in calendar days. A nonzero value has the following effects:

- The system adds this value to the install date to determine the initial Next PM Date value in Installed Base Item Maintenance (11.3.1).
- When this item is added to a contract, the PM Item field defaults to Yes.
- You can attach a PM BOM and routing to this item in the Service Structure Data frame without a warning.
- The system uses this value when you close a PM call line to calculate the next PM date for the item. The Days Between PM is added to the last PM date, which is set to the call close date. This update occurs for each line with a PM work code, regardless of the work code on the call header.

Usage Code. Specify an optional code you set up in Generalized Codes Maintenance for field pt_svc_type. This field is for reference only and displays on some reports and inquiries.

Service Group. Specify an optional code you set up in Generalized Codes Maintenance for field pt_svc_group to group types of service costs. You can use Service Group in setting up call defaults, default sites, price lists, and charge and revenue product lines.

Service Category. Enter a service category defined with Service Category Maintenance (11.21.9) for items, exchanged items, or consumable items.

Service categories support detailed tracking of invoice costs and service coverage levels. If you do not associate a service category with an item, Call Activity Recording uses the default item service category defined in Call Management Control.

MTBF, MTTR, MFG MTBF, MFG MTTR, STTR. These fields record optional statistics. Possibilities include the mean time to failure and mean time to repair this item; the standard manufacturing mean time to failure and to repair this kind of item; and the standard time to repair this item. The standard time may not always be the same as the mean time to repair, since the mean is an average of actual times, and the standard is a goal.

Classification. Enter the unique classification code you want to use to classify this item in the installed base. Define classification codes in Classification Maintenance (11.3.18).

You can leave this field blank, in which case the item does not belong to any classification.

When installed base records are created through posting sales orders, as part of call or RMA processing, or by other service functions, the item is added to the installed base with this classification.

When ISB filtering is enabled in Service Management Control, users can choose a classification code before an ISB lookup displays to filter the number of records.

See “Classifying ISB Records” on page 30.

Service Structure Data Frame

Service structures and routings are important for streamlining data entry in call functions. They enable the system to load the items normally consumed in the service of an item and the sequence of operations performed into the detail of call quotes and Call Activity Recording.

See Chapter 21, “Service Structures and Routings,” on page 557 for details on how to set up routings.

You can associate three BOMs and routings with an item that the system uses under different circumstances:

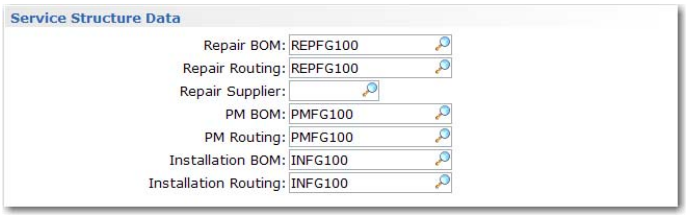
- The system uses the repair BOM and routing for calls you created with work codes other than PM or Install with Call Maintenance, Call Quote Maintenance, and the Call Generator. The system also uses the repair routing on work orders created by RMA Release to Work Order. A repair BOM and routing normally apply only if Repairable is Yes; otherwise, a warning displays.
- The system uses the PM BOM and routing for calls it creates during PM scheduling in Contract Maintenance or with the PM work code in Call Maintenance, Call Quote Maintenance, or Call Generator. A PM BOM and routing normally apply only if the Days Between PM field is not zero; otherwise, a warning displays.

- The system uses the installation BOM and routing when it creates a call with the Install work code in Call Maintenance, Call Quote Maintenance, or Call Generator or when Invoice Post and Print creates an installation call for a newly sold item. An installation BOM and routing normally apply only if Installation Call is Yes; otherwise, a warning displays.

The printed call can include the component structure of the BOM and the routing steps in the form of the list of parts and procedures relating to the call item. The system can load these items and operations into the detail frames of Call Quote Maintenance or Call Activity Recording. Automatic loading streamlines the recording of operations and items consumed.

See Chapter 21, “Service Structures and Routings,” on page 557.

Fig. 2.22
Service Structure Data Frame



Repair BOM. Enter a service structure defined in Service Structure Maintenance (11.19.5). This BOM code defines the items typically used to repair this item. The system uses the repair BOM when it creates a call with any work code other than Install or PM.

A printed call can include the items on the BOM in the form of a list of items needed during the service activity. You can also load the items on the BOM into the Item Usage frame in Call Activity Recording and Call Quote Maintenance. If Repairable is not Yes for the current item, a warning displays when you specify a repair BOM.

Repair Routing. Enter a service routing defined in Service Routing Maintenance (11.19.17). This code defines the normal sequence the engineer follows in repairing this item. It is the default when the system creates a call with any work code other than Install or PM.

A printed call can include the operations on the routing in the form of a list of procedures to be executed during the service activity. You can also load the operations on the routing into the Labor/Expense Usage frame in Call Activity Recording and Call Quote Maintenance. The system also uses the repair routing when RMA Release to Work Order creates a work order. If Repairable is not Yes for the current item, a warning displays when you specify a repair routing.

Repair Supplier. Identifies the supplier of repair parts. This field is for reference only.

PM BOM. Enter a service structure defined in Service Structure Maintenance (11.19.5). This BOM code defines the items an engineer typically uses during preventive maintenance of this item. The system uses the PM BOM when it creates a call with the PM work code.

A printed call can include the items on the BOM in the form of a list of items needed during the service activity. You can also load the items on the BOM into the Item Usage frame in Call Activity Recording and Call Quote Maintenance. If Days between PM is zero for the current item, a warning displays when you specify a PM BOM.

PM Routing. Enter a service routing defined in Service Routing Maintenance (11.19.17). This code defines the normal sequence of steps an engineer takes during a PM visit. The system uses it when it creates a call with the PM work code.

A printed call can include the operations on the routing in the form of a list of procedures to be executed during the service activity. You can also load the operations on the routing into the Labor/Expense Usage frame in Call Activity Recording and Call Quote Maintenance. If Days between PM is zero for the current item, a warning displays when you specify a PM routing.

Installation BOM. Enter a service structure defined in Service Structure Maintenance (11.19.5). This BOM code defines the items an engineer typically uses during installation. The system uses the installation BOM when it creates a call with the Install work code.

A printed call can include the items on the BOM in the form of a list of items needed during the service activity. You can also load the items on the BOM into the Item Usage frame in Call Activity Recording and Call Quote Maintenance. If Install Call is No for the current item, a warning displays when you specify an installation BOM.

Installation Routing. Enter a service routing defined in Service Routing Maintenance (11.19.17). This code defines the normal sequence of operations taken by an engineer to install the item. The system uses it when it creates a call with the Install work code.

A printed call can include the operations on the routing in the form of a list of procedures to be executed during the service activity. You can also load the operations on the routing into the Labor/Expense Usage frame in Call Activity Recording and Call Quote Maintenance. If Install Call is No for the current item, a warning displays when you specify an Installation routing.

Service Item by Site Maintenance

If you perform service activities at more than one site, the procedures you follow and the items you use may vary. For example, work centers names may be different or alternate parts used

Use Service Item by Site Maintenance (11.3.9) to tailor service BOMs and routings based on the site of the service activity. Where BOMs and routings apply, the system checks first for an item/site record. If this record does not exist, it uses the BOMs and routings for the item in Service Item Maintenance.

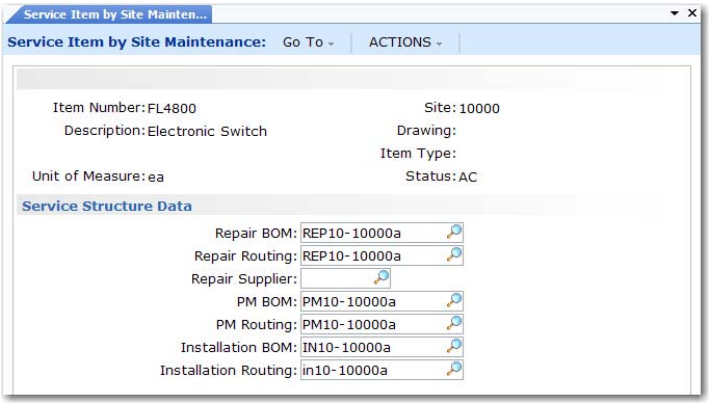
Before setting up service-structure data for items at different sites, consider how service functions determine a default site. For call-related functions, the system searches in the following order to determine a default site for an item being serviced.

1. The site associated with the assigned engineer in Engineer Maintenance
2. If the engineer does not have a site, the site associated with the engineer’s area
3. If these values are blank, a default spares site in Default Site Maintenance using the product line and service group of the item, and work code, item number, and area of the call

   See “Search Algorithm” on page 75 for details on how default sites are found.
4. The site defined in the item master
5. The site associated with the end user’s customer in Customer Data Maintenance

In RMA Release to Work Order, the system uses the RMA receipt site.

Fig. 2.23
Service Item by Site Maintenance (11.3.9)



Item Number. Enter an item code from Item Master Maintenance. The BOMs and routings you specify here apply to this item when you service it at the associated site.

Site. Enter the code that identifies a site for defining unique BOMs and routings for the current item. Since items and procedures may vary by site, the system uses these BOMs and routings by default in call functions associated with this site.

After you enter or select a valid part number and site, the system fills in the other fields in this frame from the item record, for display only.

The fields for BOMs and routings are exactly the same as those in Service Item Maintenance.

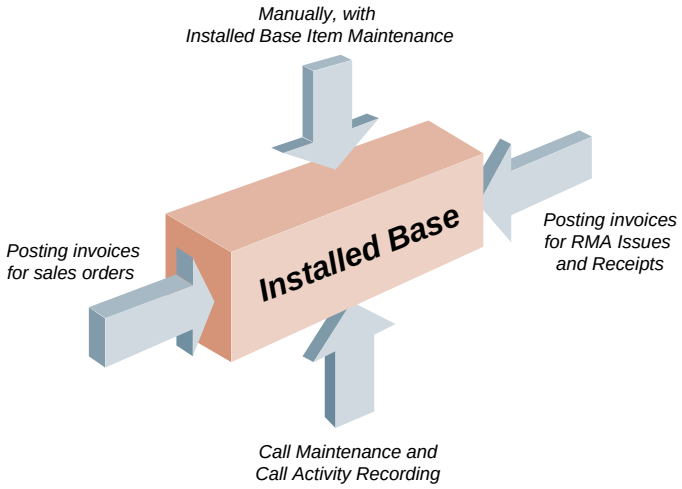
See “Service Structure Data Frame” on page 38.

Creating Installed Base Records

The installed base consists of records tying items with the end users who use them. Figure 2.24 illustrates ways you can create these records:

- Manually, using Installed Base Item Maintenance (11.3.1) and Installed Configuration Maintenance (11.3.5).
- Automatically, when you post invoices for sales order shipments and RMA issues and receipts.
- Automatically, from call tracking functions. When you close a call in Call Maintenance, you can update the installed base. Otherwise, Call Activity Recording can update the installed base for the item on the call and for items issued to repair it.

Fig. 2.24
Updating the Installed Base



Installed Base Item Maintenance

Use Installed Base Item Maintenance (11.3.1) to enter new items directly into the installed base or modify data associated with existing ISB records. This function is particularly helpful for companies that manually add items and configurations to the installed base.

Example A company sold products for several years before implementing the Service/Support Management module. They have several thousand units in the field without corresponding installed base records. They have a choice: either backfill the installed base as end users call with questions and problems, or enter installed base records from existing sales order or service contract records.

Other typical uses for Installed Base Item Maintenance include:

- Extending the warranty expiration date
- Changing the revision level of the item
- Entering and updating preventive maintenance (PM) dates and setting the interval between last/next PM dates
- Deleting obsolete records
- Correcting mistakes such as incorrect serial numbers or wrong classification codes

If an open call, a call that has been moved to history, or an unexpired service quote or contract references an installed base record, you cannot delete it.

Changing ISB Serial Numbers

You can use Installed Base Item Maintenance to modify the serial number of an item in the installed base. This is useful, for example, if the installed base was updated during shipment of a sales order and the wrong serial number was specified on the order. You can simply correct the data here.

However, if an item in the installed based is referenced on an open contract, call, or RMA, changing the serial number is more complex. For open contracts, open calls without call reports, and RMA shipment lines without a quantity shipped, the system updates the reference to the existing serial number to reflect the new number you enter in Installed Base Item Maintenance.

Note A contract is considered open if the current date is before the contract end date. A call is considered open if it does not have the closed or cancel status specified in Call Management Control.

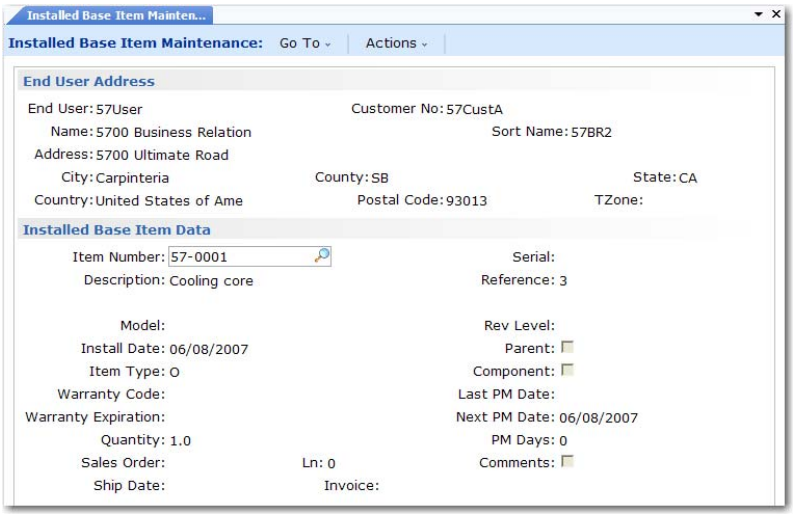
When an open call with reports exists, an engineer has already begun working on the call item. Typically the engineer verifies the serial number before beginning work. In this case, when you attempt to change the serial number, the system displays a warning and prompts you to continue. If you respond Yes, the serial number is changed on the call and in the installed base record. The system also checks to see if the new serial number is on any open contract and applies the contract coverage if appropriate.

Similarly, if the old serial number is referenced on an RMA line with a quantity shipped, a warning displays and you are prompted to continue.

End User Address Frame

After you enter or select a valid end user, the system fills in the fields in this frame from the end user record, for display only.

Fig. 2.25
Installed Base Item Maintenance (11.3.1)



Installed Base Item Data Frame

In this frame, you specify or update information related to the installed base item. The Sales Order, Line, Ship Date, and Invoice Number fields are display only. The system updates them when the item is added to the installed base during invoice post or from Call Activity Recording.

The Parent and Component fields are also set by the system when components are added beneath a parent during invoice post, from Call Activity Recording, or from Installed Configuration Maintenance.

If MTZ is active, the end user's time zone can affect dates.

See Chapter 4, "Multiple Time Zones," for details.

Item Number. Identify an item installed at this end-user location. This may be a finished product, such as a computer, or a component, such as a disk drive or memory board. Validation depends on Items Must Exist in Service Management Control. If Yes, the item must be in Item Master Maintenance. If No, you can enter any item number. Use next/previous processing to see the items installed at an end-user site.

Serial. Specify the lot or serial number uniquely identifying the installed item. If the item is defined in the item master to require lot/serial control, this field is required. Invoice post adds serial numbers to the installed base. To change the serial number of an installed base item, use the New Serial field on the pop-up window that displays after you click Next.

Description. Defaults from the first line of the description in Item Master Maintenance.

Reference. You can only update this field for items not serial number controlled. For serialized items, Reference is always zero, since the serial number must be unique. If an item is not serial controlled, the ISB reference number uniquely identifies it in the installed base. The system checks for the last reference number for this item and serial number, increments this by one, and displays this value.

Note If you add installed items manually, enter a question mark (?) in the Ref field to see the next available reference number.

The ISB reference number is not an inventory reference number. Although each provides a unique pointer to a particular item, one identifies items owned by your end users; the other identifies items in your inventory locations.

Model. Enter the model number associated with this item. For new items, this defaults from Service Item Maintenance. For existing items, the system reads the value from the installed base. You can base call defaults on the model. To ensure consistency, set up values in Generalized Codes Maintenance for field pt_model.

Install Date. For a new item, Install Date defaults from the system date, but you can change it. When Invoice Post and Print creates an installed base record, the install date defaults from the sales order shipping date. If the item has Install Call set to Yes, the system sets the install date to the ship date plus the installation days ahead in Call Management Control. When you close the installation call, however, the system updates Install Date to reflect the call closure date and recalculates the warranty end date.

The system applies these rules for defaulting an install date only if you do not specify an install date in the pop-up window of Sales Order Maintenance or in Installed Base Item Maintenance. The system never overwrites an install date you specify.

Item Type. Defaults from the value for the same field in Service Item Maintenance and is validated against generalized codes for pt_sys_type. Three values are supplied: SW (software), S (system), and O (other). You can add codes in Generalized Codes Maintenance. Specify one code as system level in the System Level field in Service Management Control. You can choose to see only system-level items on the Installed Base Report.

Note System level normally indicates the top-level item in an installed configuration, but you can apply it to suit your system.

If System Level on Calls is also Yes in Call Management Control, during next/previous processing in the Item field of Call Maintenance the system displays only items marked with this system type.

Warranty Code. The warranty code defaults from service item information.

Warranty Expiration. The system calculates the expiration date by adding the warranty duration to the install date. You can manually change this, but if you specify a warranty, you must also specify an expiration date.

Quantity. Sales order post updates this field by the quantity on the order line, unless the item is serialized, in which case item quantity is always one.

Sales Order, Ln, Ship Date, Invoice Number. These fields are display only. The system updates them when the item is added to the installed base during Invoice Post and Print or from Call Activity Recording. When Call Activity Recording adds an item to the installed base, the system updates Sales Order and Line to reflect the call ID and line number from which the update originated.

Rev Level. An optional code identifying the engineering revision of this item. If this installed base item is in Item Master Maintenance (1.4.1), the value defaults from there.

Parent and Component. These fields are display only, and set when Invoice Post and Print or Call Activity Recording adds components beneath an item in the installed base. Components and parents can also be created manually using Installed Configuration Maintenance.

Last PM Date. The system updates this field when you close a call line with the PM work code for this item. The Last PM Date is the call close date.

Next PM Date. This field is display only. When a call line with the PM work code is closed, the system adds the Days Between PM value in Service Item Maintenance to Last PM Date or, if blank, to Install Date.

If the value in the PM Days field or the Last PM Date field is modified, the system updates the Next PM Date field accordingly. The Next PM date may also be updated when a call is created for this item using the PM work code. In this case, the date of the call will be used as the next PM date.

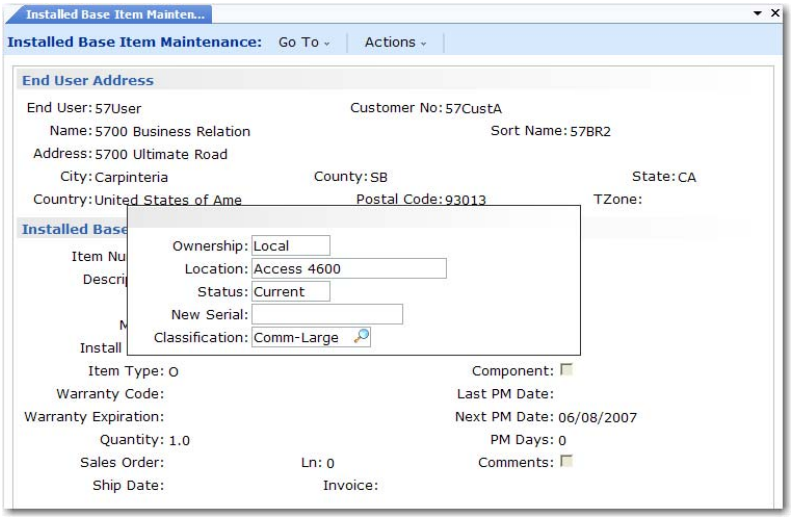
PM Days. Defaults from the value in Days Between PM in Service Item Maintenance and indicates the PM cycle for this item in calendar days. The system adds this value to the install date initially to determine the Next PM Date field value in Installed Base Item Maintenance. When you close subsequent PM calls or lines with the PM work code, the system adds PM Days to Last PM Date to determine the Next PM Date value.

Comments. Defaults to Yes if comments exist; otherwise defaults to No. If Yes, the standard transaction comments frame displays when you click Next, so you can enter or review comments associated with this installed base item. Comments display on the Installed Base Report.

Installed Base Detail

You can add additional details about the installed base item or change its serial number or classification in a final pop-up window.

Fig. 2.26
Installed Base Detail



Ownership. A reference-only field indicating who actually possesses the item. Set up values with Generalized Codes Maintenance for field isb_owner. For a large company, you might enter the department or individual that uses the item.

Location. A reference-only field that describes, in up to 24 characters, the current location of this installed base item at the end-user site. This might be a building location, suite number, or floor.

Status. A user-defined code indicating the status of this installed base item; for example, BETATEST or OBSOLETE. Set up status codes in Generalized Codes Maintenance for the field isb_status.

New Serial. Use this field to change the serial number for an item already in the installed base. See “Changing ISB Serial Numbers” on page 42 for details on this process.

Classification. Enter the unique code you want to use to classify this item in the installed base. Define classification codes in Classification Maintenance.

You can leave this field blank, in which case the item does not belong to any classification.

This field defaults from Service Item Maintenance. When installed base record are created through posting sales orders, as part of RMA processing, or by other service functions, the item is added to the installed base with the classification assigned in Service Item Maintenance.

See “Classifying ISB Records” on page 30.

Installed Configuration Maintenance

Use Installed Configuration Maintenance (11.3.5) to create and maintain product structures in the installed base. You can create parent-component relationships directly with this function, or modify product structures created in other parts of the system.

Creating ISB Records During Invoice Post

You can let the system add items to the installed base as you sell them. Creating records this way minimizes the data entry required to update the installed base.

Invoice Post and Print creates installed base records for parent and component items from sales orders when these settings are in place:

- Ship to Installed Base is Yes in Service Management Control (11.24).
- For components to be added, Load Available Structure must be Yes in Service Management Control and the conditions required for it to be in effect must be true. See “Load Available Structure” on page 27 for details.
- Installed Base must be Yes in Service Item Maintenance (11.3.7) for the parent item and for each component item to be added.

The system creates the actual ISB record when you post the invoice for the sales order, minimizing the cleanup required if you find mistakes on the pending invoice. If sales shipment created the ISB record and you change the invoice later, the ISB record may be wrong.

When the system creates an ISB record during invoice post, it includes the sales order number, line item number, and invoice number. You can use these fields later as search criteria. Invoices created for both standard sales orders and RMAs create or update installed base records.

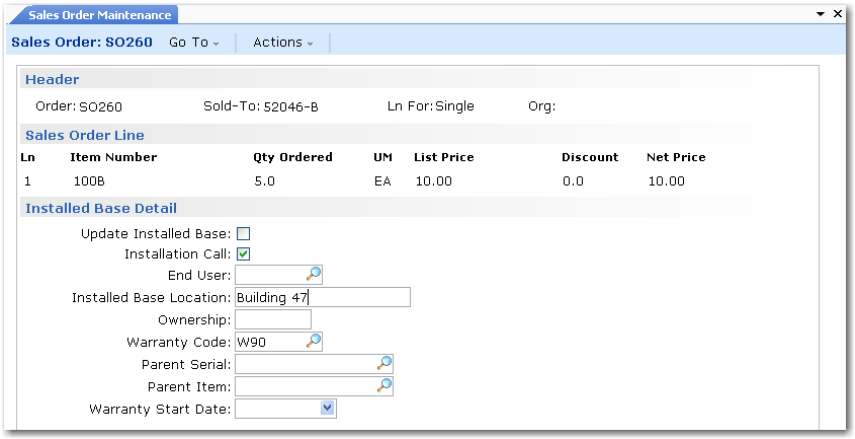
ISB Records from Sales Orders

If Installed Base is Yes in Service Item Maintenance (11.3.7) for a sales order line item and the other settings are correct in the control programs, the sales order program uses default values to create ISB records. The system bases these values on data for the item in Service Item Maintenance. The end user is the ship-to address on the sales order.

Note You cannot add memo items to the installed base from Sales Order Maintenance, since the system creates the ISB record only if the item is predefined in Service Item Maintenance.

Set SO Edit ISB Defaults to Yes in Sales Order Control to override default values during Sales Order Maintenance. The Installed Base Detail frame displays.

Fig. 2.27
Installed Base Detail in Sales Order Maintenance (7.1.1)



Some of the fields on this pop-up correspond to fields in Service Item Maintenance. The values there default into the corresponding fields in the pop-up: Update Installed Base, Installation Call, and Warranty Code. Edit the default values to control whether to include items in the installed base on a line-by-line basis.

The end user defaults from the ship-to address on the sales order. You can use Installed Base Location and Ownership to add information for the installed base record.

Use Parent Serial and Parent Item only if you want the item being sold added to the installed base as a component of another installed base item. If the item being sold is part of a configured item, you can specify a parent item and serial already in the installed base for the current end user, and the system adds the new item as part of that configuration.

The warranty start date defaults to blank. If you do not specify a date, the system uses the sales order ship date as the warranty start date when Invoice Post and Print creates the installed base record.

The system calculates the warranty end date by adding the warranty duration to the warranty start date. If you specify a warranty start date, the system uses it to calculate the warranty end date when it creates the installed base record. If the field is blank, the system bases the warranty start date on the sales order ship date during invoice post. If Invoice Post and Print creates an installation call, the system bases the warranty start and end dates on the call closure date.

The system updates the warranty start and end dates *only* if you have not specified a date. For the system to manage this date, leave the field blank.

Note If this item requires an installation call and you do not specify a warranty start date, the system recalculates the warranty start and end dates when you close the install call. The system never overrides dates you specify.

The system obtains other information that is part of the installed base record from the sales order: item number, quantity, serial number, lot/reference number.

Removing ISB Records for Sales Order Returns

If you update the installed base from sales order shipments, you need to delete installed base records when a customer returns items. A negative order quantity on the sales order line indicates a sales order return. When you ship this line and post the invoice, the system can remove the installed base record.

For this to occur, the setting of SO Returns Update ISB in Sales Order Control must be Yes. The other conditions that update the installed base must also be true. For example, Ship to Installed Base must be Yes in Service Management Control.

Also, some quantity of this item must be in the installed base. To uniquely identify the item you want to remove, enter the installed base reference, which appears on the Installed Base Detail pop-up when you have satisfied the above conditions.

Sales Order Maintenance (7.1.1) or Pending Invoice Maintenance (7.13.1) are the only places you can specify the ISB reference, and you can specify only one reference per sales order line. This has two implications:

- If you want to return more than one item, you must create a separate line item for each.

- You must enter the line in Sales Order Maintenance before you use Sales Order Shipments (7.9.15) to specify a negative quantity.

Note The installed base pop-up displays in Sales Order Maintenance for a return even if SO Edit ISB Defaults is No in Sales Order Control. Unlike other installed base parameters, the system cannot create a default for the ISB reference—you supply it. The same is true of Pending Invoice Maintenance when Pending Invoice Update ISB is No in the control program.

If the system cannot find the item, serial, and reference in the installed base for the end user on the sales order, a warning displays. A warning also displays when the installed base quantity does not match the line item quantity.

Posting the sales order invoice deletes the installed base record. When the system updates the installed base, it writes a message to the ISBPST.prn file confirming deletion or describing any error that prevented it.

ISB Records from RMA Maintenance

RMA receipts and issues create a special form of sales order. Like any other sales order, invoices for RMAs update the installed base. Items on an RMA can also generate installation calls.

You can change default installed base information in an RMA, just like a sales order by setting Edit Installed Base to Yes in RMA/RTS Control. For instance, if you need to define an end user on a line item that is different from that specified on the header, you can change the end user line-by-line.

RMA Maintenance adds records to the installed base and removes them. If you issue an item in place of a returned item, RMA Maintenance removes the old record and replaces it with the new.

Installed Base Invoice Post Report

When Invoice Post and Print updates the installed base, the system puts messages in your local directory about ISB records it created and errors it encountered. This file is `ISBPST.prn`.

The file lists items by customer and sales order (or RMA). This file is re-created each time you run Invoice Post, but the system adds data only when you update the installed base.

Messages in `ISBPST.prn` depend on the kind of update. The following messages may occur during delete from RMA and sales order returns.

- Configuration deleted. This indicates the system deleted the parent item’s lower-level configuration.
- ISB quantity reduced. This indicates the system reduced the installed base quantity for the parent item and its structure. This occurs when items in the installed base have a quantity greater than one, and a quantity less than that is returned.
- ISB structure deleted. This message prints when you attempt to delete a corrupted installed base structure.
- Item deleted. Indicates the system has deleted the top-level parent item.
- Item quantity reduced. Indicates a return has reduced the installed base quantity of a level 1 item without components.
- WARNING: Part received not in ISB. The item being returned is not in the installed base.

- WARNING: Greater than ISB quantity returned. The ISB quantity of an item is less than the number of items returned.

ISB updates, such as sales orders and RMA issues, generate the following messages:

- Item master record is missing. If Items must Exist is Yes in Service Management Control and you ship a memo item on a sales order with Update ISB set to Yes, this message displays. This event should not normally occur.
- End user record created. The system creates an end user if the end user on the sales order does not exist yet.
- Warranty code record is missing. If the warranty code specified for the item during sales order shipment or associated with the item in Service Item Maintenance does not exist, this message prints.
- Check for deletion. This message should not occur during normal operation. It indicates that the routine attempting to update the installed base has detected a record indicating this item should be removed from the installed base.
- Part already in ISB. This message only occurs for lot- and serial- controlled items. A record already exists for this item number and serial number.
- Part created. Indicates the system has created an installed base record for the item shipped.
- Missing warranty code. This message displays when the sales order or RMA warranty code is not valid for a new installed base record.

ISB updates generate the following messages when Load Available Structure is Yes:

- Part serial already exists. This message occurs only if one of the lower-level items in the configuration is serialized and already exists under a different end user. The system adds the component under the current end user with the next reference number.
- Configuration created. Indicates the system is adding this item as a component of the parent.
- Remote DB –Parent level parts only. This message displays in a multiple-database environment when an attempt is made to add a configuration structure to a remote database. Only parent items are added in this situation.

Creating ISB Records from Calls

If Items in Installed Base is No in Service Management Control, service personnel can take calls for items that are not yet in the installed base. When you record activity for the call in Call Activity Recording, you can create an installed base record for the call item and for items issued in CAR.

Set Update ISB to Yes for each line item you want added to the installed base. The repair quantity must be the same as the quantity on the ISB record.

Call Maintenance

Call Maintenance (11.1.1.1) sets up default values the system uses to update the installed base. Normally, the updates occur in Call Activity Recording. You can, however, close calls directly from Call Maintenance. Even though Update ISB is Yes, when you close a call in Call Maintenance for an item that is not in the installed base, you are prompted:

```
Create installed base record?
```

Respond Yes to direct the system to create an ISB record for items on the call for which Update ISB is Yes.

Call Activity Recording

In the normal life cycle of a call, engineers record some activity for each line in Call Activity Recording. CAR updates the installed base in three ways: the call line item, any items issued to repair it, any items returned.

Call Line Item

If the call line is for an item not in the installed base and Update ISB is Yes, a frame appears in CAR for recording installed base information. You create the ISB record directly at this point, not later during invoice post.

The installed base is updated during the initial phase of recording activity so it can be correctly updated when issue inventory items are issued. For these records to be added as components of the parent item, the record for the parent item must already exist.

You can also add call line items to the installed base as components of another parent item.

Swaps

In CAR, you can issue as a repair item the same item number reported on the call line. The system treats the transaction as a swap by removing the call line item from the installed base and replacing it with the item issued.

Repair Items Issued

You can create installed base records in CAR for items the system issues during inventory transaction processing. Create these records the same way you create other ISB updates: set Installed Base to Yes in Service Item Maintenance and Ship to Installed Base to Yes in Service Management Control.

Also set Load Available Structure to Yes in Service Management Control. Otherwise, the system adds only parent items to the installed base item.

If the call line item has a structure, the system adds items you used to the installed base as top-level components of the call line item.

Returned Items

You can return items in CAR as part of an exchange and remove ISB records for the returned items from the installed base. During an exchange, you supply the installed base reference number for non-serialized items. Then during inventory issue, the system removes the old reference or serial number and replaces it with the new one.

If a call, call history, or service contract exists for the returned item for this end user, you cannot delete its record unless it is a swap. The system updates the installed base and prints a message. The system assumes you will either repair the returned item and send it back to the customer, or you will modify the contract, and add a new line for this item.

Installed Base Utilities

SSM provides utilities for other installed base needs. These functions:

- Alert end users to product recalls with field notifications.
- Move installed base items from one end user to another.
- Generate marketing letters for a range of installed base items.

Field notifications work in conjunction with Call Generator. Also, when you need to generate calls for a range of installed base items or end user and item combinations, the Call Generator utility generates these calls.

See “Generating Groups of Calls” on page 307 for details.

Creating Field Notifications

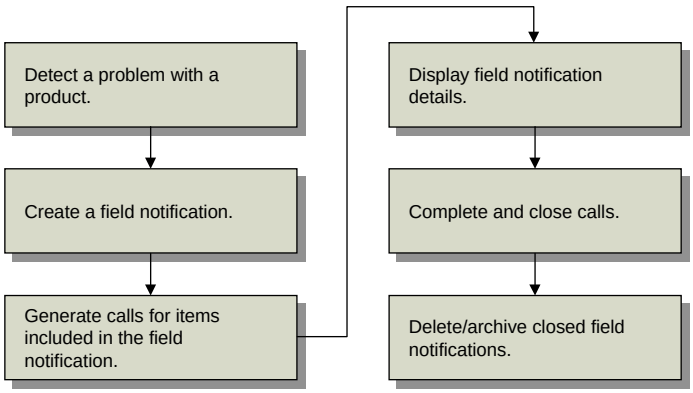
Many organizations track installed base information because of the possibility of product recalls. This is a concern, for example, for medical equipment manufacturers. Recalls associated with documentation and auditing requirements from regulatory agencies may require extensive audit history and control.

You can use SSM’s field notification utilities to manage the recall process.

- Use Field Notification Maintenance (11.3.12.1) to create and maintain a field notification. The field notification defines, groups and manages related calls, and maintains history. The system closes the field notification when you close its associated calls.
- Use the Call Generator (11.1.8) to generate calls associated with an existing field notification, or create a new field notification and generate calls for it.
- Use Field Notification Inquiry and Report (11.3.12.2 and 11.3.12.3) to display information associated with a field notification.
- Use Field Notification Delete/Archive (11.3.12.23) to remove a closed field notification from the system and delete obsolete history records. The field notification history includes information about the selection criteria for items, the first and last call associated with the notification, and open and close dates.

Figure 2.28 illustrates the field notification workflow.

Fig. 2.28
Field Notification Workflow



Effect of Field Notification

The system handles calls generated from a field notification in special ways:

- It adds the field notification number to the call record. When you update one of these calls, a message displays the source of the call.
- Call values for the field notification take precedence over other call defaults. The system does not use call defaults associated with the work code on the field notification, and uses an end user escalation only if one is not on the field notification. The call's next status defaults from Call Status Maintenance. Call duration defaults from Service Management Control if you use one of its work codes.

  Note Recalls normally use either the Update of Corrective work code.
- You cannot move a closed field notification call to history unless all related calls are closed. The system automatically closes the notification when you close or cancel all calls associated with it.

Coverage for Field Notifications

The calls generated from a field notification have unique coverage needs. You do not normally charge these calls to contract or warranty coverage. For example, if you generate the field notification as a result of a product defect, you do not want to consume an end user's contract coverage.

Field Notification Maintenance lets you override any existing coverage. When you choose this option, you can specify a service type for the calls the field notification generates. If you use existing coverage, select between contract and warranty coverage for those items in the installed base covered by both.

If you do not override coverage but do specify a default service type, the system uses it instead of the Default Call Service Type in Call Management Control for items without either warranty or contract coverage.

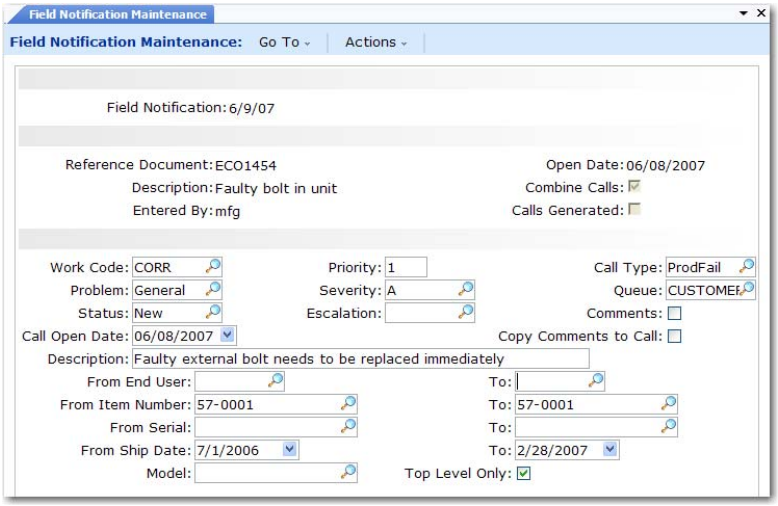
Choose the override service type carefully. Make the default under-limit charge code on the service type a covered charge code, rather than a contract or warranty charge code.

See "Charge Codes" on page 81.

Field Notification Maintenance

Create field notifications with Field Notification Maintenance (11.3.12.1) or with the Call Generator. Similar frames display in both.

Fig. 2.29
Field Notification Maintenance (11.3.12.1)



When you create a field notification, you can associate a document—an ECO documenting the problem and product change required, or some kind of internal reference document. You can also combine an end user's items into one call.

The remainder of the maintenance fields specify attributes of the call and selection criteria for the items in the installed base. The system generates a call or call line for each item.

Field Notification. Enter a code of up to eight characters identifying the field notification.

Reference Document. If you associate this field notification with another document, enter its identification. Twenty-four characters are allowed.

Description. Enter a brief description (maximum 24 characters) of this field notification.

Entered By. Defaults from the ID of the user logged into this session.

Open Date. Defaults from the system date, and indicates the date you opened this field notification. You can only change Open Date when you first create a notification.

Combine Calls. Specify Yes to generate one call for each end user. The system creates multiple lines for each installed base item for this end user. Specify No to create one call for each installed base item.

Calls Generated. Indicates whether you have generated calls for this field notification. The system sets it to Yes after you run Call Generator for this field notification.

Work Code. The default is blank. Enter a work code defined in Work Code Maintenance to be associated with calls generated for this field notification's calls. Other call defaults created in Call Default Maintenance are not used. The system derives call values from the field notification.

Problem, Status, Description, Priority, Severity, Escalation, Call Type, Queue, Description.

The system applies these values to the calls you generate for this field notification. The values take precedence over any other defaults. For example, the system applies an end-user escalation only if the field notification does not have one.

Call Open Date. Defaults from the system date. A call open date gives you more control over when the system processes the calls.

Comments. Defaults to Yes if comments exist; otherwise defaults to No. If Yes, the standard transaction comments frame displays when you click Next, so that you can enter or review comments related to this field notification. You can copy comments into each of the calls generated by this notification.

Copy Comments to Call. Defaults to No. Indicates if the system copies comments associated with this field notification into each call generated. Use Copy Comments to Call to print special instructions or notes on the call or call invoice.

From End User/To. Leave blank or specify a range end users for selecting installed base items.

From Item Number/To. Leave blank or specify a range of installed base items.

From Serial/To. Leave blank or specify a range of serial numbers for selecting installed base items.

From Ship Date/To. Leave blank or specify a range of ship dates for selecting installed base items.

Model. If you are tracking installed base items by model number, enter a model number in this field to include only items with this model in the calls generated.

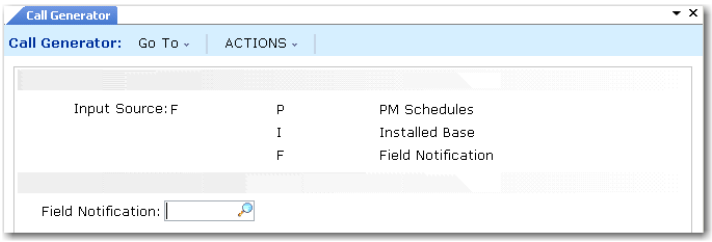
Top Level Only. Set to Yes to create call lines only for parent items. Set to No to create call lines for each item in the installed base configuration.

Generating Field Notification Calls

From the Call Generator (11.1.8), specify F as the input source to generate calls associated with a field notification. You are prompted to enter a notification number.

See “Generating Groups of Calls” on page 307 for details.

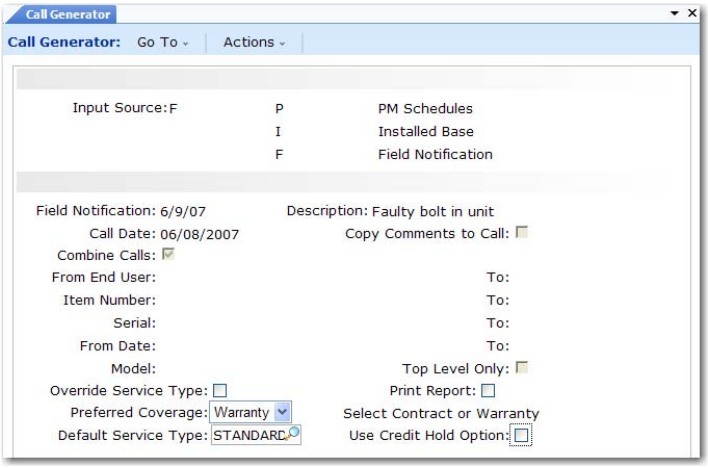
Fig. 2.30
Generating Field Notification Calls



If you enter a non-existing value in the Field Notification field, you are prompted to create it. Respond Yes to create a field notification directly from the Call Generator. If the notification you enter exists, you are prompted to review it. Respond Yes to this prompt to redisplay the Field Notification Maintenance frames and update the call definition or selection criteria.

Once you specify or create the field notification, the final Call Generator frame displays. You can only update five fields.

Fig. 2.31
Generating Field Notification Calls



Override Service Type. A Yes in this field indicates you want to use a different coverage than is normally attached to the item in the installed base. No directs the system to use the normal contract or warranty coverage. If No, you can choose between contract and warranty coverage for those items in the installed base that are covered by both.

If Yes, enter a valid service type in Default Service Type for coverage terms. If No, you can still enter a value for Default Service Type. The system uses the value instead of the Default Call Service Type in Call Management Control for installed base items without coverage.

Preferred Coverage (Warranty/Contract). The system uses this field if overlapping coverage exists for an installed base item and Override Service Type is No.

Default Service Type. The effect of this field depends on Override Service Type. If Override is Yes, this field determines the terms and conditions of coverage for calls generated by this field notification. If Override is No, this field is optional and determines the terms and conditions only for call items that do not have current warranty or contract coverage.

Print Report. Indicate whether the system should generate a printed report listing the calls created. Set to Yes to run in batch. If Yes, you are prompted for an output device for the report and Batch ID. If No, a report is not generated, but a message does display when execution completes indicating the number of calls created and the range of call numbers.

Use Credit Hold Option. Use this field to override the Credit Hold Option setting in SSM Accounting Control when you generate calls for field notifications.

Yes (the default). The system checks the credit hold status and uses the SSM Accounting Control setting to determine processing for customers on credit hold:

0: Generates the call with no credit restriction

1: Displays a warning message and generates a call with the status specified in the Hold Status field in Call Management Control

2: Displays an error message and does not generate a call

No. The system disregards the control setting and creates calls without checking the credit hold status of the customer.

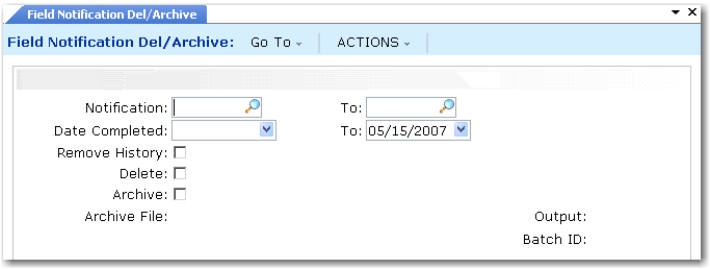
For example, setting the field to No lets a medical equipment manufacturer generate field notification calls related to vital equipment repairs for all customers regardless of credit status.

See “Credit Standing and Calls” on page 281.

Deleting and Archiving Closed Field Notifications

After you close or cancel the calls associated with a field notification, you can delete and archive the notification with Field Notification Delete/Archive (11.3.12.23).

Fig. 2.32
Field Notification Delete/Archive (11.3.12.23)



Select records to be deleted by number or by completion date. You can include history records or retain them for potential reference.

Moving Items in the Installed Base

Use Installed Item Move (11.3.13) to update the location of installed base items from one end user to another.

This function is especially useful for corporations that move equipment between divisions and diverse locations. Normally, if the item you are moving has a component structure in the installed base, the system moves the items with it. However, you can move components of a configured item to a new site.

Example A company has computer systems at different sites and moves components of the different systems, such as disk drives, from one site to another. Using Installed Item Move is easier than altering the installed configurations of each computer system by deleting one component and adding another.

You can also use this function if you often take calls from unknown end users. This is typical for organizations that sell to retail outlets. Associate the end user with a temporary customer during Call Maintenance. Later, you can create a new customer for this end user, then move the installed base item.

Note You can also move an installed base item from one end user to another when creating a new call or a new call line in Call Maintenance. See “Installed Base Move Frame” on page 287 for more information.

Restrictions

Moving items in the installed base has two restrictions:

- The item to be moved and any of its components, if it has an installed configuration beneath it, cannot be referenced by:
  - A call

- A contract with either current or future coverage
- An unprocessed RMA receipt line

All of these functions depend on installed base information that is rendered invalid by moving the item. Clean up open calls, contracts, or RMAs before attempting to move the item.

- If the end-user type of the target end user does not match the type of the source end user, a warning displays. Since warranty terms can vary by end-user type, an item's warranty may not apply to a different type of end user. Use the recalculate coverage option to modify the warranty type, installation date, and warranty expiration date.

Move Date

To move an item in the installed base, enter a source and target end user in Installed Item Move, illustrated in Figure 2.34. You can specify the actual move date. The default is today. The system uses this date to check for contract and warranty coverage.

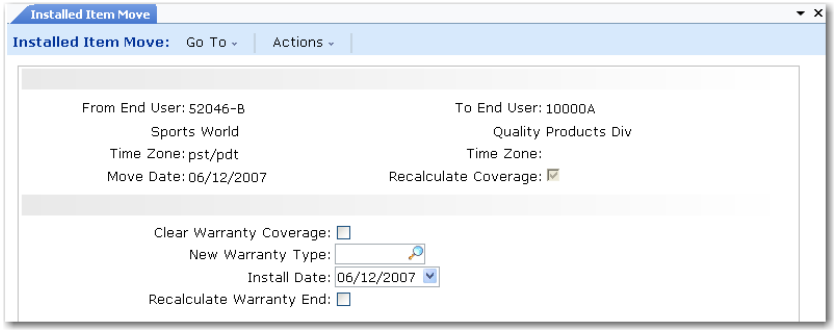
If you change the default Move Date value, it is most often to a date earlier than the current one. If you set the date ahead, service coverage for the From End User might not be valid, and warranty coverage for the To End User is not valid until the install date.

Note If MTZ is active, enter the move date relative to From End User's time zone.

Recalculating Coverage

If you are moving an item with warranty coverage, the coverage may no longer be appropriate for the new end user. Specify Yes to Recalculate Coverage to choose coverage options.

Fig. 2.33
Installed Item Move (11.3.13)



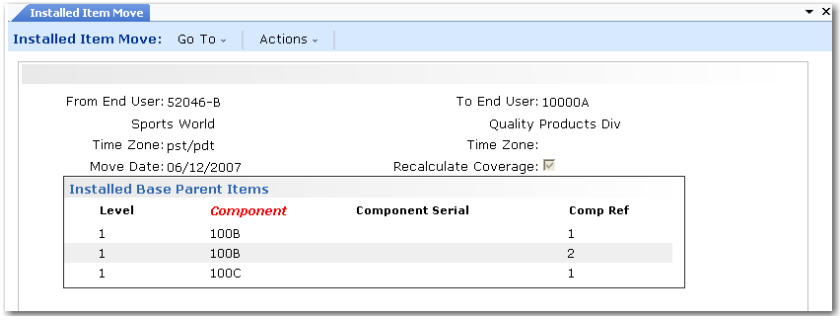
You can clear the warranty coverage for the new end user. Or you can modify the coverage by specifying an alternate warranty and installation date, and by requesting the system to recalculate the warranty end date for the item based on the new install date.

Selecting Items to Move

Next, a lookup displays the parent-level installed base items for the From End User. Only top-level items display, since they are the ones you usually move.

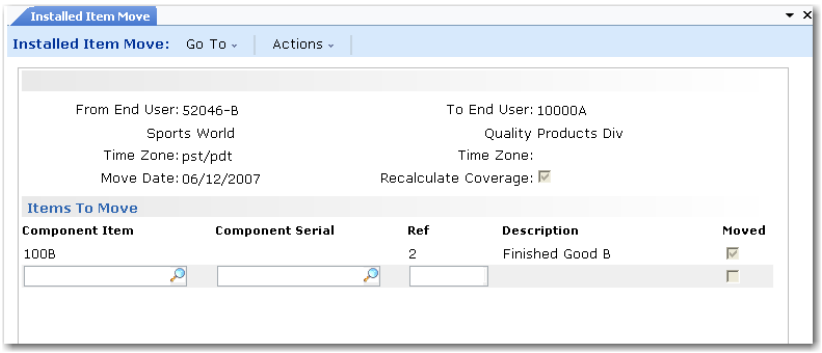
Select the items you want to move. An asterisk (*) in the leftmost column indicates selection. Click Next to move the items and their components to the To End User.

Fig. 2.34
Installed Item Move (11.3.13)



You can add more items to move manually on the next frame.

Fig. 2.35
Manual Entry in Installed Item Move



When you finish moving items and click Back, the system prompts you for an output device and generates a report listing the items moved, their installation dates, and associated warranties. Ensure that this information is correct for the new end user.

Generating a Service Marketing Letter

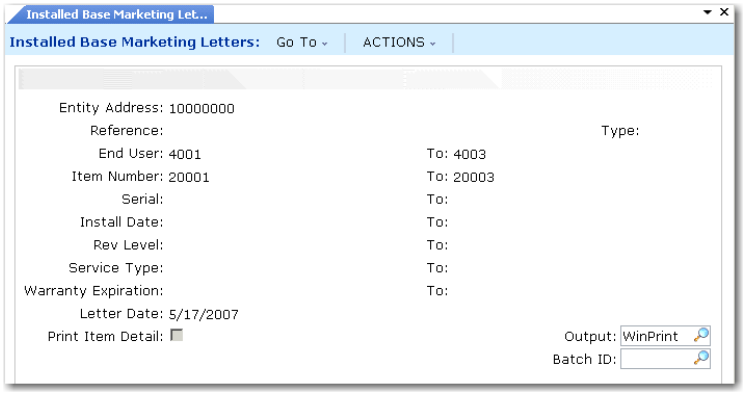
Service usually involves direct communication with the end user. At times, it is necessary to contact a range or all end users in the installed base, perhaps to alert users to a new product upgrade, or warn them of a product defect.

Use Installed Base Marketing Letter (11.3.21) to create such letters. You can base the letter on comments you created in Master Comment Maintenance (1.12). To generate a letter to all users in the installed base, follow these steps.

1. Write a master comment in the form of a letter in Master Comment Maintenance (1.12). Write the comments in each required language. When the system generates the letter, it looks for comments in the addressee's language.

2. From Installed Base Marketing Letter (11.3.21), specify the master comment in the Ref and Type fields, then the options for selecting the end users to receive letters.

Fig. 2.36
Installed Base Marketing Letters (11.3.21)



Company Address defaults from SSM Accounting Control (36.9.10). If you use pre-printed letterhead, leave the address code blank. Select end users to receive letters based on item number, serial, install date, revision level, service type, or warranty expiration. For example, you can create letters for end users who have items with warranties about to expire.

Letter Date accepts a free-form date description to print at the top of the letter. If Print Item Detail is Yes, the system also prints a list of attributes for the installed base item at the top of the letter.

Figure 2.37 illustrates a sample marketing letter.

Fig. 2.37
Sample Marketing Letter

```
Quality Products Inc.
Manufacturing Division
One World Way
Los Angeles, CA 93111

June 5, 2007

Lakewood Distributors
32 South Maple
Minneapolis, MN 54221

Attention: John Smith

         Regarding Item: 19000
         Description: Electrical Generator
         Model:   43-12
         Serial:  MT137

The warranty on your electrical generator expires on July 1, 2007. Our
company offers an excellent service contract that will extend warranty
coverage at a very reasonable price.
```

ISB Item Tracking History Report

Use ISB Item Tracking History (11.3.22.5) or ISB Item Tracking History Report (11.22.3) to view a comprehensive history of the movement of an ISB item. ISB Item Tracking History Report provides similar information as ISB Item Tracking History, but its output is easier to read.

The report displays data relating to a specific serial number; however, you can enter a serial number for component items and parent items if required.

Fig. 2.38
ISB Item Tracking History Report (11.22.3)

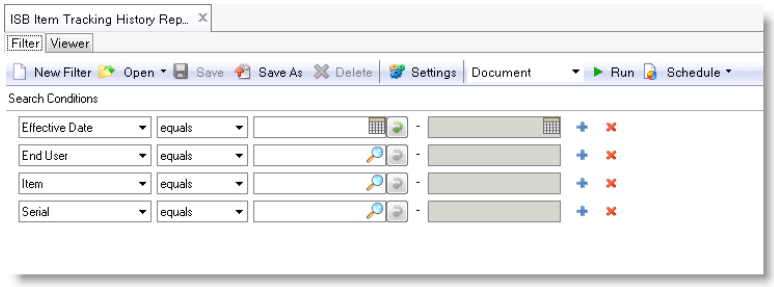
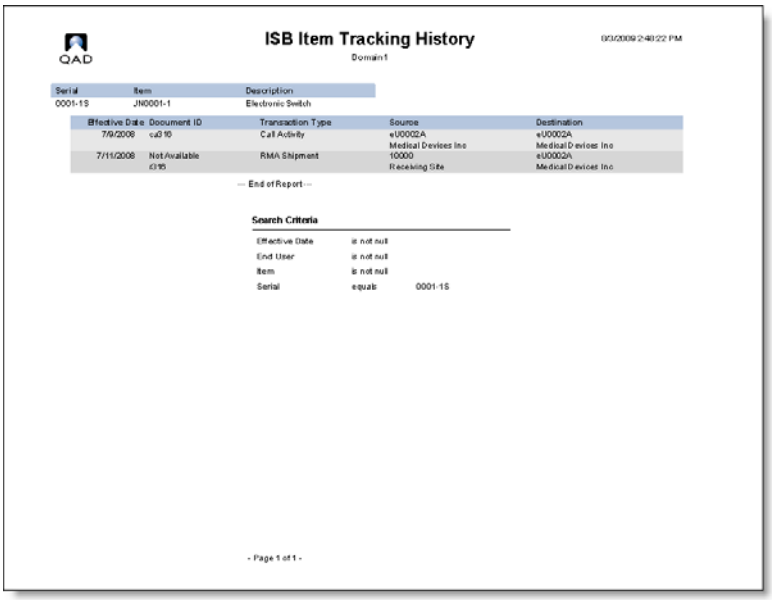


Fig. 2.39
ISB Item Tracking History Report Sample



Chapter 3

Service Setup

To implement the Service/Support Management (SSM) module, plan carefully and consider in detail your business needs and requirements and how they map to functions in SSM. This chapter concentrates on the setup functions in the Service/Support Setup menu (11.21) and includes a list of generalized codes used in service functions.

Service activity uses the codes this chapter introduces to direct and manage the flow of charges and credits. Call Activity Recording, especially, relies on codes. They also define service limits.

Overview

The codes discussed in this chapter support recording engineer activity, applying charges, and tracking inventory effects with product lines.

See Chapter 25, “Control Programs,” on page 641 for details on control program settings and their effects.

Charge Codes

With charge codes, you can indicate who is responsible for paying for service activity you record in Call Activity Recording. Charges may be warranty, contract, covered, billable, fixed billable, project, or giveaway for each item and each call. Charge codes give service personnel the freedom to make effective business decisions for every detail they record while handling a call.

Example In many markets, repairing a troublesome item for free or using a goodwill replacement helps preserve an important customer relationship. However, you probably do not want to provide all service on the call at no charge.

Charge codes can designate a particular item as giveaway, yet keep normal billing for the rest of the service and items on the call. Service personnel can implement a decision quickly and efficiently by changing the charge code on the troublesome item for this call.

Service Limits

Invoice sort, service category, and work codes create a flexible way to design warranty and contract types. You can create as many work codes and service category codes as you need, and combine them in almost unlimited ways.

With the combination of invoice sort or work code and service category you can track and manage service activity at a summarized level, or with as much lower level detail as you need.

Product Lines

Charge and revenue product lines control the flow of service activities into appropriate GL accounts. Separating costs and revenue by product line permits sophisticated accounting and reporting. For example, you can separate income generated by warranties from that generated by contracts. Or you can create accounts for installation activity that are distinct from repair activities.

Return Statuses and Default Sites

Return status codes manage the return of items in Call Activity Recording. These codes determine if the system should look for an exchange price and which default site it should use for the return. You can define default sites that direct returned items to repair centers depending on the type of item, the geographical location of the end user, or other relevant factors.

User Preferences

Service/Support User Preferences enables each user to control certain features of service processing. You can allow each user to specify preferences or use standard system security to prevent or limit access.

Recording Service Engineer Activity

Service/Support Management manages engineer activity with combinations of settings for the work codes, charge codes, invoice sorts, and service categories discussed in this chapter. You can tailor these codes to business requirements.

Call activity and invoicing functions use these codes to track such information as labor performed, items consumed and returned, and expenses.

Work Codes

Work codes designate what type of work personnel perform during service activity. You generally break work codes into broad areas of service that reflect your service organization's structure. Work codes, in combination with other features, control the flow of call activity into GL accounts.

For example, a work code can identify preventive maintenance (PM), technical work (TECH), emergency calls, a specialized type of repair, or overtime. You can define anything an organization needs to track as a work code.

Work code definitions should correspond to how the service organization bills for work. If you want to bill only for repair center work, then define a repair work code (such as REPAIR). Work code definitions can be quite sophisticated. Levels of skill specialization, time periods, departments, pay scales, and so on can be criteria for defining and organizing work codes.

Typically, manufacturing companies want their service and support tracking to be as straightforward as possible. It is often better business practice to keep work codes simple. However, if needed, you can set up and track work codes for complex service organizations.

Default Work Codes

Call Management Control defines five default work codes. These defaults represent typical kinds of work in a service environment and have a built-in meaning to the system. You can define as many other work codes as you need.

- *PM Work Code*. Default work code for calls the system generates as part of a preventive maintenance schedule.
- *Update Work Code*. You can assign this work code a meaning, such as a product upgrade.
- *Install Work Code*. Default installation call type. When items requiring installation are added to the installed base from sales order shipment, the system generates a call of this type.
- *Corrective Work Code*. Default work code for a call requiring mass recall or some kind of legal action.
- *Technical Work Code*. Default work code for all other calls you create with Call Maintenance (11.1.1.1) or Call Quote Maintenance (11.1.1.7).

You can associate a default call length with each work code. Call Maintenance uses it to calculate engineer load for each type of call.

Some companies use one or more generic work codes instead of codes for each of these call types. Other companies need more than these five codes—a work code for testing or installation preparation, for example. Create as many work codes as you need to meet your business requirements.

Applying Work Codes

Most service activities require work codes. Functions including call defaults, call escalations, coverage limits, price lists, default sites, charge and revenue product lines, and CAR use them.

Call Defaults

Work codes represent the types of work you do. You can set up call defaults based on work code in Call Default Maintenance. Call Maintenance then uses these defaults, such as queue, call duration, and severity, to define calls for the corresponding kind of work.

Call Escalation Sequences

You can base call escalation sequences on work code. This is useful, for example, when repair calls follow a different sequence of escalation steps than preventive maintenance calls.

Coverage Levels

When you define coverage levels for warranties, contract types, or contracts, you can base them on work code and service category combinations or invoice sorts. Work codes support a more detailed breakdown by the type of work. Use work codes to specify, for example, that the limit for preventive maintenance work is $100, but the limit for repairs is $200.

Price Lists

If you use work codes in price lists, you can charge different prices depending on the kind of work. For example, you might price installation labor higher than preventive maintenance.

Default Sites

You can base return sites and locations on work code. This is useful if you do different kinds of work at different physical sites or locations. For example, you might return items requiring PM service to different locations than items requiring repair.

Charge and Revenue Product Lines

Service product lines based on work code can track the costs and revenue generated by different kinds of work. You can, for example, separate the income generated by preventive maintenance from the income generated by repairs. You can also base default charge codes on a work code. Call Activity Recording uses charge codes and charge product lines; Call Invoice Recording uses revenue product lines.

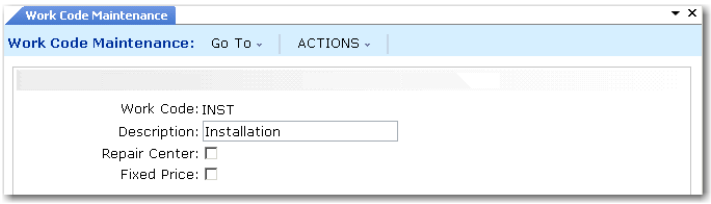
Call Activity Recording

Call Activity Recording and Call Invoice Recording use work codes to determine the coverage in effect and which charge code to use. For example, the system suggests a fixed price charge code for a fixed price work code.

Work Code Maintenance

Use Work Code Maintenance (11.21.1) to create and maintain work codes. Figure 3.1 shows an example of a work code for installation work.

Fig. 3.1
Work Code Maintenance (11.21.1)



Work Code. Identifier you define for a particular work code.

Description. Enter a brief description (maximum 24 characters) of the code identifying its use and purpose.

Repair Center. Yes means you do this work at a repair center. This field is for reference only.

Fixed Price. Yes means you charge a fixed rate for this kind of work. When you record activity for a call with this work code, the system uses fixed pricing and suggests a fixed price charge code.

Invoice Sort Codes

Invoice sort codes are important for Call Activity Recording and Call Invoice Recording. They provide a high-level sorting tool for grouping service costs by items, labor, and expenses. These groupings apply to service limits and printed invoice presentation, set defaults for invoice detail, and determine whether or not to include fixed price costs in totals.

Although you can define any number of invoice sorts, Call Invoice Recording can display only six. The three basic invoice sorts—labor, items, and expenses—cover most requirements. You define their names.

If you use fixed pricing, also define an invoice sort for fixed prices.

Applying Invoice Sort Codes

Invoice sort codes have four main applications in the system: they define service categories and service limits, affect the presentation of invoice information, and determine invoice detail.

Invoice Sorts and Service Categories

When you define service categories, they must reference an invoice sort of the proper type—either item, labor, or expense. The system summarizes the detailed information for the various service categories under the related invoice sort code.

Service Limits

You can set up service limits and levels of coverage on warranties and contracts by invoice sort. Call Activity Recording applies these limits and levels. When the limits on the service type or contract are in terms of invoice sort codes, the system tracks activity for the service categories related to each sort code. The system suggests either an under-limit or over-limit charge code based on this consumption.

Invoice Presentation

After you record activity for a call, the invoice sort determines how Call Invoice Recording displays the financial summaries. Call Invoice Recording provides a high-level financial summary of call costs and billable amounts. The top frame (costs) is a grid with the three types of invoice sort codes as the columns and charge codes as the rows.

The final frame of Call Quote Maintenance is similar. The system summarizes planned labor, parts, and expenses for a service activity just as in Call Invoice Recording.

Some invoice sort fields affect the display of information in CIR.

Type

The value in Invoice Sort Maintenance for the Type field determines which column displays invoice sort information. When you define an invoice sort, match the Type value to the invoice sort’s label. For example, an invoice sort called Expenses with a Type of L for labor would be misleading.

Display Order

Invoice sort codes display in the rows of the Billing Summary frame of Call Invoice Recording. The Display Order field determines the order in which they appear. Define the labels in the Label field. Multi-language users can define labels for each language.

A warning displays if you create two invoice sorts with the same display order. The system does not prevent this, but the display in Call Invoice Recording will be confusing.

Fixed Prices

Fixed prices represent a single price for the entire service activity, regardless of the list price of individual items. Since the prices are not broken out by expense, labor, or item, mark one invoice sort to include fixed price amounts. The Billing Summary frame of Call Invoice Recording still breaks out costs, but the price displays only if an invoice sort with Fixed Price set to Yes is defined.

Since fixed prices are not broken out by service category, do not associate service categories with this invoice sort; use it to display fixed prices. A warning displays if you associate service categories with a fixed price invoice sort.

Language

Invoice sort codes control the display in Call Invoice Recording and invoice print. Multi-language users can specify how the label for the invoice sort appears in different languages.

Invoice Detail

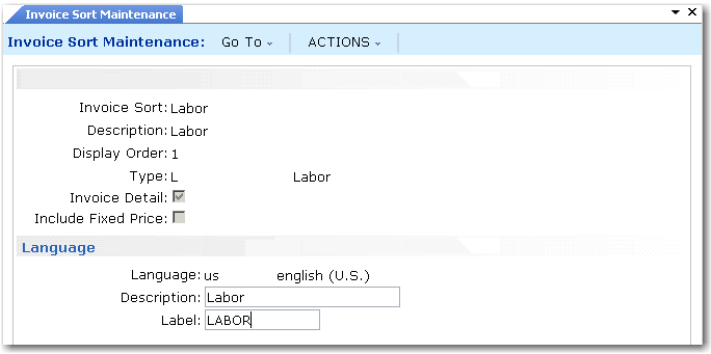
The Detail field determines the default in the Det column of Call Invoice Recording, unless you specify a different invoice format for the end user in End User Data Maintenance. This field, in turn, determines the level of detail on the printed invoice. When Detail is No for an invoice sort, the system takes the entries for a service category, summarizes them in a single line item, totals them, and then prints only this total on the hard copy invoice.

See “Invoice Format” on page 20 for details.

Invoice Sort Maintenance

Use Invoice Sort Maintenance (11.21.5) to define and maintain invoice sort codes. Figure 3.2 shows a sample invoice sort for labor.

Fig. 3.2
Invoice Sort Maintenance (11.21.5)



Invoice Sort. Enter a code identifying this invoice sort.

Description. Enter a brief description (maximum 24 characters) of the code identifying its use and purpose.

Display Order. Enter a numeral from 1 to 6 representing the display sequence in the Billing Summary frame of Call Invoice Recording. A warning displays if another invoice sort has the same display order.

Type. Possible values are L for labor, E for expense, and I for item. Type determines the column where costs display in the Call Invoice Recording summary frames. Labor costs display in column 1; item costs in column 2; and expense costs in column 3.

The invoice sort type also determines which service categories you can associate with it. You can associate a type L invoice sort with labor and travel labor service categories, a type I invoice sort with items, consumable items, or exchange items, and a type E invoice sort with expense or travel expense.

Invoice Detail. Determines the default in the Detail column in the Billing Summary frame of Call Invoice Recording and affects the printed invoice format. If Yes, the printed invoice displays information for each line of activity recorded in CAR. If No, the system summarizes the lines for a particular invoice sort with totals only. This means that if you consumed five items, the total cost for the five items displays, without details about the cost of each.

You can also set invoice detail per end user. The end user value overrides the invoice sort value.

Include Fixed Price. If this is Yes, Call Invoice Recording includes fixed price repair amounts in output for this invoice sort. Set only one invoice sort to Yes. Since fixed prices are charged regardless of the cost of items, labor, or expenses and regardless of the service categories in Call Activity Recording, do not associate service categories with this invoice sort.

Language Frame

Invoice sorts control the invoice display in Call Invoice Recording and invoice print. Use the language frame to specify how the label for the invoice sort should appear in different languages. If you do not set up language-dependent labels, the system uses the first 14 characters of the invoice sort description for the label in the Billing Summary frame of Call Invoice Recording.

Language and Description. Enter any valid language code defined Language Create (36.4.1.1). This field is required. After you enter a language code, you can specify a description and language-specific label.

If you use more than one language, execute the description and label sequence for each language you use. The description and label then appear properly translated for users in each language.

Description. Specify a general description of this invoice sort for the current language. For example, if the invoice sort applies to expenses, this description field might be “General Expenses.”

Label. The string in this field appears in the Call Invoice Recording Billing Summary frame as the label for this invoice sort when you are using this language. It displays in the position you specify in the Display Order field.

Example in Call Invoice Recording

To understand how invoice sorts appear in Call Invoice Recording, consider this scenario. A company sets up the invoice sort codes shown in Table 3.1.

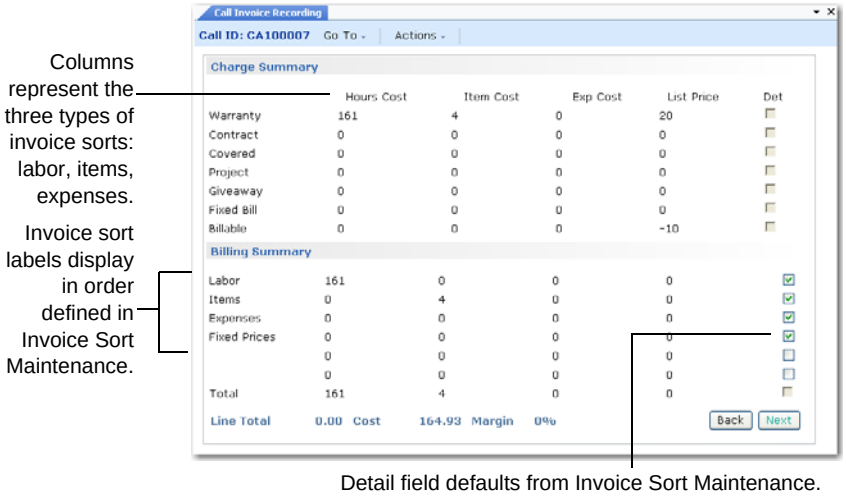
Table 3.1
Sample Invoice Sort Codes

Label	Display Order	Type	Detail
LABOR	1	L	No
Expenses	2	E	No

Label	Display Order	Type	Detail
Items	3	I	No
Fixed	4	E	No

The summary frames in Call Invoice Recording would look like Figure 3.3.

Fig. 3.3
Summary Frames in CIR



The Billing Summary frame displays the labels of the invoice sorts you specify in Invoice Sort Maintenance. The Det column reflects the value for the Invoice Detail field.

See Chapter 15, “Call Invoice Recording,” on page 443.

Service Categories

Service categories identify specific subsets of the labor, expense, and item invoice sorts. Each service category must reference an invoice sort when you define it. The invoice sort gives a high-level summary of the financial impact of its related service categories.

Each type of service category must be related to an invoice sort of the corresponding type. You can relate Items, Consumable Items, and Exchanged Items only to a type I invoice sort; Labor and Travel Labor only to a type L invoice sort; and Expense and Travel Expense only to a type E invoice sort.

Applying Service Categories

Like invoice sorts, service categories have several uses in the Service/Support module:

- Define limits and price lists.
- Provide defaults in Call Activity Recording.
- Qualify charge and revenue product lines.
- Define the default taxable status and tax code for labor and expenses.

Service Limits

Service categories manage the financial impact of service activity in CAR. You can define service limits in terms of invoice sort codes or work code and service category combinations. When you take a call, CAR monitors the limits from the call contract or service type. The system suggests either an under-limit or over-limit charge code based on limit consumption.

Service Pricing

You base pricing for labor and expenses in CAR on service category and other selection criteria. You also base expense cost lists on the service category. This means you need enough service categories to reflect both the pricing levels you use for labor and the range of expense costs and prices.

Default Service Categories

When you define service items in Service Item Maintenance, you can associate a default item service category with them. Similarly, you can associate a labor and expense service category with standard operations and service routing steps. These service categories provide default values for CAR, streamline data entry, and ensure consistent input.

Product Lines and Charge Codes

If you use service category in a search key for charge and revenue product lines, you can break out accounts based on the service categories in CAR. You can also set up default charge codes with service category as part of the search key.

Default Tax Data

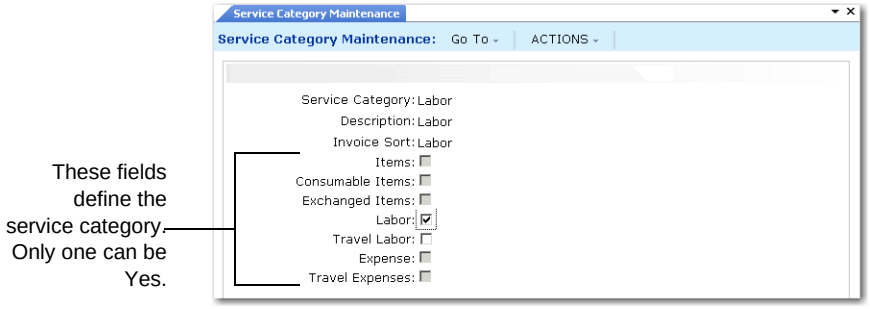
You can use Item Master Maintenance to assign a taxable status and tax code to items. These provide defaults when the item is entered on various orders, including calls and RMAs. Use Service Category Maintenance to associate tax status and tax codes with labor and expense service categories. Call Invoice Recording uses the taxable status and tax class associated with the service category as the default for labor and expense usage records for taxable call lines.

See Chapter 7, “Taxes in SSM,” on page 165 for details about tax implementation.

Service Category Maintenance

Use Service Category Maintenance (11.21.9) to create and maintain service categories. Figure 3.4 illustrates a labor service category.

Fig. 3.4
Service Category Maintenance (11.21.9)



Service Category. Enter a code identifying a particular service category.

Description. Enter a brief description (maximum 24 characters) of the code identifying its use and purpose.

Invoice Sort. Enter an invoice sort defined with Invoice Sort Maintenance (11.21.5). This field is required and the invoice sort code must exist.

You can set only one of the remaining fields to Yes for a particular invoice sort. The invoice sort type determines which fields you can edit.

- Set one of Items, Consumable Items, and Exchanged Items to Yes for a type I invoice sort.
- Set Labor or Travel Labor to Yes for a type L invoice sort.
- Set Expense or Travel Expense to Yes for a type E invoice sort.

Items. Yes means this service category is related to items in inventory or the item master. No means the service category is for something that is not an inventory item, such as labor, travel, or some other expense or activity.

Consumable Items. Further qualify items by indicating if they are consumed during the service activity. Examples of consumable items might be oil, replacement fluids, or cleaning fluid. You might consider these items an expense, depending on your own business policies.

Exchanged Items. You can also qualify items as exchanged items. You replace items during service calls and return them, possibly for credit. Toner cartridges are exchanged items.

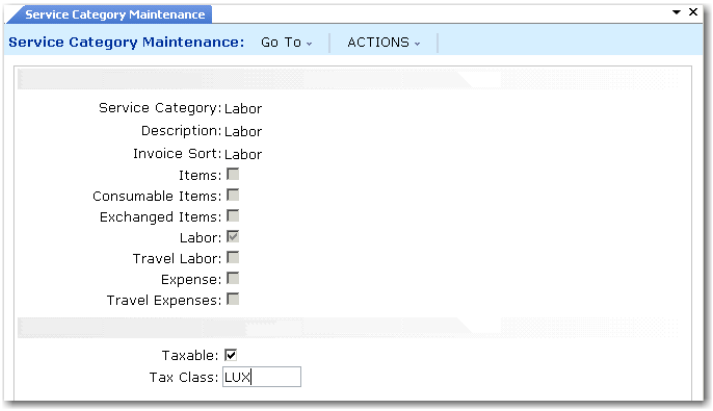
Labor. Yes means this service category is related to work performed by employees.

Travel Labor. Yes means this service category is related to travel time you can charge as labor. Some service organizations charge a service engineer's travel time as part of labor, while others charge a set rate per mile or field call.

Expenses. Yes means this service category is related to expenses other than labor and consumption of inventory items.

Travel Expenses. Yes means this service category is related to travel expenses, such as food, taxis, air fare.

Fig. 3.5
Service Category Tax Data



Taxable. This field indicates if this service category is usually taxable. When a call line is taxable and not a fixed price repair, this field determines the default in the Taxable field of the billing details in Call Invoice Recording. If the line is not taxable, the system considers the detailed usage records non-taxable.

Tax Class. Enter a tax class previously defined in Tax Class Maintenance (29.1.5). The tax class identifies service activities taxed at specific rates or that are tax-exempt. Under Global Tax Management, tax classes help determine the default tax environment (set of tax types).

The value here determines the default tax class for the service category in Call Invoice Recording if the call line is also taxable and not a fixed price repair. If a call line is not taxable, the system sets the taxable status of labor and expenses to No and you cannot modify it.

Default Sites and Locations

Define default sites and locations as part of the setup for Service/Support Management. Sites relate to inventory management and costing, since you set up costs by site.

Functions that access default sites during service activity include:

- Returns and exchanges in Call Activity Recording
- Issues in CAR and Material Order Maintenance
- MO Direct/Pending Returns

Note Set up default sites for RMAs in RMA/RTS Control.

You can set up default sites for combinations of product line, service group, work code, item, and area. Not all combinations are valid. For example, you cannot use product line and item together. Table 3.2 lists the combinations you can define and the order in which the system searches for them. If you enter an invalid combination, a message displays.

The values in the first frame of Default Site Maintenance (11.21.13) are the key for locating site defaults. You can enter any number of specific combinations or create defaults that apply to entire product lines or a particular area. Use different combinations to accommodate different business practices.

Example Your company requires all but two items in product line 200 to be returned to a particular site and location. The two special items require alternate processing, and must be returned to a different location. The search algorithm finds defaults defined for the two special items first, then those set up by product line.

Note Area is often a good choice for setting up default sites, since you may want to direct all the engineers within a certain geographic region to send returns to a particular warehouse or repair center.

Service group and product line should not be used together. You may get unpredictable results if you set up default sites for both when some items belong to both groups.

Search Algorithm

Table 3.2 illustrates the search order for default sites and the valid combinations of key fields.

Table 3.2
Search Order for Default Sites

Search Order	Product Line	Service Group	Work Code	Item	Area
1		✓	✓	✓	✓
2				✓	
3	✓	✓	✓		✓
4	✓	✓	✓		
5	✓	✓			
6	✓				
7		✓			
8					✓
9					

To minimize the possibility of blank sites defaulting into Call Activity Recording and other functions that use them, the system uses an expanded search. If you defined records with a particular key but not the particular site and location the system needs, the system searches until it finds a record with a non-blank site and location.

Example The system is searching for a default return site in CAR using the call area. A repair site exists for the area, but the return site is blank. The system searches for another record with a value for return site. The next search is with an all blank key. If there is a return site for the all-blank key, the system suggests it.

Valid Combinations

As mentioned previously, numerous functions use default sites. However, not all key values are meaningful in all functions.

Issues in Call Activity Recording

If you have not specified a site and location for the engineer, and the call either does not have an area or the call's area has no site and location, CAR looks for a default spares location for item issues. When searching for a default spares location, the system takes the values for product line, service group, work code, and item from the call line. The system takes the area from the call, which was initially determined by the end user.

Returns in Call Activity Recording

When you return items in CAR, the system derives the values for product line, service group, work code, and item from the item being returned—not the item being repaired. The system still derives the area from the call.

Issues in Material Order Maintenance

The system derives the default site on the header in Material Order Maintenance by searching for a default spares site associated with the call's area if the material order (MO) is associated with a call, or the engineer's area if there is no call.

Returns in MO Direct/Pending Returns

When items on an MO are returned, the system takes search values from the item being returned. However, work code has no value in MO Direct/Pending Returns. The system derives the area from the engineer.

Keep these factors in mind when you set up default sites. If you set up default sites and locations by work code for Call Activity Recording, you may have to set up an alternate set of defaults for MO Direct/Pending Returns. Note, however, if the system does not find return sites in MO Direct/Pending Returns, it returns the item to the issue site and location in Material Order Maintenance.

Location Attributes

You may want a restricted inventory status for return locations. Generally, you inspect returned items before making them available for sales orders or work orders. To allow for this, give the return, scrap, or repair locations a status of not available.

Set the location status to non-nettable to prevent MRP from considering inventory as on-hand. If most of your returns can be put into usable stock with little or no repair, make this inventory location nettable. You usually set scrap and repair locations to non-nettable.

If automatic locations are not enabled for a site, the system verifies that the location exists.

Inventory Transactions

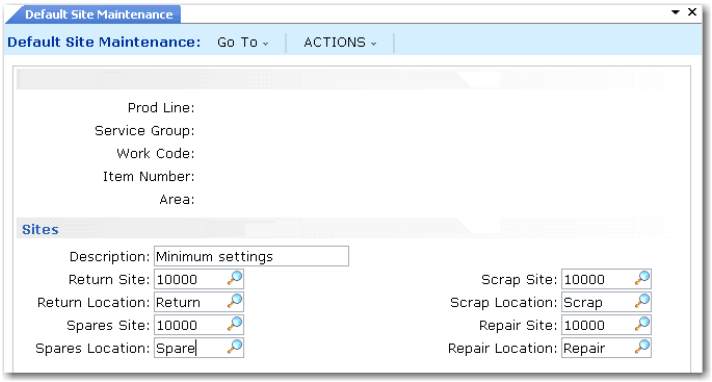
Return locations—return, scrap, and repair—must allow inventory transfers (ISS-TR) and receipts (RCT-TR), as well as unplanned receipts (RCT-UNP).

The spares location must allow inventory transfers and issues to work orders (ISS-WO).

Default Site Maintenance

Use Default Site Maintenance to create and maintain default sites.

Fig. 3.6
Default Site Maintenance (11.21.13)



The product line, service group, work code, item, and area in the first frame are keys for locating site defaults. The system uses defaults when the specified values match. You cannot specify both product line and item at the same time. Table 3.2 lists valid key field combinations.

Description. Enter a brief description (maximum 24 characters) of this set of defaults. This field is for reference only.

Return Site, Location. The system uses this site and location by default for returns under two conditions:

- The item is repairable and Good is Yes in the return status.
- The item is not repairable and Scrap is No.

The return location must allow inventory transfers (ISS-TR) and receipts (RCT-TR), as well as unplanned receipts (RCT-UNP).

Spares Site, Location. The system uses this site and location by default for inventory issues when no other defaults are appropriate. For example, in CAR, if the engineer has no site and location and the engineer's area has no site and location, the system searches for a default spares site and location. The spares location must allow inventory transfers and issues to work order (ISS-WO).

Scrap Site, Location. The system uses this site and location by default for non-repairable items with a return status that has Scrap set to Yes. The scrap location must allow inventory transfers (ISS-TR) and receipts (RCT-TR), as well as unplanned receipts (RCT-UNP).

Note Non-repairable items are those for which the Repairable field is No in Service Item Maintenance.

Repair Site, Location. The system uses this site and location by default for repairable items with a return status that has Good set to No. The repair location must allow inventory transfers (ISS-TR) and receipts (RCT-TR), as well as unplanned receipts (RCT-UNP).

Return Status

Return statuses manage the return and exchange process in Call Activity Recording (CAR) and MO Direct/Pending Returns. They do not apply to RMA receipts. The return status has no formal relationship to statuses defined with Inventory Status Code Maintenance (1.1.1). However, you normally use these two statuses together to control return processing.

Each of the attributes of the return status controls a different aspect of the process:

- Exchange determines if you give credit for an item returned from the customer. You can only exchange items in CAR. Exchange and Pending cannot both be Yes.
- Good and Scrap determine default locations for repairable (Good) and non-repairable (Scrap) items. Good and Scrap cannot both be Yes.
- Pending is for items ordered on an MO and returned in CAR. It determines if the inventory transactions take place in CAR or later in MO Direct/Pending Returns. A pending status requires that Exchange is No, Good is Yes, and Scrap is No.

See “Location Attributes” on page 76.

Standard Returns

Set Pending to No and Exchange to No for a standard return without any billing. For example, an engineer orders five items on an MO for a call and uses only four of them. You load the five items into item usage records in Call Activity Recording. One of them must be returned. CAR can do this directly, or you can use MO Direct/Pending Returns.

The same situation might occur if the engineer ordered too many items on an MO for inventory replenishment. Use MO Direct/Pending Returns to return the items.

Standard returns of items on an MO are executed as inventory transfers (ISS-TR, RCT-TR) from the engineer site and location back to available stock. There is no billing. The system treats returns in CAR that are not exchanges and not on an MO as unplanned receipts (RCT-UNP).

Exchange Returns

Indicate an exchange return by using a return status with Exchange set to Yes. Exchanges typically take place in CAR when an engineer replaces an item during a repair and the returns the old item for customer credit. You can then repair or scrap the returned item.

When you use an exchange return status, the system searches for an exchange price for the returned item on the service price list. Exchange prices use the exchange unit of measure specified in Call Management Control. If the system finds an exchange price, it displays by default during return processing. The system credits the customer this amount when it generates the invoice for the call.

You cannot use this status to return items ordered on an MO, since exchange processing assumes the item is being returned from the customer. Also, you cannot combine Exchange with Pending, since the Pending field is used only with items on an MO. An exchange return executes an unplanned receipt (RCT-UNP).

Pending Returns

You can use pending returns only for items on an MO. For Pending to be Yes, Good must also be Yes, and Scrap must be No. Since you took the items being returned directly out of inventory and did not use them, they should still be good and are returned to a site and location for good stock.

Call Activity Recording uses the pending status to mark items on an MO as returned. During a pending return, the system registers the return against the call and clears allocations for the returned items. However, no inventory is transferred. Complete the return later with MO Direct/Pending Returns (11.11.8).

Good and Scrap

You can mark items returned as either Good or Scrap. Only one field can be Yes at the same time. The system checks Good when the item's Repairable field is Yes in Service Item Maintenance, Scrap when the item is not repairable. These two fields affect the default sites and locations used during a return:

- If Good is Yes and Scrap is No, the system returns both repairable and non-repairable items by default to the return site and location.
- If Good is No and Scrap is Yes, the system returns repairable items by default to the repair site and location, non-repairable items to the default scrap site and location.

Table 3.3 summarizes the interaction of the Repairable field and the Good and Scrap fields.

Table 3.3
Return Status Fields

Repairable	Return Status	Site
Yes	Good = Yes	Default Return Site
Yes	Good = No	Default Repair Site
No	Scrap = No	Default Return Site
No	Scrap = Yes	Default Scrap Site

You can set up as many return statuses as you need with various combinations of settings. Plan return statuses accurately since inventory processing depends on them.

Default Statuses

You can specify two default return statuses in Call Management Control. These statuses provide defaults during return processing in Call Activity Recording and MO Direct/Pending Returns.

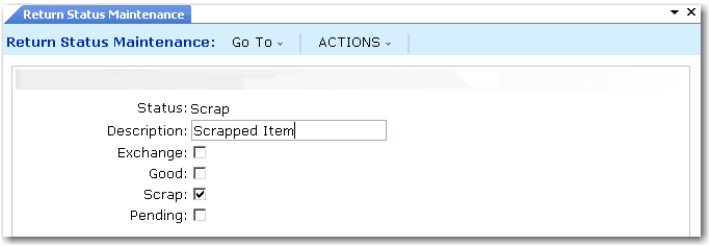
- *Return Status*. CAR uses this status by default for repairable items. It is the default in MO Direct/Pending Returns.
- *Scrap Status*. CAR uses this status by default for non-repairable items.

Note You cannot use a status with Pending set to Yes.

Return Status Maintenance

Figure 3.7 illustrates Return Status Maintenance.

Fig. 3.7
Return Status Maintenance (11.21.17)



Status. Enter an 8-character code identifying this status.

Description. Enter a brief description (maximum 24 characters) of the code identifying its use and purpose.

Exchange. Yes indicates an item the customer returned for credit. The system uses the Exchange UM in Call Management Control to find an exchange price on the call price list. The system credits the customer who returned the item this amount and receives it into inventory using an unplanned receipt transaction.

Good. The system checks this field only if the item is repairable. Good can be Yes only if Scrap is No. If Yes, the system suggests the default return location; if No, the default repair location.

Scrap. The system checks this field only if the item is not repairable. Scrap can be Yes only if Good is No. If Yes, the system suggests the default scrap location; if No, the default return location.

Pending. Set this field to Yes to mark pending returns in Call Activity Recording for items ordered on an MO. Complete the return later with MO Direct/Pending Returns. If Pending is Yes, Good must also be Yes, Scrap must be No, and Exchange must be No.

Charge and Revenue Management

The charge code determines who pays for service costs and which GL accounts are affected. The connection to accounts is made through product lines.

Service/Support Management provides two maintenance functions for specifying the product lines that segregate service costs and revenue from regular sales and COGS accounts:

- Charge Product Line Maintenance (11.21.21.5)
- Revenue Product Line Maintenance (11.21.21.9)

These functions control which accounts the system uses and when, in a range from straightforward to complex. You can base charge and revenue product lines on a number of selection criteria, further increasing your financial management control.

See “Detailed Accounting in CIR” on page 463 for details on how Call Activity Recording and Call Invoice Recording use product lines.

Charge Codes

Charge codes play an important role in managing the financial impact of service activity. The charge code determines who pays for service costs, depending on which fields are Yes.

A charge code has one of seven possible attributes. Each attribute has a particular effect. Charge codes determine whether the system:

- Invoices service to the customer—billable and fixed billable
- Provides it free of charge—warranty, contract, covered, or giveaway
- Tracks it internally against a special project—project mandatory

Normally, you should create at least one charge code for each attribute to cover all possible business applications. However, if you do not use fixed pricing or track service costs for internal projects, these charge codes may not be needed.

Important After you define charge codes, be careful about changing them. If you change a charge code marked Billable, for example, to Project Mandatory, it is no longer valid for contract limit records, as a billable default, and may be invalid in Call Activity Recording. You will now generate errors if you access records using the charge code.

Application of Charge Codes

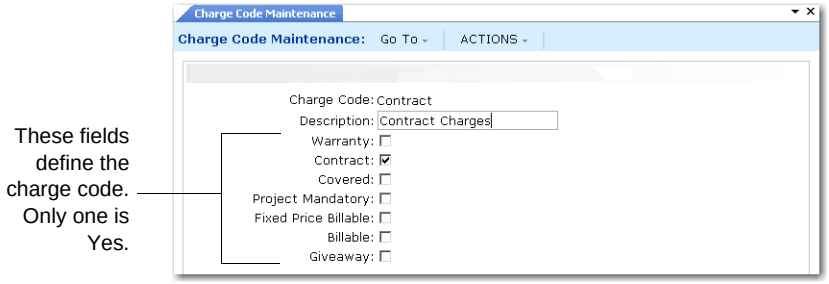
Charge codes affect numerous functions:

- *Service Limits*. You can associate under- and over-limit charge codes with the various limits for a service type or contract. When this service type or contract provides coverage in CAR, the system uses the charge codes from the limits first. If you have not associated charge codes with limits, you can define default charge codes in Default Charge Code Maintenance.
- *Recording Service*. CAR suggests a charge code for each line of detail recorded, providing you maximum flexibility to manage financial impacts.
- *Service Invoicing*. When CAR summarizes service costs, the seven rows represent the seven types of charge codes.
- *Product Lines and Accounts*. Charge codes can be associated with a product line in Charge Product Line Maintenance. You can segregate the cost of different kinds of service activity by connecting the various charge codes with different product lines. For example, you can direct the cost of warranty service to different accounts than the cost of contract service. Charge codes can be used in this way in Call Activity Recording and for expensed material orders.

Charge Code Maintenance

Use Charge Code Maintenance (11.21.21.1) to create and maintain charge codes. Figure 3.8 shows a charge code for service provided under contract.

Fig. 3.8
Charge Code Maintenance (11.21.21.1)



Charge Code. Enter a code identifying a charge code.

Description. Enter a brief description (maximum 24 characters) of the code identifying its use and purpose.

Note Only one of the remaining choices in Charge Code Maintenance can be Yes. This setting determines the effect of the charge code.

Warranty. Yes means the original warranty covers the charges. If Warranty is Yes, the charge can be the under-limit charge code on a warranty type. It can also be the default warranty charge code in Default Charge Code Maintenance.

When the system uses this charge code, it examines the limits on the warranty type and uses the level of coverage to determine how much to invoice the customer. The system does not use limit amounts with warranties—just the percent of coverage. Service charges are accumulated only against contracts and contract line items.

Contract. Yes means an existing, valid contract covers the charges. You can specify a charge code with Contract set to Yes as the under-limit charge code on a contract or contract type. It can also be the default contract charge code in Default Charge Code Maintenance.

When the system uses this charge code, it examines the limits on the contract and uses the limits and level of coverage to determine how much to invoice the customer. The system uses the limits on the contract line, then the contract header, and finally the contract service type.

Covered. Yes means either a generic service type or the default call service type in Call Management Control covers the charges. You can specify a charge code with Covered set to Yes as the under-limit charge code on warranty or contract types. It can also be the default covered charge code in Default Charge Code Maintenance.

Important Use this kind of charge code carefully, and only on service types that provide coverage apart from specific contracts or warranties. *Never* use it on service types that are the basis of contracts or warranties.

Normally, you use Covered only for the Call Default Service Type in Call Management Control. If you have alternate generic service types, you can also use Covered for them. A warning displays in Contract and Warranty Type Maintenance when you specify a covered charge code. A Covered charge code on a service type used as a warranty or as a basis for contracts can create confusion in Call Activity Recording.

When the Covered charge code is an override in Call Activity Recording, the system applies the levels of the default call service type. If, for example, you normally provide some level of coverage as a goodwill gesture, override a Billable charge code with Covered to provide that level of coverage for an item in Call Activity Recording.

The system uses the coverage levels of the default service type but not any limit amounts. Service charges are accumulated only against contracts and contract line items.

Project Mandatory. Yes means you are using this charge code to track internal charges related to a particular company project. You cannot use this charge code unless you specify a project in CAR. You cannot use a charge code with Project Mandatory set to Yes as an under- or over-limit charge code on warranty types, contract types, or contracts. You can only use it as an override in CAR.

Note Set up projects in Project Create (25.3.11.1.1).

Fixed Price Billable. Yes means you are using this charge code to track fixed-price service. The system suggests a fixed-price billable charge code in CAR when you use a fixed price work code. The system invoices the customer the fixed price regardless of the actual cost of service. Fixed-price service is an alternative to service based on contracts and warranties. When you use the fixed price, no limits are examined.

When Fixed Price Billable is Yes on a charge code, you cannot use it as an under- or over-limit charge code on warranty types, contract types, or contracts, since you do not use fixed pricing in conjunction with service coverage. However, you can specify it as the default fixed-price billable charge code in Default Charge Code Maintenance.

Billable. Yes means the system invoices the charges to the customer. You can specify a charge code with Billable set to Yes as the over-limit charge code on a contract or service type. You can also specify it as the default billable charge code in Default Charge Code Maintenance. Once service limits are exceeded, the system suggests the over-limit charge code. When you use a Billable charge code in Call Activity Recording, the covered amount is always zero.

Giveaway. Yes means the customer receives the service without any charge, and the system does not accumulate costs against any service limits in effect. You cannot use a charge code with Giveaway set to Yes as an under- or over-limit charge code on warranty types, contract types, or contracts. You can only specify it as an override in Call Activity Recording.

Charge Product Lines

Every item must be associated with a product line when you define it in the item master. The product line determines the general ledger accounts for financial transactions. You can further break down GL accounts by using Sales Account Maintenance or Inventory Account Maintenance. However, the service environment has special accounting needs.

Many service organizations do not want service costs and revenues included with manufacturing costs and item sales revenue. They need detailed reports that show the costs incurred by service under various conditions.

To address these accounting needs, define charge and revenue product lines to direct costs and revenue to accounts based on service-related factors.

Use Charge Product Line Maintenance (11.21.21.5) to set up product lines for service costs. Charge product lines can direct costs to different accounts depending on the charge code, the service type you associate with the call, the service category or work code of the usage detail, or the product line or service group of the item being repaired.

In the absence of charge product lines, the system uses a standard algorithm to determine the relevant product line, based on Use Item Prod Line in SSM Accounting Control. If this is Yes, the system uses the product line of the item being repaired; if No, the product line of the service type associated with the item being repaired. In both cases, if a product line is still not found, the default accounts in Domain/Account Control (36.9.24) are used.

Important Since accounting is such an important part of a business endeavor, carefully plan how you use product line accounts in service.

Simple or Complex

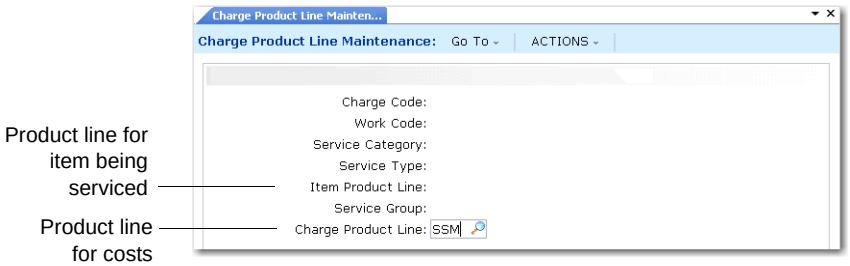
Your setup of charge product lines can be relatively simple or complex, depending on how you apply your business practices. You can direct service costs to one product line. Or, at the most complex, you can use all fields, including charge code, work code, service category, service type, item product line, and service group.

Most companies find a policy between the two extremes best meets their needs. For example, relating product lines to charge codes is one effective way to distinguish and report on costs.

The system searches key fields for charge product lines from the bottom up, and you must fill them without skipping any. For example, if you want to use service category as part of the search algorithm, you must also specify work code and charge code.

Example The following example shows how to break out service costs from the standard sales and COGS accounts. You do this by leaving all fields blank except Charge Product Line. Figure 3.9 shows the entire setup.

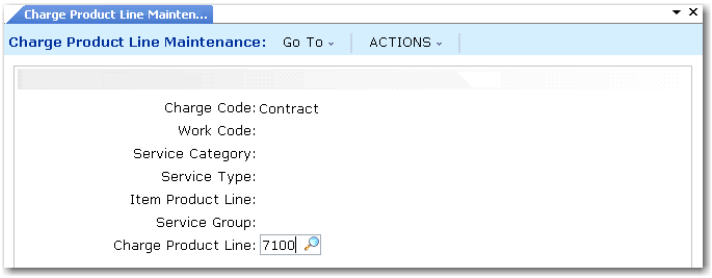
Fig. 3.9
Charging All Service Costs to One Charge Product Line



Leaving the other fields blank means that the system charges service costs to the accounts in product line SSM, regardless of the charge code, work code, service category, service type, item product line, or service group.

Example You can also break out service costs related to particular charge codes, as Figure 3.10 shows.

Fig. 3.10
Breaking out Service Costs for a Charge Code



In this example, all costs for service contract activities are charged to service product line 7100. Use this kind of setup to see how costs are distributed between contract, warranty, and billable service.

Charge Product Line Maintenance Fields

When Call Activity Recording searches for a charge product line, it derives the values for charge code, work code, service category, and service type from each line of detail. It derives the value for item product line and service group from the item for which you are providing service.

Charge Code. Enter a valid charge code defined in Charge Code Maintenance. This field can be blank, but if so, all remaining key fields must also be blank. If you enter a value here, the system uses the associated charge product line for the cost of details recorded in CAR only when this charge code is on the line of detail.

Work Code. Enter a work code defined in Work Code Maintenance. This field can be blank, but if so, all remaining key fields must also be blank. If you enter a value here, the system uses the associated charge product line for the cost of details recorded in CAR only when this work code is on the line of detail.

Service Category. Enter a service category defined in Service Category Maintenance. This field can be blank, but if so, all remaining key fields must also be blank. If you enter a value here, the system uses the associated charge product line for the cost of details recorded in CAR only when this service category is on the line of detail.

Service Type. Enter a service type defined in Contract or Warranty Type Maintenance. This field can be blank, but if so, all remaining key fields must also be blank. If you enter a value here, the system uses the associated charge product line for the cost of details recorded in CAR only when this service type is in effect for the line of detail.

Item Product Line. Enter a product line defined in Product Line Maintenance. This field can be blank, but if so, Service Group must also be blank. If you enter a value here, the system uses the associated charge product line for the cost of details recorded in CAR only when you repair items belonging to this product line.

Note This is the product line of the item being repaired, not the item issued as part of the repair.

Service Group. Validated against codes you set up in Generalized Codes Maintenance for field pt_svc_group. However, this field can be blank even if a blank generalized code does not exist. If you enter an invalid value, a warning displays. The system does not use the data you are about to create unless you set up this value in Generalized Codes Maintenance.

If you enter a value here, the system uses an associated charge product line for the cost of details recorded in CAR only when you repair items belonging to this service group.

Note This is the service group of the item being repaired, not the item issued as part of the repair.

Charge Product Line. Enter a product line defined in Product Line Maintenance. The system uses the accounts associated with this product line for the cost of details recorded in CAR when the other key fields match.

Revenue Product Lines

Revenue product lines are similar to charge product lines. However, in the case of revenue product lines, the financial impact represents the income from service activity, rather than the cost.

Another important difference is that the system applies charge product lines to the usage detail consumed in Call Activity Recording. Revenue product lines, however, are applied at a higher level to the item being A different charge product line can be specified for each item consumed, each expense, and each hour of labor. Revenue product lines track income from the service activity only for the item repaired.

Like charge product lines, you can base revenue product lines on several criteria. Criteria for revenue product lines are limited, however, to the service type and work code associated with the call line, or the product line and service group of the item being repaired. The charge code and service category do not apply.

Table 3.4 summarizes the differences between charge and revenue product lines.

Table 3.4
Product Line Comparison

	Charge Product Line	Revenue Product Line
Used For	The costs of service activity	The income from service activity
Applies To	Detail usage records	Call line items
Key Includes	Charge Code, Work Code, Service Category, Service Type, Item Product Line, Service Group	Work Code, Service Type, Item Product Line, Service Group
Displays In	Call Activity Recording	Call Invoice Recording

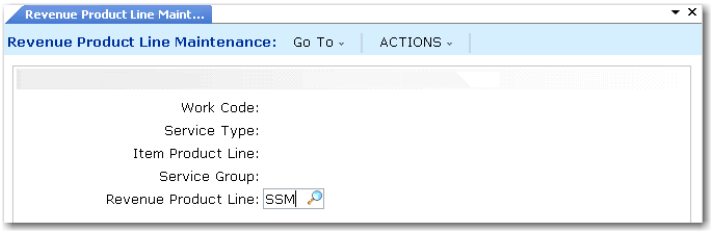
If you have no revenue product lines, the value of Use Item Prod Line in SSM Accounting Control determines the default suggested in Call Invoice Recording. If Yes, the product line of the item being repaired displays as a default. If No, the product line of the service type in effect displays.

The setup of revenue product lines, like charge product lines, can be relatively simple or complex, depending on your business practices.

Revenue Product Line Maintenance

Use Revenue Product Line Maintenance (11.21.21.9) to create and update revenue product lines.

Fig. 3.11
Revenue Product Line Maintenance (11.21.21.9)



When Call Invoice Recording searches for a revenue product line, the system derives the value for work code and service type from the call line. It derives item product line and service group from the item you are servicing.

Work Code. Enter a work code defined in Work Code Maintenance. This field can be blank, but if so, all remaining key fields must also be blank. If you enter a value here, the system uses the associated revenue product line for the revenue received for the repair of an item only when the item being repaired has this work code.

Service Type. Enter a service type defined in Contract or Warranty Type Maintenance. This field can be blank, but if so, all remaining key fields must also be blank. If you enter a value here, the system uses the associated revenue product line for the revenue received for the repair of an item only when the item being repaired has this service type.

Item Product Line. Enter a product line defined in Product Line Maintenance. This field can be blank, but if so, Service Group must also be blank. If you enter a value here, the system uses the associated revenue product line for the revenue received for service recorded in CAR only when you repair items belonging to this product line.

Service Group. This field is validated against codes defined in Generalized Codes Maintenance for field pt_svc_group. However, this field can be blank even if a blank generalized code does not exist. If you specify an invalid value, a warning displays. The system does not use the data you are about to create unless you set up this value in Generalized Codes Maintenance.

If you enter a value here, the system uses the associated revenue product line for the revenue received for service recorded in CAR only when you repair items belonging to this service group.

Revenue Product Line. Enter a product line defined in Product Line Maintenance. The system uses the accounts associated with this product line for the income generated by Call Invoice Recording when the other key fields match.

Search Order for Product Line

The system searches key fields for charge and revenue product lines from the bottom up. You must fill them in without skipping any. For example, to use service category as part of the search algorithm for a charge product line, you must also specify a work code and charge code.

If you use a large number of key field combinations to define product lines, the searches for determining the correct product line for a particular operation can be quite complex. Consider this when you set up the product lines, since increasing complexity has a performance cost, and may be difficult to understand and manage.

When the system searches for a product line to use, it proceeds from the most specific to the most generic as follows:

Note Revenue product lines do not use charge code and service category.

1. Search for an exact match with charge code, work code, service category, service type, item product line, service group.
2. Blank out service group and search again.
3. Blank out service group and item product line and search again.
4. Blank out service group, item product line, and service type and search again.
5. Blank out service group, item product line, service type, and service category and search again.
6. Blank out service group, item product line, service type, service category, and work code and search again.
7. Blank out all fields including charge code and search for a product line based on the product line type: revenue or charge.

If a charge or revenue product line is not found, the system uses the product line of the item or the service type in effect, depending on Use Item Prod Line in SSM Accounting Control. If this is Yes, the system uses the product line associated with the item being serviced; if No, the product line associated with the contract or warranty in effect, or the default service type.

The last option is the default accounts in Domain/Account Control (36.9.24).

Default Charge Codes

You can specify charge codes while you record activity in Call Activity Recording. However, to streamline recording, the system always attempts to suggest the most appropriate charge code.

When you define warranty and service types, you can specify a default under- and over-limit charge code. The system looks for these first. If you do not use these, you can set up default charge codes in Default Charge Code Maintenance (11.21.21.13). If no defaults exist, users recording activity must supply them manually in CAR.

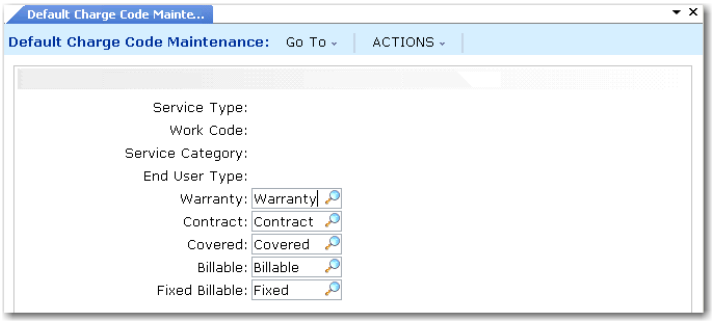
The defaults defined with Default Charge Code Maintenance are useful for service environments with a minimum of service level combinations. A simple service environment can use a few sets of default codes for everything. For more detailed control, specify under- and over-limit charge codes on your service types.

Default Charge Code Maintenance

You can define five default charge codes for any combination of service type, work code, service category, and end-user type. These four fields are the key used by the system when it searches for an appropriate default. If it does not find an exact match, it searches for less specific matches.

Leave the key fields blank to create a generic set of default charge codes the system can apply in all cases.

Fig. 3.12
Default Charge Code Maintenance (11.21.21.13)



Service Type. Enter a service type defined in Contract or Warranty Type Maintenance. This field can be blank. If you enter a value here, CAR suggests the associated default charge codes only when this service type is in effect for the line of detail.

Work Code. Enter a work code defined in Work Code Maintenance. This field can be blank. If you enter a value here, CAR suggests the associated charge codes only when this work code is on the line of detail.

Service Category. Enter a service category defined in Service Category Maintenance. This field can be blank. If you enter a value here, CAR suggests the associated charge codes only when this service category is on the line of detail.

End User Type. This field is normally validated against values in Generalized Codes Maintenance for field eu_type. However, it can be blank even if a blank value is not defined. If you specify an invalid value, a warning displays. The data you are setting up has no application in the system unless you create this code later.

If you enter a value here, CAR suggests the associated charge codes only when the type of the end user initiating the call matches.

Warranty. Enter a charge code defined in Charge Code Maintenance with Warranty set to Yes. CAR suggests the warranty charge code only if a warranty type is providing coverage.

Contract. Enter a charge code defined in Charge Code Maintenance with Contract set to Yes. CAR suggests the contract charge code only if a contract is providing coverage.

Covered. Enter a charge code defined in Charge Code Maintenance with Covered set to Yes. CAR suggests the covered charge code only if coverage for the call line is being provided by the default call service type or some other service type you enter.

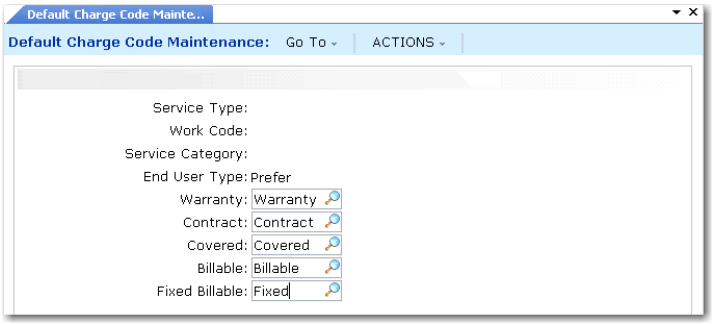
Billable. Enter a charge code defined in Charge Code Maintenance with Billable set to Yes. CAR suggests the billable charge code when no coverage is provided by the current service type or service has consumed the limits on a contract.

Fixed Billable. Enter a charge code defined in Charge Code Maintenance with Fixed Price Billable set to Yes. CAR suggests the fixed billable charge code whenever you use a fixed price work code.

Example Default Charge Code Setup

You can create a set of default charge codes for a special kind of end users using the End User Type field. In the example in Figure 3.13, the system suggests this charge code regardless of the service type, work code, or service category.

Fig. 3.13
Sample Default Charge Code for Preferred Customer



Search Order

During processing in CAR, the system looks for default charge codes with any combination of values in the key, in the sequence listed in Table 3.5.

Table 3.5
Search Order for Default Charge Codes

Search Order	Service Type	Work Code	Service Category	End User Type
1	✓	✓	✓	✓
2	✓	✓	✓	
3	✓	✓		✓
4	✓		✓	✓
5		✓	✓	✓
6	✓	✓		
7	✓		✓	
8	✓			✓
9		✓	✓	
10		✓		✓
11			✓	✓
12	✓			
13		✓		
14			✓	
15				✓
16				

User Preferences

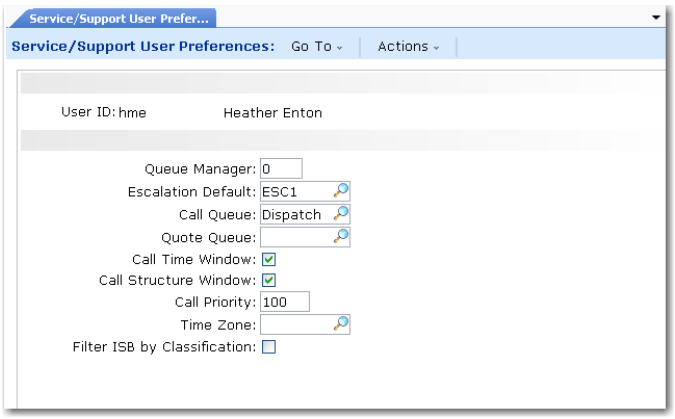
SSM offers a number of ways to streamline data entry when you take a call by predefining default field values. You specify some of the values in control programs. These settings determine defaults for all users. You can also set up call defaults using Call Default Maintenance based on work code, model, and service group.

However, in some cases, each user may want to determine a default value used when they execute a program. Use Service/Support User Preferences (11.21.23) to enter values for individual users. Users must have been previously defined in User Maintenance (36.3.1).

See Table 11.3, “Call Default Precedence Rules,” on page 273 for details on how default settings are used.

Note For more control, apply system security so only managers can set up user preferences.

Fig. 3.14
Service/Support User Preferences (11.21.23)



User ID. Enter a user ID defined in User Maintenance (36.3.1). You do not have to be logged in as the user; managers can set appropriate defaults and restrict users from changing them.

Queue Manager (0, 1, 2, 3). Specify a value for managing the sort criteria for calls displayed in Call Queue Manager (11.1.6). This value overrides the value in Call Management Control.

0 (zero): Displays calls by next date and next time. Pivot sorts by end user.

1: Groups calls by the Assigned (engineer) field, then response priority. Pivot sorts by Queue.

2: Sorts by the Assigned (engineer) field. Pivot sorts by end user.

3: Sorts by the Area field. Pivot sorts by customer.

Note Each Queue Manager value has a primary and secondary sort view. You use the Pivot command to switch between the two views.

Escalation Default. Enter the default escalation code for Call Maintenance (11.1.1.1). Leave this field blank if you do not use call escalation. When this user creates a call, this setting overrides the default in Escalation Control. However, if the end user has an escalation or one is defined in Call Default Maintenance, it is used first.

Note Use Escalation Maintenance (11.1.13.1) to set up escalation codes.

Call Queue. Enter a code used to group service calls for dispatching and review with the Queue Manager. When this user creates a call, this setting overrides the default set in Call Management Control. A queue set by an escalation or in Call Default maintenance takes precedence over this value.

Note Use Call Queue Maintenance (11.1.21.7) to set up call queues.

Quote Queue. Enter a code used to group call quotes. When this user creates a quote, this setting overrides the default in Call Management Control. A queue set in Call Default Maintenance takes precedence.

Call Time Window. Specifies whether the Travel and Estimated Time window appears in Call Maintenance. Enter Yes to record the estimated call length, travel distance, and travel time in Call Maintenance (11.1.1.1). When this user creates a call, this setting overrides the default in Call Management Control.

Call Structure Window. Specifies whether the Repair Structure Detail window appears in Call Maintenance. If Yes, a frame displays in Call Maintenance (11.1.1.1) where you can specify or modify the service BOM and routing. When this user creates a call, this setting overrides the default in Call Management Control.

Call Priority. Enter a number indicating how important this call is. Lower numbers indicate higher priority. In order of precedence, the value in the Priority field defaults from:

- The Call Priority field in End User Data Maintenance.
- If this field is zero, then depending on whether the item is covered under a warranty or service contract, the default comes from the Priority field in either Warranty Type Maintenance or Contract Type Maintenance.
- If the item is not covered under warranty or contract, the default is the priority of the Default Call Service Type in Contract Control.
- The system uses user preferences if none of the above apply.

Filter ISB by Classification. Specify whether you want this user to be able to filter ISB records based on classification codes when displaying ISB lookups.

No: All ISB records are displayed.

Yes: You can select a classification code to limit records included before an ISB browse displays.

The value of this setting affects all programs that have a field with an associated installed base lookup.

This field defaults from Service Management Control. If user preferences are not defined for a user, the control value is used.

See “Classifying ISB Records” on page 30.

Generalized Codes for Service

The system uses generalized codes, which you define in Generalized Codes Maintenance (36.2.13), extensively. They give you flexibility in organizing and implementing functions, since you can define values that are meaningful in your own business environment.

In the Service/Support Management module, you can define generalized codes to shape how you record and manage service activity information. Table 3.6 lists most of the codes referenced by service functions. Use it to plan which codes to use in your implementation.

Table 3.6
Generalized Codes for Service

Code	Label	Where Used
ca_resolve	Resolution	Call Update frame of Call Maintenance (ca_resolve)
ca_severity	Severity	Call Maintenance (ca_severity) Call Default Maintenance (cdf_ca_severity) Call Escalation Maintenance (es_ca_severity)
ccd_cause	Cause	Fault Codes (ccd_cause)
ccd_problem	Problem	Fault Codes (ccd_problem)
ccd_resolution	Resolution	Fault Codes (ccd_resolution)
egd_sched_type	Schedule Type	Engineer Detail Schedule Maint (egd_sched_type)
eng_location	Current Location	Engineer Maintenance (eng_location)
esh_sched_type	Schedule Type	Engineer Master Schedule Maintenance (esh_sched_type)
eu_type	End User Type	End User Data Maintenance (eu_type) Default Charge Code Maintenance (fcd_eu_type) Warranty Code Maintenance (svtype)
fsgroup	Engineer Group Group Engineer Group	Engineer Maintenance (eng_group) Escalation Maintenance (es_group) End User Maintenance (eu_eng_group)
fsskill	Prob/Skill	Call Maintenance (ca_problem) Call Default Maintenance (cdf_ca_problem) Engineer Skills Table (fsskill) Call Escalation Maintenance (es_ca_problem)
isb_owner	Ownership	Installed Base Item Maintenance (isb_owner)
isb_status	Status	Installed Base Item Maintenance (isb_status)
pgh_status	Status	Status (pgh_status) Waiting for Page Status (pgc_wait_status) in Paging Control Paged Status (pgc_paged_status) in Paging Control
pod_um	Unit of Measure	RTS Maintenance (pod_um)
pt_model	Model	Service Item Maintenance (pt_model) Call Default Maintenance (cdf_model) Call Maintenance (part-model)

Table 3.6 — *Generalized Codes for Service* — (Page 1 of 3)

Code	Label	Where Used
pt_svc_group	Service Group	Service Item Maintenance (pt_svc_group) Default Site Maintenance (rdf_svc_group) Charge Product Line Maintenance (fcc_pt_svc_group) Revenue Product Line Maintenance (fcc_pt_svc_group) Call Default Maintenance (cdf_group) Call Maintenance (part-svc-group) Price List Maintenance (fpc_svc_group)
pt_svc_type	Usage Code	Service Item Maintenance (pt_svc_type)
pt_sys_type	System Type	Service Management Control (svc_sys_type) Service Item Maintenance (pt_sys_type) Installed Base Item Maintenance (isb_sys_type)
pt_um	Unit of Measure Exchange UM Fixed UM	Price List Maintenance (fpc_um) Call Management Control (svc_exch_um) Call Management Control (svc_fixed_um)
reg_type	Area Type	Area Maintenance (reg_type)
rmd_fault_cd	Fault Code	RMA Maintenance (rmd_fault_cd)
ro_tool	Tool Code	Service Routing Maintenance (ro_tool) Service Standard Operation Maint (opm_tool)
sa_sa_type	Type	Contract Maintenance, Contract Quote Maintenance
sa_stat	Action Status	Contract Maintenance (sa_stat)
sad_type	Ship Type	Contract Maintenance (sod_type)
sap_bom_type	BOM Type	Contract Maintenance, PM Scheduling
so_channel	Channel	RMA Maintenance (so_channel) Call Activity Recording (ca_channel) Call Invoice Recording (ca_channel) Contract Maintenance (sa_channel)
so_cr_card	Credit Card	Contract Maintenance (sa_cr_card) RMA Maintenance (so_cr_card)
so_cr_init	CR Initials	Contract Maintenance (sa_cr_init) RMA Maintenance (so_cr_init)
so_fob	FOB Point	RMA Maintenance (so_fob)
so_shipvia	Ship Via	RMA Maintenance (so_shipvia) MO Maintenance (so_shipvia)
so_stat	Action Status	RMA Maintenance (so_stat) MO Maintenance (so_stat)
sod_type	Type	RMA Maintenance (sod_type)
sod_um	UM	RMA Maintenance (sod_um)
srr_problem	SR Problem	SR Maintenance (srr_problem)

Table 3.6 — *Generalized Codes for Service* — (Page 2 of 3)

Code	Label	Where Used
srr_severity	SR Severity	SR Maintenance (srr_severity)
srr_type	SR Type	SR Maintenance (srr_type)

Table 3.6 — *Generalized Codes for Service* — (Page 3 of 3)

Chapter 4

Multiple Time Zones

This chapter describes SSM's optional Multiple Time Zones (MTZ) feature. First, a general business background and overview of MTZ is presented, then the details of activating and setting up. The next section describes the impact of MTZ on service processing, including call management, the installed base, service contracts, and engineer scheduling. Finally, additional technical reference material is provided.

Business Considerations

It is increasingly common for service organizations to support customers across a wide geographic range. Being a global service provider presents special challenges and requirements such as multiple currencies, different tax structures, and multiple languages.

A special global business challenge for service providers, however, is accommodating variations in local time.

An awareness of time zones is uniquely important to service organizations because service coverage and associated fees are often dependent on the date and time a client requests and you supply coverage. Also, service contracts can include an obligation to respond to customer issues within a certain number of hours.

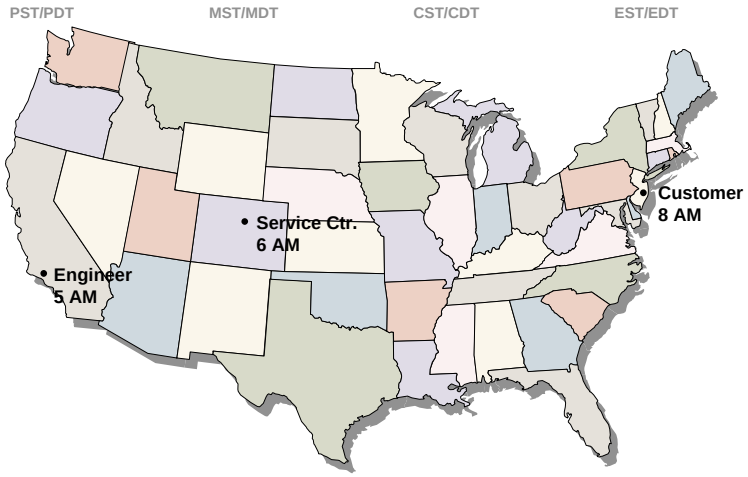
Sample Scenario

Consider this illustration of the importance and potential complexity that time zones introduce into service requirements.

A software support organization has a central service center in Denver. A customer in New Jersey contacts the center in Denver at 8:00 on Monday morning with a critical problem. In Denver, the local time is 6:00 AM.

Figure 4.1 illustrates the locations in this scenario.

Fig. 4.1
Managing Multiple Time Zones



This customer’s service contract specifies full coverage during normal business hours, defined as 8:00-17:00, Monday through Friday. At other times, the customer pays 50% of the service charges. The contract also specifies that a customer request receives a response within two hours.

So a service call at 8:00 AM (customer time) is fully covered. For the system to find the correct coverage, the time used must be the end user’s.

Based on the response time stipulated in the contract, an engineer should contact the end user by 10:00 AM Monday, New Jersey time. The service center dispatcher assigns the call to an engineer in California, where the time of the call is 5:00 AM Monday. When the engineer reviews the call, he needs to know that he must respond by 7:00 AM his time to meet the contractual obligation.

This is a simple example. In some cases, the system registers date differences as well as time differences.

MTZ Features

The multiple time zone (MTZ) option of Service/Support Management helps you create, display, and track calls that accommodate and adjust for time differences. The main features of MTZ include:

- Support for defining and maintaining time zones, including the changes required by daylight savings time
- Association of time zones with customers, end users, and engineers
- Call creation and scheduling from the end user's point of view
- Storage of installed base data relative to the end user's time zone
- Coverage checking based on the end user's time zone
- Flexible display of time-sensitive data from multiple points of view
- Enhanced engineer scheduling options for engineer call assignment

Note Time zone maintenance programs and reports are also available on the Database Management (36.22) menu in System Administration. This is because time zones are also used for system functions and time zones must be associated with users when they are defined in User Maintenance (36.3.1). The programs in System Administration are exactly the same as the ones in SSM.

The Use User's Time Zone for Default Domain field in Database Control (36.24.1) affects the time stamping of transactions you create in the default domain. If the Use User's Time Zone for Default Domain field is selected, all transactions you create in the default domain are dated and time stamped according to the user time zone specified in User Maintenance (36.3.1), even if a different time zone is defined for the domain in the Domain record. See *User Guide: QAD System Administration* for more information.

Important If you are using the SSM module and the Multiple Time Zone option is activated in Service Management Control (11.24) for any domain in the database, you should not activate the Use User's Time Zone for Default Domain field.

Overview of MTZ

The Service/Support Management module provides many time-sensitive features. For example, you can define a duration and a number of hours per day for service coverage. The response time and coverage hours you associate with a service type determines when engineers should act on a call. Engineer scheduling uses these dates and times to assign an engineer to respond to the request.

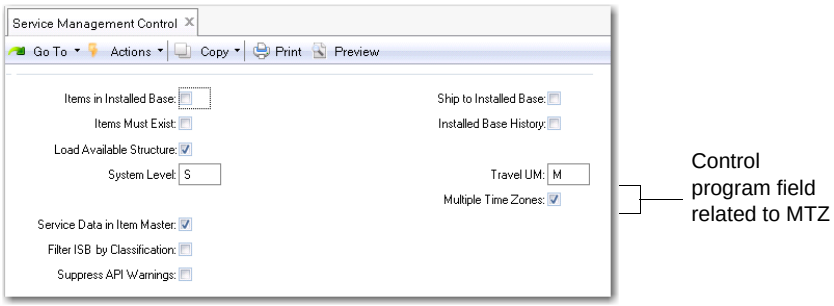
When service providers and end users are located in different time zones, understanding these dates and times can become extremely complex. Using MTZ provides an integrated solution for organizations facing these issues. Since not all users of SSM manage calls across multiple time zones, MTZ is optional. As a result, most of MTZ's data elements are not visible unless it is active.

When MTZ is not active, SSM uses the time zone specified on the domain record as the default value in date and time fields. MTZ also uses this date and time for storing most date and time information internally. However, before display, it converts times that are relative to an end user. To allow for conversion, you must set up and define the domain time zone explicitly. See *User Guide: QAD System Administration* for information on defining the domain time zone.

Activating MTZ and converting existing data is described fully in “Activating MTZ” on page 100.

Figure 4.2 illustrates three fields in Service Management Control that display values associated with MTZ. You cannot, however, always update these values directly in the control program.

Fig. 4.2
Service Management Control (11.24)



Multiple Time Zones. This field indicates whether MTZ is active. You can update it in the control program when its value is Yes. Use the Multiple Time Zones Startup Utility (11.21.22.24) to activate MTZ. See “Multiple Time Zones Startup Utility” on page 102.

Activating MTZ

As explained in the overview, MTZ changes the way the system stores and displays dates and times. Switching MTZ on and off is not recommended. Carefully consider your business needs before activating MTZ.

Activating MTZ in a New Database

Typically time zone data is loaded during the installation process. Since a time zone must be associated with each user, this data is loaded or created by the system administrator using functions on the Multiple Time Zones menu (36.16.22) on the System Administration menu. Loading time zone data is accomplished with Multiple Time Zone Load Utility (36.16.22.13).

Even if you have completed this general setup, you must still execute the Multiple Time Zones Startup Utility (11.21.22.24) to activate multiple time zone features. If you have already loaded time zone data, you can set these fields to No in the utility.

See page 102 for details.

Activating MTZ in an Existing Database

If your business requirements change or you are upgrading to a new release of the system that now supports MTZ, you can still activate MTZ. Additional conversion and setup properly initializes existing records.

1. Make a backup of the database to be converted.
2. Define your own time zones with Multiple Time Zones Maintenance (11.21.22.1) or load default time zone data as part of the next step. Skip this step if it was done by the system administrator when users were defined. See page 106 for details.
3. If you are activating MTZ as part of an upgrade from an earlier release, make sure you have executed the J1B6 Utility (11.25.16). Also, if you have never run the Initialize Engineer Address utility (11.13.25), the startup utility may display errors regarding missing address records. Execute 11.13.25 so each engineer record has a corresponding address record.
4. Execute the Multiple Time Zones Startup Utility (11.21.22.24) to activate MTZ.

   In a database with existing records, the startup utility performs the conversions MTZ requires by:

   - Initializing all customer, end user, and engineer address records so their associated time zones are set to the time zone of the current session, which is the domain time zone.
   - Initializing two fields for each call record that define the date and time of the call in the end user's time zone.

   See page 102 for details.
5. Execute the End User Time Zone Change Utility (11.21.22.20). In step 4, you initialized the end users to the domain time zone. You can reset the time zone for groups of end users selected by state, postal code, or country. This utility also updates the end user's active calls by setting the end user open date and time appropriately.

   To minimize the impact of time zone conversion, you can gradually convert end users.

   See page 103 for details.

Implementation Notes

This section highlights some details to consider when you activate multiple time zones in an existing database.

Custom Reports

After activating MTZ, you may need to adjust custom reports that access dates and times. For example, if you manually adjusted call open times for time zone differences, these times are now in the domain time zone and must be converted before they are displayed. If your reports continue to display the date and time as stored, they do not reflect the time zone you expect.

A set of tables beginning on page 120 lists how the system stores data in call-related date and time fields.

CIM Loading Data

If you use the CIM interface to load data into calls or other tables affected by MTZ, you may need to modify them to accommodate time zone fields.

Call History

When you activate MTZ, dates and times on open calls are initialized to the domain time zone. However, the calls in the history table are not converted. After MTZ is activated, time data in these calls displays without conversion, regardless of which display time zone you specify.

When you move calls to history after MTZ is active, the system stores the domain time zone and end-user time zone values with the call. When you generate reports for these calls, the system converts the time data to the display time zone based on these values.

If you change your domain time zone or end-user time zone, the call history table is not affected. It retains the values for the call at the time you moved it to history.

MTZ Functions

The following menu-level programs support Multiple Time Zones. You use them during implementation and later for time zone maintenance.

- Multiple Time Zones Maintenance (11.21.22.1)
- Multiple Time Zones Inquiry (11.21.22.2)
- Multiple Time Zones Report (11.21.22.3)
- End User Time Zone Change Utility (11.21.22.20)
- Multiple Time Zones Startup Utility (11.21.22.24)

It is best to use menu-level security on these programs, with the possible exception of the report and inquiry. Do not change time zone information without carefully evaluating the impact.

Note Multiple Time Zones Maintenance, Inquiry, and Report are also located on the Multiple Time Zones Setup menu (36.16.22) in System Administration.

Multiple Time Zones Startup Utility

Use Multiple Time Zones Startup Utility (11.21.22.24) to activate MTZ in a new or existing database. The first time you activate MTZ, the startup utility can load your own set of time zone data.

After you load this data, verify that the time zones are valid and appropriate for your business practices. Use Multiple Time Zones Report or Inquiry to review definitions and ensure they conform to your requirements. Each organization is responsible for maintaining and updating time zone data to correspond to changing realities and business requirements.

QAD's default time zone data is loaded automatically during the installation process. QAD's default time zone data is located in the $QAD_EE_INST_DIR/db/mfg directory.

If needed, you can delete existing time zone data and reload the sample data.

Once MTZ is activated, you can no longer change the Use User's Time Zone for Default Domain field in Database Control (36.24.1).

The startup utility makes the following changes when you initially activate MTZ:

- Optionally deletes existing time zone data and loads a set of default time zones.
- Sets Multiple Time Zones in Service Management Control.
- Initializes all customer, end user, and engineer address records so their associated time zones are assigned the time zone of the current session, which is normally the time zone of the current domain.

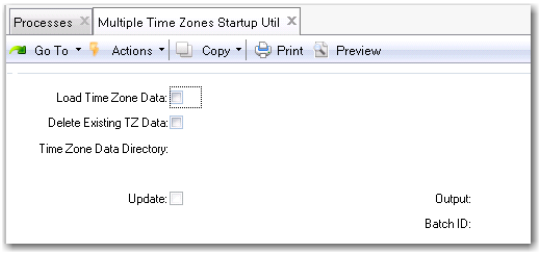
See *User Guide: QAD System Administration* for more information on the domain time zone.

The utility performs all necessary database conversions, then sets the MTZ field to Yes. If the utility aborts for some reason, MTZ is still No. Re-execute the utility to complete the conversion.

Screen Reference

Figure 4.3 illustrates Multiple Time Zones Startup Utility.

Fig. 4.3
Multiple Time Zones Startup Utility (11.21.22.24)



Load Time Zone Data. Yes indicates you want the system to load your own time zone data. You can use this data as the basis for your own time zone maintenance.

After loading, verify that the time zones are valid and appropriate for your business. Use Multiple Time Zone Report or Inquiry to ensure the definitions conform to your requirements.

Delete Existing TZ Data. The system checks this field only when Load Time Zone Data is Yes. If you are loading time zone data, you can also delete current time zone definitions. Use this feature if you rerun the startup utility and want to reinitialize the loaded data.

Time Zone Data Directory. Specify the directory from which to load the time zone data.

If you select the Load Time Zone Data field, this field is mandatory and cannot be blank.

Update. Indicate whether you want the startup utility to be report-only or change the database:

No: Execute the utility without changing database records. A report lists the records affected.

Note Always execute the program with update set to No before actually making changes.

Yes: Complete the setup required to support and optionally activate Multiple Time Zones.

End User Time Zone Change Utility

Use this program for two distinct purposes:

- Set up the correct time zone information for existing end users when you activate Multiple Time Zones.
- Change the time zone associated with an end user if that end user's geographical location changes.

This utility updates each end-user record as a separate transaction. If it aborts for some reason, you can rerun it without adversely affecting database records.

Changing End Users During Activation

When you first activate MTZ, you initialize all time zones to the time zone of the current session, which is normally the time zone of the current domain. You must then establish the correct time zone for end users in each geographic region. Do this for groups of end users you select by state, postal code, or country.

Initially, the conversions performed by this utility differ depending on your response to the Current Times Relative to End User prompt. Use this prompt to tell the system how you normally entered call times in the past.

Yes means you entered times on calls for this end user relative to the their time zone. Specify Yes if you *manually* updated the date and time fields on a call to reflect the end user's geographic location.

Example A Los Angeles business has end users in New York. When the business took calls from these end users, the service operator routinely adjusted the call open time manually to reflect the time zone difference since, prior to activating MTZ, the system did not adjust for time zones.

If you accepted the date and time suggested by the system, the date and time associated with the call are not relative to the end user. They reflect the time zone of your current session, which is normally the domain time zone.

Changing End Users After Using MTZ

When MTZ is active and you create an end user, you must specify a time zone. This is true in End User Data Maintenance and in the other programs where you create end users such as Call Maintenance, Call Quote Maintenance, RMA Maintenance, Contract Maintenance, and Contract Quote Maintenance.

Once an end-user record exists, you can only change the time zone using End User Time Zone Change Utility. This is because the utility also updates each call associated with the end user so that call dates and times reflect the correct time zone.

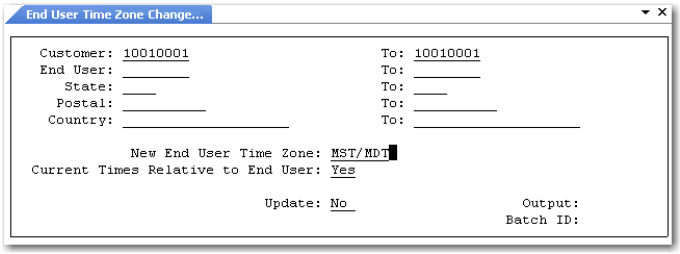
When used for this purpose, you should leave the default Yes in the Current Times Relative to End User prompt. After MTZ is active, the system always stores time relative to the end-user time zone.

Note Normally, you can update the time zone associated with a customer in Customer Data Maintenance. However, if the customer is also an end user, the two records share the same address information and you must use this utility to update the customer time zone.

Screen Reference

Figure 4.4 illustrates End User Time Zone Change Utility.

Fig. 4.4
End User Time Zone Change Utility (11.21.22.20)



Customer/To. The first and last customer in a range for selecting end users to update. This utility does not update customer records unless the customer is also an end user. Update the time zone associated with a customer who is not an end user in Customer Data Maintenance (2.1.1).

End User/To. The first and last end user in a range to be updated when you execute this utility. The system applies New End User Time Zone to these end users and updates open dates and times on their associated calls.

State/To. The first and last state in a range for selecting end user records to update.

Postal/To. The first and last postal code in a range for selecting end user records to update.

Country/To. The first and last country in a range for selecting end user records to update.

New End User Time Zone. Enter the time zone to be associated with end-user records updated by this utility. This must be a valid time zone in Multiple Time Zones Maintenance.

In addition to updating end-user time zones, the utility updates every call associated with the end users so that call dates and times reflect the correct time zone.

Current Times Relative to End User. Indicate how the system should interpret the times on calls for this end user.

If you are running this utility as part of the initial setup for time zones, enter Yes if your organization manually updated the date and time on calls to reflect the time zone of the associated user. Enter No if you accepted the time suggested by the system, which is the equivalent of the domain zone. For initial startup, this is usually No.

If you are changing the time zone associated with an end user after you implemented MTZ, leave the default Yes. Once the utility has converted the time zones, times are relative to the end user.

Update. Indicate whether the utility should be report-only or make changes to the database:

No: Leave the database records unchanged and generate a report listing the records affected. The report indicates how many call records the system must change to reflect the changes in end user time zones.

Note Always execute the program with update set to No before actually making changes.

Yes: Modify the selected end-user records and related call dates and times.

Multiple Time Zones Maintenance

Use Multiple Time Zones Maintenance (11.21.22.1) to define and modify time zones.

Note Multiple Time Zones Startup Utility creates sample data upon which you can base your own time zones.

This program supports two ways of setting up a time zone:

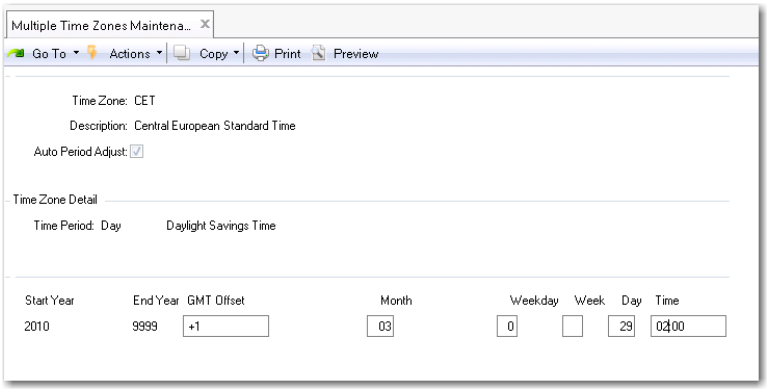
- In the simplest format, you can base a time zone on an offset from GMT.
- The system can also track daylight savings time adjustments from a baseline you set.

If you choose the second approach, you must specify when the change in time occurs. You can also use effective dates with time zone information, if the start and end points for daylight savings time only apply for a range of years.

After you define the time zones, you can generate reports with Multiple Time Zones Inquiry (11.21.22.2) and Multiple Time Zones Report (11.21.22.3). A time zone lookup displays on the time zone field throughout service functions. Because of size restrictions, this lookup displays only the standard GMT offset for the time zone, even if you defined it with adjusted periods.

Figure 4.5 illustrates Multiple Time Zones Maintenance.

Fig. 4.5
Multiple Time Zones Maintenance (11.21.22.1)



Time Zone. Enter an eight-character label identifying a time zone.

Description. Enter a brief (maximum 40 character) of this time zone. The description appears on the time zone pop-up in various service functions.

Auto Period Adjust. This field indicates whether the system should adjust the time zone you are defining for a given period—usually daylight savings time or its equivalent.

Yes: Define the period to be adjusted in the subsequent detail frame.

No: Time Period defaults to STD (standard). You cannot change it.

Time Period. This field is editable if Auto Period Adjust is Yes. Valid choices are STD for standard time, Day for daylight-saving time, and Sum for summer time. You can define details for two periods: a standard period, and a special adjusted period for daylight savings or its equivalent. This field determines which of the detail fields are required. Set up values for time period as language details to reflect the terms you use.

Start Year. The beginning year of a range, to which this time zone definition applies. In some countries, the implementation of time zones varies from year to year. Using start and end dates, you can set up multiple records effective at different periods of time.

End Year. The ending year of a range, to which this time zone definition applies. If you do not know when the current definition ceases to be effective, use an end year such as 9999.

GMT Offset. Enter the actual offset in hours and minutes from Greenwich mean time (GMT) for this time zone. Enter this number with either a plus sign (+) or minus sign (–) indicating the direction of the offset.

GMT is the base for establishing the relationships among time zones and is never affected by daylight-saving time adjustments.

Start Period. Only required if Auto Period Adjust is Yes. The first day of the week when the change of time occurs, entered in MM/DD format. For the United States, daylight-saving time normally begins on the first Sunday in April—identified by a start date of 04/01—and ends on the last Sunday in October—identified by a start date of 10/25.

This field, in conjunction with the Weekday and Time fields, identifies precisely when the time change occurs.

Month. Specify the month in which daylight savings starts or ends. The month is expressed as a numerical value between 1 and 12. For January, enter 1; for February, enter 2, and so on.

This field is mandatory.

Weekday. Only required if Auto Period Adjust is Yes. A number from 0 to 7 indicating the day of the week—identified by the Start Period field—when the time change occurs.

- Enter 0 if the change occurs on the date in the Start Date field, regardless of the day of the week on which it falls.
- Enter a number in the range 1-7 corresponding to Sunday through Saturday if the change occurs on a certain day of the week.

Note In the U.S., time changes always occur on Sunday (1).

Week. Specify the week in the month in which daylight savings starts or ends. The week is expressed numerically and must be a value between 1 and 5, where 5 indicates the last week in the month. You can only use this field if you also specify a value in the Weekday field.

Note The Week field only takes effect if the Weekday field contains a non-zero value.

You can use this field and the Month and Weekday fields to define cases where daylight savings time begins on a particular weekday in a month, rather than on a set date every year. For example, in the US, daylight savings time begins on the second Sunday of March and ends on the first Sunday of November.

Day. Specify the particular day in a month on which daylight savings starts or ends. The day is expressed numerically and must be a value between 1 and 31. You can only specify a value in this field if the Weekday field is set to 0.

You can use this field and the Month field to define situations where daylight savings time begins on a particular date in the year. For example, in Honduras, daylight savings time began on 7 May, 2010.

Time. Only required if Auto Period Adjust is Yes. The exact time of day—identified by the Start Period and Weekday fields—using a 24-hour clock, when the time change occurs. Enter this time in standard time.

In the United States, enter 02:00 when switching from standard time to daylight-saving time, but 01:00 when switching from daylight savings time back to standard.

Effects of MTZ

MTZ has wide-ranging effects on other service functions. The areas impacted, discussed in this section, include:

- Customers and end users
- Installed base
- Call management
- Engineer scheduling

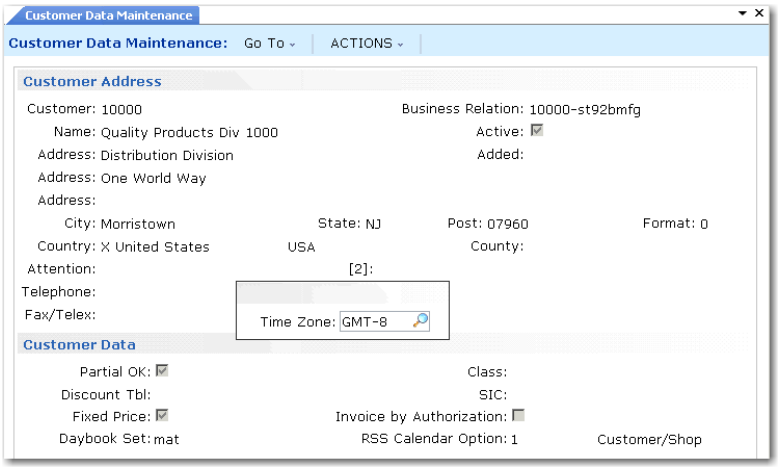
Customers and End Users

If MTZ is active, you can associate time zones with customers and end users. The time zone for new end users defaults from the customer.

Customer Data Maintenance

Figure 4.6 illustrates the pop-up that appears in Customer Data Maintenance (2.1.1) when MTZ is active. The system uses the customer time zone as the default for end users associated with this customer.

Fig. 4.6
Time Zone Pop-Up in Customer Data Maintenance (2.1.1)

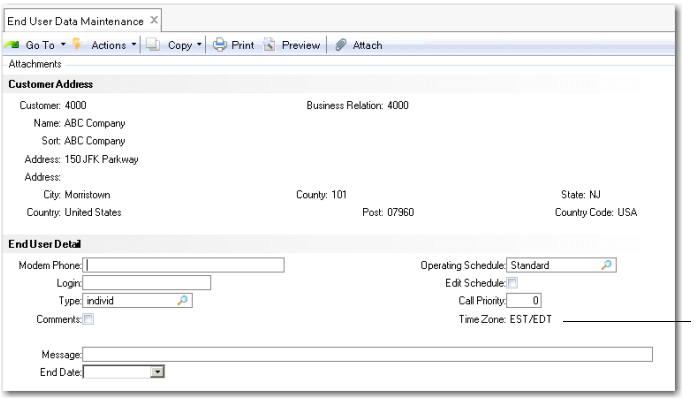


Note If a customer is also an end user, you cannot change the time zone in Customer Data Maintenance.

End User Data Maintenance (11.9.1)

As illustrated in Figure 4.7, when MTZ is active, a Time Zone field also displays in End User Data Maintenance. The time zone here determines how Call Maintenance displays and stores times when you take a call for this end user. The end user's time zone also affects engineer scheduling, service coverage, and service pricing.

Fig. 4.7
Time Zone Field in End User Data Maintenance (11.9.1)



A time zone must be associated with an end user when MTZ is active.

The time zone field initially defaults from the end user's customer; you can update it only when creating an end user. After an end-user record exists, use End User Time Zone Change Utility (11.21.22.20) to change the time zone. This utility ensures that the system updates any calls for the end user to reflect the new time zone.

Time Zones and Call Management

Time zones have their most significant impact on managing calls, since calls represent real time contact with end users. When MTZ is active, most call dates and times display relative to the end user's time zone, while the system stores them in the domain time zone.

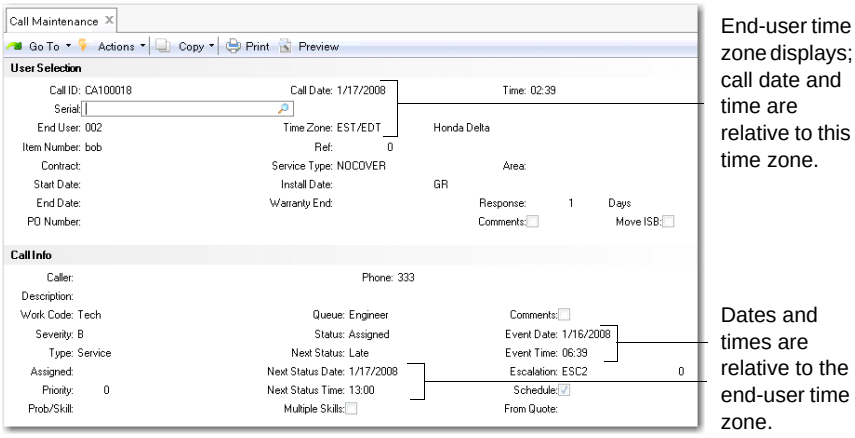
MTZ does not just affect time displays. When the system searches for data based on dates and times, the time it uses is relative to the end user's time zone. This applies to contract coverage, pricing calculations, and service BOMs and routings.

Call Maintenance (11.1.1.1)

When MTZ is active, the end user's time zone displays as part of the address information in the Call Maintenance header. If you create the end user directly with Call Maintenance, the system prompts you to specify a time zone for the new end user.

The default call open date and time display relative to the end-user time zone. These fields are updated after you specify an end user, since the system needs to know the end user's time zone to convert them correctly. You can change the call open date and time when you open a call; afterward they are display only.

Fig. 4.8
Effect of MTZ in Call Maintenance Header Frames



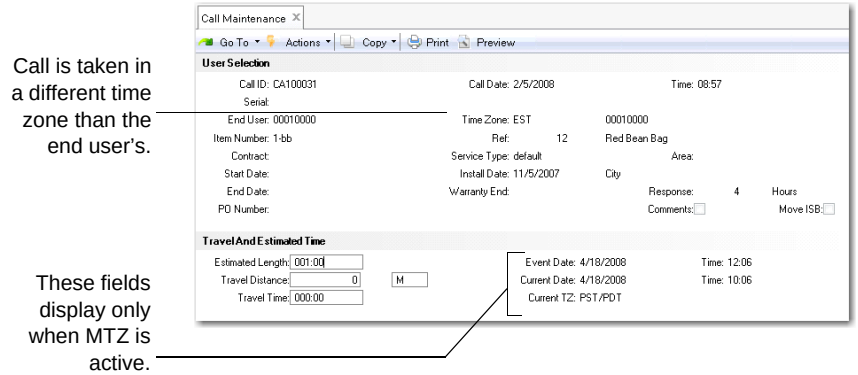
If the user has defined a preferred time zone using Service/Support User Preferences, the date and time associated with call comments reflects this value. Otherwise, they default from the domain time zone. See “User Preferences” on page 119 for details.

The dates and times in the Call Info frame also display relative to the end user’s time zone, including Next Status Date, Next Status Time, Event Date, and Event Time.

Travel and Estimated Time Frame

When MTZ is active, the call Event Date and Time values set in the previous frame display on the Travel and Estimated Time frame. The current date, time, and the current time zone also display. The current date and time are relative to the time zone of the current user, if the user has a preferred time zone. Otherwise, the system uses the domain date and time.

Fig. 4.9
Effect of MTZ in Call Maintenance Travel and Estimated Time Frame

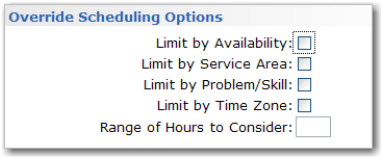


Override Scheduling Options Pop-up

If you use engineer scheduling and MTZ is active, Call Maintenance is affected. If Override Scheduling Options is Yes in Engineer Schedule Control, you can modify the Limit by Time Zone and Range of Hours to Consider fields in the scheduling options frame. Otherwise, these fields do not display.

See “Defining Scheduling Rules” on page 492 for details.

Fig. 4.10
Override Scheduling Options Frame



Limit by Time Zone. Defaults from Engineer Schedule Control and indicates whether the system should consider only engineers with a time zone matching the time zone of the call end user.

The system uses this field in conjunction with Range of Hours to Consider. If you enter zero, the time zones must match exactly. An integer value indicates the number of hours less than or greater than the end-user time zone considered a match for scheduling.

Range of Hours to Consider. Defaults from the value in Engineer Schedule Control. The system considers it only when Limit by Time Zone is Yes.

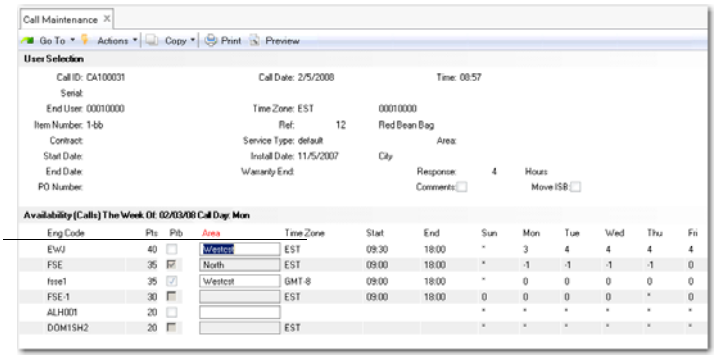
- It indicates how many other time zones the system can include for scheduling. Blank indicates the engineer’s time zone must exactly match the time zone of the call’s end user.
- An integer value indicates any time zone in a range is a match. The integer represents the number of time zones more or less than the end user’s considered a match for scheduling.

Engineer Availability Frame

The availability frame, illustrated in Figure 4.11, displays a time zone column instead of the engineer’s schedule.

Fig. 4.11
Effect of MTZ in Call Maintenance

When MTZ is active, engineer time zone displays, rather than the active schedule.



Call Engineer Schedule Maintenance Frame

When you exit the availability frame, the Call Engineer Schedule Maintenance frame displays. Use this frame to modify the estimated number of hours to be worked and the start date and time.

When MTZ is active, the scheduled start date and time are in the end user’s time zone, which is displayed in the Call Maintenance header. The engineer time zone displays for reference in the Eng TZ column. If MTZ is not active, the engineer’s area displays instead, labeled Eng Area.

Displaying Call Information

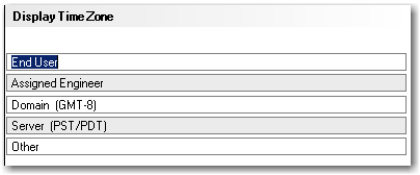
When MTZ is active, most SSM inquiries and reports that display call data let you choose how the system presents time information. Choose from a list of display time zones, including some or all of the following:

- Time zone of the call's end user, from End User Data Maintenance
- Time zone of the call's assigned engineer, from Engineer Maintenance
- Domain time zone, from the domain record
- Current user's time zone, from Service/Support User Preferences

Select Other to manually enter any other valid time zone.

Figure 4.12 illustrates the Display Time Zone frame in Call Inquiry (11.1.1.2).

Fig. 4.12
Call Inquiry, Display Time Zone



Select the option you want to use. If you choose Other, you are prompted to enter a valid time zone.

Note Display options depend on which program you are using. If a call function does not have an end user or engineer, these options do not appear.

When the display option for a call report is the domain time zone, current user's time zone, or a time zone you entered, call open dates and times all display in the same time zone. If the display option is the time zone of the call's end user or assigned engineer and you review a range of calls, you may be viewing dates and times in more than one time zone, since the time zone may differ among end users and engineers.

If you use the call open date as a selection criterion for reporting, the system interprets the date relative to the display time zone you choose.

Example A company located in Los Angeles, the domain time zone, takes two calls on April 14, one from an end user in Los Angeles and one from an end user in New Zealand.

Now you generate a report in Call Inquiry with a selection date of 04/14/07. If the display option for Call Inquiry is the domain time zone, the system selects both calls. If the display option is the end-user time zone, the system selects only the call from Los Angeles. From the point of view of the end user in New Zealand, you opened the second call on 04/15/07.

Reports and Inquiries Affected

Call inquiries and reports affected by MTZ include the following:

- Call Inquiry (11.1.1.2). The Time Zone Display pop-up appears before the Output field and a field labeled TZ displays your choice. When MTZ is active, the end user's time zone labeled EUTZ replaces the call area output column.

- Call Detail Inquiry (11.1.1.3). The Time Zone Display pop-up appears before the Output field and a field labeled Display TZ displays your choice. When MTZ is active, the system includes in the report two fields labeled End User TZ and Display TZ. The system uses the display time zone you choose to convert the call's open and closed dates for output, and the event and next status dates and times in the call history output lines.
- Call Print (11.1.1.4). The Time Zone Display pop-up appears before the Output field and a field labeled Report TZ displays your choice. When MTZ is active, the system includes in the report two fields labeled End User TZ and Report TZ. The system uses the display time zone you choose to convert the call's open, event, and next status dates and times before displaying them. It also determines how the system interprets Next Date.
- Call Print from Call Maintenance/Escalation Monitor. If you choose to print calls from Call Maintenance or if an escalation step automatically prints a call, you do not have an opportunity to enter a display time zone. In these cases, dates and times are relative to the time zone of the call's end user.
- Call Print with History (11.1.1.5). Same changes as for Call Print.
- Total Calls by Assigned Inquiry (11.1.19.1) and Total Calls by Queue Inquiry (11.1.19.2). The system compares Date From with the call open date relative to the end user's time zone.

Recording Call Activity

Call Activity Recording and Call Invoice Recording are both affected by activating MTZ. In general, as in Call Maintenance, most call dates and times are relative to the end user's time zone. The exception is the tax date. Since it is related to tax tables used system-wide, it is not converted to the end user's time zone. It remains relative to the domain time zone, like other tax dates in the system.

- The time zone of the call's end user appears at the top, right-hand corner of the CAR header frame.
- The system bases pricing, charge codes, and limits processing on the call open date relative to the end user's time zone. It uses the same logic to search for effective dates on BOMs and routings.
- The labor start date and time and end time on the Labor/Expense Detail frame are relative to the end user's time zone.
- If the Dates field in the Call Line Status frame is Yes, the Display Time Zone selection list lets you specify a time zone to use. This is because the engineer actually doing the work on the call, or a clerical/support person somewhere else, could be entering these dates and times. The Complete Date is an exception. Since no time is associated with the date, it is relative to the end user's time zone, regardless of the display time zone you choose.
- The Display Time Zone selection list may also appear before the Call Status frame in Call Activity Recording, if you did not select it previously. The time zone affects the display of Complete Date and Time, Close Date and Time, and the Next Status Date and Time fields.

Call Queue Manager (11.1.6)

Like many of the call reports and inquiries, you can select a display time zone from the Call Queue Manager when MTZ is active. The next status date and next status time of each call record display relative to the time zone you select.

If you normally display calls sorted by Next Status Date/Time, be aware of the following. The Next Status Date/Time index is based on the way the system stores call dates and times in the domain time zone. When call dates and times are relative to a different time zone, they may appear to be out of order.

Note If Queue Manager is 0 in Call Management Control, this sort is used.

In the Call Queue Manager, the call next status date and time in the edit pop-up window also appear relative to the display time zone you select.

Call Generator (11.1.8)

The dates and times in the Call Generator are relative to the time zone of the end user for which you are generating a call. These dates include the call open date and any dates you use as selection criteria, such as ranges of ship dates or next PM dates. The same applies to dates on a field notification you create from the Call Generator.

Escalation Monitor (11.1.13.13)

Dates and times in the Escalation Monitor output remain relative to the domain time zone. However, if an escalation step prints a call, the system assumes it should display the date and time information on the call in the end user’s time zone.

Call Quotes

Call Quote Maintenance (11.1.1.7) resembles Call Activity Recording and supports multiple time zones similarly:

- The time zone of the call end user appears at the top, right-hand corner of the CAR header.
- The quote’s Expire date is relative to the end user’s time zone. The time you opened the quote, relative to the end user’s time zone, determines the expiration time.
- The system bases pricing, charge codes, and limits processing on the call open date relative to the end user’s time zone. It uses the same logic to search for effective dates on BOMs and routings.
- You enter the labor start date and time and end time on the Labor/Expense Detail frame relative to the end user’s time zone.

Call Quote Reports

Call quote reports and inquiries correspond to call reports and inquiries:

- Call Quote Inquiry (11.1.1.8). The Time Zone Display pop-up appears before the Output field, and a field labeled Display TZ displays your choice. Enter an Expire Before value relative to the display time zone; expiration dates display that way in the output.

- Call Quote Detail Inquiry (11.1.1.9). The quote's expiration date displays relative to the end user's time zone.
- Call Quote Print (11.1.1.10). The Time Zone Display pop-up appears before the Output field and a field labeled Report TZ displays your choice. When MTZ is active, the system includes two fields labeled End User TZ and Report TZ output. The system uses the display time zone you choose to convert the quote's open dates and times before displaying them and to interpret the Quote Date value.

Call Quote Release to Recording (11.1.1.11)

You enter the Quote Date range and the Call Date value relative to the end user's time zone, since the system uses Call Date to find default charge codes and limit coverage.

Copy Call Quote (11.1.1.12)

The end user's time zone of the source quote appears at the top right of the header and is the time zone for the new quote. You enter the Quote Date and Expire date values—and they display—relative to the end user's time zone.

Time Zones and the Installed Base

Most dates and times in the installed base are relative to the end user's time zone, both when Installed Base Item Maintenance (11.3.1) creates ISB records directly and when you create them as part of another service activity such as RMAs or calls. Install Date, Warranty Expiration Date, Last PM Date, and Next PM Date are among the fields affected.

The exception is any date set by programs outside the Service/Support module, such as Invoice Post. Since these programs are outside the scope of SSM, they update ISB records with the system date and time.

The install date is important in determining valid warranty coverage. If end users are far enough away that time zone differences create date differences, you can manually update the install date created by Invoice Post.

Sales order routines also set the Ship Date value displayed in Installed Base Item Maintenance. This date reflects the domain time zone.

See page 43 for details about this function.

Time Zones and Service Contracts

Contracts follow the general rule that applies to calls and the installed base when MTZ is active. All contract dates and times are relative to the time zone of the end user on the contract.

The system searches for call coverage using the call open time relative to the end user's time zone. It also determines if the day is a holiday, relative to the end user's time zone.

For contract coverage to be considered valid, the call open date must be within the contract line's start and end dates. The contract's currency must also match the call's. If more than one service type applies to call item, the system checks to see if the call's open time falls in the available hours for the contract line's service type.

The system uses the same algorithm to determine limit consumption when you post a call invoice. It uses the call open date relative to the end user's time zone to determine the effective limits. You cannot modify the start and end dates of the contract header or lines to exclude an attached call's open date. This is also true of limit records. You cannot modify the effective dates to exclude the open date of a call that references them.

Time Zones and Engineer Scheduling

Multiple Time Zones has a significant impact on call scheduling options and on how the system interprets a call's next status date and time.

- Use Engineer Maintenance (11.13.1) to associate a time zone with an engineer.
- You assign scheduling points in Engineer Schedule Control (11.13.15.24) based on matching time zones, either exactly or within a range.You can optionally limit engineers to consider for scheduling to those with time zones matching a call's end user.
- Schedule times are either relative to the time zone of a call's end user or relative to the time zone of the engineer, depending on Field Engineer in Engineer Maintenance.
- You must select a display time zone before generating most engineer reports and inquiries.

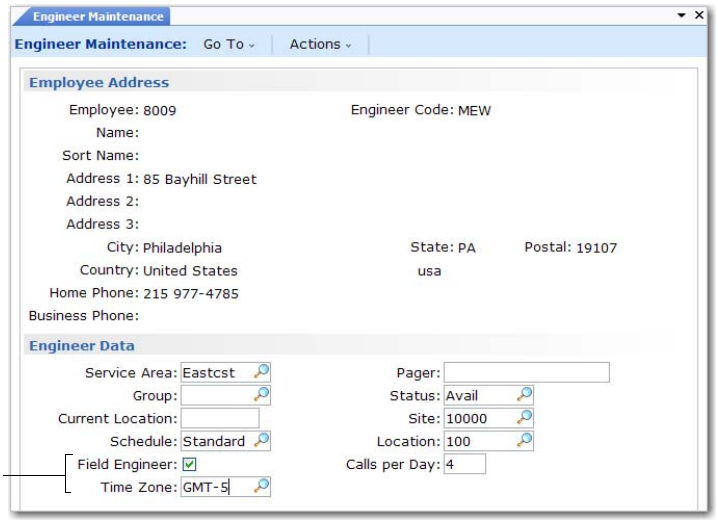
When you are using MTZ, you can choose how date and time information displays in most call reports and inquiries. The engineer's time zone is one of the available choices.

See Chapter 17, "Engineers and Scheduling," for full details about scheduling options.

Engineer Maintenance (11.13.1)

Use Engineer Maintenance (11.13.1), illustrated in Figure 4.13, to define engineers.

Fig. 4.13
Engineer Maintenance (11.13.1)



When MTZ is active, a Time Zone field displays and Field Engineer has a special significance. Time Zone defaults from the Domain Time Zone and is validated against time zones you create with Multiple Time Zones Maintenance.

The engineer's time zone should reflect the time zone where the engineer is located. It is used in conjunction with Field Engineer, which indicates whether this engineer normally works at your site or at the end-user site.

- When Field Engineer is No, the system interprets the schedule times for this engineer relative to this time zone.
- When Field Engineer is Yes, the system interprets schedule times relative to the end user's time zone.

The system considers the engineer time zone during call scheduling. It awards an engineer points according to Engineer Schedule Control if the engineer time zone matches the time zone of a call's end user or is within the range of Range of Hours to Consider.

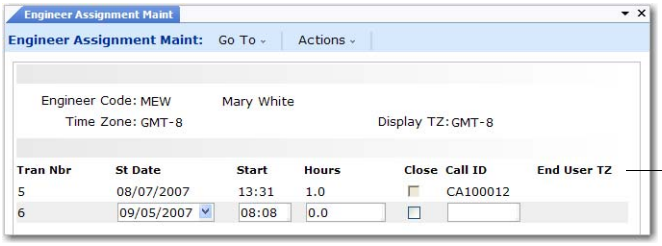
Engineer Assignment Maintenance (11.13.15.8)

Call engineers use this function to maintain scheduling transactions created in Call Maintenance. When MTZ is active, the engineer's time zone, labeled Time Zone, displays in the header frame. You select a display time zone from a pop-up list before you access transactions. The display time zone pop-up is discussed in detail on page 112.

Your time zone selection appears in the header frame, labeled Display TZ. The system uses it to convert the scheduled start date and time of each record for display.

To provide a complete reference point, the time zone of the call's end user also displays on the schedule detail line.

Fig. 4.14
Engineer Assignment Maint (11.13.15.8)



Note When MTZ is not active, the call's area displays instead of the end user's time zone.

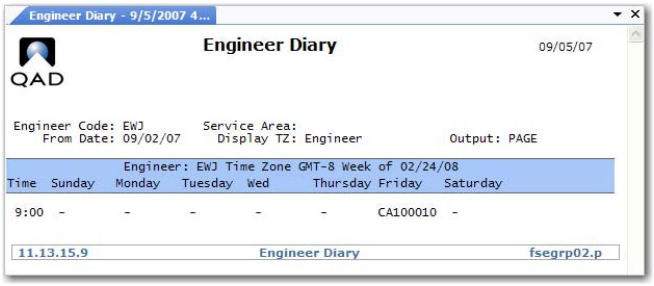
Engineer Reports

Most engineer reports accommodate time-zone data.

Engineer Diary (11.13.15.9)

Engineer Diary displays the transactions created in Call Maintenance or in Engineer Assignment Maintenance. This report provides engineers with an overview of their call assignments for a week.

Fig. 4.15
Engineer Diary (11.13.15.9)



When Multiple Time Zones is active, the dates and times in this inquiry are relative to a selected display time zone, which appears in the top frame labeled Display TZ.

The display time zone list does not include end user as a choice for this function, because output must be in one time zone, and the time zone of end users associated with calls can vary from call to call.

The title of the output frame includes the engineer's time zone.

Note If an engineer supports calls across time zones, use another display to review planned activity, since you cannot see the source of the call in this one.

Engineer Calendar (11.13.15.10)

This inquiry displays the normal work schedule for one or more engineers you select by engineer code, service area, problem and skill code, and date range. Its appearance does not change when MTZ is active, but if Field Engineer is Yes, the schedule time is relative to the end user on a call; if it is No, the schedule time is relative to the engineer's time zone.

Engineer Availability Inquiry (11.13.15.11)

This inquiry simulates the availability information in Call Maintenance. When MTZ is active, like Call Maintenance, this simulation takes into account time zone matching.

The scheduling limits in Engineer Schedule Control affect this inquiry in the same way they affect Call Maintenance. If Override Scheduling Options is Yes in Engineer Schedule Control, the pop-up displays where you can override the fields that limit the set of engineers to consider. When MTZ is active, Time Zone Points and Range of Hours to Consider display on the pop-up.

In the display time zone pop-up you can also select a time zone for displaying information from a limited number of choices. Since the system is not calculating availability for a particular call, the end user and assigned engineer are not valid choices.

The display time zone affects the way the system interprets availability. The system views schedule times for field engineers relative to the display time zone value. If Field Engineer is No, the system views the engineer's schedule times relative to their personal time zone. Set the value of Field Engineer and Time Zone in Engineer Maintenance (11.13.1).

Example You enter availability for 04/17/07 at 23:00. The display time zone is MST/MTD and Limit by Availability is Yes. Engineer Joe in Sydney, Australia normally works from 8:00 to 17:00. At 23:00 MST/MTD, it is 17:00 in Sydney. The system considers Joe available at 23:00 MST/MTD if Field Engineer is No for him, since schedule times are relative to his time zone. If he is a field engineer, the system interprets schedule times relative to the display time zone, and considers him unavailable.

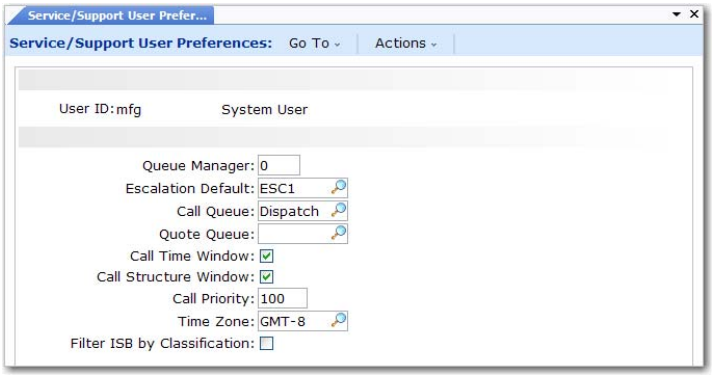
The report output is identical to the output in the Engineer Availability frame in Call Maintenance, except it does not include the point totals.

See Figure 4.11 on page 111.

User Preferences

Each user can set up defaults for some fields with Service/Support User Preferences, illustrated in Figure 4.16. When MTZ is active, users can define a preferred time zone with each user. The current user's time zone is one of the display options available for call information and reports.

Fig. 4.16
Service/Support User Preferences (11.21.23)



Note Time zone for end users initially defaults from the domain time zone. This is true even when a different time zone is associated with the user in User Maintenance (11.3.18).

Other Service Functions

Most other service functions are unaffected by Multiple Time Zones:

- Material orders are unaffected. Since MOs are a type of sales order, dates and times remain relative to the domain time zone.
- Service areas are unaffected.
- Service requests are unaffected. Dates and times remain relative to the domain time zone.
- Return material authorizations do not change. For consistency with sales orders, dates and times are relative to the domain time zone.
- Return to supplier programs are unaffected. For consistency with purchase orders, dates and times are relative to the domain time zone.

MTZ Reference

This section contains reference material that might be useful if you write custom reports and need to understand how the system stores and converts dates and times.

Date/Time Fields

The system uses the domain time zone to store date and time data in the fields listed in Table 4.1 and converts the data to the end user's time zone for display.

Table 4.1
Fields Stored in Domain Time Relative to End User

Field Name	Description
ca_cls_date/time	Call close date/time
ca_comp_date/time	Call completion date/time
ca_evt_date/time	Call event date/time
ca_nxt_date/time	Call next status date/time
ca_opn_date/time	Call open date/time
ca_quote_exp	Call quote expiration date
cah_evt_date/time	Call status history event date/time
cah_nxt_date/time	Call status history next status date/time
cah_opn_date	Call status history open date
chm_cls_date/time	Call history close date/time
chm_comp_date/time	Call history completion date/time
chm_opn_date/time	Call history open date/time
chm_quote_exp	Call quote history expiration date
egt_sched_date	Engineer call schedule date
egt_start_time	Engineer call schedule start time
itm_endown_date/time	Call item end downtime date/time
itm_stdown_date/time	Call item start downtime date/time
itm_nxt_date/time	Call item next status date/time
itm_stjob_date/time	Call item start work date/time
itmh_stdown_date/time	Call item history start downtime date/time
itmh_endown_date/time	Call item history end downtime date/time
itmh_nxt_date/time	Call item history next status date/time
itmh_stjob_date/time	Call item history start work date/time
sfb_ca_opn_date	Call billing detail open date
sfh_ca_opn_date	Call billing history open date
wr_start	Call report labor detail start date
wr_st_time	Call report labor detail start time
wr_end_time	Call report labor detail end time
wo_ord_date	Call report order date
so_*/sod_*	All call invoice and call invoice line dates

Date and time data in the fields listed in Table 4.2 reflect the end user's time zone. The system does not convert them to the domain time zone.

Table 4.2
End User Time Fields Stored Without Conversion

Field Name	Description
ca_eu_date/time	Call open date/time in end-user time zone
cah_eu_date/time	Call status history open date/time in end-user time zone
chm_eu_date/time	Call history open date/time in end-user time zone
fpc_start	Service pricing effective start date
fpc_expire	Service pricing expiration date
isb_*	All installed base item dates
itm_comp_date	Call item completion date
itmh_comp_date	Call item history completion date
sa_*/sad_*/sap_*/sca_*	All service contract dates and times
sah_*/sadh_*	All service contract history dates and times
sal_*/salh_*	All coverage limits dates
sv_stime[8]	Service type start coverage time
sv_etime[8]	Service type end coverage time

Date and time data in the fields listed in Table 4.3 reflect either an end user's time zone or an engineer's time zone, depending on whether the engineer is a field engineer. The system does not convert these to the domain time zone.

Table 4.3
Engineer Related Time Fields

Field Name	Description
egd_start_eff	Engineer detail schedule start effective date
egd_end_eff	Engineer detail schedule end effective date
egd_start_time[8]	Engineer detail schedule start shift time
egd_end_time[8]	Engineer detail schedule end shift time
egw_st_time	Engineer availability start shift time
egw_end_time	Engineer availability end shift time
egw_week	Engineer availability start of week date
esh_start_eff	Engineer master schedule start effective date
esh_end_eff	Engineer master schedule end effective date
esh_start_time[8]	Engineer master schedule start shift time
esh_end_time[8]	Engineer master schedule end shift time
fsh_date	Engineer or service area holiday date
ocm_start_eff	Engineer on-call schedule start effective date
ocm_end_eff	Engineer on-call schedule end effective date

Date and time data in the fields listed in Table 4.4 reflect the domain time zone. The system stores and displays them without conversion.

Table 4.4
Domain Time Zone Fields

Field Name	Description
ca_date/time_stmp	Call creation date/time stamp
cah_date/time_stmp	Call creation status history date/time stamp
chm_date/time_stmp	Call creation history date/time stamp
ca_tax_date	Call tax effective date

Converting Times

The `fstzcon.p` utility converts times from one time zone to another using the four input parameters listed in Table 4.5.

Table 4.5
Input Parameters for `fstzcon.p`

Parameter	Description
from-date	Input date stored in input time zone
from-time	Input character time stored in input time zone with a format of HHMM
from-zone	Input character time zone
to-zone	Output character time zone

Table 4.6 lists the program's three output parameters.

Table 4.6
Output Parameters for `fstzcon.p`

Parameter	Description
to-date	Output date converted to output time zone
to-time	Output character time stored in output time zone with a format of HHMM
effflag	Logical to indicate if an error occurred (date and time will be returned unconverted)

The following example illustrates how to convert the current system time to EST/EDT.

```
define variable from-time as   character format "99:99".
define variable to-date   as   date.
define variable to-time   as   character format "99:99".
define variable errflag   as   logical.
{mfdeclre.i}
find first svc_ctrl no-lock.
assign from-time = string(time,"HH:MM")
       from-time = substring(from-time,1,2)  /* remove colon */
           + substring(from-time,4,2).
{gprun.i ""fstzcon.p""
       "(input  today,
       input  from-time,
       input  svc_server_timezone,  /* svc__qadc01 before 8.7 */
       input  ""EST/EDT"",
       output to-date,
       output to-time,
       output errflag)"}
```

Chapter 5

Contract and Warranty Types

This chapter introduces service types, details how you can use invoice sorts, work codes, and service categories to define levels of coverage, and describes the programs used to define contract types and warranty types.

Overview of Service Types

Service types define the rules that determine what service activities can take place for covered items and who pays for them. There are two categories of service types:

- Warranty Type Maintenance (11.3.15) sets up warranty types, which you attach to items in the installed base.
- Contract Type Maintenance (11.5.10) sets up contract types, which you use during the creation of contracts.

The service type—warranty or contract—defines defaults such as hours of coverage, levels of service, and under- and over-limit charge codes. Typically, service organizations do not provide warranty or contract coverage for every item. For items not covered by either, the system obtains a default coverage type from control program settings.

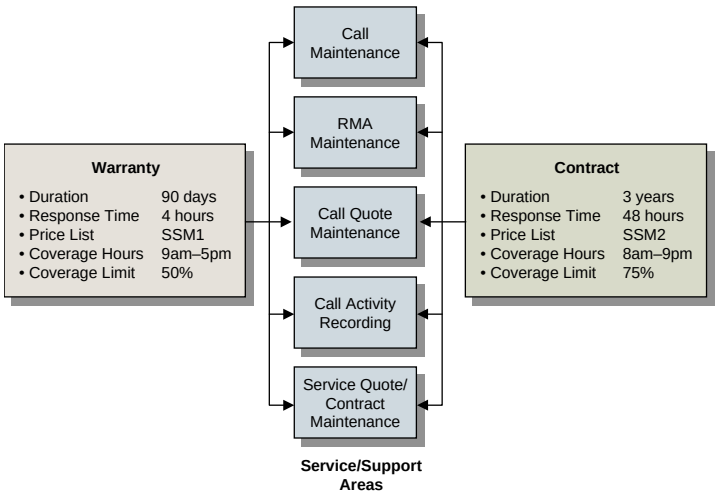
Both a warranty and contract can be active at the same time, although it is more common for contracts to become effective when warranties expires.

The agreements represented by service types and contracts determine much of what happens in call management. The service type also affects returned material authorizations (RMAs). These functions retrieve a service type from one of the following:

- The warranty code attached to an installed base record
- A contract that includes the item being serviced or a blanket contract
- A default service type in a control program

See Chapter 8, “Service Contracts,” on page 173 for details on how contract types apply to the creation of individual contracts.

Fig. 5.1
Impact of Service Types



Default Service Types

Generally, warranties and service contracts cover transactions that could otherwise be billable, such as labor, repair items, or expenses. However, you may also receive requests for service on items with an expired warranty or without a current service contract. The Service/Support Management module requires a default service type for these cases.

SSM uses two default service types: one for calls and one for RMAs:

- For calls, specify the default service type in the Default Call Service Type field in Call Management Control (11.1.24).
- For RMAs, specify the default in the Default RMA Contract field in RMA/RTS Control (11.7.24).

Default service types establish basics such as the hours your support department takes calls and your response time to such requests. You must have at least one service type to use Call Maintenance.

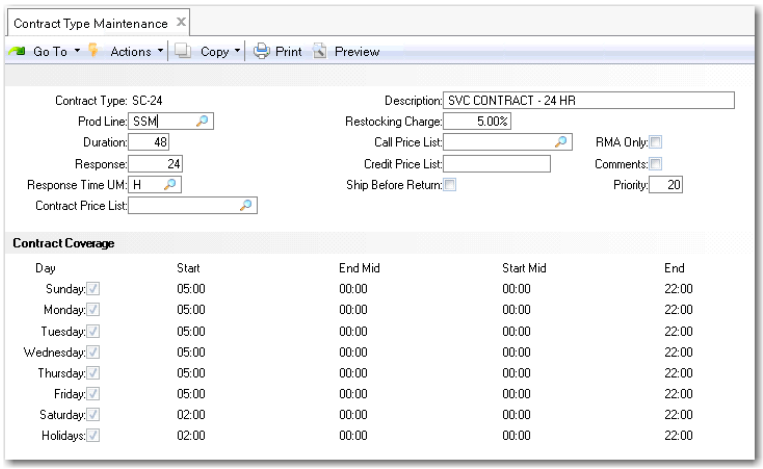
You can use either a warranty or contract type for the RMA default; the call default must be a contract type. Normally, a default service type does not provide any coverage. If you do provide some coverage for items without a contract or warranty, the default service type should specify a covered charge code.

See “Charge Codes” on page 81 for a complete discussion of charge codes.

Service Attributes

Use Contract Type Maintenance to define and update contract types. Figure 5.2 illustrates the first two frames. Warranty Type Maintenance is similar.

Fig. 5.2
Contract Type Maintenance (11.5.10)



Service types define your relationship with customers. The system uses some attributes of the type directly. This is always true for warranties. For contracts, some attributes provide defaults you can change in Contract Maintenance. The system derives the following information from the service type:

- *Product line* of the service type can direct the financial impact of service into GL accounts. See “Product Lines and Service Types” on page 126.
- *Duration* defines the length of time service is available. You define warranties in days, contracts in months. The duration determines the end date for the warranty of an installed base item and the default end date for a contract.

- *Response time* defines the length of time within which the customer can expect you to respond to a service request. Call Maintenance uses response time and coverage hours to calculate the call's next event date and time.
- *Price lists* determine what a customer pays for contract coverage, for service on a call, and for items returned on an RMA. RMA issue lines use standard sales order pricing.
- *Ship Before Return and Restocking Charge* affect RMAs only. Ship Before Return determines if you can issue an item on an RMA before you receive the defective one from the customer. This field only affects linked RMA lines. The system applies the restocking charge to items returned for credit. It indicates what portion of the credit to deduct for handling. See Chapter 23, "Return Material Authorizations," on page 593 for details on shipping before returns and restocking charges.
- *Priority* sets the opening priority of a call in Call Maintenance. The lower the number, the higher the priority. You can also define the priority for an end user. If you use escalations, they can affect the priority.
- *Hours of coverage* define when you are available to provide service. Call Maintenance uses them to schedule engineers and calculate a call's next event date and time.
- *Level and limits of coverage* determine the coverage percentage applied by the system and limits based on work code and service category or on invoice sort. You can also specify a total limit and a limit for individual prices. See "Levels and Limits of Service" on page 128.
- *Charge codes* on the service type provide defaults in Call Activity Recording.

Product Lines and Service Types

The product line ties the service type to a set of general ledger accounts. It usually determines the accounts affected by the sale of contracts and by RMA issues and receipts. In Call Activity Recording, charge codes usually determine product lines. The system references product lines on the service type only if you do not set up charge and revenue product lines.

The system uses a service product line only if Use Item Prod Line in SSM Accounting Control is No. Otherwise, the system uses the item product line.

The product line lets you track and report on contract sales for different contract types. For example, to book the billing of annual contracts to a different GL account than semiannual contracts, you can create service product lines with different sales and sales discount accounts. You can then associate these product lines with different contract types.

When you post an invoice for a contract billing, the system credits the product line sales and sales discount accounts. You can modify accounts line-by-line on a contract if Modify Sales Accounts is Yes in SSM Accounting Control (36.9.10).

Automatic Pricing

The price lists you associate with service types support automatic pricing for many service activities. On contract types, you can specify three price lists: contract, call, and RMA credit. On warranty types, you can only specify the first two. Each of these price lists has a different use.

- Contract price lists determine what the system charges the customer for coverage of items on the contract. This determines the amount the customer is invoiced for the contract itself. Invoicing for actual service performed is separate. Define these price lists with Service Pricing Maintenance (11.17.1) as a type C (contract). See Chapter 6, “Automatic Pricing,” on page 149 for details on setting up service price lists.
- The call price list defaults to contract quotes and contracts that reference a service type. When a call is opened that is covered by the contract, Call Activity Recording (CAR) uses the call price list to determine the price for labor, expenses, and items you use in providing service on a call. The call price list also determines credits for items exchanged in CAR and fixed prices.

  Define these price lists in Service Pricing Maintenance with type R (repair). You can create a type E (expense) list with the same price list code to determine the cost of expenses recorded in CAR.
- RMA credit price lists determine, during the return segment of RMA processing, what the system credits the customer for an item returned. Set up price lists for credits in the PO/Sched/RMA Rcpt Pricing Menu (1.10.2).

The system handles pricing for RMA issues like sales order pricing. You do not specify a price list; the system determines which price lists apply and calculates a best price based on codes and rules previously set up. For this reason, you do not associate a price list with a service type for RMA issues.

Table 5.1 summarizes which service functions use price lists.

Table 5.1
Price List Usage

Price List	Used In	Defined In
Contract Price List	Contract Maintenance and Invoicing	11.17.1
Call Price List	Call Quote Maintenance, Call Activity Recording, Call Invoice Recording	11.17.1
RMA Credit Price List	RMA Maintenance receipt lines	1.10.2.1
Sales Order Price Lists	RMA Maintenance issue lines	1.10.1.1

Hours of Coverage

Call Maintenance uses coverage hours and response time to calculate the call’s next status date and next status time. You can also use the define a single break in the daily coverage, such as a lunch period.

Example A service type has these values:

```
Service Response Time:      4 hours
Service Coverage:           Mon - Fri, 08:00 - 17:00
```

You take a call at 16:00 hours on January 3, using this service type. The call event time plus the response time yields a next status time of 20:00 hours. This would create a problem, since the service department is open only until 17:00.

However, the system knows your service coverage hours, so it schedules the next event three hours into the next day you are open for support business. The next status date on the call is January 4, and the next status time 11:00 hours.

Create a different service type for each schedule of coverage your business supports. This enables you to define premium service coverage for critical or special components.

Example A company selling personal computer systems and network hubs wants to provide service coverage for the computers from 10:00 to 17:00 hours. The network hubs are more critical; they need coverage from 06:00 to 20:00 hours. Use one service type for the computer line item and another for the network hub.

Similarly, if you warranty these items, create and apply two warranty codes with different coverage hours.

To provide different coverage levels for the same item at different times of the day, you can add the same item to a contract twice, but only if the service type for the line items differs.

Levels and Limits of Service

The level of service for the warranty, service contract, or default service type carries through into the management of service activity from calls to returns. The level of service determines the percentage paid by the end user for service.

SSM provides flexibility in classifying and supporting service activity. You can define limits either at a high level with invoice sorts, or at a lower level with work codes and service categories. You can also define a total limit amount for all activity.

Limit Usage Restrictions

The implementation of coverage levels and limits depends on the Contract Limits field in SSM Accounting Control.

- When this field is No, you cannot define limit amounts on contract types or modify coverage levels in Contract Maintenance.
- When this field is Yes, you can define the limits, copy them into multiple contract levels (header, default item and end user, and detail lines), and modify them.

You define levels of coverage associated with service types the same way whether you are using limit amounts or not. *While you can define limit amounts for a contract type, the system only uses them when you copy them into a contract.*

The contract type provides a template for creating similar contracts. If you use it as a generic service type, the system applies the coverage level percentage of the service type. Limits are only effective in a contract because the system must accumulate and check quantities over time. This is only possible when you can collect and record information for a specific line item.

The system uses limit amounts only with contracts and checks them only in Call Activity Recording. RMA Maintenance applies the coverage percentage only, even if a contract has limit amounts.

In summary, limits:

- Can only be used when Contract Limits is Yes in SSM Accounting Control
- Cannot be used with warranties
- Can be defined on a contract type, but are only used when copied into a contract

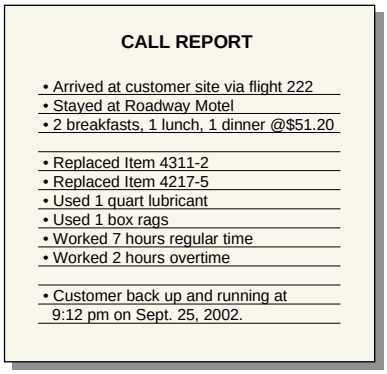
- Are only checked in Call Activity Recording

Understanding Codes for Limits

Before you learn how to define limits, it is important to understand how service codes provide support for defining limits. The system uses three important codes: service categories, invoice sorts, and work codes.

Service categories group the detail you record when you provide service in response to a call. Figure 5.3 illustrates a sample call report.

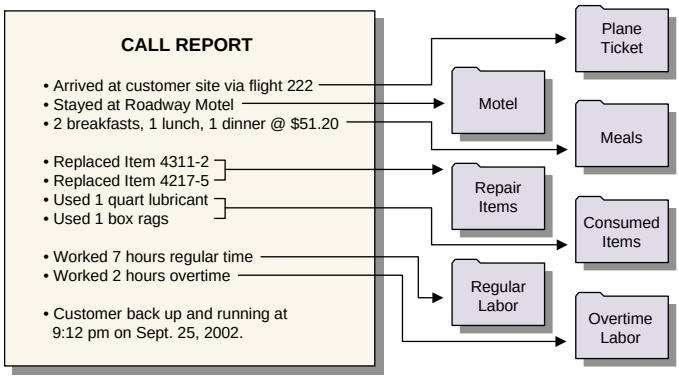
Fig. 5.3
Sample Call Report



Each of the details on this report represents an instance of a service category. An organization can have as many or as few service categories as they need.

Figure 5.4 shows how you can categorize each detail of a call with the appropriate service category. Since the service category represents the lowest-level way of grouping detail, it is pictured as a file folder.

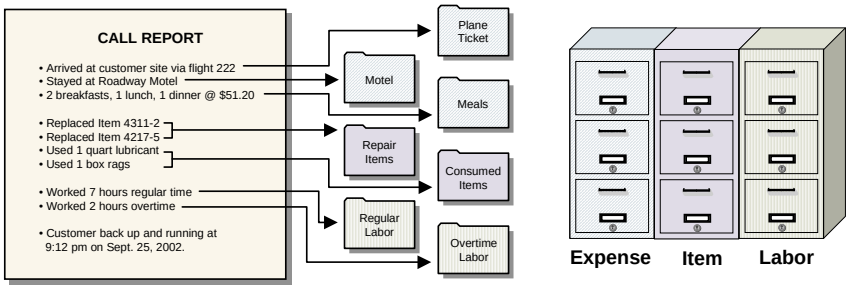
Fig. 5.4
Call Details Map to Service Categories



Each service category is associated with an invoice sort when it is defined. Normally you use three basic invoice sorts: for expenses, items, and labor. Invoice sort codes group all the details of related service categories for high-level presentation.

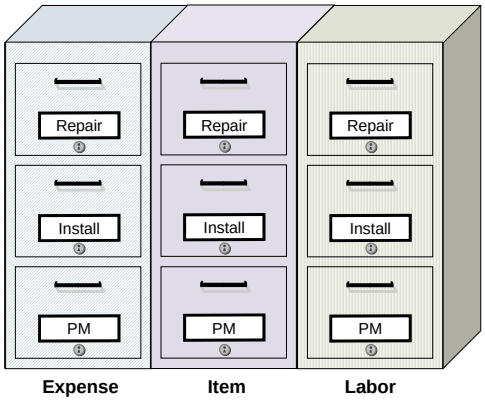
In Figure 5.5, three file cabinets represent three invoice sorts. The system sorts the detail associated with a particular service category into one of three cabinets: expense, item, or labor. In this example, you can put a related folder in any drawer of the correct filing cabinet.

Fig. 5.5
Invoice Sorts Group Service Categories



You can define generic coverage limits based on invoice sort codes. For example, you can define a simple limit for all expenses. However, you can also consider the work code when defining limits. Work codes group the service detail on a call based on the type of work. Figure 5.6 shows the result of adding three work codes: repair, install, and PM. Now the system sorts detail both by file cabinet and by drawer within the cabinet.

Fig. 5.6
Work Code Adds More Detailed Control



Grouping information this way supports complex limit definitions. In Figure 5.6, the more work codes you use, the more drawers you need in each filing cabinet.

While invoice sorts do not give as much detail, with them you can make generic changes in coverage levels across the customer base or a specific service contract market. Work codes and service categories, on the other hand, provide the power to manage and change service levels in the most detailed situations.

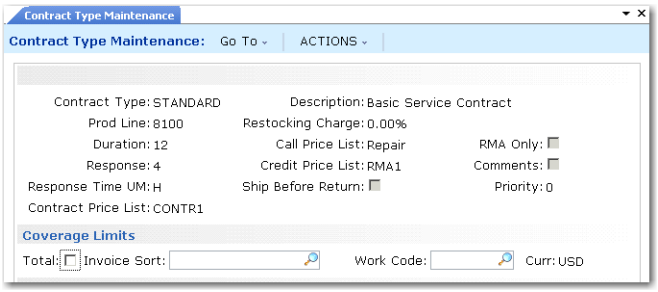
You can combine work codes, service categories, and invoice sorts in almost unlimited ways. For example, you can base limits for service items on the kind of work done, but make limits for expenses generic, based on invoice sort. Or if you do not need detail, you can set up one limit for all the detail recorded.

You can use any work code and service category combination except a work code with fixed price set to Yes. You cannot use fixed pricing in conjunction with coverage limits.

Figure 5.7 illustrates the Coverage Limits frame in Contract Type Maintenance. The Total, Invoice Sort, and Work Code fields determine the kind of limit you are defining:

- If Total is Yes, Invoice Sort and Work Code must be blank, and the record limits all service or defines a generic level of coverage.
- If Total is No and you enter an Invoice Sort value, the system applies this limit to the service categories associated with the specified invoice sort.
- If Total is No and you specify a Work Code, you must also specify a service category. The limit applies only to the specified combination of work code and service category.

Fig. 5.7
Invoice Sort or Work Code



You can define any number of limits. The system uses limits for a work code and service category combination first. If it finds none, it uses those set up for invoice sorts, then those for the total. When you define limit amounts in a contract, the system always looks for a total limit amount to use in conjunction with the lower-level amounts.

Simple or Complex

Work codes and service categories enable you to track service activity in detail, but the detail introduces complexity into the rest of Service/Support Management, including implementation.

If you use work code and service category details in coverage, create clear policies on how to use the service types as templates for contracts. Without careful planning and implementation, it becomes easy to lose control of coverage limits and service costs. To clarify your setup, use charts like the one on page 134.

Service Levels by Invoice Sort

If you are not concerned about tracking coverage, percentage, or monetary limits by specific service category, the high-level invoice sort is the best solution. If you choose to cover only preventive maintenance labor and bill for everything else, use the work code and service category scheme to track labor against service limits.

The invoice sort tracks service activity at a high level by grouping labor, expenses, and items used for related service categories.

See “Invoice Sort Codes” on page 67.

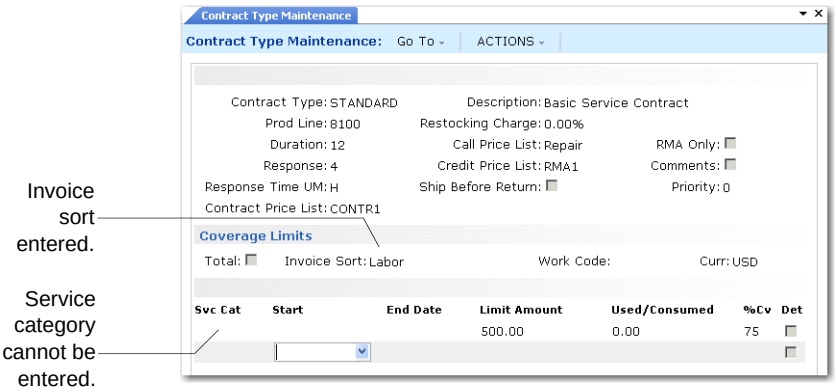
Invoice Sort Example

A service organization's engineers perform 17 kinds of labor. These labor types correspond to various skill and job classifications and overtime procedures, distinctions that reflect different service pricing. However, contractual agreements cover labor at the same level regardless of its type. So this organization bases its levels of coverage on a labor invoice sort. To do this, they follow these steps:

1. Create the labor invoice sort with Invoice Sort Maintenance.
2. Define a service category for each kind of labor with Service Category Maintenance. Each of these service categories references the labor invoice sort code.
3. Define service limits in terms of the labor invoice sort.

Using this approach, labor consumption receives one level of coverage, regardless of what kind of labor it is.

Fig. 5.8
Service Limits by Invoice Sort



To define limits by invoice sort, you enter an appropriate sort code. In this case, you cannot enter anything for service category (Svc Cat). The coverage level (%Cv) is defined as a percentage. In Figure 5.8, the price of labor is covered at 100 percent up to the limit amount of $1000.00. This means the contract covers the first $1000.00 of labor, regardless of the work code and service category combinations.

Call Activity Recording checks service limits when a service contract provides coverage. Since you set up limits at the invoice sort level, CAR allows $1000.00 for all service categories with the labor invoice sort, regardless of the work code. The system accumulates the charges on service contracts based on this contract type and compares them with this preset limit.

You can use invoice sorts to set up similar limits for expenses or items.

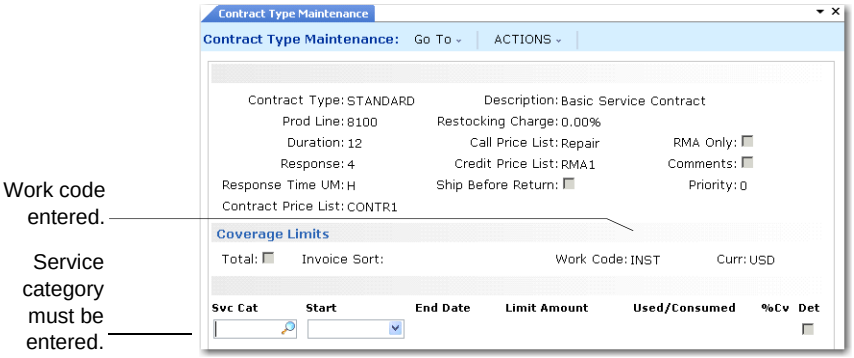
Service Levels by Work Code and Service Category

The invoice sort works at a high level. For more detailed tracking of service limits and percentage of coverage, use work codes and service categories, as shown in Figure 5.9. In this approach, you create a relationship between a work code and service category. The system then tracks service limits based on the kind of work done.

This approach is useful for a service organization that covers only certain kinds of activity. A contract for preventive maintenance, for example, may only cover PM labor and bill for other kinds. Or an organization may choose to cover repairs at 100 percent, PM at 50 percent, and installation not at all.

SSM can track service limits against any work code and service category combination.

Fig. 5.9
Service Limits by Work Code and Service Category



To define limits for a work code, Total must be No and Invoice Sort must be blank. When you enter a work code, you must enter a service category to further qualify coverage limits.

Example

A service organization performs three different kinds of work. They define three work codes representing them: REPAIR for repairs, INST for installation, and PM for preventive maintenance.

They also set up three service categories: Labor1 for labor, Item1 for items, and Expense1 for expenses. Now they can set up different levels of coverage for each kind of work for labor hours, items consumed, and expenses. Table 5.2 shows the basic scheme for these work code and service category combinations.

Table 5.2
Sample Work Code and Service Category Combinations

	Work Codes		
	REPAIR	**INST**	**PM**
Service Categories	Labor1	Labor1	Labor1
	Item1	Item1	Item1
	Expense1	Expense1	Expense1

You can define different coverage percentages and limit amounts for each service category under a work code. For example, for the REPAIR work code, you define:

- 100% coverage up to $1,000 for the Labor1 service category
- 75% coverage up to $750 for the Item1 service category
- 50% coverage up to $500 for the Expense1 service category

Using these definitions, Table 5.3 defines a grid of sample work code and service category combinations.

Table 5.3
Limits by Work Code and Service Category

			Work Codes		
			REPAIR	INST	PM
Service Categories	Labor1	(%)	100	100	100
		limit ($)	1,000	2,000	1,000
	Item1	(%)	75	50	100
		limit ($)	750	500	750
	Expense1	(%)	50	0	100
		limit ($)	500	0	500

Defining Service Levels with Effective Dates

Effective dates are another important element of service levels you can define. Effective dates add a layer of differentiation to limits. You can use them with limits set up for invoice sorts or for limits that apply to work code and service category combinations.

The system uses effective dates on limits the same way it uses effective dates in other functions, with some exceptions. Similarities and differences are noted in the following sections.

Open-Ended Dates

If you leave a start or end date blank, the system, as usual, assumes the date is open ended and coverage is in effect from the beginning of time or to the end of time.

Overlapping Dates Restricted

Unlike dates in other parts of the system, effective dates for limits cannot overlap. Since you can accumulate amounts against limits when you copy them into a contract, there can be only one valid set of limits at any one point in time. Otherwise, the system would not know where to post the consumed amounts.

Since the system considers a limit with a blank start and end date always in effect, you cannot create such a limit and then create another with specific start and end dates.

Copying Effective Dates into Contracts

When you copy limits into a contract, the system sets the earliest start date to the contract start date and the last effective date to the contract end date.

In a simple case, you can set up limits on a contract type without any effective dates, then create a contract based on that contract type. The contract start date is 01/01/07 and end date is 12/31/07. When you copy limits into the contract, the starting effective date is 01/01/07, the end effective date 12/31/07.

Now consider what happens if you have two sets of limits on the contract type with the following effective dates:

06/30/06 – 06/30/07

07/01/07 – 06/30/08

The same contract from 01/01/07 and 12/31/07 still has two sets of limits, but the system copies them in with these dates:

01/01/07 – 06/30/07

07/01/07 – 12/31/07

Effective Dates and Contract Renewal

How you set up effective dates on contract types can affect contract renewal. When you create a contract, you can tell the system to copy limits from the contract or from the contract type. If you set up limits with consecutive effective dates and tell the system to refer to the contract type, the system brings in the limits effective for the renewed contract's start date.

This way you can phase in changes and the system applies them during contract renewal.

Applying Effective Dates

Call Activity Recording uses the call open date when it looks for coverage limits. Remember this if you add lines to an open call. The system bases the limits it applies to that line on the date you opened the call, not the date you added the line. The call open date also determines limits during invoicing.

Note When Multiple Time Zones is active, the call open date is relative to the time zone of the call's end user. See Chapter 4, "Multiple Time Zones," for details on the effect of MTZ.

Effective Dates: Example 1

Table 5.4 illustrates sample limits based on the data in Table 5.3. However, a new row for effective dates has been added to the table. To make this example simple, dates are blank for all the limits. This means each service category is effective all the time.

Table 5.4
Work Code/Service Categories with Blank Dates

			Work Codes		
			REPAIR	**INST**	**PM**
Service Categories	Labor1	Dates	(blank)	(blank)	(blank)
		%	100	100	100
		Limit ($)	1,000	2,000	1,000
	Item1	Dates	(blank)	(blank)	(blank)
		%	75	50	100
		Limit ($)	750	500	750
	Expense1	Dates	(blank)	(blank)	(blank)
		%	50	0	100
		Limit ($)	500	0	500

The coverage defined in this table continues forever, or until superseded by another contract. In this case, the service categories are not controlling coverage periods in the contract; they are controlling only the percent of coverage and the limits.

Effective Dates: Example 2

You can define coverage effective dates, percentages, and limit amounts for each service category under a work code.

Table 5.5 illustrates limit data for two years. You might use a contract type like this for a two-year contract or to have the system apply next year's limits when this year's contract expires.

Table 5.5
Work Code and Service Categories with Non-blank Dates

			Work Codes		
			REPAIR	**INST**	**PM**
Service Categories	Labor1	Dates	1/07 - 12/07	1/07 - 12/07	1/07 - 12/07
		%	100	100	100
		Limit ($)	1,000	2,000	1,000
		Dates	1/08 - 12/08	1/08 - 12/08	1/08 - 12/08
		%	75	75	75
		Limit ($)	1,000	2,000	1,000
	Item1	Dates	1/07 - 12/07	1/07 - 12/07	1/07 - 12/07
		%	75	50	100
		Limit ($)	750	500	750
		Dates	1/08 - 12/08	1/08 - 12/08	1/08 - 12/08
		%	50	25	75
		Limit ($)	500	250	500
	Expense1	Dates	1/07 - 12/07	1/07 - 12/07	1/07 - 12/07
		%	50	0	100
		Limit ($)	500	0	500
		Dates	1/08 - 12/08	1/08 - 12/08	1/08 - 12/08
		%	50	0	75
		Limit ($)	500	0	250

In this example, preventive maintenance coverage for each service category starts at 100%. The second year it is 75%. While these factors are the same for the PM work code and each service category, the actual monetary limit varies.

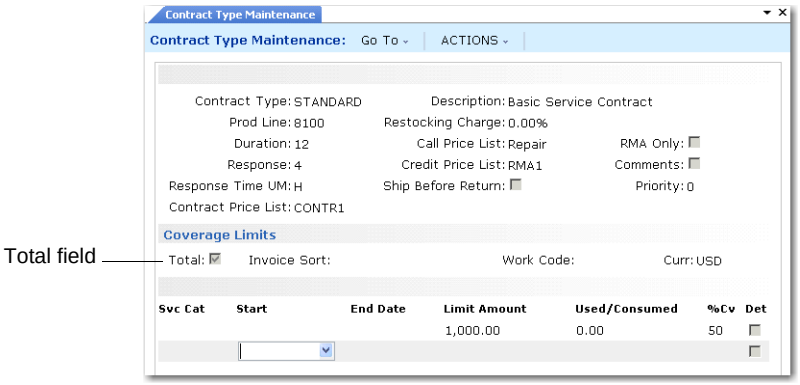
This kind of table helps you set up work codes and service categories. For each work code, you can enter any number of time periods, percentages, and limit amounts for a service category, to match your business. For Labor1, for example, you can set up a series of coverage periods for preventive maintenance.

Defining Service Levels with a Total Service Limit

In Contract Type Maintenance, Total is the first field in the Coverage Limits frame, illustrated in Figure 5.10. This field does two things:

- If lower-level limits exist, Total determines an aggregate amount applied to the cumulative total consumed for all service limits. The system applies this feature only when you copy limits into a contract.
- It enables you to set up a generic record for the system to use when more specific records do not exist.

Fig. 5.10
Total Field in Contract Type Maintenance



To define a total limit, Invoice Sort and Work Code must be blank. The system uses the limit data if there are no other limits; you can set up simple, high-level, generic limits. For example, a contract type covers service activity at 50% up to 10,000. This record then applies to any kind of activity in Call Activity Recording.

When you define a total amount in addition to other more detailed records, the system uses it in conjunction with the other limits. For example, an invoice sort for labor has a $1,000 limit. Another invoice sort for items has a $1,000 limit. But you want an overall service limit of $1,500. The value in the Amount field when Total is Yes determines an aggregate limit for coverage.

When you record service in CAR for an item under an active contract with this service type, the system compares service activity against this total to see if service is over limit. The system still tracks costs against the invoice sort or work code and service category combination as appropriate. However, when you enter a value and Total is Yes, the system also compares the total service costs against this aggregate limit.

Example Three limit records have a $750 limit for labor, items, and expense invoice sorts. You set an aggregate service limit of $1,500. You take the calls in Table 5.6 and record the activity.

Table 5.6
Sample Call Information

Call	Labor	Items	Expenses	Accumulated Total
CA1	500	300	200	1000
CA2	200	300	100	600
Invoice Sort Total	700	600	300	1600

Even though the amount recorded is under the $750 limit amount for each invoice sort, the $100 of expenses for CA2 is not covered, since it exceeds the total limit of $1500.

When you specify an amount with Total set to Yes and the aggregate reaches $1,500, this item is over its service limit regardless of the limits on individual invoice sorts or service categories. The servicing company has now met its contractual requirements and the system applies the over-limit charge code to service activity.

Defining Percent of Coverage

You can use the percentage amount in the %Cv field by itself or in conjunction with limit amounts. If Contract Limits is No in SSM Accounting Control, the coverage percent determines coverage. This is also the case when a contract type rather than an actual contract provides coverage. The system checks limit amounts only on contracts.

The coverage percent by itself determines the amount covered according to the following formula:

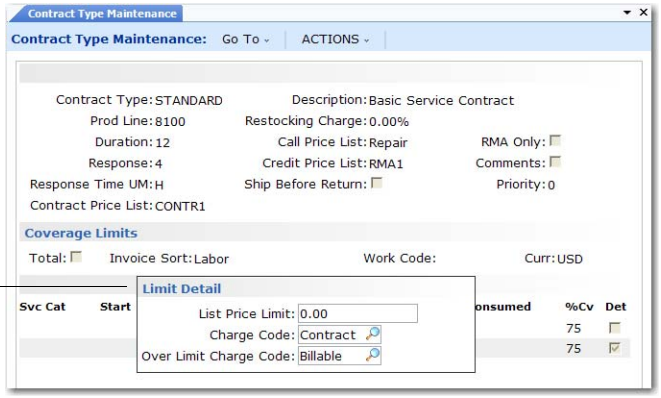
*Price * Coverage Percent = Covered Amount*

For RMA issues, the system uses the coverage percent to calculate the price discount percent, since the limit features of contracts do not apply to RMAs. Coverage percent is also the only factor the system considers for warranty coverage in RMAs and calls.

Defining Limit Detail

If you specify Yes to the Detail field when defining limits, an additional limit detail pop-up displays, as in Figure 5.11.

Fig. 5.11
Limit Detail Pop-Up



Limit detail provides even more control over how the system applies coverage.

The system searches for limit details in the same way it searches for limits. First it looks for a work code and service category combination, then for limits by invoice sort, and finally for limits in the Total = Yes record.

List Price Limits

A list price limit defines a ceiling on the price of individual items covered by the service type. When you specify an amount in List Price Limit and the list price of a particular item exceeds this amount in Call Activity Recording, the item is not covered even if limits have not yet been consumed. The system suggests the over-limit charge code. If you use common limit detail for the limits on a service type, specify values for the Total = Yes record only to simplify data entry.

Note Overriding the billable charge code has no effect on the covered amount for an item that exceeds the list price limit. The covered amount always defaults to zero, but you can change it.

Under-Limit Charge Code

You can associate two charge codes with each limit record: an under-limit and over-limit charge code. These charge codes direct financial impacts to charge product lines in Call Activity Recording. If you do not specify charge codes for detailed limits, the system looks for charge codes associated with the Total = Yes record. If none exist there, the system uses default charge codes defined with Default Charge Code Maintenance.

On a contract type, use a charge code with either contract or covered set to Yes for the under-limit charge code. Similarly, for a warranty, use a charge code with warranty or covered set to Yes.

However, use covered charge codes carefully. They are intended to indicate a generic coverage, such as that provided by the Default Call Service Type in Call Management Control. You can also set up generic service types for special purposes in call management.

Important *Never* use the covered charge code on service types that form the basis of contracts and warranties.

Contract and Warranty Type Maintenance warns you that covered is reserved. Disregarding this warning can lead to confusion when you use the service type in Call Activity Recording.

See “Charge Codes” on page 81 and “Calculating Coverage in CAR” on page 392.

Over-Limit Charge Code

The Over Limit Charge Code field determines the default charge code in Call Activity Recording when service costs exceed the service limit. Use a charge code with Billable set to Yes in Charge Code Maintenance.

When service charges exceed the limit, CAR switches to the over-limit charge code. If you do not associate an over-limit charge code with the limits, the system uses the billable charge code in Default Charge Code Maintenance instead. You can override the billable charge code with a giveaway charge code in particular instances in CAR.

Over-limit charge codes have an effect in two cases:

- On a contract with limit amounts. Charges accumulate against a limit amount only on a contract.
- On a contract or warranty if the coverage percent is zero. In this case, all service is over the limit.

Limits at Multiple Levels

The contract type is a template for building service contracts. If Contract Limits is Yes in SSM Accounting Control, you can further refine or customize the limit template at the contract level, for end users or default items, and on individual lines within the contract.

This topic is discussed in detail in Chapter 8.

See “Limits at Multiple Levels” on page 180 for details.

No Coverage or Zero Percent Coverage

Because of the way the system looks for limits, defining a limit record with zero percent coverage can have a slightly different effect than not defining any coverage.

If you define a record with zero coverage, you have more control over the charge codes the system suggests in Call Activity Recording. In this case, the system suggests the over-limit charge code associated with the record.

If no record exists, the system suggests the billable charge code in Default Charge Code Maintenance.

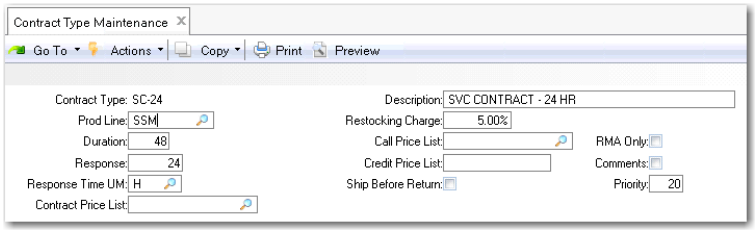
Contract Type Maintenance

This section provides a field reference to Contract Type Maintenance (11.5.10).

Header Frame

Many important features that determine coverage display in the Contract Type Maintenance header.

Fig. 5.12
Contract Type Maintenance Header Frame (11.5.10)



Contract Type and Description. Enter a code to uniquely define this contract type and a brief description. The description appears in the lookup that displays when you select service types.

Prod Line. The product line relates the service type to a set of general ledger accounts. Whether the system uses this product line depends on Use Item Prod Line in SSM Accounting Control. If this is No, the system uses the product line of the service type in effect; otherwise, the item product line.

When you post a contract invoice, the system credits the product line Sales and Sales Discount account. You can modify accounts on contract lines if Modify Sales Accounts is Yes in SSM Accounting Control.

You can also use the product line of the service type in Call Activity Recording. If the system finds no charge or revenue product line for service activity and Use Item Prod Line in SSM Accounting Control is No, the system uses the product line of the service type in effect.

Duration. Duration defines the default length of a contract. In service contract types, the duration is in months, while in warranties, the duration is in days. In contracts, the system calculates the contract end date by adding the duration of the service type to the contract start date.

Response and Response Time UM. A response time states the length of time and its unit of measure within which your service department should respond to a call. The response unit can be minutes, hours, or days. The response time must be expressed in integer values. A response time of up to 168 hours (1 week) can be specified. After that, the unit of measure must be days.

If you are not using an escalation sequence, Call Maintenance uses the response time to calculate the Next Status Date and Time values according to the following rule:

Next Status Date/Time = (Event Date/Time) + Response Time

For example, a call has a service type with the following characteristics:

Response:	3
Response UM:	H
Coverage Days:	M-F
Coverage Hours:	08:00 - 17:00

For this service type, you expect to respond within three hours of taking the call. It also means you provide this service only Monday through Friday, 8:00 AM to 5:00 PM.

Contract Price List. Enter a valid contract price list defined in Service Pricing Maintenance (11.17.1). The system uses this price list as the default price list code for contract quotes and contracts based on this service type. It determines what to charge the customer for coverage of items on the contract.

The contract price determines the amount the customer is invoiced for the contract itself. Invoicing for service activity is separate.

Restocking Charge. The restocking charge is a percentage deducted from the credit price of a returned item on an RMA. Customers can perceive restocking charges as penalties, but you might apply them to cover the labor and expense of refurbishing and repackaging returned items.

Call Price List. Enter a valid repair price list defined in Service Pricing Maintenance (11.17.1). The call price list sets the default for the same field in Contract Quote Maintenance and Contract Maintenance. The system uses the price list from the contract as the default in Call Quote Maintenance and CAR for calls covered by contracts that reference this service type.

Note If the service type is used to provide coverage directly, such as the default call service type in Call Management Control, the call price list is referenced directly from the service type.

Repair price lists can specify prices for items consumed in a service activity and labor and expenses recorded in CAR. The call price list also determines credits for items exchanged in CAR, using the Exchange UM value from Call Management Control, and fixed prices using the Fixed Price UM value.

If you set up an expense cost price list with the same code as the call price list, Call Activity Recording uses it to determine standard costs for expense items.

Credit Price List. During the receipt segment of RMA processing, the system uses the credit price list you assign to the service type to determine the credit amount for a returned item. If you define a restocking charge on the service type, the system reduces the credit price by that percentage.

Note Set up RMA credit price lists in the PO/Sched/RMA Receipt Pricing menu (1.10.2).

Ship Before Return. This field affects processing of linked RMA receipt and shipment lines.

No: You process the receipt of a defective item before you can issue a replacement. You can print a packing list, but you cannot ship the replacement item.

Yes: You can issue replacement items regardless of the number of items received.

RMA Only. A reference-only field that indicates whether this service type is exclusively for processing RMAs.

Comments. Indicate whether you want to enter transaction comments for this service type.

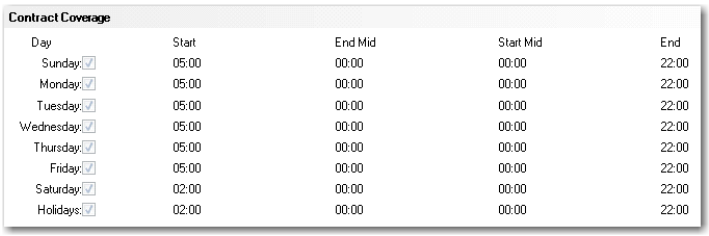
Priority. The Priority field sets the opening priority of calls in Call Maintenance. The lower the number, the higher the priority. For example, a call with a priority of 1 is more urgent than a priority 50 call.

You can also assign call priority by end user in End User Data Maintenance (11.9.1). The system uses any nonzero call priority on an end user's record instead of the service type. You can also set call priority in Service/Support User Preferences. Escalation sequences can affect call priorities.

Service Coverage Frame

Once you define the header information for the service type, you can specify the days and hours of coverage.

Fig. 5.13
Contract Coverage Frame



Use the End Mid and Start Mid fields to define a single break in the coverage for the day, such as a lunch period. The system considers the interval between the times defined in the End Mid and Start Mid fields as non-covered time. If you do not define a break, the system assumes that coverage is available from the time indicated at start of the day until the end of the day

To define coverage from 9:00 until 17:30 with an hour for lunch, you create a service contract type that has service coverage starting at 09:00 and ending at 13:00 for the first period of the day, beginning at 14:00 and ending at 17:30 hours for the second period of the day. To indicate 24-hour coverage, enter a range of 00:00 to 23:59. In most processor time clocks, 00:00 is the same as

24:00. To indicate no coverage, enter a range of 00:00 to 00:00. Call Maintenance uses service coverage in conjunction with Response Time to schedule the call's next status date and next status time.

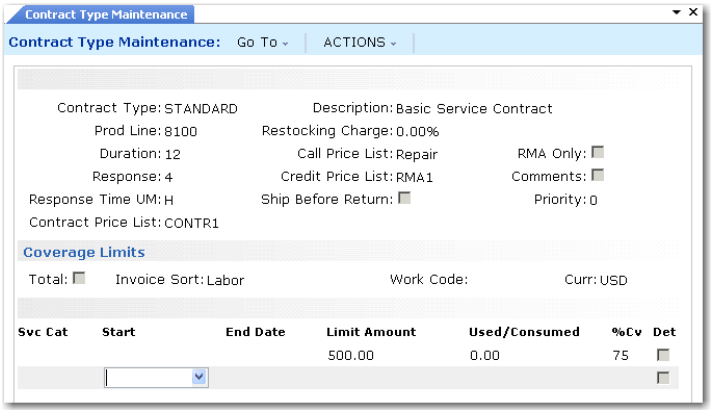
Coverage Limits Frame

Specify coverage limits in one of three ways:

1. Set Total to Yes to specify a total amount covered.
2. Enter a value in the Invoice Sort field to specify limits for a particular invoice sort.
3. Enter a value in the Work Code field to specify limits for a work code and service category combination.

You can enter a value in only one of these three fields at a time. Typically, a service organization chooses to track costs by invoice sort or by work code and service category, although it is possible to combine the two methods.

Fig. 5.14
Coverage Limits Frame



Total. If Yes, the value in the Amount column defines a limit to charges accumulated on a contract using this service type. The percentage of coverage and other data apply as a generic record when no other applicable record exists.

Invoice Sort. If you specify a value here, the limit data applies to this invoice sort. A value in the Amount column indicates a total for the service categories associated with this invoice sort, regardless of the work code.

Work Code. If you specify a value here, also specify a service category. Use any work code except a work code with fixed price set to Yes. The associated limit data applies to this work code and service category combination.

Curr. For contract types and warranties, the domain base currency displays. For contracts, the contract currency displays. The system converts the amounts from base currency to contract currency.

Svc Cat. Specify a service category when you enter a work code in the previous frame. The associated limit data applies to this work code and service category combination.

Start and End Date. Determines the effective period for these service limits. One or both dates can be blank, in which case the system considers the limits open ended. The system prevents you from creating overlapping effective dates.

Amount. A value expressed in the domain base currency indicating a preset limit on coverage. You cannot update this field if Contract Limits is No in SSM Accounting Control.

Used/Consumed. Display-only field that is not used for contract and warranty types. When limits are consumed on an actual contract, the amount posted against that limit (consumed), or recorded in Call Activity Recording (used), displays in this field.

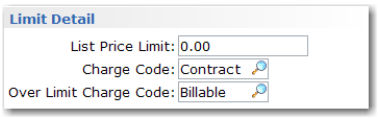
%Cv. The coverage percent determines how much of a particular charge is covered and how much you can invoice. If labor costs $200 dollars and %Cv is 75%, $150 is covered and the system applies it to any limit.

Det. Indicate whether you want to be prompted for limit detail.

Limit Detail Frame

When Det is Yes, a pop-up for limit detail appears.

Fig. 5.15
Limit Detail Pop-Up



The fields in the Limit Detail frame are optional.

List Price Limit. If you specify an amount in this field and record an item or service category with a price exceeding this amount in Call Activity Recording, the item is not covered even if limits have not yet been consumed. Coverage always defaults to zero for such an item, regardless of charge code.

Charge Code. Charge Code determines the charge code Call Activity Recording uses when services are within the service limit. The code in Contract Type Maintenance normally has Contract set to Yes in Charge Code Maintenance. In Warranty Type Maintenance, it normally has Warranty set to Yes.

If you do not associate a charge code with the limits, the system uses the default Contract or Warranty charge code from Default Charge Code Maintenance.

When service charges on a contract exceed the limit or 0% coverage is defined, the system switches the code in CAR to the over-limit charge code.

You can also specify a charge code with Covered set to Yes for the under-limit charge code. However, limit its use to service types that provide generic coverage, such as the call default service type in Call Management Control.

Important *Never* specify a covered charge code on any service type that is the basis of a contract or warranty.

Over Limit Charge Code. Determines the charge code Call Activity Recording uses when service costs exceed the service limit. This charge code must have the Billable field set to Yes in Charge Code Maintenance.

If you do not associate an over-limit charge code with the limits, the system uses the billable charge code in Default Charge Code Maintenance instead. You can override the billable charge code with a giveaway charge code in particular instances in CAR.

Warranty Types

You have probably seen statements like "...backed by a 90-day warranty on parts and labor" in advertisements or sales brochures. A warranty is an agreement between you and your customer that says you will provide a certain level of service for an item from the date of purchase through a specified warranty period, usually measured in days.

Many customers base purchasing decisions on the terms and conditions of a product's warranty. In this sense, the warranty is a feature of the product or item. Similarly, Service/Support Management treats a warranty as a part of the item and keeps the warranty information in the installed base record. The system can record this warranty information in the installed base when you ship a warranted item.

Important If you plan to use warranties, you must maintain the installed base. See Chapter 2, "Installed Base," on page 11.

What Is a Warranty?

A warranty is a promise that the selling company takes responsibility for the repair or replacement of an item under the stated conditions. Warranties specify exact terms, conditions, coverage percentages, and time limits.

The levels of coverage you define for a warranty influence Service/Support Management functions dealing with the repair, maintenance, and replacement of warranted items. The warranty type, which you associate with the item in Service Item Maintenance (11.3.7), determines the warranty conditions.

You can attach a warranty to each installed base record. In this way, many items can have the same warranty code or type of warranty, yet have warranties that differ (for example, different expiration dates). This enables you to maintain different kinds of warranties in a central location and tailor warranties to specific customers.

Warranties affect Call Maintenance, RMA Maintenance, and Call Activity Recording. The warranty information is used when these functions refer to an item in the installed base.

Setting Up Warranties in the Installed Base

In SSM, you give the warranty type a code to identify it and then define it. You then assign the warranty to items in Service Item Maintenance (11.3.7).

If you are using the interface between sales orders and service that supports automatic updating of the installed base, the system uses the default warranty when you add an item to the installed base. Coverage begins on the ship date. If SO Edit ISB Defaults is Yes in Sales Order Control, you can change the warranty type before the system creates the installed base record.

When warranty coverage information is associated with installed base items, it is also available to other service functions. The warranty is specific to an installed base record.

Table 5.7 summarizes setting up warranty codes.

Table 5.7
Setting Up Warranty Codes

Function	Action
11.24	Set Ship to Installed Base to Yes.
11.3.15	Define warranty type.
11.3.7	Attach warranty type to item and set Installed Base to Yes.
11.3.1	Create installed base record manually.
7.13.4	Create installed base record automatically by posting invoice for sales order.

Tailoring Warranties by Type of User

Contract types are the bases of contracts, which are unique documents for one end user. Warranties are more general than contracts, but you can tailor them somewhat, based on the end-user type code.

For example, your standard 90-day warranty may not specify a restocking charge. However, for items sold to OEMs (original equipment manufacturers), a restocking charge is required.

To set up warranties for types of end users, follow these steps:

1. To tailor warranties by end-user type, first set up type codes in Generalized Codes Maintenance for field eu_type.
2. Associate the proper type code with end users in End User Data Maintenance.
3. Create a base warranty with a blank end-user type code.

   A warranty with a blank end-user type must exist before you can create one for a particular type of end user. This warranty is a *base warranty.* The base warranty can be a template when creating unique versions.
4. Create a second warranty with the warranty code in step 3 for a specific end-user type.

   The warranty header fields default from the base warranty, and you can modify them.
5. Set up limits for the tailored warranty.

   When you create limits for the second warranty, the system prompts you to copy base warranty limits. You can copy and start with these, or create limits unique to this warranty.

Now, when you add an item to the installed base for an end user with the type on the second warranty, the system uses the tailored terms and conditions, rather than the base ones.

Warranty Coverage Levels

You set up levels of coverage for warranties in the same way as for contract types. You can track coverage at the high-level invoice sort level, or using detailed work code and service category combinations. However, you cannot define limit amounts for warranties, since the system does not support an accumulation of amounts against a limit.

If you specify under- and over-limit charge codes on a warranty type, define the under-limit charge code in Charge Code Maintenance with Warranty set to Yes. See “Charge Codes” on page 81.

Deleting Warranties

The system checks a number of conditions before it lets you delete a warranty:

- You cannot delete a warranty with a blank end-user type code if other warranties based on it exist. These have the same code and a non-blank end-user type
- You cannot delete a warranty with a blank end-user type if it is associated with an item in Service Item Maintenance. You can, however, delete a warranty with a non-blank end-user type code under the same condition.

Warranty Effects

Warranty coverage affects processing in most major service functions including Call Maintenance, Call Activity Recording, and RMA Maintenance.

Call Maintenance

Warranty information is immediately available when you create a call referencing an item in the installed base. Call Maintenance displays the type of warranty and its duration so the service engineer and the customer know if the warranty is in effect. If the warranty is active, it determines the initial setting for the call’s response time and may determine priority, if other defaults do not.

Response time is the time within which you should take action on the call. This action could be to assign an engineer or change the call’s status and queue. The system uses the response time to calculate initial settings for the next status date and time fields if you are not using call escalation.

Priority is a rating used by the call queue and call escalation managers to select calls with identical Type, Problem, Severity, and Status settings.

Other settings can override the warranty’s initial call Response Time and Priority values. Priority can default from the end user if it is defined there. The response time can default from the initial setting in a call escalation sequence and be updated accordingly if you are using call escalation.

Call Activity Recording

The coverage levels for a warranty type determine the coverage for labor, expenses, and items in Call Activity Recording. This, in turn, determines the billable totals on the call invoice. If you associate under-limit and over-limit charge codes with the warranty limits, the system uses them by default in CAR.

RMA Maintenance

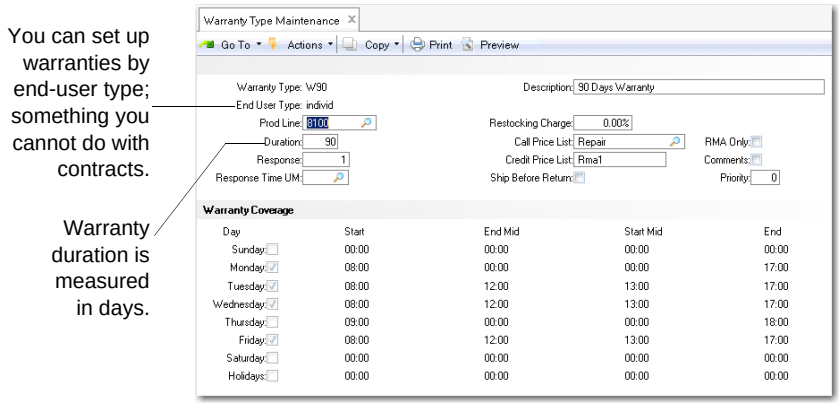
The percentage of coverage on a warranty type determines the discount percent in RMA Maintenance, which determines the billable totals on the RMA sales order and invoice.

Like contract types, the warranty type supplies defaults for the RMA credit price list and restocking charge, and determines if you can process RMA issues before receipts. You can set up Service Management Control to have the system use warranty product lines.

Warranty Type Maintenance

Warranty Type Maintenance (11.3.15) is almost identical to Contract Type Maintenance. The fields that are different are described here: End User Type and Duration. You cannot specify a contract price list for warranty types.

Fig. 5.16
Warranty Type Maintenance (11.3.15)



End User Type. An optional code to group end users according to categories you define. You can base warranty types on the end-user type. You might have one warranty for OEMs and another for distributors. You cannot specify an end-user type code if a version of the warranty with a blank type code does not already exist.

Note To standardize usage, set up end-user type codes in Generalized Codes Maintenance for field eu_type.

Duration. Duration defines the default length of a warranty. In service contract types, the duration is measured in months; in warranties, the duration is measured in days. In the installed base, the system uses warranty duration to calculate a warranty expiration date.

Amount. On contract types, this field defines a value expressed in the domain base currency indicating a limit on coverage. You cannot update this field in Warranty Type Maintenance.

Chapter 6

Automatic Pricing

This chapter discusses the different kinds of price lists you set up in the SSM module, which supports features unique to service. Service price lists are for contracts; for items, labor, and expenses recorded in Call Activity Recording (CAR); and for expense costs in CAR.

Service price lists also support fixed repair pricing and credit you offer customers for reusable components they return during service activity.

Other Pricing

You can define two kinds of price lists using the Price List and Discount Menu (1.10). Each price list structure applies to different functions. For complete information about setting up and using these pricing structures, refer to *User Guide: QAD Master Data*.

SO/SQ/RMA Issues Pricing Menu

The price lists you define from the SO/SQ/RMA Issues Pricing Menu (1.10.1) determine prices in sales quote and sales order maintenance functions. These price lists take advantage of a sophisticated coding schema that enables the system to determine best prices based on predefined rules.

In the service module, RMA issues are similar to sales orders. When you issue an item on an RMA, the system searches for a price just as it would search if you sold the item on a sales order. When it finds the price, it applies the coverage percent of the warranty, contract, or service type on the RMA to the price.

PO/Sched/RMA Receipt Pricing Menu

You define pricing structures for other functions from the PO/Sched/RMA Receipt Pricing Menu (1.10.2). Purchase orders and scheduled sales orders use these pricing structures, as do RMA receipts.

The credit for a returned item does not necessarily have a direct connection to its original sales price. The credit price also does not require the advanced features of sales order pricing. For example, it would not make sense for the system to look for a best credit for a returned item. For this reason, you define RMA credit price lists like purchase order price lists.

Service Price Lists

Service price lists help you to automate pricing for two service areas: contracts and Call Activity Recording. Automated pricing streamlines management of the financial side of service activity. You can change the prices the system suggests. However, to prevent arbitrary changes, you can set up field security on pricing fields.

Implementation Issues

You can set up service price lists in several ways. One way may be more or less suitable, depending on your business practices. Some of the issues to consider in setting up price lists include:

- Should price lists be for individual items or based on some kind of item grouping?
- Should prices be the same no matter what kind of work is involved?
- Are fixed prices and exchange prices needed?
- When should prices be effective?

Service price lists enable you to embed the special codes related to service activity in your pricing structure. You can base prices on work code, service group, and service category.

Common Attributes of Price Lists

Service price lists are similar to the item price lists in the Price List and Discount Menu (1.10). Create and maintain them in Service Pricing Maintenance (11.17.1) or Service Price List Copy (11.17.4).

While service price lists are similar to other price lists the system uses, there are some important differences.

- *Service Attributes*. Service price lists can indicate special service attributes: work code, service group, and service category. This enables you to tailor them to service needs.
- *Price List Type*. When you create a service price list, you select a price list type (C, R, or E). These types have special meaning in service activities. Type C is for contracts, type R for repairs in Call Activity Recording (CAR), and type E for expense costs in CAR.

Each price list type is discussed individually in:

- “Contract Price Lists” on page 152
- “Repair Price Lists” on page 154
- “Expense Cost Lists” on page 157

Some aspects of pricing are common to all types and are discussed first.

Effective Dates

You can specify start and end effective dates when you set up price lists. Effective dates enable you to set up prices ahead of time and phase them in when appropriate.

When the system searches for a valid price list, it compares the transaction date with the price list start and expiration dates. The price list is valid if the transaction date falls on or between the effective dates. If the system finds more than one valid price list, it selects the one with the latest start date that has not expired.

If you use price lists with open-ended dates together with price lists that use start and end dates, you can get unexpected results. The system selects price lists with open-ended dates first. Instead of open-ended dates, set dates beyond the range of expected business operations with a start date of 1/1/1950 and end date of 12/31/2999.

Currency

You can base price lists on a currency. The system uses a price list only if the currency on the contract or call is the same as the price list currency. If it finds no price list with the correct currency, the price defaults to zero.

Define each customer with the appropriate currency. Currency on a contract or call normally defaults from the customer associated with the end user.

You can create price lists in different currencies using Service Price List Copy. This program enables you to quickly create alternate price lists from one base price list, automatically recalculating prices based on a currency conversion factor.

Units of Measure

The system checks units of measure only for items on contracts and items consumed during service recorded in Call Activity Recording. For the system to use a price list, the UM of the item it is pricing must match the UM on the price list. This enables you to set up different prices depending on the unit of measure of the activity. For example, you can offer a lower price when a case of fluid is consumed than when an individual unit is consumed.

See “Service Units of Measure” on page 155 for information on special service units of measure.

Amount Types

Service price lists support three of the amount types other pricing structures use. The amount type determines the way the system calculates the price.

- *Discount %*. Discounts are percentages the system takes from the item list price in the item master.
- *Markup %*. Markups are percentages the system adds to the item GL cost at the relevant site.
- *Price*. A type P price list specifies a price amount.

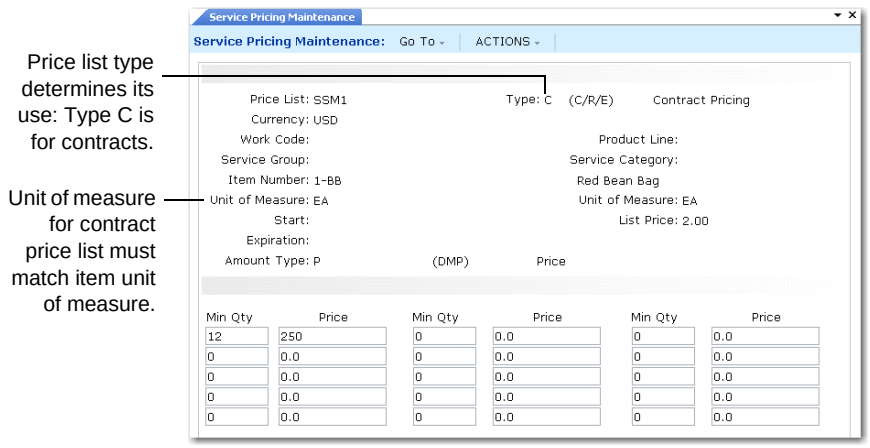
Because of the way the system uses service price lists, not all amount types are valid on each type of list—repair, contract, and expense cost. How the system uses amount types is discussed in the following sections on each kind of price list.

The amount type is not part of the unique index that defines a price list. This means that for any combination of key fields, you can define a price list with only one amount type.

Contract Price Lists

Define contract price lists with Service Pricing Maintenance (11.17.1). Specify prices for items covered on contracts and additional charge items on this type of price list.

Fig. 6.1
Contract Price Lists



Associate contract price lists with contract types in Contract Type Maintenance. The contract type establishes the default price list for individual contracts.

You can set up contract pricing by item number or by product line. Every item in the item master must belong to a product line. Pricing by product line is especially useful with contract price lists if you offer coverage at the same rate for all products in a product line.

Amount Type

You can use any amount type for contract pricing. When you create a type P list, the system reads the price for a period of coverage directly from the price list in Contract Maintenance. When you create a type D list, the system determines the price for coverage by applying the discount percent to the price of the item in the item master. When you create a type M list, the system determines the price for coverage by applying the markup percentage to the cost set for the item at the contract site.

Prices for Additional Charges

Some service organizations have other items they include with a contract that either add to the price or create a discount. Define these charges in Contract Additional Charges (11.5.7). When you define a charge, you must specify an amount type of P for percentage or F for fixed amount.

Set up prices for additional charge items on a contract price list. Specify the additional charge item name in the Item field; leave the unit of measure blank. The additional charge amount type field determines the amount type of price list:

- If the additional charge is a fixed amount, the price list amount type must be P for price. The price is a fixed amount to be added to or subtracted from the price of the contract for each period.
- If the additional charge is a percentage, the amount type can be either D or M. M is the default. The system interprets this kind of price as a percentage to be applied to the entire contract. The percent is negative for a discount price and positive for a markup.

See “Contract Additional Charges” on page 189 for details.

Example Table 6.1 illustrates four kinds of additional charges.

Table 6.1
Sample Additional Charges

Additional Charge Item	Amount Type	Price List Type	Quantity	Price
FedEx Delivery	P (percentage	M (markup)		2
Refurb Items	P (percentage)	D (discount		2
Additional Caller	F (fixed amount)	P (price)	+1	2
Only One Caller	F (fixed amount)	P (price)	–1	2

In each example, the price in Service Price List Maintenance is 2. However, the system applies 2 differently based on other factors:

- When you create a contract and specify FedEx Delivery as an additional charge, the system adds 2% to the contract total.
- When a user agrees to accept refurbished replacement items, the system takes a 2% discount from the contract total.

- When you create a contract and specify Additional Caller, the system adds $2 for each period billed on the contract.
- When a user agrees to have only one person call, the system subtracts $2 for each period billed on the contract.

Repair Price Lists

Define repair price lists with Service Pricing Maintenance. Associate them with contract and warranty types in the Call Price List field.

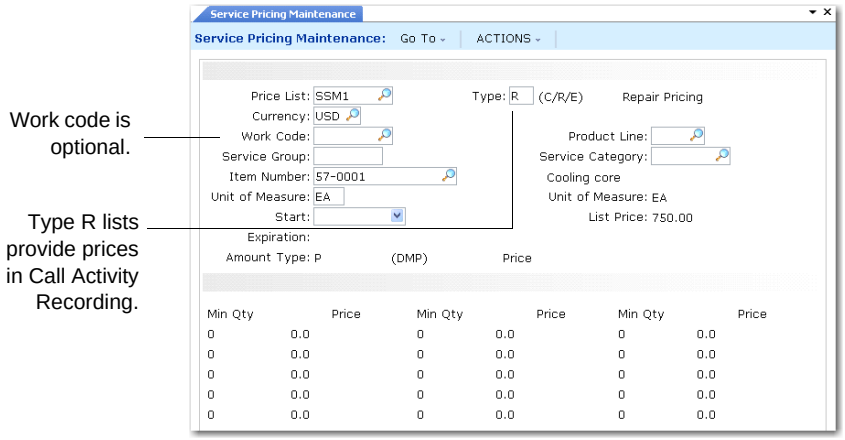
When coverage for activity recorded in Call Quote Maintenance and Call Activity Recording is found on a warranty or contract type, the price list defaults from the referenced type. When coverage is found on a contract, the call price list defaults from the contract. The contract call price list initially defaults from the type, but can be changed.

You can record three different kinds of consumption in CAR: labor, expenses, and items. You set up price lists for labor and expenses differently than for items.

Pricing for Repair Items

Figure 6.2 illustrates a repair price list for items.

Fig. 6.2
Repair Price List for Items



When items are consumed in CAR, the system searches the price list on the call header for each item's price. If a price is not found, the system looks for the item's list price in the item master. If the item is not in the item master, the price defaults to zero. The key factors in the price list search are the item or item group and the work code.

Items or Item Groups

You can set up price lists for individual item numbers or for a group of items. The product line and service group provide alternate ways of grouping items.

Product Line. Every item in the item master must belong to a product line. The system uses the product line of the item being consumed in the price list search.

Service Group. Associate items with a service group in Service Item Maintenance (11.3.7). Service groups provide a way for you to group items according to criteria you define. If you use service groups as an important item grouping category, you can base price lists on them. The system uses the service group of the item being consumed in the price list search.

Work Code

An item can have different prices, depending on the kind of work being done. For example, an item's price may vary depending on whether it is used during an installation, a repair, or a preventive maintenance visit.

The work code provides an additional layer of differentiation above the item selection. In addition to a work code, you must still specify an item number or some kind of item grouping—service group or product line.

Service Units of Measure

In service activities, two units of measure you define in the Call Recording/Invoicing frame of Call Management Control have a special significance.

- The system uses the Exchange UM in Call Activity Recording to determine the credit given for an exchanged item. When the return status you specify indicates an exchange and the item being returned has no coverage, the system searches for an exchange price with the exchange unit of measure on the repair price list associated with the call. This price displays as the default exchange price for the item.
- Fixed Price UM defines the price for a fixed price repair. You specify fixed prices for the item being repaired, not the parts used in the repair process.

Amount Type

You can use any amount type with repair price lists for items. When you create a type P list, CAR reads the item price directly from the price list. When you create a type D list, CAR determines the price for the item by applying a discount percent to the price of the item in the item master. When you create a type M list, CAR determines the price for the item by applying a markup to the cost set for the issuing site.

Search Order

During processing, the system looks for prices in the sequence listed in Table 6.2.

Table 6.2
Search Order for Repair Item Prices

Search Order	Work Code	Service Group	Product Line	Service Category	Item Number
1	✓				✓
2					✓
3	✓		✓		
4			✓		

Search Order	Work Code	Service Group	Product Line	Service Category	Item Number
5	✓	✓			
6		✓			

Included in the price list search are currency, unit of measure, and effective days.

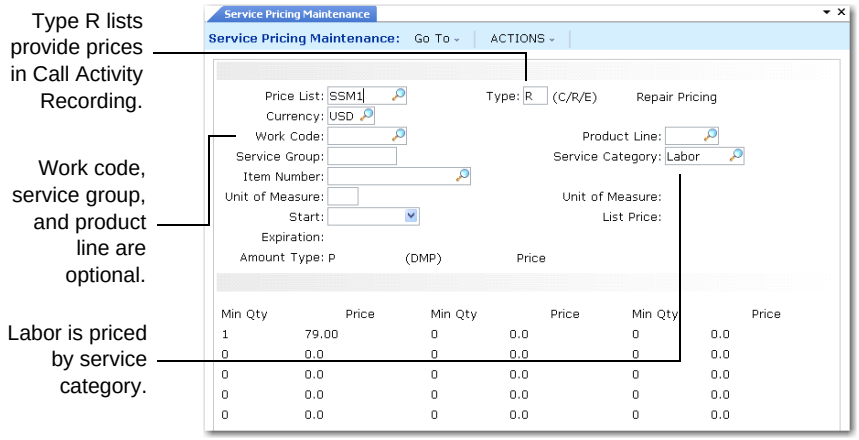
Labor/Expense Pricing for CAR

Price lists for labor and expenses consumed in CAR are based on service category. You can define as many service categories as you need, each representing a particular kind of labor or expense charge.

For example, if you are tracking travel expenses in CAR you might set up three service categories for ranges of hotel room expenses: room1, room2, and room3. Then you set up prices for each service category using Service Pricing Maintenance.

Figure 6.3 illustrates a repair price list for a labor service category.

Fig. 6.3
Repair Price List for Service Category



The system can consider other factors in the search for labor and expense prices: work code, service group, and product line. For example, the price for installation labor may be different than for repair labor. If you include service group and product line when you set up prices, they refer to the service group and product line of the item being repaired. This is different than for item price lists, where service group and product line refer to the item being consumed.

If the system finds no price for the labor or expense on the list, it defaults to zero.

Unit of Measure

Set up labor and expense prices with a blank unit of measure.

Price Lists for Less than One Unit

For the system to calculate prices for partial units, set up a price for a minimum quantity of 0. The system uses this price if, for example, you record a half hour of labor. This is especially important for labor and expense price lists, since they are more likely to be used for partial units.

Amount Type

Prices for labor and expenses cannot use a discount amount type, because, unlike items, there is no list price to discount. Costs, on the other hand, are available for both labor and expenses. The system derives labor costs from the work center associated with a standard operation, a routing step, or the Service Work Center in Call Management Control. If you define expense costs on an expense cost list, you can use both amount type M and P with labor and expenses.

When you create a type P list, CAR reads the price of the labor or expense from the price list. When you create a type M list, CAR determines the price for the labor by adding a price from the price list to the standard labor cost associated with the service work center. Similarly, the system determines the price for an expense by adding the price list price to the list price defined on an expense cost list. In either case, if the system does not find a cost, the price is zero.

Search Order

During processing, the system looks for prices in the sequence listed in Table 6.3.

Table 6.3
Search Order for Labor and Expense Prices

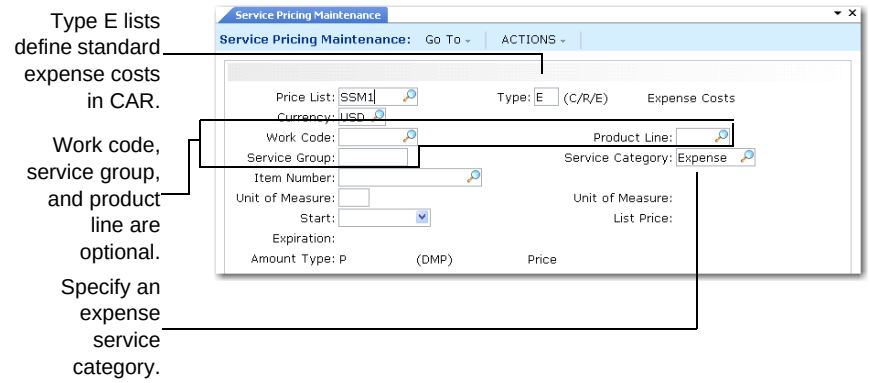
Search Order	Work Code	Service Group	Product Line	Service Category	Item Number
1	✓	✓		✓	
2	✓		✓	✓	
3	✓			✓	
4		✓		✓	
5			✓	✓	
6				✓	

Included in the price list search are the call currency and effective days. Set up labor and expense prices with a blank unit of measure.

Expense Cost Lists

You also define expense cost lists with Service Pricing Maintenance.

Fig. 6.4
Cost List for Expenses



The cost list determines the standard cost for expenses recorded in Call Quote Maintenance and Call Activity Recording. The cost list must have the same price list code as the corresponding repair price list specified on the service type. If the system finds no cost, the standard cost for the expense defaults to zero.

Note Cost lists apply only to expenses. The system derives the cost of labor from the work center specified for standard operations and routing steps or the default service work center in Call Management Control. It determines the cost of items from costs you specify in the item master or costs per site.

Set up cost lists just like expense price lists, using the service category as a base and optionally including work code, service group, and product line. The system uses the same search algorithm, with the call currency and a blank unit of measure. The only amount type you can use with expense cost lists is P for price.

Field Validations

Because you can create three different types of price lists with Service Pricing Maintenance, the field validations can be complex. The system displays a message if you do not follow these guidelines:

- Set up a price list of any type by entering at least one of the following: work code, service group, product line, service category, item.
- Use a work code in combination with other codes. For labor and expenses, the work code qualifies the service category. For items, the work code qualifies service group, product line, or item.
- Use service category or item number, but not both. For labor and expenses, the service category is the equivalent of an item number.
- Use service group, product line, or item number alone, not in combination. Base repair price lists for parts on service group with or without work code, on product line with or without work code, or on item with or without work code.
- Leave the unit of measure blank when you specify an additional charge item on a contract price list. This is also true for repair price lists for labor and expenses and expense cost lists. If you enter a unit of measure, the system clears it and displays a message.

Match the unit of measure to the unit of measure of the item in the item master when you specify an item on a contract price list. The system adjusts it if you enter any other unit of measure.

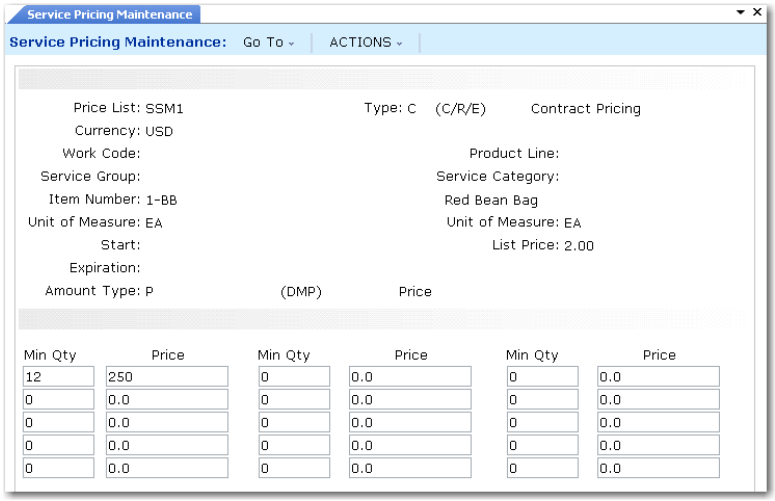
- For repair price lists for items, match the UM to the item's UM in the item master, or the fixed or exchange unit of measure in Call Management Control. If you specify any other unit of measure or leave the field blank, a message displays.
- Base contract price lists on product line or item number; the work code, service group, and service category fields do not apply and must be blank.
- Base type R labor and expense price lists on a service category. The system checks that the service category specified has one of the labor or expense fields set to Yes; otherwise, a message displays.
- Specify Amount Type P or M for labor and expense repair price lists. You cannot use discount prices.
- Base type E expense cost lists on a service category. You cannot leave this field blank and you must specify a service category with one of the expense fields set to Yes; otherwise, a message displays.
- Specify additional charge items only on a contract price list.
- Specify Amount Type P for expense costs, since there is no base for a discount or markup.
- Specify Amount Type P for a fixed amount additional charge.
- Specify Amount Type M or D for percentage additional charge.
- Specify a minimum quantity of one or less for a percentage additional charge. A percentage additional charge applies to an entire service contract. Therefore, you cannot set up multiple prices for it.

See Table 6.1 and Table 6.2 for valid field combinations.

Service Pricing Maintenance

Figure 6.5 illustrates Service Pricing Maintenance (11.17.1). Remember when setting up price lists that you cannot use all fields for each type of price list, and not all combinations of fields are valid. Table 6.1 and Table 6.2 summarize valid combinations.

Fig. 6.5
Service Pricing Maintenance (11.17.1)



Price List. Price list codes identify a pricing structure that defines specific prices at different quantity levels. State prices in terms of the domain base currency or any other valid currency. These tables determine the prices the system suggests for items and additional items on contracts; for items, labor, and expenses consumed in Call Activity Recording; and for expense costs in CAR, depending on the price list type.

Type. Select a price list type. Choices are:

- C for contracts
- R for repairs
- E for expense costs

Currency. Enter the currency of the prices on this price list. The system uses this price list only if the currency of the service transaction is the same as the price list currency. If you do not set up a price list in the currency of the service transaction, item prices default from the list price in Item Master Maintenance or are blank and you must specify them.

Work Code. Work codes designate what type of work is performed during service activity. Set up prices based on the kind of work being done. For example, preventive maintenance labor may cost less than repair labor or installation labor. Work Code does not apply to type C lists.

Service Group. If you assign each item you set up with Service Item Maintenance to a service group that represents your grouping scheme, you can base repair and cost prices on the group. For items consumed in CAR, this is the service group of the item consumed. For labor and expenses, this is the service group of the item being repaired.

Product Line. Each item in the item master must belong to a product line. Base contract, repair, and cost prices on product line. For contracts, this is the product line of the item being supported. For items consumed in CAR, this is the product line of the item consumed. For labor and expenses, this is the product line of the item being repaired.

Service Category. Set up repair price lists for labor and expenses and expense cost lists by service category. If you specify a service category, you can also specify a product line, service group, or work code; item number must be blank. Service category must by for expenses or labor.

Item Number. A warning displays if the item is not a valid item number in the item master or an additional charge item defined with Additional Charge Maintenance. However, you can define prices for items you do not manufacture. You can specify item numbers only on a contract or repair price list, and then only if service group, product line, and service category are blank. Specify additional charges only on a contract price list.

Unit of Measure. Indicate the unit of measure associated with this price list structure. For service price lists, this is normally blank. For an inventory item, unit of measure can be blank; If you specify a value here, it must be the item's unit of measure as defined in the item master or one of the special service units of measure. Leave UM blank for the other price list structures and for contract additional charge items.

- If the price list is for items consumed in CAR, you can specify the exchange unit of measure, defined in Call Management Control, for credit amounts for items returned.
- You can use the fixed price unit of measure defined in Call Management Control to specify an amount for a fixed price repair. In this case, the item number refers to the item being repaired, not an item being consumed.

Unit of Measure and List Price. If you specify an item defined in the item master, the primary description, unit of measure, and list price in Item Master Maintenance display for reference.

Start and Expiration. Enter values to determine the effective dates for this price list. If blank, the price list is always effective. When determining which price list to use, the system compares the transaction date with the price list start and expiration dates. If the transaction date falls on or between these dates, the system selects the price list with the latest start date that has not expired.

Important The system finds a price list with a blank effective date first, so make sure you use effective dates consistently.

Amount Type. The default is P unless this is a percentage additional charge item, in which case it defaults to M. Possible values are:

D (Discount %). Discounts are percentages the system takes from the item list price defined in the item master. Use the type D amount type for contract prices and percentage additional charges, and for repair prices for items.

M (Markup %). Markups are percentages the system adds to the item GL cost at the relevant site. Use the type M amount type for contract prices and percentage additional charges; for repair prices for items, labor, and expenses.

P (Price). A type P price list specifies a price amount. Use the type P amount type for contract prices and fixed additional charges; for repair prices for items, labor, and expenses; and for expense cost lists.

Min Qty. The minimum order quantity required for this price structure to apply. Quantity sets different prices at different order quantities. For example, you may offer a lower price when more than 5 items are consumed in CAR or more than 10 hours of labor are used. The system allows up to 15 different quantity levels. Enter quantity levels in ascending sequence.

If you want the system to calculate prices for partial units, set up a price for a minimum quantity of 0. The system uses this price if, for example, it records a half hour of labor.

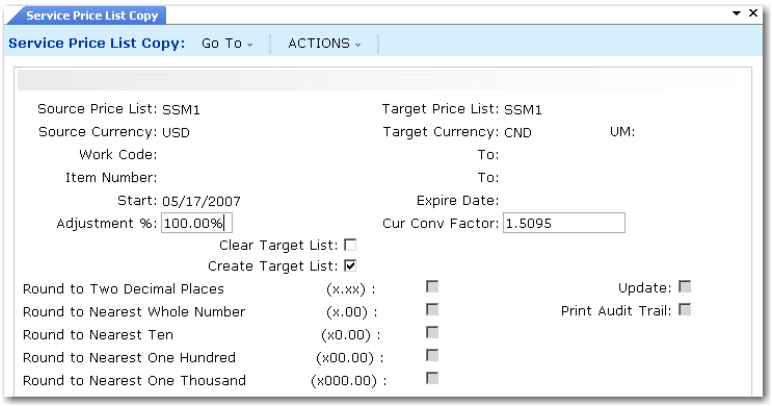
For an additional charge item of type P for percentage, Min Qty must be 0 or 1 and you can specify only one quantity and price combination.

Price, Discount %, Markup %. The price the system uses when calculating prices for this quantity level. The label of this field changes depending on Amount Type. Price represents an amount if the amount type is P; it represents a discount percent if Amount Type is D, and a markup percent if Amount Type is M.

Service Price List Copy

Service Price List Copy (11.17.4), illustrated in Figure 6.6, is similar to Price List Copy (1.10.2.5), with additional selection criteria for service attributes. Use it to quickly create alternate price lists from one base price list, automatically recalculating prices based on currency exchange rates. You can also adjust existing price lists by increasing or decreasing prices with an adjustment percent.

Fig. 6.6
Service Price List Copy (11.17.4)



Source Price List. Enter a service price list code for the system to use as the source of the data it copies to the target price list.

Source Currency. Enter the currency of the prices being copied. The system copies pricing information and currency rate from the source price list to the target price list for the range of work codes and item numbers you specify.

Target Price List. Enter the code for the system to use as the destination of the information being copied. The target and source price list can be the same. In this case, the system adds an ending effective date to the source list and a starting effective date to the target list. If the target list is not the same as the source and does not exist, you can create it. If it does exist, you can clear it or add to it.

Target Currency. Enter the currency for the system to use on the target prices. The source and target currency can be the same—leave blank for the system to default the source currency. If you are copying from one currency to another, the system calculates and displays a default Currency Conv Factor using the exchange rate effective on the price list start date. The system adjusts prices on the target list using the conversion factor you specify.

UM. Unit of measure for the target prices. The system copies only prices in this unit of measure from the source price list. Leave blank to copy prices regardless of the unit of measure.

Work Code and To. Enter a range of work codes for the system to use as selection criteria in choosing prices to copy.

Item Number and To. Enter a range of item numbers for the system to use as selection criteria in choosing prices to copy.

Start. Start date defaults to today's date and defines the start date for the new pricing structure created by the copy. The system applies this field differently in different situations:

- If the source and target codes and currency are the same and the date you enter matches the start date currently on the source price list, the system does not create a new price list. Instead, it modifies the existing price list according to any adjustment percentage you enter.
- In other cases when the source and target codes and currency are the same, the system uses the Start Date value as the start effective date on the target list and adds an ending effective date on the source list—the day before the target's start date.
- If the source and target codes are different, the system uses the start date on the target and the source list is not affected.

Expire Date. If you specify a value here, the system uses the expiration date as the end effective date for the target price list.

Adjustment %. Defaults to 100.00%. The system multiplies specific prices (amount type P) by the adjustment percent, then rounds to the specified number of decimal places. It also multiplies discount and markup percentages (amount types D and M) by the adjustment percent. If the percentage is greater than 100%, amounts are increased. If the percentage is less than 100%, amounts are decreased.

Cur Conv Factor. Enter a conversion factor to use when the source and target price list currencies are not the same. The system calculates and displays a default Currency Conv Factor using the exchange rate in effect on the price list start date. If effective exchange rates are not found, Cur Conv Factor defaults to 1. You can modify the conversion factor, if needed. However, the value cannot be 0.

Clear Target List. Defaults to No. Determines if the system clears the target price list before copying in the new prices. If No, the system adds the prices to the existing target price list. If Yes, it clears the target price list first and then copies the new prices.

Create Target List. Defaults to Yes and indicates that the target price list should be created if it does not exist. If Yes, the system creates a list if one does not exist; if No, it does not. If Create Target List is Yes and the list exists, Clear Target List determines if the system clears the list before the copy, or if it adds an end effective date to the old prices.

Round to Two Decimal Places, Round to Nearest Whole Number, Round to Nearest Ten, Round to Nearest One Hundred, Round to Nearest One Thousand. Set only one of these to Yes, indicating the rounding method for the system to use when creating the new price list structure.

Update. Defaults to No. Determines if the system updates the target price list based on the values specified. No is usually specified to create a report of potential changes before they are made. Run Service Price List Copy first using the report-only option by setting Update to No and Print Audit Trail to Yes. This lets you review changes before actually creating or updating the target price.

Print Audit Trail. Indicate if the system should print an audit report.

Yes (the default): The system prints a report showing the effect of applying the updates to the target price list.

No: The system does not print a report.

Chapter 7

Taxes in SSM

After you set up your tax structures, the system applies them to all taxable transactions. However, the service functions have some unique tax features, especially Call Activity Recording (CAR) and Call Invoice Recording (CIR). This chapter provides an overview of how taxes are applied to service functions, then highlights special service features.

Important This chapter does not detail tax setup. Review *User Guide: QAD Global Tax Management* for details on how to set up Global Tax Management (GTM).

This chapter covers the following topics:

Introduction

Use the functions on the Global Tax Management (GTM) Menu (29) to set up tax rates and other necessary tax controls. Once defined, the system applies the various tax parameters to all taxable transactions.

Each customer, supplier, end user, product line, and item record has a field that determine whether it is normally taxable. In SSM, you set up GTM tax defaults for service categories. Service categories play the same role for expenses and labor that item master records do for items.

SSM uses the taxable status and tax codes to determine defaults for the following service documents:

- Return Material Authorizations (RMA)
- Returns to Supplier (RTS)
- Service Contracts
- Call Invoices

The system calculates taxes for RMAs and service contracts like it does for sales orders. It calculates taxes for RTSs like purchase orders. This chapter concentrates on taxes in Call Activity Recording (CAR) and Call Invoice Recording (CIR), which are unlike other orders in the system.

End-User Tax Detail

Most transactions outside of SSM derive tax-related data from the customer address. In SSM, tax-related data generally defaults from the end user. While customers can be defined as end users, often the end user is another corporate division with different geographical location and different tax regulations. The system then uses end-user tax data to determine the taxable status of the end user for service activities.

Taxes for Call Activity

You can generate and review invoices for activity related to a call in Call Invoice Recording (CIR). You use standard sales order functions to post and print call invoices. In many ways they resemble standard sales order invoices.

However, call billing introduces another level of detail into the tax scenario. The call line item is the equivalent of a sales order line item. The call line can have beneath it any number of other records related to labor, expense, and item usage. On a taxable call, the tax status of each of these detail records can vary, adding a layer of complexity to the recording process.

Note If a call line is not taxable, the system ignores the tax setting for items, expenses, and labor and does not calculate tax. It considers lower-level settings only if a call line is taxable.

Where Are Taxes Edited?

Usually the individual who takes a call has more interest in recording the call problem and initiating an appropriate response than in tax details for the eventual billing. For this reason, tax data is not recorded in Call Maintenance.

Typically, tax detail is only minimally important during the recording of service activity. In Call Activity Recording, you can specify tax information at the call header and call line level. You can access tax data for detailed activity records only in Call Invoice Recording. When you create the call invoice, the system applies the information for the call line to the detail records in conjunction with defaults you set up for items and service categories. You modify tax defaults in Call Invoice Recording.

In summary, the three programs that manage calls enable you to progressively edit and review tax data:

- In Call Maintenance, you gather information the system uses later to determine the taxable status of the call.
- In Call Activity Recording, you review and modify tax data related to the call and call line.
- In Call Invoice Recording, you review and modify the tax data related to the call, call line, and call line usage records. You can also review and modify tax amounts in the trailer.

Tax Defaults for Labor and Expenses

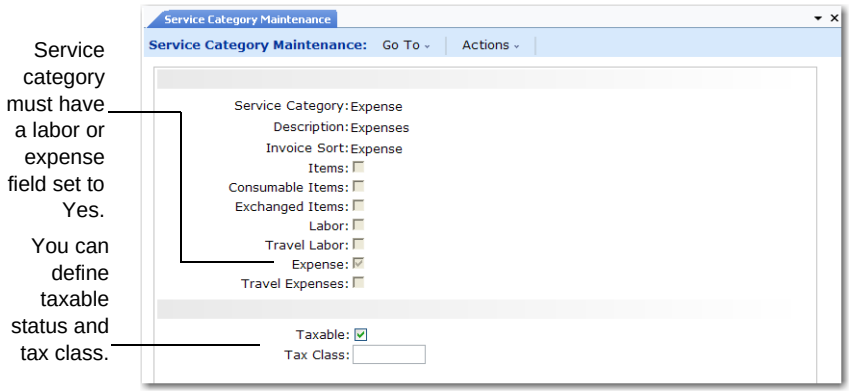
You can set up defaults to streamline the calculation of taxes in various service activities. If you carefully plan the defaults for consistency, users should not need to do much editing. The system simply calculates taxes as part of the billing process.

Only items defined with Item Master Maintenance (1.4.1) can be consumed in the service of a call. Assign a taxable status and tax code to these items. Tax data initially defaults from the item's product line.

Use Service Category Maintenance (11.21.9) to associate tax status and tax codes with labor and expense service categories. Since the labor and expense service category is the equivalent of an item, this provides functionality similar to the tax defaults in Item Master Maintenance. The system uses the taxable status and tax class associated with the service category as the default for labor and expense usage records for taxable call lines in Call Invoice Recording.

See "Service Categories" on page 71.

Fig. 7.1
Service Category Maintenance (11.21.9)



Taxes for Fixed Price Services

The system handles taxes for service activity provided at a fixed price differently than taxes for other kinds of calls. Normally, the system calculates taxes for each detailed labor, expense, and item usage record.

For fixed price service, it calculates tax amounts by applying the tax rate to the single fixed price. For this kind of service activity, the system does not consider tax data elements associated with detailed usage records. Taxes are calculated on the tax attributes of the call line.

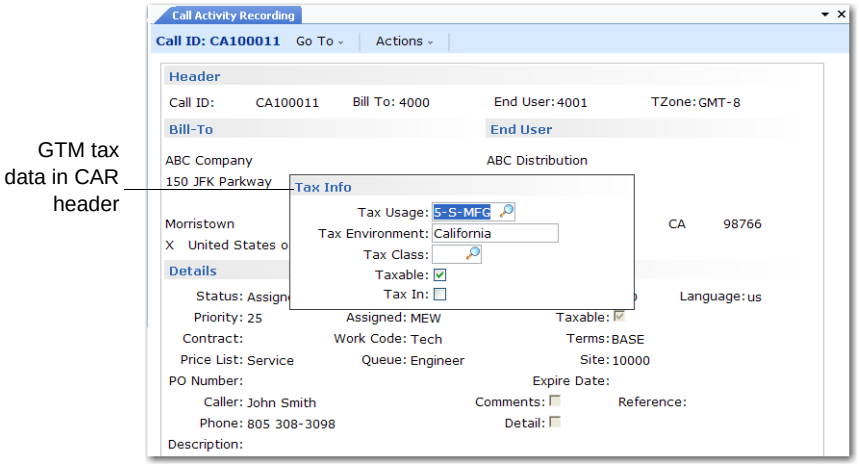
Determining GTM Tax Defaults

Global Tax Management (GTM) uses five data elements in determining taxes: tax status, tax class, tax environment, tax included, and tax usage.

Call Header Defaults

When a call is taxable, you can review and modify the five GTM data elements in a pop-up that displays in the Call Activity Recording header. These elements default from the end user on the call.

Fig. 7.2
GTM Tax Data in CAR Header



The From and To zone values associated with a call and the tax class of the To address determine the tax environment for the call header.

- For all call activity, the geographical location of the end user—county, city, and country—determine the To zone value.
- The tax class is the class associated with the end user in End User Create.
- The From zone is the site associated with the call header.

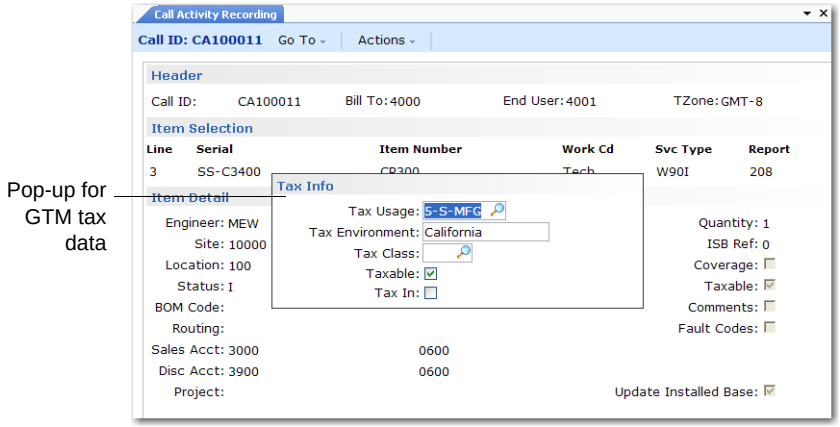
Under GTM, you must define each site in Company Address Maintenance to make the required geographic values available. If you do not define the site on the call header as an address, the system uses default values defined in Global Tax Management Control to determine the From zone. The same logic is used in other order functions such as sales orders and purchase orders.

Note If you are using the interface to Vertex's Quantum™ for Sales and Use Tax to calculate taxes, the system also checks the work code when determining tax zones. See *Technical Reference: Sales and Use Tax Interface*.

Call Line Defaults

Most of the information at the call header defaults to the call line. Another GTM pop-up displays in Call Activity Recording at the call line level, enabling you to review and modify call line item tax elements.

Fig. 7.3
GTM Tax Data for CAR Line Item



If you change the site associated with the call line from the call header site, the system recalculates the default tax environment.

Note You cannot modify the information in this pop-up if an invoice for the call exists. Once a pending invoice exists for the line, you can edit tax details only in CIR.

If this is a fixed price service activity, the call line elements determine the final tax calculation. No usage details are considered.

Call Usage Detail Defaults

The user does not enter any tax information for call usage records in CAR. However, the system sets up default values you can edit in CIR. The system applies the tax usage and tax included attributes of the call line by default to the usage detail records for that line.

Here again the system bases the tax environment on the To zone value—always the end user's zone—and the From zone value. The site associated with the detail usage record determines the From zone. This is the site where items are located or the site associated with labor and expense consumption. This site defaults from the call line, but can be changed in CAR for individual usage records.

The taxable status and tax class for the usage records default for items from the values in Item Master Maintenance or from Service Category Maintenance for labor and expense service categories.

Important If the call line is not taxable, the system ignores these lower-level details.

Generating and Reviewing Call Invoices

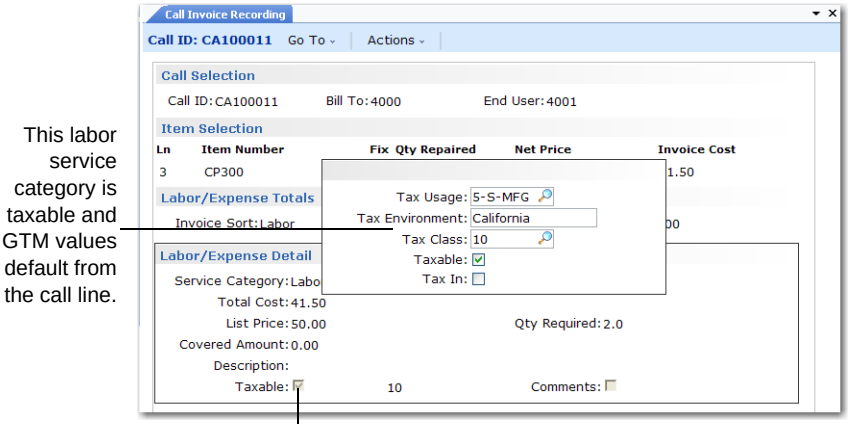
Create call invoices directly from Call Activity Recording if Invoice from Recording is Yes in SSM Accounting Control (36.9.10), or generate them from Call Invoice Recording.

When you create a call invoice, the system creates billing detail records for each labor, expense, and item usage record associated with the call. It creates distinct billing records for items issued, items returned, and items exchanged, since each may be taxed differently.

Note The system also creates billing details for fixed price service; however, they do not include any price information.

In CIR, you can review and change GTM tax details at the header, line, and usage detail levels as long as the call line is taxable. If the call line is not taxable, you cannot modify tax data elements at the detail level.

Fig. 7.4
GTM Tax Data for Billing Details in CIR



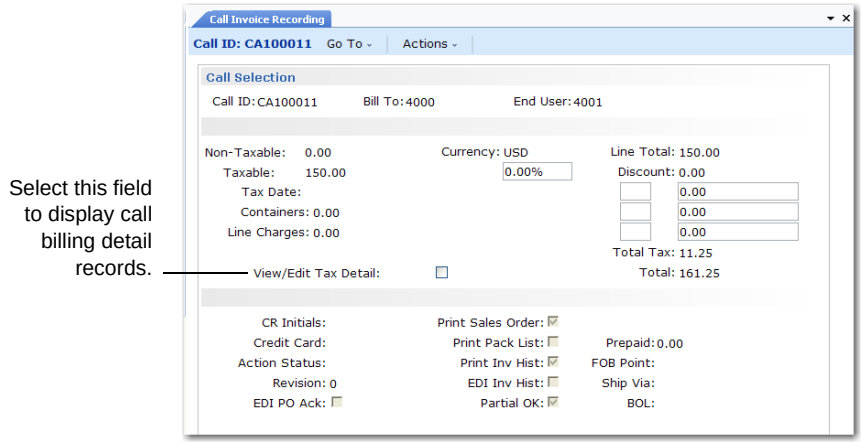
If the call line is taxable, the tax status and class on the detail records default either from Service Category Maintenance or from Item Master Maintenance. You can modify this.

Important If you make additional changes in CAR for a call line, the system deletes and regenerates the billing records associated with the line. This means that if you have overridden the default tax status or class of a detail record, you must make the change again in CIR.

Reviewing and Editing Taxes

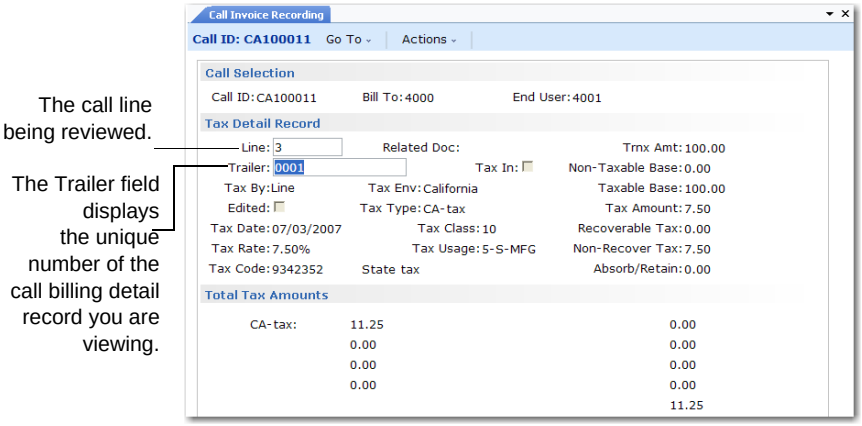
Review and edit tax records in the Call Invoice Recording trailer, just like in a sales order trailer. If Update Tax Allowed is No for the tax rate in effect, you cannot edit tax amounts.

Fig. 7.5
Trailer Frame in CIR



If View/Edit Tax Details is Yes, another frame displays call billing details.

Fig. 7.6
Trailer Frame in CIR



In a standard sales order, the Trailer field has a value only when you are viewing or editing trailer codes. Trailer codes are associated with line 99999. In Call Invoice Recording, the Trailer field also displays the index number of the billing detail record associated with the call line being reviewed.

Example You record three lines of labor and four items used for a call line. The system creates seven billing detail records numbered 01 through 07. You can review the tax amount for each separately.

The system creates tax detail records for items first, then details for labor and expenses sorted by invoice sort.

If you modify taxes, the system prompts you to recalculate taxes whenever the invoice is regenerated or whenever you access the trailer frame in CIR. If you have changed the call line in CAR, you normally respond Yes to this prompt so the system taxes any new transactions correctly. Recalculating the taxes, however, eliminates any modifications you have made.

Printing Call Invoices

If Print Tax Detail on Reports is Yes in Global Tax Management Control (29.24), tax detail is included by the invoice print function. This setting affects call invoices in the same way it affects sales order invoices.

Chapter 8

Service Contracts

This chapter covers creating and managing service contracts and quotes. Contract billing is discussed in Chapter 9 and preventive maintenance scheduling is discussed in Chapter 10.

Introduction to Contracts

Service contracts, like warranties, define the rules governing agreements for service with customers. The contract specifies:

- The customer and end users receiving coverage
- Items covered
- Levels and limits of coverage
- Total coverage
- Pricing of service
- Duration of contract in months

Chapter 5 discussed service contract types and how to use them as templates for actual service contracts. The contract type associated with a contract determines many of its service attributes, including price lists, coverage hours, and response time.

Some attributes of the contract type provide default values when you define a specific contract; they can be modified. The system uses others directly to determine coverage in Call Maintenance (11.1.1.1) and RMA Maintenance (11.7.1.1).

From this viewpoint, a service contract is a unique document that ties together:

- Coverage information from the contract type
- Customer and end-user records
- Items to be supported

See “Overview of Service Types” on page 124 for details.

Contract Design

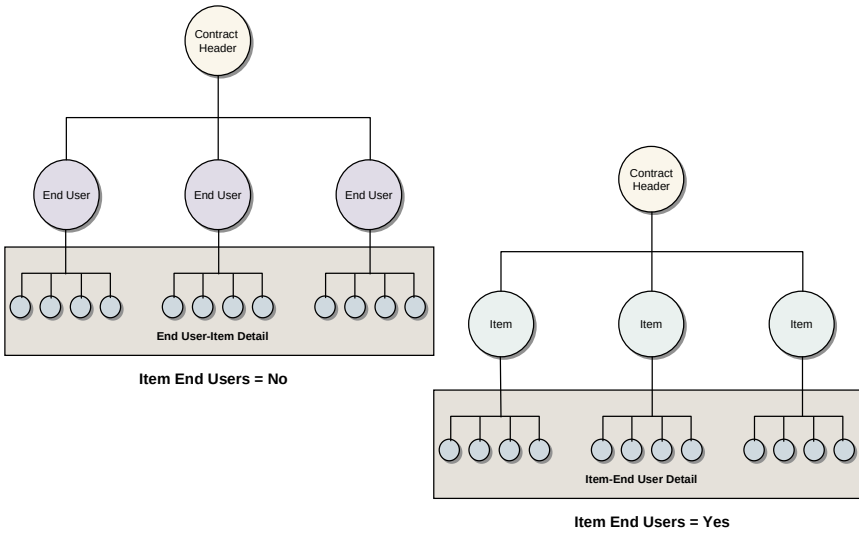
Of the three common features of contracts—contract types, customers and end users, and items—contract types are applied in the same way to all contracts. Similarly, a contract can be associated with only one customer.

However, the way you view items and end users can vary. As you design a contract, you must make a fundamental choice regarding the relationship between items and end users. Contracts can be viewed in two ways:

- A collection of end users with items requiring coverage
- A collection of items, each with one or more associated end users

Figure 8.1 illustrates the relationships between components using these two different designs.

Fig. 8.1
Contract Designs



You determine contract design by your choice of Yes or No for the Item End Users field in the contract header.

- Contracts created with Item End Users set to No are referred to as contracts in end-user/item sequence, since you enter end users before you enter items owned by the end users.
- Contracts created with Item End Users set to Yes are referred to as contracts in item/end user sequence, since you enter a default item before you specify end users who own specific instances of the item.

The distinction between these two contract designs affects every aspect of creating and maintaining a contract. This is reflected in the sequence of frames in Contract Maintenance and how data defaults from one contract level to the next. Your choice of items with end users or end users with items also affects:

- Contract billing and how billing information displays on invoices
- How tax defaults for detail lines are found
- How blanket coverage is set up and applied
- How preventive maintenance (PM) schedules are created

To ensure that the distinctions between these two types of contracts are clear, two separate screen flows are provided in this chapter:

- See “Contracts for End Users with Items” on page 195 for a discussion of contracts in end-user/item sequence.
- See “Contracts for Items with End Users” on page 214 for a discussion of contracts in item/end-user sequence.

Contract Workflow

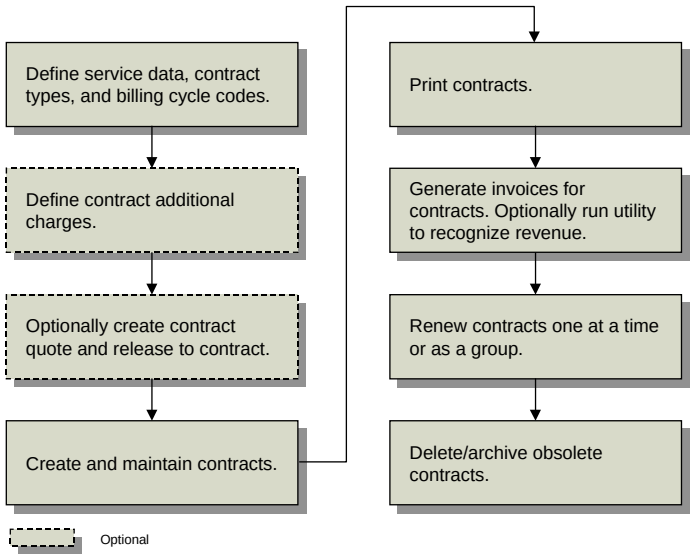
The service contract manages billing issues regarding the repair, replacement, and support of an item. These issues arise in:

- Call and Call Quote Maintenance, where problems are registered with the support department

- Call Activity Recording, where service activity in response to a call is recorded, including labor, expenses, and items consumed
- Preventive Maintenance (PM), an optional feature of Contract Maintenance that schedules service calls in advance for items under contract
- Return Material Authorization (RMA) Maintenance, where you receive items from an end user and issue replacement items

Figure 8.2 outlines a typical contract workflow.

Fig. 8.2
Contract Workflow



To use contracts, follow these steps:

1. Make sure you have set up the base service data required before you can create contracts, such as customers, end users, service item information, work codes, service categories, and invoice sorts. Define appropriate defaults and controls in Contract Control (11.5.24) and SSM Accounting Control (36.9.10).

2. Use Contract Type Maintenance (11.5.10) to define contract types reflecting service values you typically incorporate in your contracts. Set up other codes such as billing cycles in Billing Cycle Code Maintenance (11.5.18.1).

3. If needed, set up additional charge items in Contract Additional Charges (11.5.7).

4. Many organizations go through a review process before a contract becomes effective. To do this, use Contract Quote Maintenance (11.5.1.1) to create contract quotes, print them using Contract Quote Print (11.5.1.3), and send them to the customer. After a quote is accepted, release it to a contract using Contract Quote Release to Contract (11.5.1.5).

   Note In Contract Quote Print, the country for the sold-to customer determines the numeric and date formats.

   If you use quotes, you can streamline the creation of new quotes by copying existing quotes or contracts using Contract Quote Copy from Quote (11.5.1.6) or Contract Quote Copy from Contract (11.5.1.7). You can also generate them from contracts during renewal as part of running Renewal Process/Report (11.5.13.10).

5 If you do not prepare quotes, create contracts directly in Contract Maintenance (11.5.13.1), or copy them from existing contracts using Contract Copy to Contract (11.5.13.5). Print them using Contract Print (11.5.13.4).

6 Depending on your billing process, release contracts to invoicing at appropriate intervals using Billing Release to Invoice (11.5.18.13). This activity creates pending invoices that are managed in the Sales Orders/Invoices module. Depending on your accounting practices, you may also need to run Revenue Recognition (11.5.18.21). For details, see page 229.

7 A contract remains in effect until the specified end date. Renew contracts that have been fully invoiced to extend their coverage. Do this one at a time using Renew Single Contract (11.5.13.8) or use the auto-renew feature to renew groups of expired contracts with Renewal Process/Report (11.5.13.10).

8 You can archive and delete fully billed, expired contracts from the system using Contract Delete/Archive (11.5.13.23). The system checks to make sure no active calls reference a contract before it is deleted. The delete/archive can also include quotes.

Coverage Limits and Contracts

SSM provides two basic approaches to managing coverage levels and limit amounts. In the first approach, after you set up coverage levels on contract types, you are done. Each contract derives coverage levels from its associated service type.

In the second approach, you copy limits from the service type into the contract when you create it. The limits become part of the contract, and are not found by referencing the service type. You can edit these limits or create new ones.

Important Limit consumption can be tracked only with the second approach.

Options for copying service limits are also available during contract renewal. You can use the limits directly from the contract or refer back to the contract type for current effective limits.

The system monitors contract limits as you record activity in Call Activity Recording, and CAR warns you if you exceed a limit. Only the percentage of coverage affects processing in RMA Maintenance.

The approach you take is determined by the Contract Limits field in SSM Accounting Control.

Contract Limits Field

Contract Limits in SSM Accounting Control (36.9.10) determines whether the system uses limit amounts when you create a contract, and whether you can view and change coverage records in Contract Maintenance.

When No, you cannot define limit amounts for contract types in Contract Type Maintenance—only coverage percentages. The system applies these coverage percentages to the contract as defined. You cannot modify them in Contract Maintenance; limit prompts and frames do not display.

When Yes, you can copy limits from the contract type into a new quote or contract and modify them at all levels of a contract: header, default end users or items, and detailed lines. Copying limits is discussed in the following sections.

Copying Limits

If Contract Limits is Yes, you are prompted to copy limits when you complete the second header frame in Contract Maintenance. Depending on the value of Item End Users, you are also prompted at lower levels in the contract.

If you respond with Yes, the system copies the limits as defined for the contract type into the header. If you respond with No, limits are not copied, but you can define limits unique to this contract. You may save time by copying and modifying limits, rather than starting over.

When Item End Users is No:

- After completing end-user default information, you are prompted to copy limits to the end user. If you respond Yes, you can copy limits from the contract header or the service type.
- After completing detailed line-item information, you are prompted to copy limits to the line. If you respond Yes, you can copy limits from the end user or the service type. If end-user limits do not exist, you can copy from the header or the service type.

When Item End Users is Yes:

- After completing item default information, you are prompted to copy limits to the default item. If you respond Yes, you can copy limits from the contract header or the service type.
- After completing detailed line-item information, you are prompted to copy limits to the line. If you respond Yes, you can copy limits from the default item or the service type. If default-item limits do not exist, you can copy from the header or the service type.

If you have modified limits at one level, you may want to use the modified version as a template for the next contract level.

The copy prompt initially defaults to Yes in Contract Maintenance. If you choose not to copy limits, you are prompted each time you edit the contract, but on subsequent edit sessions, the prompt defaults to No.

Important The calculation of the amount accumulated against a limit occurs *only* when limits are copied into a contract and become part of it. It cannot take place for a contract type. If you respond with No to the copy limits prompt and do not define limits in Contract Maintenance, the system applies the level of coverage defined for the contract type without regard to limit amounts.

If you are using limit amounts or list price limits, the system converts them to the contract currency when they are copied into the contract using the effective exchange rate.

See “Exchange Rate” on page 187.

Note If you are generating lines automatically using the Source field in the contract header, you do not have the opportunity to copy limits. The system creates each line without its own limits. See “Automatically Generating Contract Lines” on page 194.

Copying Effective Dates into Contracts

When limit records are copied into a contract, the system sets effective dates if none are defined. If the records have effective dates, the system ensures that the dates fit within the start and end of the associated contract level: header, end user or default item, or item detail.

In a simple case, you can set up limits on a contract type without any effective dates, then create a contract based on that contract type. The contract start date is 1/1/07 and end date is 12/31/07. When limits are copied into the contract, they are copied with these effective dates.

Now consider what would happen if you had two sets of limits on the contract type with the following effective dates:

```
06/30/07 - 06/30/08
07/01/08 - 06/30/09
```

When you create the same contract from 01/01/08 to 12/31/08, you still have two sets of limits, but they are copied in with these dates:

```
01/01/08 - 06/30/08
07/01/08 - 12/31/08
```

Limits at Multiple Levels

The contract type is a template for building service contracts. If Contract Limits is Yes in SSM Accounting Control, you can further refine or customize the limit template at the contract level, for end users or default items, and on individual lines within the contract.

As a result, you can set limits at four levels: contract line, end user or default item, contract header, and contract type. However, while it is possible to set up limits at all levels, the system uses only one level to determine coverage for a particular item.

When the system looks for effective limits, it uses a multiple-phased approach. First it finds where limits are defined by searching in the following order:

1. The contract line item defined in Contract Maintenance
2. If Item End Users is No, the end-user level; if Item End Users is Yes, the default-item level
3. The contract header defined in Contract Maintenance
4. The original service type defined in Contract Type Maintenance

When the system finds a coverage record, it examines the terms in this order:

1. Limits for a work code and service category combination
2. Limits for an invoice sort related to the service category
3. Limits for the contract total

If none of these exist, the system considers the activity being recorded not covered. In Call Activity Recording (11.1.1.13), charge code defaults to the billable charge code, as defined in Default Charge Code Maintenance (11.21.21.13).

See “Levels and Limits of Service” on page 128.

Important This search algorithm has important implications. If you decide to set up limits at the contract-line level, set up all necessary limits at that level. You cannot combine limits from multiple levels since the accumulation of amounts against those limits would become ambiguous.

Changing Limits

You can change limits on a contract after the contract is effective. However, if CAR has accumulated any amounts against the limits, certain restrictions apply:

- The limit record cannot be deleted, nor can the contract line and contract.
- The limit amount cannot be lowered below the accumulated amount.
- The effective dates cannot be moved inside the range defined by the call open date of the first and last call with accumulating amounts.

If you must make a change, modify the covered amounts in Call Activity Recording or Call Invoice Recording. If the invoice for the amounts has been posted, you cannot modify the records associated with it.

Adding Additional Limit Records

You might need to add limits to an open contract, for example, if some of the contract is renegotiated. The system prevents this change if any call lines reference the contract header or line for coverage. Adding limits could result in invalidating those that currently exist.

To prevent limit consumption at invoice post from not matching consumption in CAR, limit records cannot be added to a contract until you post all open call reports.

Example A limit line provides 50% coverage for the Labor invoice sort. A call references this limit and the covered amount is based on it. Now you add a limit record to the contract for work code TECH and service category LABOR1 for 25% coverage. This new record applies to the line currently open that used the Labor invoice sort coverage. When the invoice is posted, the limit that now applies—work code and service category—is not the one applied in CAR.

Changing Contract Start and End Dates

The effective dates on limits are related to the start and end dates at the associated contract level. As a result, you cannot always change the contract dates. When open calls reference limit records, you cannot move the contract start or end date within the range defined by the open dates of the first and last call with accumulated amounts.

Example A contract starts on 11/01/07 and ends on 12/30/07. You take a call on 11/15/07 for an item covered by a contract line and record activity that consumes limits in Call Activity Recording. You cannot move the contract start date after 11/15/07 or the end date before it.

The system only checks for accumulated amounts. Additional calls may have been opened based on the current contract open date and activity not yet recorded. When you access the call in CAR, the contract coverage will no longer be valid.

Changing Service Types for Contract Lines

The system uses the service type on the contract header by default for each line item added. However, you can use a different service type for a particular line item. If you change the service type when adding a new line to the contract, the system uses the price list, limits, and product line associated with the new service type for this item.

If you change the service type after adding a line to the contract, the system must make additional checks. If you are using contract limits when you change the service type, you are prompted to delete the old limits and copy in the ones from the new service type.

If you respond Yes, the system attempts to delete the old limits and apply the new. However, if any amounts have been accumulated against the current limits, they cannot be changed. Instead, a warning message displays.

You are also prompted to see if you really want to change the price of coverage for the item. If you respond Yes, the system changes the price; otherwise, it does not.

Changing the service type after a contract is in effect is not recommended and could have unpredictable results.

Renewal and Contract Limits

When Contract Limits is Yes in SSM Accounting Control, the system provides two options for managing limits during contract renewal. The Renew Limits From field in SSM Accounting Control has two values.

- C indicates that limits should be copied from the old contract. The system changes the effective dates on the limits to reflect the start and end dates of the renewed contract. This is the correct choice if you have created limits that are unique to a particular contract or modified limits copied from the service type.
- S indicates that limits should be copied from the contract type, just as when a contract is created. This is useful for organizations that want to phase in changes by setting them up in the contract type using effective dates. During renewal, the system applies the limits that are effective for the new contract start date.

Renew Limits From in the control program defaults to Contract Maintenance, where you can modify the setting on a contract-by-contract basis. When one contract is copied or renewed, you can modify this value. When you renew in batch, the system checks the value for each contract and processes it according to the option selected.

Note Whenever limits are copied or renewed, the system resets any amounts recorded against them to zero.

Effect of Renew Limits From Field

The Renew Limits From field affects all of the programs that copy limits.

- Contract Quote Release to Contract (11.5.1.5). Limits are copied exactly as defined in the quote, regardless of the setting of Renew Limits From. The quote is released as is, since this is the way the customer reviewed and accepted it.
- Contract Quote Copy from Quote (11.5.1.6) and Contract Quote Copy from Contract (11.5.1.7). You can modify the Renew Limits From setting before executing these functions. When quotes are being created, the start date defaults from the start date of the quote or contract being copied and the system does not verify overlapping coverage.
- Contract Copy to Contract (11.5.13.6) and Renew Single Contract (11.5.13.8). You can modify Renew Limits From before executing this function. The default start date of the new contract is after the end date of the original contract, and the system verifies that overlapping coverage is not created.

- Renewal Process/Report (11.5.13.10). You cannot modify Renew Limits From. The system reads it from each contract as defined in Contract Maintenance.

Determining New Effective Dates

If you are using option C (contract) when copying limits, the system adjusts the effective dates of the source contract or quote to fit the date range of the new contract or quote. If you renew a contract for a 12-month duration for another 12 months, copying and adjusting the limits is very straightforward.

Example Consider a 12-month contract effective from January 1, 2007 to December 31, 2007 with two limits:

```
The first limit is effective from 1/1/07 to 6/30/07
The second is effective from 7/1/07 to 12/31/07
```

When you renew this contract for the same date range in 2008, the system copies the limits and adjusts the year from 2007 to 2008.

Now renew the contract from 5/1/08 to 4/30/09. The system adjusts the year and calculates the monthly offset from the old contract start date (1/1/08), which is 4. The system adds the offset to the limits:

```
1/1/07 to 6/30/07 becomes 5/1/08 to 10/31/08
7/1/07 to 12/31/08 becomes 11/1/08 to 4/31/09
```

However, contracts do not have to start on the first of the month. What happens if the original contract is renewed from 5/15/008 to 5/15/09? The system calculates a month offset (4) and a day offset (14) and adds them to the original limit dates:

```
1/1/07 to 6/30/08 becomes 5/15/07 to 11/14/08
7/1/07 to 12/31/08 becomes 11/15/08 to 5/14/08
```

Consumption of Limits

When you record activity in Call Activity Recording, the system accumulates amounts against limits found at the lowest level of the contract. If you have set up limit amounts using effective dates, the amount applies from the start to the stop date of the effective range.

Example You might have limits with effective dates such as those in Table 8.1.

Table 8.1
Effective Dates

Invoice Sort	Amount	Effective Dates
Labor	$500	1/1/07 - 6/30/07
Labor	$250	7/1/07 - 12/31/07

If $500 of service has not been recorded by 6/30/07, the unused amount does not carry over. On 7/1/07, the system resets the accumulated amount to zero and allows only $250.

Items returned for credit in Call Activity Recording do not affect limit consumption. The system does not reverse consumption based on a credit.

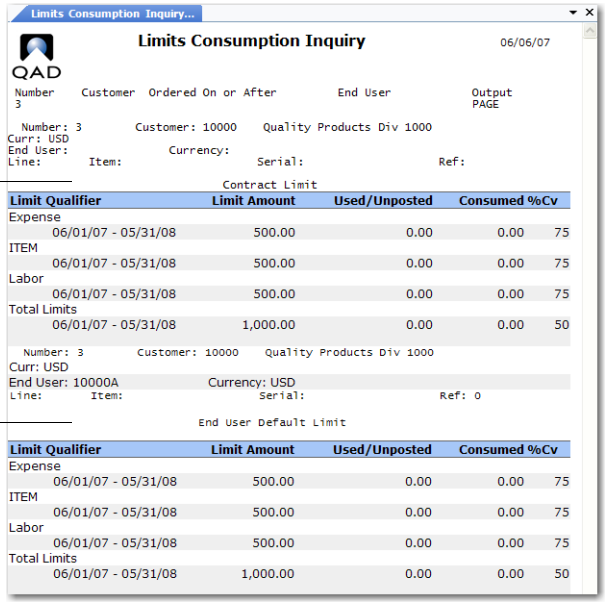
Viewing Contract Consumption History

Two reports give you an overview of how limit amounts have been consumed.

Limits Consumption Inquiry

The Limits Consumption Inquiry (11.5.13.21.4) displays consumption for limits selected by contract number, customer, order date, and end user.

Fig. 8.3
Limits Consumption Inquiry (11.5.13.21.4)



When an end user is specified, limit consumption for that end user only is listed in the output. In this case, no consumption for contract-wide limits displays, since these limits are not associated with an end user.

When an end user is specified, limit amounts are expressed in the end user's currency.

This inquiry shows limits at all levels of a contract. The limit frame title identifies the kind of limit: contract, end-user default, item default, and detail.

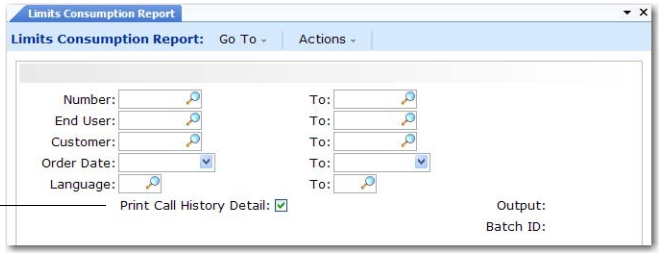
- The kind of limit displays under the Limit Qualifier heading. This can be an invoice sort, a work code and service category combination, or a limit set for the total (Total Limits).
- The limit amount displays in the Amount column. Contract and default item limits are in the contract currency. End user and detail item limits are in the end-user currency.
- The Used column displays amounts recorded in Call Activity Recording but not yet consumed through invoice post. These amounts are subject to change. For example, modifying the covered amount or the charge code in CAR may change the amount the system uses against this limit.
- The Consumed column displays amounts posted against this limit by call invoices.
- The %Cv column displays the level of coverage for this coverage limit.

For details, see "Multicurrency and Limit Amounts" on page 187.

Limits Consumption Report

The Limits Consumption Report (11.5.13.21.5) provides information similar to the inquiry with additional options.

Fig. 8.4
Limits Consumption Report (11.5.13.21.5)



Selection criteria include ranges of contract numbers, end users, customers, contract (order) dates, and contract languages. If Print Call History Detail is Yes, information about each call that affected the limits is included in the report.

Note Call detail is available to the system only when Record Limits History is Yes in SSM Accounting Control.

The limits consumption report is more detailed than the inquiry. The following sample shows only the first seven columns of information reported.

Fig. 8.5
Limits Consumption Report Output

```
Number: 292       Customer: 100-h     Lake Refrigerator Co.    Currency: USD

   Invoice Sort  Wk Code   Svc Cat   Start     End Date    Amount  Used/Unposte
   ------------- --------  --------  --------  --------  --------  ------------
   Total Limits                      03/01/07  03/31/07  3,000.00         100.0

       Call    Line  Item Serviced  Report Oper  Usage   Consumed  Act  Date
       ------- ----  -------------  ------ ----  ------  --------  ---  --------
       CA818      7  21-1000        403456   10  21-20     100.00  3/14/07


Line: 1    Item: 116                 electric generator        Serial: 9  Ref:
End User: 1001000  Currency: USD

   Invoice Sort  Wk Code   Svc Cat   Start     End Date    Amount  Used/Unposte
   ------------- --------  --------  --------  --------  --------  ------------
   Total Limits                      03/01/07  03/31/07  3,000.00           0.00
```

The report uses separate columns to display the invoice sort or work code and service category used to define the limits. The other columns display similar amounts as the inquiry.

Note The system uses the call open date to search for effective limits.

Call detail includes the call number, line affecting the limit, item for which service was provided, operation, component part or service category used on that call line, the amount consumed (posted), and the activity date. The date in the call history detail is the date the system used to search for effective limits, which is the call open date.

Contract Pricing

This section covers issues related to the application of price lists in Contract Maintenance, the influence of contract currency, and the handling of credit issues in contracts.

Contract Line Pricing

This section discusses how the system applies price lists in Contract Maintenance.

Contract pricing differs from pricing for sales orders in one important way. In the case of a sales order, the item being sold normally has a price in Item Master Maintenance. If the system does not find a price on a price list, it uses the item master price and calculates discounts relative to item master prices.

In the case of contract line items, the equivalent of an item master price does not exist. The system handles this in two ways, depending on whether it finds a price on a price list for the coverage.

Price from Price List

When the system finds a price on the line-item price list, it displays it in the Net Price field and sets a value for the List Price field, displayed in the item detail. *From this point on, List Price cannot be changed.* If you modify the net price, the modification displays in the Discount field as either a positive or negative discount, relative to the fixed list price. If you manually enter a discount percent, the system recalculates the net price based on this percentage and the fixed list price.

No List Price Found

When the system cannot find a price for contract coverage, net price defaults to zero. In this case, what you enter in Net Price also becomes the List Price value. If you then specify a discount in the item detail, the system recalculates the net price based on this discount. The list price remains as specified.

So far, this seems to be the same as what happens when the system finds a price on a price list. However, when you change the Net Price value in this second scenario, the system resets List Price to the Net Price value and Discount % to zero. Reenter a discount if one is required. To alert you to the consequences of changing the price, the following message displays when the edit focus is in the Net Price field:

```
If updated, net price will become new list price
```

This message displays when a price has not been found on a price list. However, you are warned in both cases when the system has recalculated the net price based on a change to Discount %, and prompted to continue.

Contract Additional Charge Pricing

Pricing for additional items on a contract is similar to contract line-item pricing. In both cases, the system distinguishes between a price found on a price list and one you enter when net price defaults to zero.

- When the list price for the additional charge item is found on a price list, it never changes. If you change the net price, the difference is reflected as a discount.
- When a price is not found on a price list and you enter a net price, any changes to the net price resets the list price. In this case, you must enter a manually specified discount.

Fixed additional charge items can represent either a positive or negative amount, depending on the value for item quantity. However, you cannot update item quantity when there is a percentage additional charge. For a percentage additional charge, the system determines whether the item is an uplift or discount based on the amount type of the price list. If the percentage additional charge is not on a price list, the system applies it as an uplift. If you want a percentage additional charge item to be treated as a discount, define it on a discount price list.

Contract Currency

When you create a contract, you can specify a currency. The currency initially defaults from the currency for the customer bill-to associated with this contract. If the customer has no separate bill-to address, the customer currency is used. You can modify currency only when creating a contract; after the contract is saved, currency cannot be updated.

The contract currency affects pricing for contract-wide additional charges and contract-level limit amounts or list-price limits. Limit amounts for a contract type are defined in base currency.

Each end user can have a different currency, if necessary. If you are billing end users (Bill End Users is Yes in the contract header), end-user currency defaults from the end user's bill-to customer record. Otherwise, end-user currency defaults from the contract header.

The system searches for line-item prices using the end-user currency.

Multicurrency and Limit Amounts

How currency affects limits depends on the contract design. For a contract in end-user/item sequence:

- Limits at contract header are in the contract currency.
- Limits at end-user level are in the end-user currency.
- Limits at line detail are in the end-user currency.

For a contract in item/end-user sequence:

- Limits at contract header are in the contract currency.
- Limits at default-item level are in the contract currency.
- Limits at line detail are in the end-user currency.

Exchange Rate

When you enter a non-base currency, the system looks for a valid exchange rate effective on the contract order date. An exchange rate pop-up enables you to specify a spot rate, and to indicate if the exchange rate is fixed or not. By default, the system displays both components of the exchange rate relationship. One of these is the base currency and the other is the contract currency.

This system uses this rate to convert limit amounts from the base currency to the contract currency. When you post the invoice for the contract, the system uses the exchange rate effective on the date of invoice post, unless you have indicated that the exchange rate is fixed.

For details, see the Multiple Currency chapter in *User Guide: QAD Financials A.*

Contract Currency in Calls

Contract currency has an important effect on related calls and recording activity for them. Only one currency can be valid on a call. Since all the lines on a call must be in the same currency, the contracts associated with a given call must be in the same currency.

You normally specify currency after you begin service activity in Call Activity Recording. However, when you add a line to a call with contract coverage, the system sets the call's currency in Call Maintenance.

If you try to add another item to the call that is covered by a different contract using a different currency, an error displays.

Currency normally defaults from the currency associated with the contract customer's bill-to address. If you override this default in Contract Maintenance, the system warns you, since this may cause problems later if a call for multiple items for this customer is generated.

Multicurrency and Contract Invoicing

If Bill Summary is set to Yes for a contract, the system attempts to summarize information on one invoice. This is either one per end user, when Bill End Users is Yes, or one for the customer bill-to on the header, when Bill End Users is No.

If more than one currency is used on a contract, however, multiple invoices always result. See the section on "Summarized or Detail Billing" for more details.

See "Constraints on Summarized Billing" on page 234.

Multicurrency and Contract Copy and Renewal

You can copy contracts and quotes with any of the following functions:

- Contract Quote Copy from Quote (11.5.1.6)
- Contract Quote Copy from Contract (11.5.1.7)
- Contract Copy to Contract (11.5.13.6)
- Renew Single Contract (11.5.13.8)

The currency of the old contract is copied to the new, unless you specify a different currency for the new contract being created. The new currency must be valid and, for non-base currencies, an exchange rate must exist for the new start date.

When you specify a new currency, the system replaces the currency for the header and every line that matches the old currency. Any lines with a valid currency that do not match the header are not changed. However, if the line currency is no longer valid, it is always changed to the new header currency. The system displays a message indicating the change.

When you specify a new currency, set Update Prices to Yes to recalculate line prices and limits using the new currency. Make sure you have appropriate price lists set up in this currency or prices default to zero (0). When the exchange rate changes, the system automatically recalculates contract limits and prices.

Contracts and Customer Credit

Contracts are a type of sales order and follow most of the billing rules for sales orders. If the customer bill-to on the contract header is on credit hold, Credit Hold Option in SSM Accounting Control determines processing. This field can have one of three values:

0. Contracts can be created regardless of the customer's credit status.

1. Contracts can be created, but a warning displays and the system sets the contract's action status to hold.

2. Contracts cannot be created for customers who are on credit hold or who are over their credit limit. An error message displays, and you cannot create the contract until you set Credit Hold to No in Customer Create.

With this setting, when the contract line being entered puts the customer balance over the credit limit, the system does not prevent you from completing the request. This is because the credit limit is not actually exceeded until the order line is complete. Instead, the system accepts the service contract, displays a warning message, and places the resulting document on credit hold.

To remove credit holds, update the Action Status field in Contract Maintenance.

Note Credit hold status is checked for the header bill-to address only, regardless of the setting of Bill End Users.

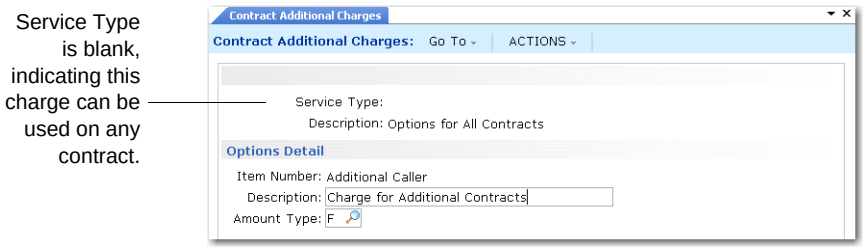
Contract Additional Charges

You can add additional charges to a contract at both the contract and end-user level. The display of frames for defining additional charges in Contract Maintenance depends on settings in SSM Accounting Control (36.9.10):

- When End User Additional Charges is Yes in SSM Accounting Control, the frame displays for end users.
- When Contract Additional Charges is Yes in SSM Accounting Control, the contract-wide frame displays.

Define additional charges in Contract Additional Charges (11.5.7).

Fig. 8.6
Contract Additional Charges (11.5.7)



Set up additional charges for a particular contract type by specifying a value in the Service Type field. If you leave Service Type blank, the additional charges are available for use on contracts with any service type.

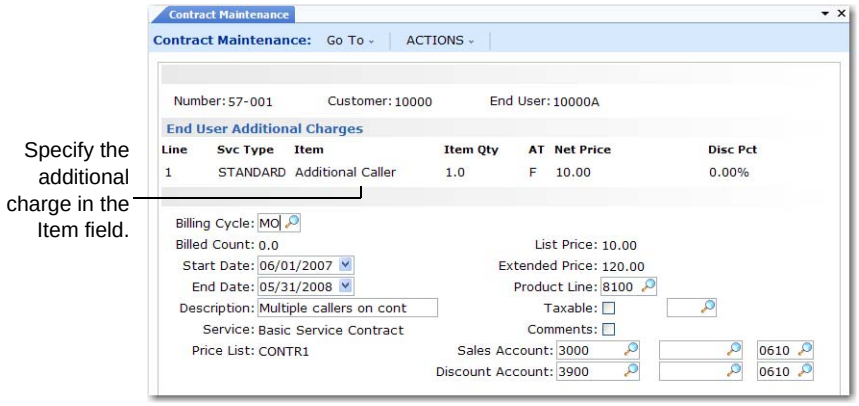
The amount type for an additional charge can be F for fixed amount, the default, or P for percentage. A fixed additional charge represents an amount added to or subtracted from the contract trailer. A percentage additional charge is a markup or discount applied to the total for the items covered on the contract.

To automate pricing, define the prices for additional charge items on a contract service price list. The amount type of the additional charge determines the kind of price list you can define.

See “Prices for Additional Charges” on page 153.

Figure 8.7 illustrates adding an additional charge in Contract Maintenance.

Fig. 8.7
Adding an Additional Charge



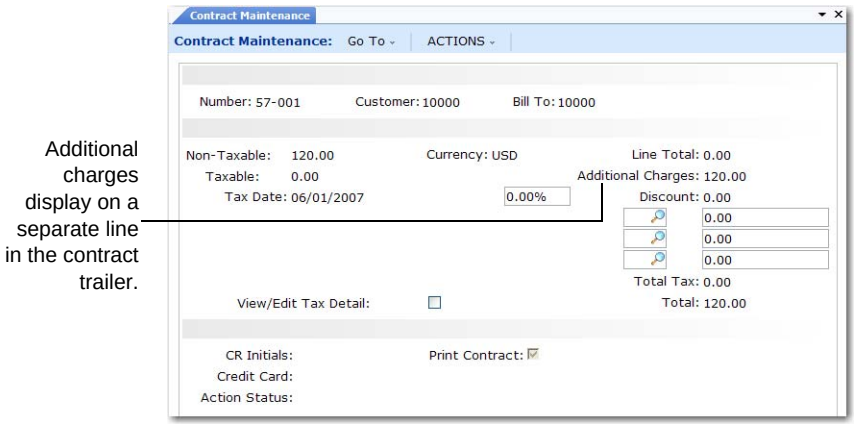
Set up the additional charge item, Additional Caller, in Contract Additional Charges with a fixed type. Then, specify it in one of the additional charges frames of Contract Maintenance—either end user or contract wide. The system retrieves its amount type (F) and derives its price from the price list associated with the line. In this case, the price is $10 per month. The system derives the extended price by multiplying the net price by the number of months of coverage, in this case 12.

When modifying or editing additional charge lines, the system applies the same edits as it does for contract lines.

The total additional charge displays in a separate line on the contract trailer and on the contract invoice. If End User Totals is Yes in SSM Accounting Control, the total additional charge for the end user displays in the End User Total frame.

See “Changing Contract Line Items” on page 195 for details.

Fig. 8.8
Additional Charge Displays on Trailer



Blanket Coverage

In some business situations, an organization provides a level of coverage to an end user for all products of a certain type. Or, in an even more general case, you might provide coverage to an end user regardless of what product they are using. You can manage these business requirements through blanket contracts.

Blanket contracts are set up slightly differently depending on the value of Item End Users.

- When Item End Users is No, you can specify Yes in the Blanket field in the contract header. This value sets the default for the Blanket field for each end user. When Blanket is Yes for an end user, all of the end-user's items are provided blanket coverage. You can set up some end users with blanket coverage and some without on the contract, regardless of the value of Blanket in the header.
- When Item End Users is Yes, all lines on the contract provide blanket coverage. You cannot modify this setting below the header.

Types of Blanket Coverage

You can define two different kinds of blanket coverage:

- Blanket coverage for a specific item number. To create this kind of blanket contract, add line items to the contract for each item number that is covered. You do not need to specify lot or serial numbers. For lot and serial-number controlled items, the system allows the Serial field to be blank when Blanket is Yes.
- Blanket coverage for any item. To provide blanket coverage for an end user regardless of the items they possess, set Blanket to Yes and add a contract line with a blank item number. This kind of blanket contract provides general coverage for all the end user's items. When you define a global blanket contract, you cannot specify a serial or reference number, and the PM item field is No and cannot be changed.

When the system searches for coverage in Call Maintenance and other call management functions, it looks for contract coverage in this sequence:

- A contract line covering the specific item, lot/serial number, and reference reported by the end user

- Blanket coverage provided for the reported item number
- Blanket coverage all items for the end user on the call

The rules that apply to non-blanket contracts related to overlapping coverage dates do not apply in the same way to blanket contracts. Coverage can exist for a specific item at the same time a blanket contract exists for the same kind of item. The system finds the most specific record first.

Pricing for Blanket Contracts

If you use blanket contracts, think about how you want to price for them. You can set up contract price lists either by item number or by product line. However, the amount you charge for coverage of one item is probably not the same as the amount you would charge for a blanket contract that may cover many items.

To use automated pricing, consider setting up a distinct service type with unique price lists that are used only for blanket pricing. If you enter an item number on a blanket contract line, the system finds the price for that item.

If you are creating a blanket contract that covers all an end user's items, automated pricing can occur only by product line. Since there is no item to establish a product line, the system uses the product line of the service type in searching for a price for a blanket contract with blank items.

Overlapping Coverage

The system does not allow an item to be covered on two different contracts with overlapping coverage dates. But some other types of overlapping coverage are allowed:

- An item can be covered by both a warranty and a contract.
- You can add an item to the same contract more than once if the service type for the two lines is different. You can use this feature to cover an item for a 24-hour day, but provide different terms and conditions, based on different service types, for days and nights.
- An item can be covered specifically on a contract at the same time it is covered by a blanket contract, either for the end user and item combination or for the end user only.

Overlapping Coverage in Calls

When you add an item with multiple coverage sources to a call, you can select the coverage to be used. A lookup lists each coverage source, the start and end dates, service type, whether a contract is a blanket contract, and the hours of coverage. The list is ordered with the more specific coverage sources before the more general ones. This window may display when you create a call or add more lines to it in Call Maintenance or Call Activity Recording.

See "Multiple Sources of Call Coverage" on page 282.

Managing Overlapping Contracts and Warranties

Most customers prefer to let the warranty cover an item for its full duration—after all, the warranty is free. When the warranty expires, a service contract can begin where the warranty left off, perhaps providing even more thorough coverage than the warranty.

Start from Warranty in SSM Accounting Control (36.9.10) helps manage the transition from warranty to service contract. If this is Yes, the system attempts to prevent contract and warranty periods from overlapping.

If you set Source to I in Contract Maintenance to use installed base records to add contract lines, the system has information about the warranty start and end dates. If the warranty end date falls after the contract header start date, the system sets the start date for the line item forward to the day following the warranty end date. If you manually enter an item that is covered by a warranty, the system prompts you to change the contract start date and move it forward.

If Start from Warranty is No, the start date for the line-item defaults from the value on the contract header, which may still be within the warranty period.

Some service organizations aggressively market service contracts and may get customers to start more comprehensive contract coverage on an item before the warranty expires. This, in essence, sets up conflicting service dates, since the system is aware of coverage durations. How does the system resolve the overlapping warranty and contract coverage?

If you create a contract for an installed base item still under warranty, the system gives you a warning and offers to change the contract's start date so it follows the warranty's end date. The warning displays when you extend the warranty end date in Installed Base Item Maintenance (11.3.1) and a contract is in effect during the extended warranty.

If you ignore this warning, both the warranty and contract are effective during the overlapping period. Whenever you add an item with more than one source of coverage to a call in Call Maintenance or Call Activity Recording, a lookup displays coverage sources in prioritized order.

The existence of both a valid warranty and a valid contract affects how you can override charge codes in Call Activity Recording.

See "Changing Charge Codes" on page 395.

Contract Start and End Dates

Start dates can be defined at various levels of a contract: the header, default end users or items, detail lines, and additional charges. Start dates defined at one level default to the level below and determine the valid range for lower-level dates, including limit effective dates. All dates must be within the start and end range defined by the header.

In many situations, the start dates on all levels of the contract are synchronized. If you change the start or end date on the contract header, you are prompted to apply this change to each line item.

When you respond Yes to reset the line start dates after changing the header start date, the system updates all lower-level dates that match the old start date. This includes end user and default item dates, as well as detail lines. When the system updates end dates, it modifies the lower-level dates to reflect the contract end date, regardless of whether the dates previously matched.

Note Limit effective dates are not automatically reset; you must do this manually, as needed.

If the changes are not automatically applied to each line, the system verifies that the new header start or end date is not within the range defined by the earliest line start date and latest end date. If it is, the system displays an error message.

There are some limitations on changing contract start and end dates:

- If any open calls reference the contract, the contract start date cannot be moved after any call open date. Correspondingly, the contract end date cannot be moved before any call open date.
- If billing has occurred, you cannot change the contract start date. The end date cannot be set prior to the end date of the coverage period billed.

Contract Line Items

This section discusses a number of issues related to contract line items:

- Generating line items automatically
- Changing line items
- Deleting line items

Automatically Generating Contract Lines

You can enter contract lines manually. However, you can also have the system generate lines based on one of three sources:

- Installed Base. You can create contract line items by selecting from a list of items in the installed base that belong to the current end user.
- Sales Orders. If you specify a sales order number as the source of line items, you can select from the sales order lines. The system creates corresponding contract lines for each item on the sales order selected.
- Sales Quotes. Similar to sales orders, if you specify a sales quote number as the source of line items, you can select from the lines on the sales quote. The system creates corresponding contract lines for each item on the sales quote selected.

When Item End Users is Yes on the contract, creating lines automatically using the Source field changes the sequence of frames slightly. When you are in end-user/item sequence, you specify an end user before the system displays lines from the sales order, quote, or installed base items.

In item/end-user sequence, you normally specify a default item, then an item end user, and then item detail. However, to automatically generate lines, you must specify an end user first.

- When Source is I, you specify one end user and then select items from that user’s installed base.
- When Source is Q or S, you specify a quote or order number, then specify an end user. You can then select lines from the quote or order for this end user. After selecting lines for one end user, you are prompted to specify another. When you click Back, the system creates both default item lines and item detail lines for the end users specified.

See Figure 8.1 on page 176.

When the system creates lines, it assumes that values on the header apply to each contract line to be created. This also applies to contract limits; the system assumes that the lines it generates use the coverage limits defined in the header and do not have their own limits. As a result, *you will not be prompted to copy limits into the lines* as you would if you created the lines manually.

One advantage to adding contract lines based on installed base information is that it ensures accurate information. If you manually enter information about installed base items, be careful that lot-controlled items specify a contract line quantity that matches the installed base quantity.

You can add lot-controlled items to the installed base with a quantity of more than one. However, the system cannot distinguish one of these items from another. If you have a contract line for a lot-controlled item that was added to the installed base with a quantity of five, the system suggests this coverage for any one of the five that the end user calls about. This means that you are effectively covering all five for the price of one unit of coverage.

To prevent this, a warning displays when the installed base quantity does not match the contract line item quantity.

Changing Contract Line Items

Service coverage has important implications throughout the system, especially in call-tracking functions. When a call exists that references a contract, the system restricts changes to that line.

Example Item 116, serial 12A is covered on a contract. A call is taken for this item. The contract coverage found by the system determines call defaults such as response time and next event date and time. An engineer responds to the call, and reports are opened in Call Activity Recording. Based on the contract limits, the system calculates coverage and generates an invoice.

If the system let you change the serial number on the line in Contract Maintenance, the coverage previously calculated would be invalid.

When a contract line is referenced by a call, you cannot:

- Change the line's service type, item number, serial number, and reference number.
- Delete the line.
- Move the line start and end dates within the range defined by the earliest and latest call open dates referencing the call.
- Add new limits when open reports exist.

Before you can update a contract line referenced on a call, the calls referencing it must be closed and moved to history.

See "Adding Additional Limit Records" on page 181.

Deleting Contract Line Items

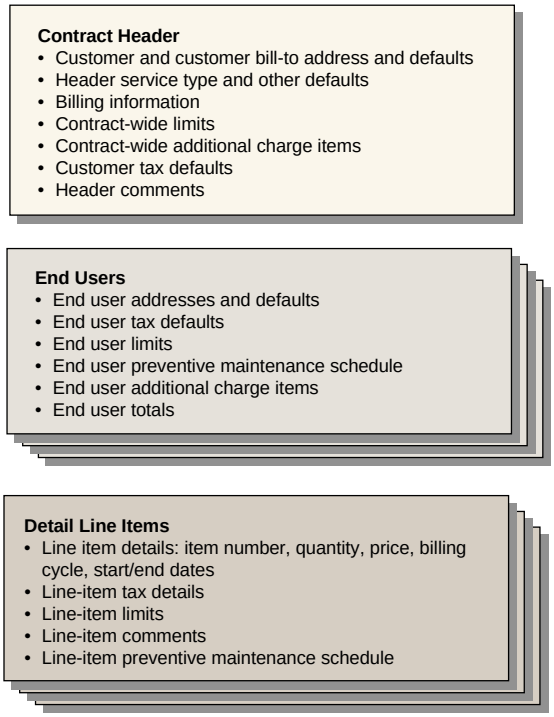
You can delete line items on a contract except when:

- The line has been invoiced. To preserve the integrity of invoice history, the line cannot be deleted. Use Contract Delete/Archive instead.
- A call referencing the contract line exists. Close the call and move it to history. Then you can delete the contract line.

Contracts for End Users with Items

To design a contract for end users with items, set Item End Users to No in the contract header. Figure 8.9 illustrates the various levels of the contract and the components within each level.

Fig. 8.9
Contracts for End Users with Items



The basic flow for contracts when Item End Users is No is the following:

1. Enter the contract header. Specify the contract type and other header defaults. When you complete the header, the contract is stored in the database even if you do not enter any line items.
2. If Contract Limits is Yes in SSM Accounting Control (36.9.10), optionally copy contract type limits to the contract header.
3. Enter header transaction comments.
4. Specify an end user on this contract and supply end-user default information.
5. If Contract Limits is Yes in SSM Accounting Control, optionally copy contract type or contract header limits to the end user.
6. Create end-user line items and specify associated line-item detail.
7. If Contract Limits is Yes in SSM Accounting Control, optionally copy contract type, contract header, or end-user limits to the line.
8. Enter line-item comments.
9. View and modify item preventive maintenance (PM) schedule.

Repeat steps 6 through 9 for each line item associated with an end user.

10. If End User Additional Charges is Yes in SSM Accounting Control, specify end-user additional charges and any associated comments.
11. View and modify the end-user preventive maintenance (PM) schedule.

12 If End User Totals is Yes in SSM Accounting Control, view summary totals for this end user.

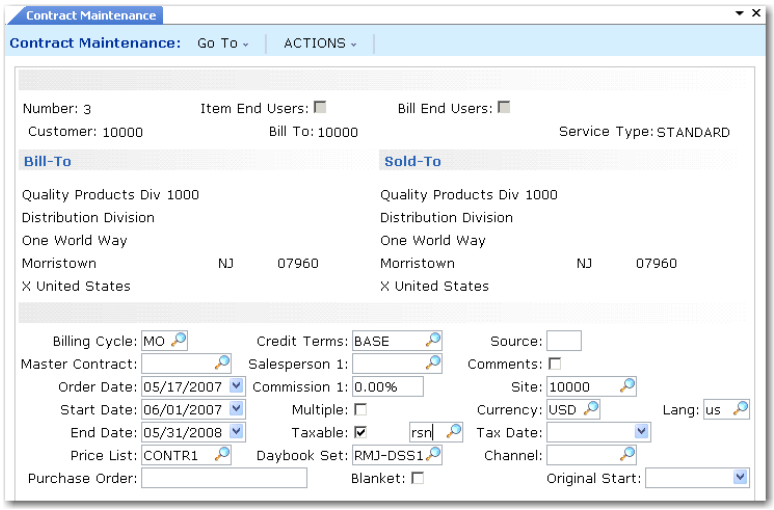
Repeat steps 4 through 12 for each end user on the contract.

13 If Contract Additional Charges is Yes in SSM Accounting Control, specify contract-wide additional charges and any associated comments.

14 View contract totals and modify contract trailer information.

Use the following illustrations and field descriptions to understand the details of creating contracts when Item End Users is No in Contract Maintenance (11.5.13.1).

Fig. 8.10
Contract Maintenance (11.5.13.1)



Contract Header

Number. Enter a number uniquely identifying a specific contract and its line items. If you leave this field blank, the system creates the next number using Next Contract Number in Contract Control (11.5.24).

Item End Users. Indicate the relationship between items and end users on this contract:

No: This contract is designed to provide coverage for one or more end users with associated items.

Note This section displays the frame sequence when Item End Users is No.

Yes: This contract is designed to provide coverage for one or more items with associated end users.

The value you specify for this field determines the order in which frames display as you maintain the contract. You cannot change this value after a contract has been created. This field defaults from Contract Control.

Bill End Users. Indicate who should receive the invoices generated for this contract by Billing Release to Invoice:

No: Only one billing address, specified in the contract header, is associated with the contract. Billing Release to Invoice generates all contract invoices to this address.

Yes: Multiple billing addresses can be associated with the contract, one for each contract end user. At least one invoice is generated in Billing Release to Invoice for the bill-to address associated with each end user defined on the contract.

Note The invoice for contract-wide additional charges is always sent to the header billing address, regardless of the value of Bill End Users.

When Bill End Users is Yes, each end user you specify must be defined in Customer Create. The end-user bill-to address defaults from the end-user customer record, not from the header.

This field defaults from SSM Accounting Control.

See “Billing Customers or End Users” on page 233 for more details.

Customer, Bill To. Enter a valid, active customer defined with Customer Create. The Bill To value defaults from the customer record.

Service Type. Enter a valid contract type defined in Contract Type Maintenance. The value specified determines the default service type for each contract line.

Billing Cycle. Enter a code indicating how often to bill lines on this contract. This field defaults from the Default Billing Cycle Code value in SSM Accounting Control, but you can change it to another valid billing cycle.

The header billing cycle defaults to the next contract level, either default items or end users, based on the value of Item End Users.

You can accept the default or specify a different billing cycle code at various levels below the contract header. However, you cannot specify a cycle that indicates less frequent billing than the cycle specified on the header. For example, the header billing cycle is annual. You cannot specify a billing cycle of every two years for a contract line.

Note Set up billing cycle codes with Billing Cycle Code Maintenance (11.5.18.1).

Master Contract. Service contracts can be set up in a hierarchy, with one contract linked to another. For example, you can link a contract for each piece of equipment in an installation to the master contract for the entire installation. In this case, enter the master contract number in this field. The master contract number can be used later as a filter when printing contracts.

Order Date. Order date defaults from the system date and is a reference-only field.

Start Date. Enter the first date that contract terms and conditions become effective. After you create the contract, the system does not recalculate the start date, even if you change the order date later.

This field defaults to the first of the month following the system date.

If you change the header start date and line items exist on the contract, you are prompted to override the start dates for each line. Respond Yes to update all lines that previously matched the contract start date. You cannot move the start date inside the range defined by limit effective dates or change it after the contract has been invoiced.

For more details on start date, see “Contract Start and End Dates” on page 193.

End Date. The system adds the duration of the service type to the start date to calculate the end date. Although you can add new line items at any time to an existing contract, no end-of-coverage date can go beyond the contract header’s end date.

If the header end date is changed and line items exist on the contract, you are prompted to override the end dates for each line. Respond Yes to update the contract lines. However, you cannot move end dates inside the range defined by limit effective dates.

Price List. Enter a code identifying a type C (contract) price list to use for this contract. Price list defaults from the Contract Price List field on the service type in effect. The header price list is used to price contract-wide additional charge items. You can change the price list at any time. However, the new price list affects only new records added to the contract; existing prices are not recalculated.

The line-item price list is determined by the service type associated with the detail line.

Purchase Order. Specify a purchase order number for this contract. This field is required if the customer has been defined to require purchase orders in Customer Data Maintenance (2.1.1).

Credit Terms. Enter the credit terms code that applies to this contract. Credit terms default from the header bill-to address.

Salesperson. Enter the salesperson to receive a commission and quota credit for this contract. Salesperson defaults from the customer. The salesperson information on each line item defaults from the salesperson and commission rate entered on the header. You can change commission on each line item.

Commission. Enter the commission percentage this salesperson is to receive.

Multiple. Indicate if more than one salesperson is responsible for this customer order. If Yes, a pop-up window prompts you to enter up to four salespersons and corresponding commissions when you exit this frame.

Taxable. Enter Yes if the items on this contract are subject to tax; otherwise, enter No. Header tax fields default from the contract customer. If Item End Users is No, you can also update tax fields for each end user. End-user tax fields default from End User Create and set the default for lines.

Blanket. Enter Yes if some items on the contract have blanket coverage. Otherwise, enter No. After the contract has been saved, you cannot change this value.

This field sets the default for the same field associated with end users on the contract. Blanket must be Yes for the end user for blanket coverage to be applied. You can set up some end users with blanket coverage and some without on the contract, regardless of the value of Blanket in the header.

See “Blanket Coverage” on page 191.

Source. The code in this field tells the system where to look for items to be included on the contract. The possible choices are I (installed base), S (sales orders), Q (sales quotation), and M or blank, indicating you will enter line items manually, rather than selecting them from a list.

For details on this option, see “Automatically Generating Contract Lines” on page 194.

Comments. This field defaults from Service Header Comments in Contract Control. If Yes, a page appears for recording or retrieving master comments associated with the contract. After you select or enter comments, you can specify when you want them to print.

Site. This field defaults from Contract Site in Contract Control and indicates the site responsible for supporting this contract. This is usually the site where repairs are done or repair parts are found. Item costs are based on the contract site, and GTM tax zones use the site address as the From value.

Currency. Enter the currency for this contract. Currency defaults from the bill-to address.

- When Bill End Users is No, the header currency sets the default for each end user.
- When Bill End Users is Yes, currency at the contract-line level defaults from the bill-to address associated with the end user, not the contract header.

Each end user can have a different currency, if needed.

See “Contract Currency” on page 187.

Note When different currencies are used, separate invoices are generated for each currency even when Bill Summary is Yes.

You can modify this value on a new contract only. After the contract has been saved, currency cannot be changed.

See “Constraints on Summarized Billing” on page 234.

Contract currency sets the currency of a call for covered items. When a non-base currency is entered, an exchange rate pop-up lets you override the effective exchange rate and indicate if it is fixed or not.

See “Contract Currency in Calls” on page 188.

Language. Language defaults from the contract customer. Language enables you to print comments on an invoice in the language appropriate for the receiver.

Tax Date. Enter the effective date associated with the tax code entered previously.

Channel. Enter an optional code identifying the distribution channel through which this contract originated. Channel can be a factor in determining default GL sales and sales discount accounts affected when you post the contract invoice.

You can modify the default sales and sales discount accounts in Contract Maintenance only when Modify Sales Accounts is Yes in SSM Accounting Control.

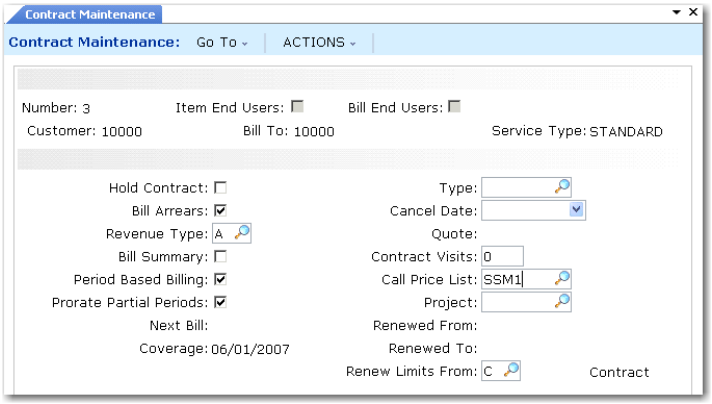
Note To standardize usage, set up values for field so_channel in Generalized Codes Maintenance.

Original Start. This field is blank unless the contract has been renewed.

Second Header Frame

Many of the fields in the second header frame default from SSM Accounting Control (36.9.10).

Fig. 8.11
Contract Maintenance, Second Header



Hold Contract. If Yes, this contract will not be released for billing. This is useful if the price for the contract is still in negotiation and is not finalized with the customer.

A contract on hold can still be used to provide coverage for service activities as in Call Maintenance. If the contract should not be considered valid for coverage, use the contract quotation process instead.

See “Contract Quotes” on page 227 for details.

Bill Arrears. If No, the customer is billed in advance for contract coverage. If Yes, the customer is billed for periods that have already passed—Next Bill defaults to the first day of the next billing period. This field defaults from the Bill Arrears field in SSM Accounting Control. You cannot modify it after a contract has been invoiced. The setting of Bill Arrears affects the valid contract revenue types.

Revenue Type. Enter the revenue type code to use when billing this contract. Valid values are A (Accrued Revenue), C (Cash Basis), or D (Deferred Revenue). The default is set in SSM Accounting Control. Validation depends on the setting of Bill Arrears.

Cash Basis: To post revenues upon receipt for this contract, set Revenue Type to C. In cash-basis accounting, revenue is recorded in the period it is actually received.

Accrued Revenue: To accrue revenue for this contract, set Revenue Type to A. Bill Arrears must be set to Yes. In accrual-basis accounting, revenue is recorded in the period in which it is earned, regardless of whether cash is received in that period. Run Revenue Recognition (11.5.18.21) to accrue amounts, usually monthly.

Deferred Revenue: To defer revenue for this contract, set Revenue Type to D. Bill Arrears must be set to No. Perform the normal invoicing procedure at the beginning of the contract coverage period. Collected revenue is held in a deferred account and is posted periodically over the contract duration when you run Revenue Recognition.

See “Managing Deferred and Accrued Revenue” on page 235 for more details.

Bill Summary. Enter Yes to invoice this contract in summary format; otherwise, enter No. This field defaults from SSM Accounting Control.

When Bill Summary is Yes, the details that are not printed on an invoice are stored in the database. You can view these details using Billing Detail Report (11.5.18.14).

The setting of Bill Summary interacts with Bill End Users and Item End Users.

See “Summarized or Detail Billing” on page 233 for the full effect of this setting.

Period Based Billing. Indicate whether contract billing is synchronized with calendar months:

Yes: Invoicing begins on the first day of the next calendar month, regardless of the start date of the contract. For example, a contract with a start date of January 23 is billed starting on February 1.

No: Billing periods for contract invoices use the actual start date of the contract header and line, without synchronizing to the start and end days of the month. A contract on a monthly cycle starting on January 23 is billed on January 23, February 23, March 23, and so on, assuming Bill Arrears is No.

Period Based Billing works in conjunction with Prorate Partial Periods.

For details, see “Period Based Billing” on page 232.

Prorate Partial Periods. Indicate how the system should invoice for coverage periods that are less than a complete month:

Yes: Invoices are generated for partial periods based on the percentage of a month the partial period represents.

No: When Period Based Billing is Yes, partial periods are essentially given away free and no invoice is generated for them.

If Period Based Billing is Yes, partial periods are likely to occur. You can use the Prorate Partial Periods field to ensure that any partial periods are included in invoicing. If Period Based Billing is Yes and Prorate Partial Periods is No, any days in the partial period prior to the beginning of the month are essentially given away free.

For details, see “Prorating Partial Periods” on page 232.

Next Bill. This system displays the next date when an invoice should be generated for this contract. This field normally should not be changed and cannot be updated in Contract Maintenance. If necessary, use Billing Date Correction (11.5.18.19) to change the next billing date.

See “Correcting a Posted Invoice” on page 245.

Billing Release to Invoice selects contracts for billing based on the header Next Bill date.

When a contract is created, this field is set based on the value of Bill Arrears:

- When Bill Arrears is No, Next Bill is the start date of the contract.
- When Bill Arrears is Yes, it is the day after the first billing period.

After it is initially set, Next Bill is updated by Billing Release to Invoice.

Coverage. The system displays the date when service coverage becomes effective for the next billing period, to be billed on the date recorded in Next Bill Date.

This field is updated automatically by Billing Release to Invoice (11.5.18.13) and Billing Reversal Maintenance (11.5.18.18). This field normally should not be changed and cannot be updated in Contract Maintenance. If necessary, use Billing Date Correction (11.5.18.19) to change the value.

See “Correcting a Posted Invoice” on page 245.

Type. This field is used for reference only. It is a user-defined grouping code that can be set up in Generalized Codes Maintenance for the field sa_sa_type.

Cancel Date. If the contract is canceled, you can enter a date here for reference.

Quote. If you generated this contract by releasing a quote, the quote number displays here for reference.

Visits. Enter the number of preventive maintenance (PM) visits to be scheduled for each end user on this contract.

You can update this field only when Item End Users is No. When Item End Users is Yes, you can set up PM schedules for individual items, but not for end users.

Entering any non-zero number activates PM scheduling for each end user on the contract. After you enter detail items for each end user, the system displays the End User PM Schedule, which lists the system-scheduled dates for the visits.

See Chapter 10, “PM Scheduling,” on page 251.

The end-user schedule is in effect for all of the end user’s items that have PM item set to Yes and do not have individual schedules created for them. If you leave the header Visits field blank, you can still create preventive maintenance schedules for individual contract details.

See “Scheduling Visits for a Line Item” on page 253.

Project. Enter an optional code identifying the default GL project associated with this contract. If you specify a value, it defaults to lower levels of the contract, either end users or items.

GL transactions created during contract billing reference entity, account, sub-account, cost center, and project. Each component you enter must be valid on its own and in combination with other account number components.

Call Price List. Enter the call price list code to use for items covered by this contract. You must enter a type R (repair) service price list set up with Service Pricing Maintenance (11.17.1). This fields defaults from the service type associated with the contract.

When a call is taken for an item covered by this contract, the call price list defaults to the call. Repair price lists specify prices for items consumed in a service activity, as well as for labor and expenses recorded in Call Activity Recording (CAR).

Call price lists also determine:

- Credits for items exchanged in CAR, based on the exchange UM
- Fixed prices, based on the fixed price UM

Note Define Exchange UM and Fixed Price UM in Call Management Control (11.1.24).

If you set up an expense cost price list (type E) with the same code as the call price list, CAR also accesses that list to determine standard costs for expense items.

Renewed From, Renewed To. If this contract was renewed from a different contract, the number displays in the Renewed From field. If this contract formed the basis of another through the renewal process, this number displays in the Renewed To field.

Renew Limits From. This field defaults from Renew Limits From in SSM Accounting Control. The system examines this value when a contract is renewed or copied to determine how to manage limits:

- C (contract). The system copies the current limits from the contract and modifies the effective dates to match the new contract’s start and end dates.

- S (service type). The system copies limits from the service type, applying limits effective on the new contract's start and end dates.

Note This field has no effect if Contract Limits is No in SSM Accounting Control.

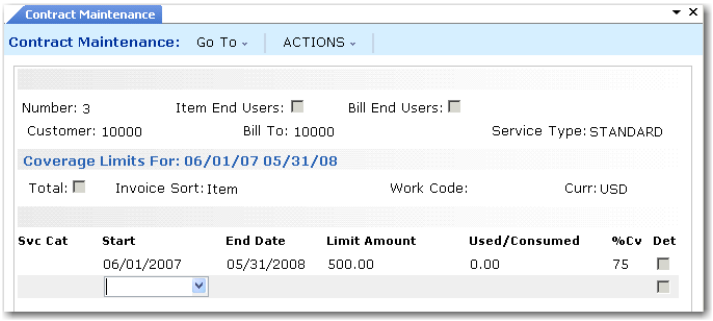
Header Coverage Limits

If Contract Limits is Yes in SSM Accounting Control, you can modify the limits associated with the contract service type, at all levels of the contract. If this field is No, the system uses the limits defined for the contract type. They are neither displayed nor modified.

If Contract Limits is Yes, you are prompted to copy service type limits. If you respond Yes, the system copies the limits defined for the contract type being used into the header. If you respond No, limits are not copied. You can set up new limits in the contract or define them at the line level.

After you respond to this prompt, the Coverage Limits frame displays.

Fig. 8.12
Header Coverage Limits Frame



If you copied the service type limits, you can view or modify them in this frame, which is the same as the one used to set up coverage limits in the service type.

If you have posted any amounts against limits defined on a contract or recorded any amounts against the limits in Call Activity Recording, they display in the Used/Consumed field. You cannot update this field manually. The system updates it when invoices are posted.

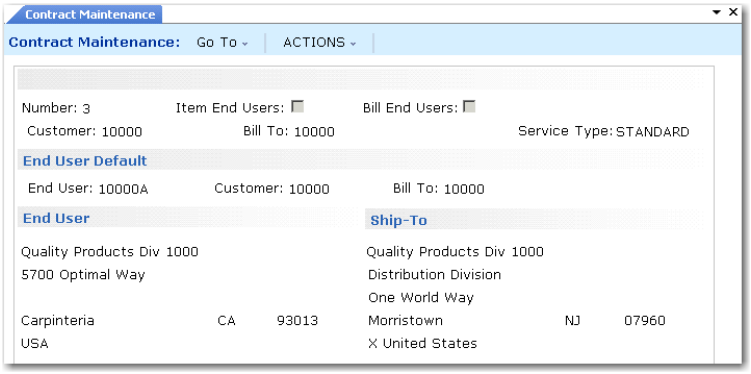
See "Levels and Limits of Service" on page 128.

Note Use Limits Consumption Inquiry and Limits Consumption Report (11.5.13.21.4 and 11.5.13.21.5) to view consumed (posted) amounts and used (unposted amounts recorded in CAR) separately. See page 184 for details on these reports.

End User Default

After completing header limits, you specify an end user with items on the contract.

Fig. 8.13
End User Default, Address Frames



End User. Enter the address code of an end user with associated items. Address information of this end user displays.

This field is validated differently depending on the setting of Bill End Users:

- When Bill End Users is No, enter an existing or new end-user address code. If the address does not exist, you are prompted to create it. Customer and bill-to default from the header, and you cannot change them.
- When Bill End Users is Yes, enter a customer defined in Customer Create and Customer Data Maintenance. If the customer is not also defined as an end user, you are prompted to create the end-user record. The end-user customer and bill-to default from the end-user customer record. You can modify the end-user bill-to as necessary.

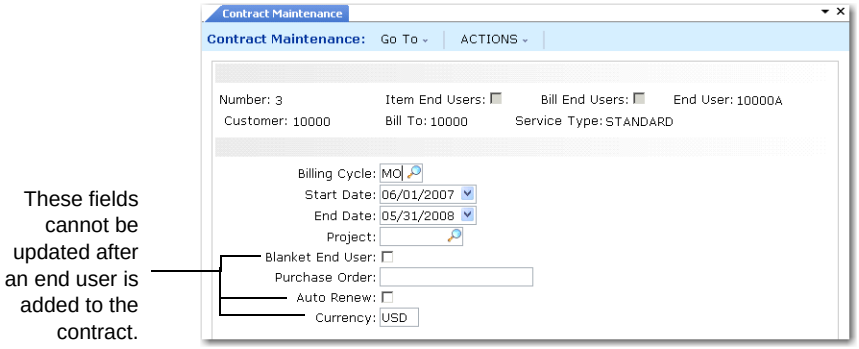
Bill To. When Bill End Users is Yes in the contract header, enter the address code assigned to the bill-to location for this customer. This field defaults from the end user's customer record if a bill-to address has been defined in Customer Create. See "Billing Customers or End Users" on page 233.

End User Default

Use this frame to modify defaults associated with the end user.

Note When you create contracts with Item End Users set to Yes, you specify only a subset of the fields you specify here: Project, Auto Renew, Currency.

Fig. 8.14
End User Default



Billing Cycle. Specify a billing cycle for the end user, which then defaults to the end user's line items. The line-item billing cycle determines actual billing frequency. The end-user billing cycle cannot be more frequent than the contract header.

Start Date and End Date. Enter the default start and end dates for line-items associated with this end user. End-user dates must be within the range defined by the header start and end dates.

Project. Enter a default project for line-items associated with this end user.

Blanket End User. Enter Yes if this contract provides blanket coverage for items associated with this end user. Otherwise, enter No. This field defaults from the setting of Blanket on the contract header. After you have created a line for an end user, you cannot change this value.

You can set up some end users with blanket coverage and some without on the same contract, regardless of the value of Blanket in the header.

Purchase Order. Enter this end user's purchase order (PO) number, if applicable. Whether this field is required depends on the value of the PO Required field in End User Data Maintenance (11.9.1).

Auto Renew. This field defaults from the value for the end user in End User Data Maintenance (11.9.1). If Yes, the system includes contract lines for this end user when you run Renewal Process/Report (11.5.13.10). You cannot update this field after the end user is added. See "Renewing Contracts Automatically" on page 224.

Currency. Enter the currency for this end user. If Bill End Users is No, currency defaults from the contract header. If Bill End Users is Yes, currency defaults from the end-user bill-to address. The system searches for line-item prices using the end-user currency. You cannot update this field after the end user is added. See "Contract Currency" on page 187 for details on multiple currency contracts.

End User Coverage Limits

If Contract Limits is Yes in SSM Accounting Control, you are prompted to copy limits to the end user. If you previously copied limit detail into the contract header, you can copy limits from the header or the contract type.

The limit screen is the same as the one used for contract header limits.

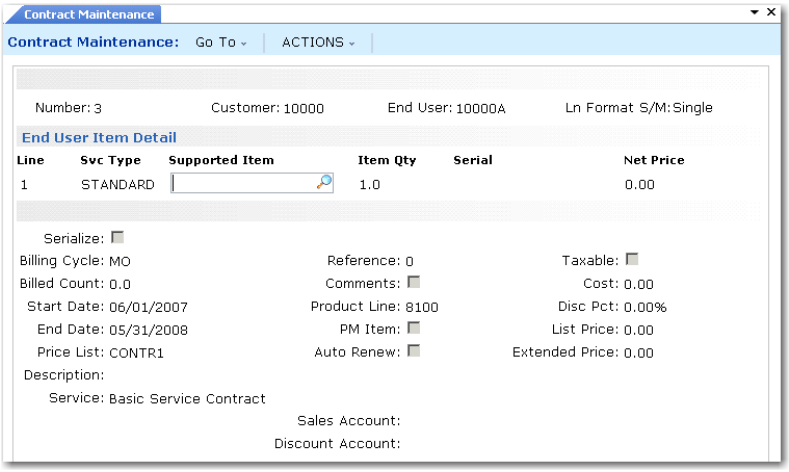
See "Header Coverage Limits" on page 204.

Entering End User Item Details

Each end user on a contract can have multiple items, each with a different service type. The line-item service type overrides the header service type. For example, specifying a different service type might bring in a different price list or change the level of coverage. If you change the service type, you are prompted to update the price from the new price list.

If you specified a source for items earlier, the system creates detail line for the items you selected.

Fig. 8.15
End User Item Detail



Line. Enter a number identifying a detail line or leave blank for a system-generated number. Line numbers can be up to 5 digits.

Service Type. Service type defaults from the header, but can be changed. If you modify it, the system uses the price list from the new service type for this item, and you can copy the service limits associated with the new service type if no amounts were accumulated against the current limits.

Item. Enter the number of an item to be covered by this contract. Items are validated according to the setting of Items Must Exist in Service Management Control and Items in Installed Base in Contract Control.

An item can be covered only by one contract at a time. When a call is taken for an item, the system searches first for contract lines for the specified item, serial, and reference. If they exist, the system uses the contract's terms and conditions for coverage.

Note After you save a line, you cannot change the item number; you must delete the existing line and add a new line with the other item number.

Item Qty, Serial. Enter the number of items covered on this contract line. If the Item Qty is 1 and this is a serialized item, enter the serial number that uniquely identifies it. If the Item Qty is greater than 1 and this is a serialized item, leave Serial blank and specify Yes to the Serialize field in the detail. You can then enter multiple serial numbers in a pop-up window.

If the item is serial-number controlled in Item Master Maintenance (1.4.1), a serial number is required unless this is a blanket contract.

Net Price. This field defaults from the price list in effect; otherwise, it is zero. You can change the price. Control price update through field security. If the net price does not default to zero, List Price is set from the Net Price and never changes. The system considers any change to the net price a discount and displays it in the Disc field in the item detail. Increasing the price creates a negative discount; decreasing it a positive discount.

If the price defaults to zero and you enter a price, the system considers it to be the list price of the item. If you change the net price later, list price is recalculated.

The net price indicates the price per unit for one month of coverage for this item. The system calculates the extended price for an item by multiplying the item quantity by the net price per unit by the number of periods of coverage—contracts are measured in months. For example, if one item is covered at a price of $10 per month for 12 months, the extended price is $120.

See “Contract Line Pricing” on page 186 for details.

Line-Item Detail

Serialize. Enter Yes in this field if the line item is serial or lot-controlled and quantity is greater than 1. In this case, Serialize defaults to Yes. Specifying Yes displays a pop-up that enables you to enter individual serial or reference numbers for each item on the line. If you designate an item as lot or serial number controlled in Item Master Maintenance, enter a number for each item on the contract.

Billed Count. The system displays the total number of months that have been billed through Billing Release to Invoice.

Start Date and End Date. These fields default from the end user. Each line item can have a unique start and end date for coverage, although these cannot be outside the range defined by the end-user start and end dates.

Price List. The system displays the price list used to calculate the line-item price. If you change the service type for a line item, the price list associated with that service type is used; otherwise, the price list from the contract header is used. This is normally the price list associated with the contract type specified on the header, but it might have been changed at the header level.

Description. Enter a brief description of the item covered on this contract line. Description prints on customer documents, such as the contract and invoice.

For inventory items, the description defaults in the following order:

- If the item exists in the installed base, the description defaults from the value defined in Installed Base Item Maintenance.
- Otherwise, the first line of the description defined in Item Master Maintenance displays.

If you enter a memo item, the description defaults to *Item not in item master.* Since the description prints on the contract and on other reports, you should change this to something more meaningful.

For an existing line, you can clear the Description field and the system will find the default value using the search order described.

Service. The description of the service type entered in Contract Type Maintenance (11.5.10) displays and cannot be modified.

Reference. Specify an ISB reference number that uniquely identifies this item. Reference numbers uniquely identify items in the installed base without serial numbers or that are part of a lot. Enter ? (question mark) for the next system-supplied reference number.

If Items In Installed Base is Yes in Contract Control, the combination of item number, lot or serial number, and ISB reference number must exist in the installed base for this end user or an error displays.

Comments. This field defaults from the value of Service Line Comments in Contract Control. Specify Yes to enter comments for this line item.

Product Line. The product line associated with either the service type or the item displays by default. The value depends on Use Item Prod Line in SSM Accounting Control (36.9.10). The system uses the accounts of this product line for recording revenue from the sale of this contract for the associated line item.

Note Deferred and Accrued Revenue accounts are always found using the product line of the service type, since they exist only at the contract header level. See “Revenue Accounts” on page 236.

PM Item. Enter Yes to schedule preventive maintenance (PM) visits for this item. If Days between PM is any nonzero value in Service Item Maintenance (11.3.7), this field defaults to Yes. If you do not specify a different number of visits for this item, it is included on any end-user schedule.

When PM Item is Yes, the Preventive Maintenance Detail pop-up displays, enabling you to specify the number of visits to be scheduled for this item. When PM Item is No, this item is not included on the PM call generated for an end-user PM schedule.

Taxable. This field defaults from the end user. Each line item can have a different taxable status.

Cost. Cost defaults from the contract site specified on the header multiplied by the item quantity. If costs are not set up at this site, cost is zero. This field is security restricted. This field is for reference only and is not used in any contract margin calculations.

Disc Pct. The system calculates and displays a discount if the item’s net price was derived from a price list, setting the list price, and then changed. You can enter a manual discount, causing the system to recalculate the net price from the price list or the net price you entered earlier.

List Price. Output-only field. If the system found the net price from a contract price list, List Price is the initial net price. If Net Price defaulted to zero, the system sets List Price to the amount you entered for Net Price during the last edit session. In this case, List Price changes whenever you change Net Price.

Extended Price. The system calculates this by multiplying the item’s net price by the number of items and the number of months of coverage.

Sales and Discount Account, Sub-Account, Cost Center. The system displays the Sales and Sales Discount accounts for this contract line. These fields can be modified only if Modify Sales Accounts is Yes in SSM Accounting Control.

Sales and Discount Project. Enter an optional code identifying the GL project associated with the sales and sales discount amounts for this contract line. These fields default from the header. The sales and discount projects are typically the same.

The sales and sales discount projects default to the same fields in Call Activity Recording when service is provided for this item.

The system verifies that the project exists and is active and that it is valid with the other sales account components.

Preventive Maintenance Detail

If PM Item is Yes, a preventive maintenance detail pop-up displays. It shows the default number of visits for the end user. You can change the value for this line item.

See “Scheduling Visits for a Line Item” on page 253.

Contract Accounts Pop-Up

If Display Contract Accounts is Yes in Contract Control, a pop-up window displays the Sales and Sales Discount accounts and cost centers being used and lets you modify them.

Item Detail Coverage Limits

If Contract Limits is Yes in SSM Accounting Control, the system again prompts you to copy service limits when you finish entering a line item. If you respond with Yes, you are then prompted to copy limits. You choices depend on how you responded to previous prompts:

- If end-user limits exist, you can copy these or from the service type.
- If end-user limits do not exist and header limits do, you can copy from the header or the service type.

If you set up limits for the line item, amounts accumulate against these limits, not limits at the end-user or contract-header level.

The limit screen is the same as the one used for contract header limits.

See “Header Coverage Limits” on page 204.

PM Schedules

If PM Item is Yes for the line item and a separate schedule exists for the item, the PM Schedule for Line: n displays the scheduled dates. When you click Next after confirming these dates, the End User PM Schedule frame displays if an end-user schedule exists.

See Figure 10.5 on page 257.

End User Additional Charges

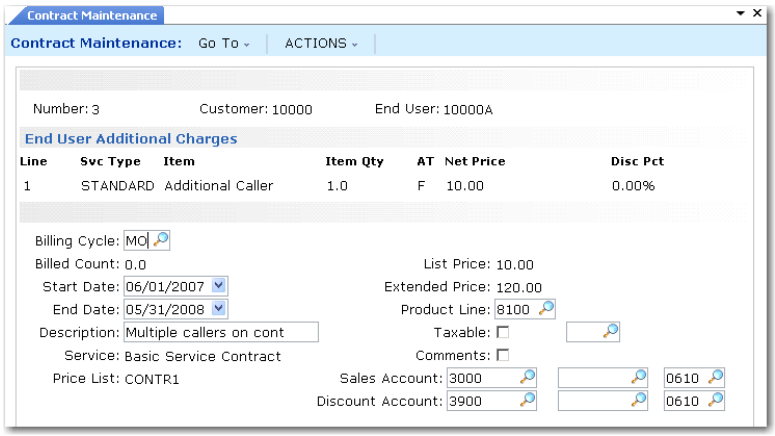
If End User Additional Charges is Yes in SSM Accounting Control, you can associate additional charge items with each end user. These items are defined in Contract Additional Charges (11.5.7). Each charge is added as a separate line item with its own pricing information.

Adding additional charges is similar to adding contract items, with some exceptions. Only the fields that differ are described.

Additional charges appear in a separate section of the printed contract.

See “Contract Additional Charges” on page 189.

Fig. 8.16
End User Additional Charges in Contract Maintenance



Item. Enter an additional charge item set up with Contract Additional Charges for use with the current service type or with all service types.

Item Qty. This field is editable only if the additional charge item has an amount type of F (fixed). In this case, quantity specifies the number of fixed fees to be added. A negative quantity indicates an amount to be subtracted from the contract total.

For example, you may have a fixed fee for an additional caller and enter a quantity of 3 for three additional callers. Or you may provide a site discount based on the number of sites. In this case you could enter –3 to provide a discount amount for three sites.

If the additional charge item is an amount type of P, Item Qty cannot be edited. The system determines whether the percentage is a discount or markup based on the amount type of the price list used. If a price does not exist on a price list, a percentage additional charge is treated as an uplift.

AT. This output-only field displays the amount type from the definition of the additional charge item: either F (fixed) or P (percentage).

- A fixed price additional charge is an amount added to or subtracted from the contract trailer.
- A percentage additional charge is a markup or discount applied to the total for the items covered on the contract.

Net Price. This field defaults from the price list in effect; otherwise, it is zero. Define contract price lists with Service Pricing Maintenance. You can change this value. If the net price does not default to zero, List Price is the net price. The system considers any change to the net price a discount and displays it in the Disc field in the item detail.

If the price defaults to zero and you enter a price, the system considers it the list price of the item but recalculates list price if you change the net price.

Note Price update can be controlled through field security.

Disc Pct. The system calculates and displays a discount when the item’s net price was derived from a price list—setting the list price—and then changed. You can also enter a discount manually, causing the system to recalculate the net price from the price list or the net price you entered, after you click Next to continue.

Note Click Next at the Discount field for the system-calculated amount to display.

When you enter a positive discount, the system applies it so the customer benefits from a lower price. In the case of percentage additional charges, this works slightly differently depending on whether the charge is an uplift or a discount.

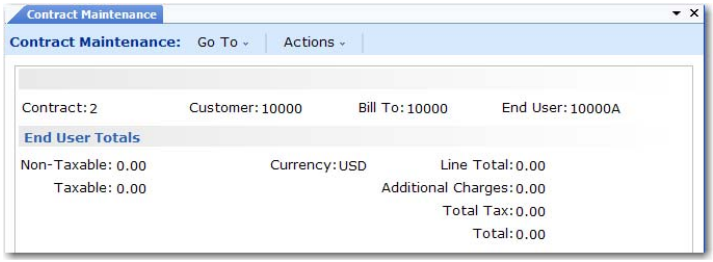
When you have an uplift additional charge and enter a positive discount, the net price decreases; if you enter a negative discount, the net price increases. Conversely, when you have a discount additional charge and enter a positive discount, the net price increases to provide a greater discount to the customer; if you enter a negative discount, the net price decreases.

Billing Cycle. The billing cycle does not apply to percentage (type P) additional charges. The percentage is applied to every amount billed, regardless of the billing cycle.

End User Total

If End User Totals is Yes in SSM Accounting Control, the following frame displays with summary information about the detail lines for this end user.

Fig. 8.17
End User Total in Contract Maintenance



The fields in this frame are similar to those that display in the contract trailer, but apply to amounts for the current end user only.

End User Default

After you complete an entire sequence for one end user, the End User Default frame displays for input of another end user with items on this contract. Enter another end user or click Back to complete the contract.

See “End User Default” on page 205.

Contract Additional Charges

If Contract Additional Charges is Yes in SSM Accounting Control, you can associate additional charge items with the contract. Each charge is added as a separate line item with its own pricing information.

When Bill End Users is Yes, a separate invoice is generated for the contract header customer for contract-wide additional charge items, since these apply to the entire contract.

If you plan to renew contracts by end user, you should be careful about adding fixed additional charges to the contract.

Important When you renew parts of a contract, any contract-level additional charges are applied to each contract generated, with amounts unchanged. You many need to adjust a fixed-amount charge.

This same warning applies to releasing contract quote lines by end user.

The Contract Additional Charges frame is the same as the End User Additional Charges frame.

See Figure 8.16 on page 211.

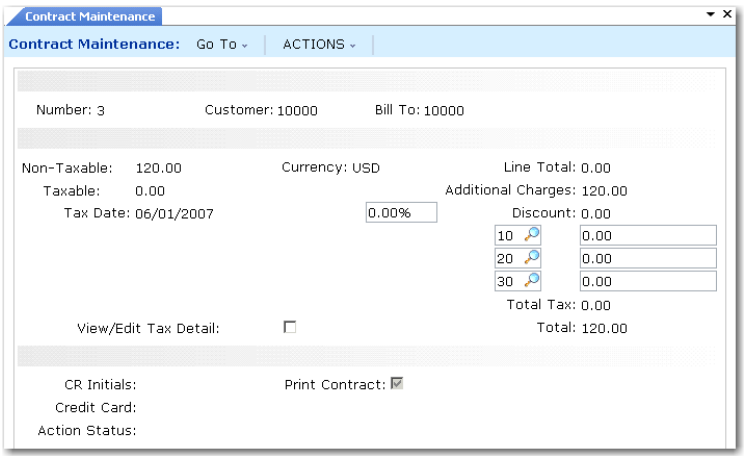
Contract Trailer

The contract trailer is similar to that of a standard sales order. The Line Total field is the sum of the extended prices for each line item. The Additional Charges field displays the total of either fixed or percentage uplift additional charges. You can add an overall discount percentage here for the entire order, along with miscellaneous charges.

Taxable and nontaxable trailer codes default from SSM Accounting Control, if defined.

The Total field represents the total billable amount on the contract. This may be divided among end users if Bill End Users is Yes. Billing may occur at one time, or the invoice amount may be divided, depending on the contract billing cycle—yearly, quarterly, monthly.

Fig. 8.18
Contract Maintenance Trailer



Cr Initials, Credit Card. Enter optional user-defined codes defined with Generalized Codes Maintenance.

Action Status. If the header customer is on credit hold, HD displays in the action status field. The effect of this status depends on Credit Hold Option in SSM Accounting Control. See “Contracts and Customer Credit” on page 189.

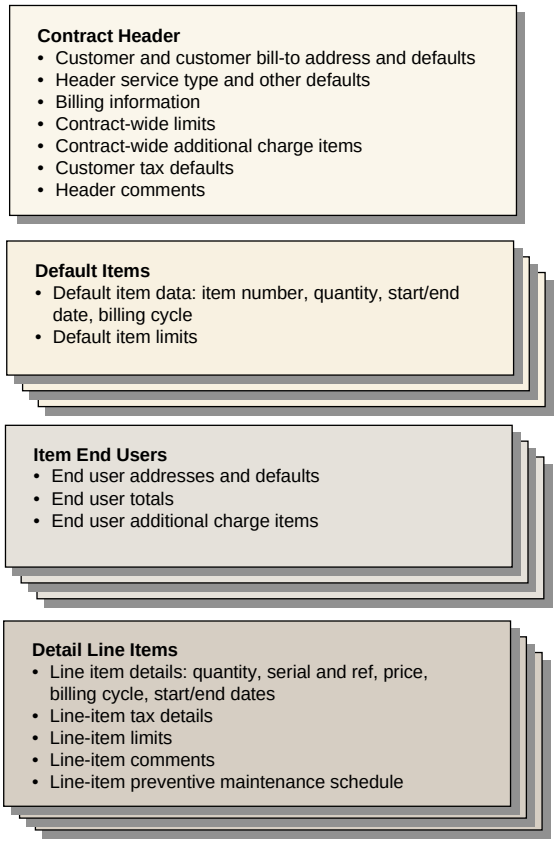
Print Contract. This field defaults from Print Sales Contracts in Contract Control and indicates whether the contract should be printed. Contract Print includes only contracts with a Yes in this field and sets the field to No when an entire contract is printed successfully in one execution. If you want to reprint a contract, reset this field to Yes.

Note If you print only sections of a contract, for example, only lines for a particular end user, this field is never set to No by the system.

Contracts for Items with End Users

To design a contract for items with end users, set Item End Users to Yes in the contract header. Figure 8.19 illustrates the various levels of the contract and the components within each level.

Fig. 8.19
Contracts for Items with End Users



The basic flow for contracts when Item End Users is Yes is the following:

1. Enter the contract header. Specify the contract type and other header defaults. When you complete the header, the contract is stored in the database even if you do not enter any line items.
2. If Contract Limits is Yes in SSM Accounting Control, optionally copy contract type limits to the contract header.
3. Enter header transaction comments.
4. Specify a default item on this contract and supply item default information.
5. If Contract Limits is Yes in SSM Accounting Control, optionally copy contract type or contract header limits to the default item.
6. Specify an end user who owns specific instances of this item and supply default end-user information.
7. Create detailed line items for this end user.

8 If Contract Limits is Yes in SSM Accounting Control, optionally copy contract type, contract header, or default item limits to the line.

9 Enter line-item comments.

10 View and modify item preventive maintenance (PM) schedule.

Repeat steps 7 through 10 until all instances of this item are added for this end user. Repeat lines 6 through 10 until all end users who own this item are added. Repeat steps 4 through 10 until all items are added to the contract.

11 If End User Additional Charges is Yes in SSM Accounting Control, specify end-user additional charges and any associated comments.

12 If End User Totals is Yes in SSM Accounting Control, view summary totals for this end user.

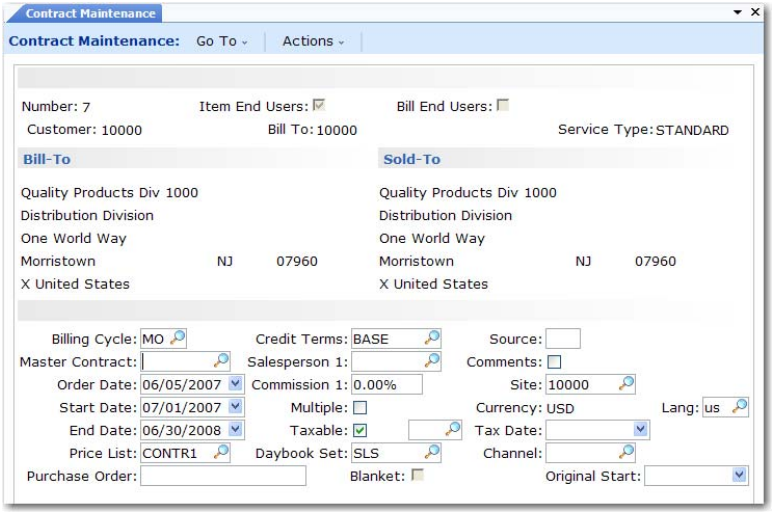
13 If Contract Additional Charges is Yes in SSM Accounting Control, specify contract-wide additional charges and any associated comments.

14 View contract totals and modify contract trailer information.

Use the following illustrations and field descriptions to understand the details of creating contracts for items with end users in Contract Maintenance (11.5.13.1).

This sequence of illustrations highlights only what is unique about creating a contract with Item End Users set to Yes. When the fields have the same effect as contracts for end users with items, refer to the previous field descriptions and discussions.

Fig. 8.20
Contract Maintenance (11.5.13.1)



Contract Header

Set Item End Users to Yes to create a contract for items with end users. Other fields in the header are used in the same way as they are in a contract for end users with items.

One exception is the Blanket field. In item/end-user sequence, all lines on the contract have blanket coverage; you cannot change this value for an end user.

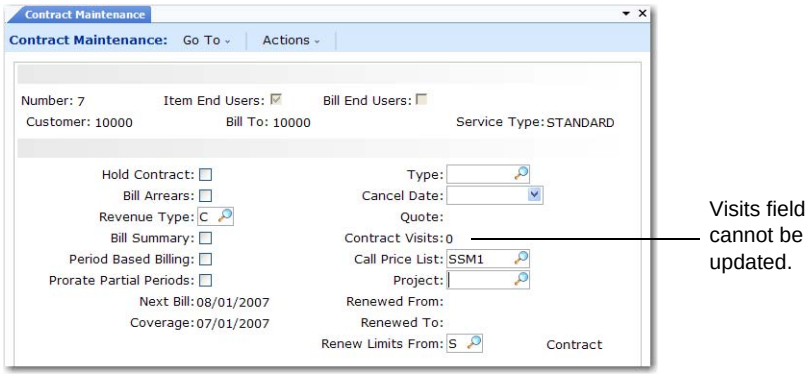
See “Contract Header” on page 197.

Second Header Frame

This frame is identical to the frame displayed in end-user/item sequence, except that you cannot update the Visits field. PM schedules exist only at the item level when Item End Users is Yes.

See “Second Header Frame” on page 201.

Fig. 8.21
Contract Maintenance, Second Header



Header Coverage Limits

This frame is exactly the same as the header coverage limit frame in end-user/item sequence.

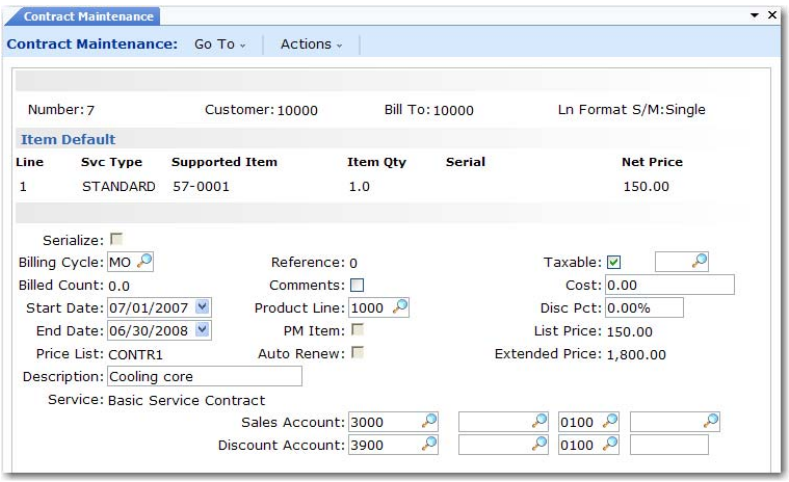
See “Header Coverage Limits” on page 204.

Item Default

The Item Default frame displays next. This frame looks similar to the item detail frame, but you only specify limited information here, such as the item number and other attributes of the item that default to the specific item instances owned by each end user.

If you specified a source for items earlier, the system creates default item lines for the items you selected.

Fig. 8.22
Item Default



In this frame, you cannot specify serial, serialize, reference, or PM item.

Item Default Coverage Limits

If Contract Limits is Yes in SSM Accounting Control, you are prompted to copy limits to the default item. If you previously copied limit detail into the contract header, you can copy default item limits from the header or the contract type.

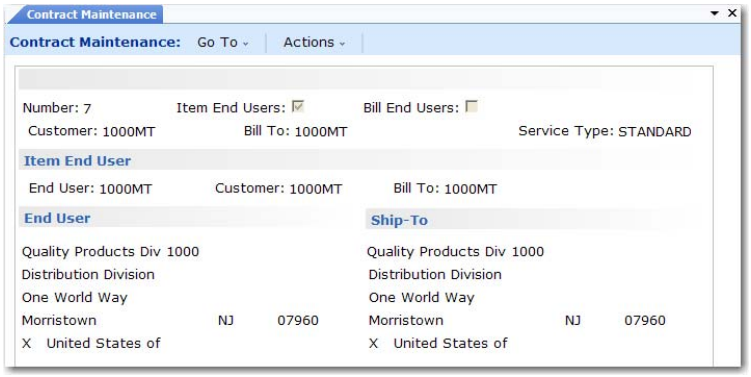
This frame is exactly the same as the header coverage limit frame in end-user/item sequence.

See “Header Coverage Limits” on page 204.

Item End User Address Frame

After completing header limits, you specify an end user who owns specific instances of the previously defined default item.

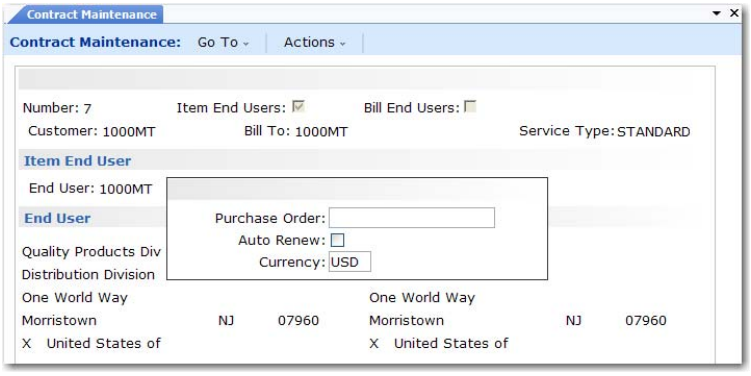
Fig. 8.23
Item End User Address Frame



Item End User Defaults

Use this frame to modify defaults associated with the end user. In item/end-user sequence, you can modify only a few fields associated with the end user.

Fig. 8.24
Item End User Defaults

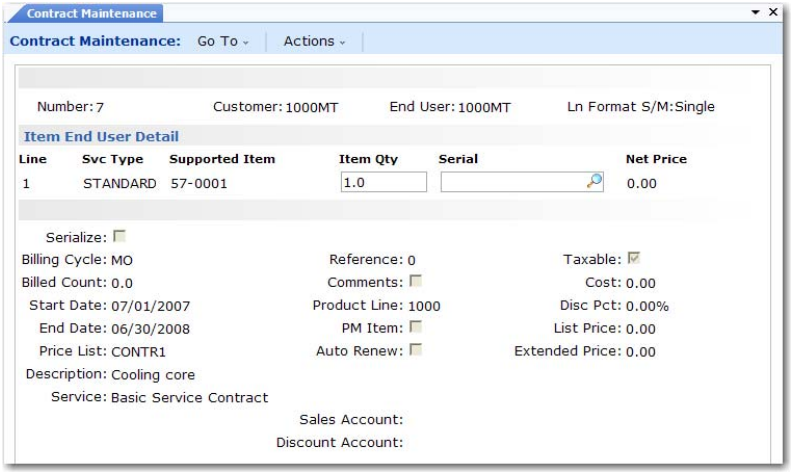


Default values for the other fields not displayed in this pop-up either do not apply (blanket end user) or are set in the default item record (billing cycle, start and end dates, project).

Item End User Detail

An end user can have multiple instances of the default item, each with a different service type. The line-item service type overrides the header service type. For example, specifying a different service type might bring in a different price list or change the level of coverage. If you change the service type, you are prompted to update the price from the new price list.

Fig. 8.25
Item End User Detail



This frame is almost exactly the same as the item detail frame in end-user/item sequence. However, the Item field cannot be updated, since you are creating detail related to the default item you entered previously.

In this frame, you specify the values you could not specify in the default item frame: lot or serial numbers, reference numbers, and PM item. Serialize can be modified when you enter a quantity greater than 1 of lot or serial-number controlled items.

See “Entering End User Item Details” on page 207.

Preventive Maintenance Detail

If PM Item is Yes, a preventive maintenance detail pop-up displays. The default number of visits is always 0 (zero), since the header Visits field cannot be modified in this sequence. You can create a line-item schedule by specifying a number of visits in the pop-up.

See “Scheduling Visits for a Line Item” on page 253.

Contract Accounts Pop-Up

If Display Contract Accounts is Yes in Contract Control, a pop-up window displays the Sales and Sales Discount accounts and cost centers being used and lets you modify them.

Item Detail Coverage Limits

If Contract Limits is Yes in SSM Accounting Control, the system again prompts you to copy service limits when you finish entering a detailed item. If you respond Yes, your choices depend on how you responded to previous prompts:

- If default item limits exist, you can copy from the default item or the service type.
- If default item limits do not exist and header limits do, you can copy from the header or the service type.

If you set up limits for the detail item, amounts accumulate against these limits, not the default item or contract header.

The limits frame is the same as the one used for contract header limits.

See “Header Coverage Limits” on page 204.

PM Schedules

If PM Item is Yes for the line item and you entered a nonzero value in the line-item Visits field, the PM Schedule for Line: n frame displays the scheduled dates.

See Figure 10.5 on page 257.

Item End-User Iteration

After you add all instances of the default item for one end user, the Item End User frame redisplays so that you can associate another end user with this default item. If you have added all end users, click Back to continue.

Item Default Iteration

The Item Default frame redisplays so you can add another default item to the contract. If you have added all default items, click Back to continue.

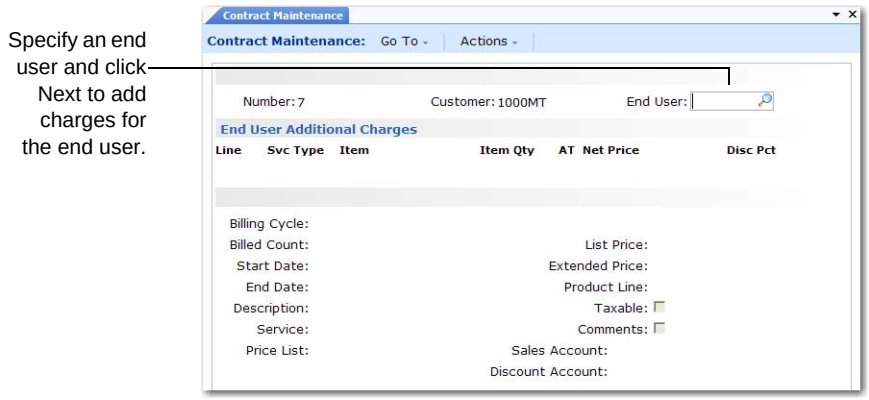
End User Additional Charges

If End User Additional Charges is Yes in SSM Accounting Control, you can associate additional charge items with each end user. These items are defined in Contract Additional Charges (11.5.7). Each charge is added as a separate line item with its own pricing information.

Adding additional charges in item/end-user sequence is similar to adding them in end-user/item sequence except that you must specify an end user before you can continue. After entering lines for one end user, you can specify a different end user and add more lines.

See “Contract Additional Charges” on page 189.

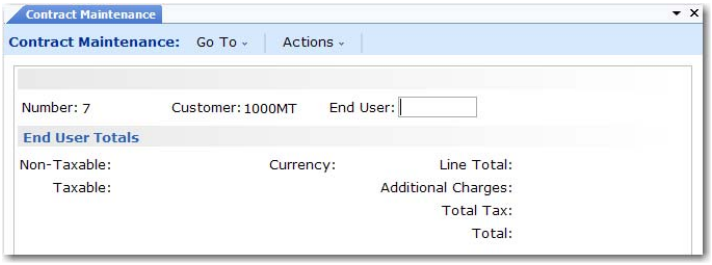
Fig. 8.26
End User Additional Charges in Item/End-User Sequence



End User Total

If End User Totals is Yes in SSM Accounting Control, the following frame displays. As with the End User Additional Charges frame, you must first specify an end user before the summary information displays.

Fig. 8.27
End User Total in Contract Maintenance



The fields in this frame are similar to those that display in the contract trailer, but apply to amounts for the current end user only.

See“End User Total” on page 212.

Contract Additional Charges

If Contract Additional Charges is Yes in SSM Accounting Control, you can associate additional charge items with the contract. This frame is the same as the one that displays in end-user/item sequence.

See “Contract Additional Charges” on page 212.

Contract Trailer

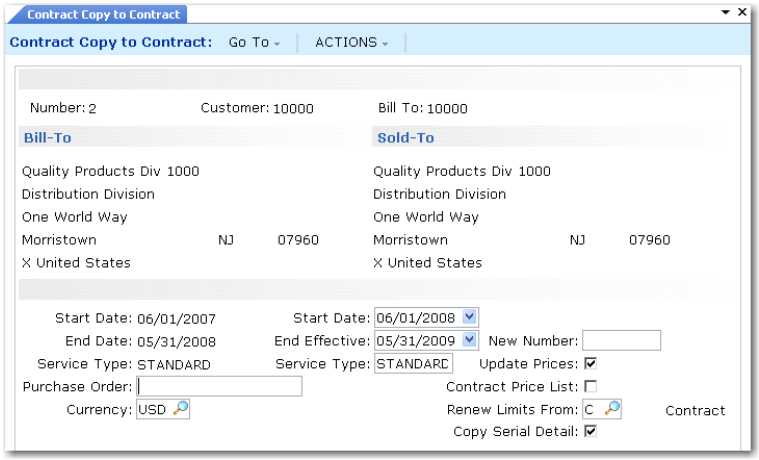
The contract trailer in item/end-user sequence is the same as the trailer in end-user/item sequence.

See “Contract Trailer” on page 213.

Copying Contracts

Rather than entering a contract manually in Contract Maintenance, you can create a contract by copying an existing one with Contract Copy to Contract (11.5.13.6).

Fig. 8.28
Contract Copy to Contract (11.5.13.6)



This function is similar to Renew Single Contract (11.5.13.8). To be copied, a contract does not have to be fully billed.

To copy a contract, specify its number in the header. Start Date defaults to the first of the month following the current end date. The system bases the end date on the existing contract's duration. You cannot set the start date earlier, since this would cause the items on the contract to be covered twice.

Service type defaults from the source contract but can be changed. You can specify a new number for the contract, or the system supplies the next number.

If the new contract should have a different currency, specify it in the Currency field and set Update Prices to Yes to calculate prices in the new currency.

For details, see "Multicurrency and Contract Copy and Renewal" on page 188.

The Renew Limits From field lets you copy limits from the source contract to the new contract, or look back at the service type and copy limits from it. This field defaults from the value specified for the source contract. If the limits on this contract have been heavily customized, you may want to preserve them. If you have set up effective dates on the contract type, you may want to look back at the type to apply the new limits based on the new contract's start date.

Use this option in conjunction with the Service Type field for full control over service limits. If you specify a new service type and indicate that limits should be copied from service type, the new limits are applied.

If prices or price lists have changed since you generated the previous contract, you can have the system update the prices. If you want to update prices, the system uses either the price list associated with the contract's service type (Contract Price List is No) or the one associated with the contract.

A contract or contract quote can have multiple lot and serial numbers associated with one line when you use the Serialize option. The Copy Serial Detail field determines if the system includes the lot and serial numbers on the new contract.

- When Yes, numbers are copied to the new contract.
- When No, the system creates a line without lot and serial numbers. In this case, update the new contract manually, since the system does not find coverage for lot and serial-controlled items if these numbers are not specified.

Renewing Contracts

Contracts always have start and end dates. To remain in effect, the contracts must be renewed. There are several ways to accomplish this:

1. Use Contract Maintenance to extend the end date.
2. Use Renew Single Contract (11.5.13.8) to renew a particular contract that is about to expire.
3. For contract lines with Auto Renew set to Yes, use Renewal Process/Report (11.5.13.10) to renew lines for selected ranges of contracts and end users.
4. Copy the existing contract to a new contract with Contract Copy to Contract (11.5.13.6). See “Copying Contracts” on page 221.

When you use either method 2 or 3, the system verifies that the contract has been fully billed before it can be renewed.

PO Required

If the customer or end users associated with a contract require a purchase order, the system carries over the existing purchase order numbers when contracts are renewed. If a new PO applies to the renewed contract, change it manually.

Renewal Numbers

Contracts cannot be renewed to the same number. The system retrieves the next available number from Contract Control, except in cases where a new number can be supplied.

There are several good business reasons for contracts to be renewed with new numbers.

- Renewing to the same number reinitializes the existing contract. This could easily leave a lapse in coverage at the end of the year between the time the contract was renewed and the beginning of the next year.
- Renewing to the same number also removes historical references to previous terms and agreements, which may be important in answering questions about contractual obligations.
- Finally, renewing to the same number invalidates any calls that may currently reference the contract. A call taken on December 31 should be serviced under the old terms and conditions—not the ones in effect on January 1.

Renewal and Limits

If Contract Limits is Yes in SSM Accounting Control and contract coverage levels and limits are part of the contract, the contract renewal process accommodates the coverage records in two ways:

- You can copy limits for the new contract from the old contract with new effective dates.
- The system can retrieve limits from the service type and copy them into the new contract.

Which approach the system takes depends on Renew Limits From on the contract. Set the default for this field in SSM Accounting Control. If you renew contracts one at a time, you can modify this field. When you do batch renewal, the system uses the value associated with each contract being renewed.

If you have extensively customized limits in a contract, you probably want to copy them to the new contract. You can also set up limits on the service type using effective dates and then have the system apply the coverage records effective for the new contract duration by referencing the service type.

See “Renewal and Contract Limits” on page 182 for more details.

Renewal and PM Schedules

When you renew a contract with a PM schedule, the system calculates a schedule for the next coverage period, just as it did when the contract was created. If Create PM Calls is Yes in Contract Control, the system creates the first call on the schedule. If you are renewing a large number of contracts, a corresponding large number of calls is added to the system.

Control the creation of calls by setting Create PM Calls to No and using the Call Generator (11.1.8) to create scheduled calls for specified time ranges.

See “Creating PM Calls” on page 256.

Service Types and Prices

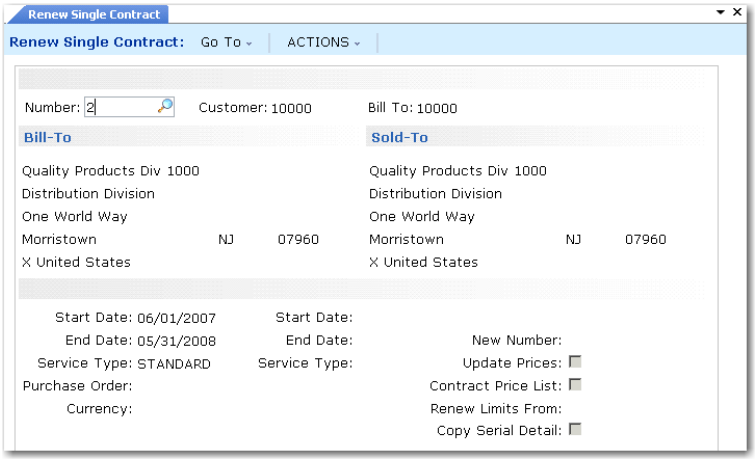
When you copy or renew individual contracts, you can specify a new service type to be used. If you do, the system loads the new value into the header of the new contract and into any lines that matched the header. If the service type on a line did not match the contract header, it is not changed. You can also copy limits from the new service type by specifying S in Renew Limits From. New lines added to the new contract will use the new service type by default.

You can update pricing during renewal. Use this option by itself or in combination with a changed service type. The price list for recalculating prices can be on the service type or on the source contract. The system uses the start date of the new contract when it searches for effective prices.

Renew Single Contract

Use Renew Single Contract (11.5.13.8) to renew one fully billed contract.

Fig. 8.29
Renew Single Contract (11.5.13.8)



To renew a contract, specify its number in the header. The new start date defaults to the first of the month following the current end date. The system bases the End Date value on the existing contract's duration. Service Type also defaults from the existing contract but can be changed.

Renew the contract with a new number. If you leave New Number blank, the system uses the next available number. If prices or price lists have changed since you generated the previous contract, the system can update prices. Renew Limits From defaults from the source contract, but you can change it. You can also copy serial detail associated with a contract line. This is typically set to Yes during renewal.

If the new contract should have a different currency, specify it in the Currency field and set Update Prices to Yes to calculate prices in the new currency.

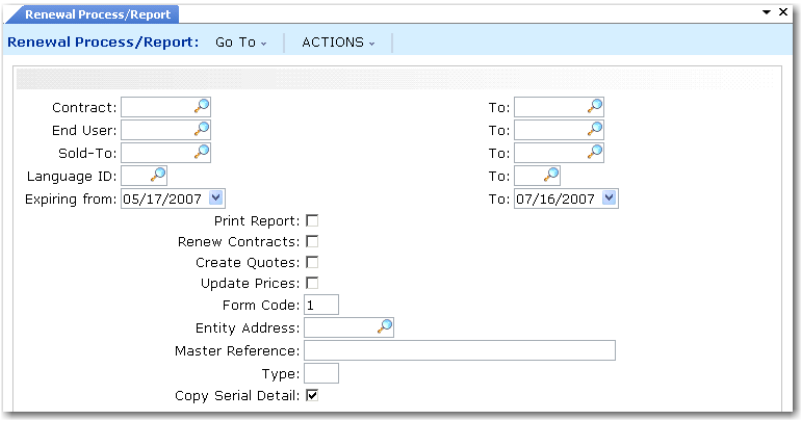
For details, see "Multicurrency and Contract Copy and Renewal" on page 188.

Renewing Contracts Automatically

Use Renewal Process/Report (11.5.13.10) to review contracts near expiration and optionally generate service quotes or renew contracts at old or new prices. To be included in the renewal process, a contract line must meet the following conditions:

- It must be fully invoiced.
- Auto Renew must be set to Yes.

Fig. 8.30
Renewal Process/Report (11.5.13.10)



Note The login country of the user determines the numeric and date formats.

Based on date ranges or other selection criteria, you can perform multiple functions with this program:

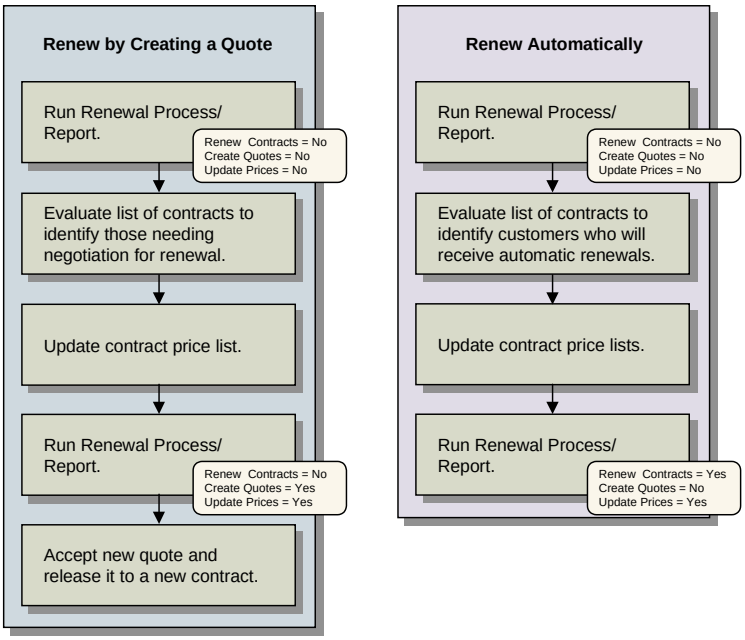
- Print reports showing contract lines that will expire within a range of dates.
- Automatically create quotes based on existing contracts, optionally updating prices. You can then mail the printed quotes to the customer or end user for approval and release approved quotes to contract. You can include a renewal letter by setting one up in master comments and specifying the master reference when quotes are generated.

  Quotes are created with an Action Status of A. This indicates that the quote was created through automatic renewal and prevents it from being released to a contract before review. To release the quote to a contract, remove the A from the Action Status field.
- Automatically renew contract lines with Auto Renew set to Yes, optionally updating prices.

Note Define the default for Auto Renew in End User Data Maintenance (11.9.1).

Figure 8.31 illustrates two methods for renewing contracts, one using quotes and one going directly from contract to contract.

Fig. 8.31
Renewing Contracts



Renewal Process/Report resets the start and end dates on the contract, so the start date is the day after the expiration date of the original contract. The end date defaults from the service type's duration. The billing process continues as usual, using the new dates. Contracts are always renewed with a new number. The system retrieves the next available number from Contract Control.

Note To ensure consistent results, execute the report function first and review the output before attempting to create quotes or renew contracts.

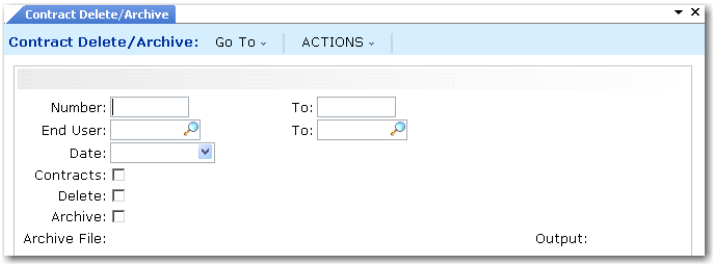
You can run this function multiple times for the same contract for different ranges of end users. However, each time you do this a new contract is created. If you want the renewed contract to look like the old one, you must include all end users in the range when you process renewals or leave the end-user range blank.

Contract Delete/Archive

Use Contract Delete/Archive (11.5.13.23) to delete and archive contract and contract quote records when online history is no longer needed. Before processing a record, the system checks the following:

- Contracts must be fully billed (coverage date is the same or exceeds the end date).
- All revenue must be recognized for contracts with deferred and accrued revenue types.

Fig. 8.32
Contract Delete/Archive (11.5.13.23)



If you enter a range of end users, only data for end users within that range is deleted or archived.

Important Be careful when using this option. Archived data for end users probably cannot be reloaded into the system. By running this function for end users, you are deleting parts of contracts. If the contract changes, you cannot add the lines back.

When contracts are deleted, related data is also removed from the system, including billing detail records, deferred/accrued revenue details, preventive maintenance schedules, and coverage limit records.

Contract deferred/accrued revenue records can be archived separately with Contract Revenue Delete/Archive (11.5.18.23).

See “Deleting Revenue Records” on page 240.

Contract Quotes

You can create contract quotes as a preliminary step in creating a contract. Contract quotes are the same as contracts, except they are not yet effective. Create and maintain quotes in Contract Quote Maintenance (11.5.1.1), which functions exactly like Contract Maintenance with the exception of one additional prompt.

A pop-up window displays the Release to Contract field. If you specify No to this prompt, the quote cannot be released until you change this field in Contract Quote Maintenance.

Just like contracts, you can create quotes in multiple ways:

- Enter them manually in Contract Quote Maintenance (11.5.1.1).
- Copy them from an existing quote with Contract Quote Copy from Quote (11.5.1.6).
- Copy them from an existing contract with Contract Quote Copy from Contract (11.5.1.7).
- Create them as part of renewing expired contracts with Renewal Process/Report (11.5.13.10).

When a quote is finalized, you can release it as an active service contract. Until released, it is only a working document and has no financial impact.

Releasing the Quote

After you create a quote, you can release it to a contract using Contract Quote Release to Contract (11.5.1.5). To do this, Release to Contract must be Yes in the quote header.

You can release all lines on a quote to a contract, or release lines by range of end user. However, unlike sales quotes, you cannot release a line more than once. After release, the quote remains in the system until deleted.

When a quote is released:

- The system updates the quote with the contract number created.
- The new contract references the quote number.
- If the quote includes one or more preventive maintenance (PM) schedules for end users or lines, they are copied to the contract. If Create PM Calls is Yes in Contract Control, the system creates calls for the first scheduled PM visits.

A number of conditions cause errors during the release process:

- If any quote line overlaps an existing contract, the quote cannot be released. You need to fix the erroneous line before releasing the quote.
- A quote cannot be released if it has a non-blank Action Status.
- If Credit Hold Option is 2 in SSM Accounting Control and the customer on the quote is on credit hold, an error displays.
- If you defined the customer on the quote header or any end user on the quote as requiring a purchase order, one must be specified before the quote can be released.
- If the currency on the quote line is invalid or a valid exchange rate does not exist, it cannot be released.

Chapter 9

Contract Billing

This chapter discusses contract billing issues, including the options for managing billing, managing deferred and accrued revenue, and the procedure for releasing a contract billing to invoice.

Managing Contract Billing

Like most other service functions, contract billing can be approached in more than one way. A number of settings in SSM Accounting Control (36.9.10) affect contract billing. You can tailor these settings to the needs of your business organization. Most of these settings set default values that can be modified on individual contracts as needed.

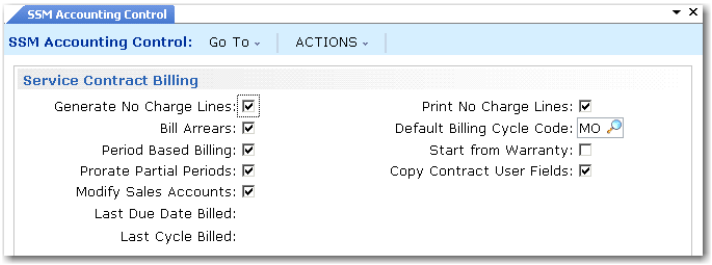
See Chapter 25, “Control Programs,” for complete information on control program settings.

How you bill for service depends on how you have designed your service contracts. Here are some of the questions to consider:

- How often do you need to bill your customers for service contracts? Do you bill quarterly? Monthly? The answer depends largely on the prices of your contracts. If a one-year contract costs $250, is it worth breaking up the total into smaller monthly payments? What if the contract costs $24,000 a year? Are your customers willing to pay that amount in a single payment?
- Do you want to bill in advance of service or in arrears? The trend in aftermarket sales support is to pay in advance of service. This is true because companies typically like to receive revenue before committing to service. Often the sale of the service contract coincides with the sale of a product. However, customer relationships may dictate another approach where the bill is issued at the completion of the billing cycle, rather than at the beginning.
- Who typically receives the invoice for a contract? In some organizations, a central office handles billing. In others, each end user is responsible for paying coverage charges for the items they own and use.
- What kind of information should appear on the contract invoice? Some organizations prefer detailed information. For others, a summary statement is sufficient.

Use fields in SSM Accounting Control to implement the decisions you make regarding these kinds of questions.

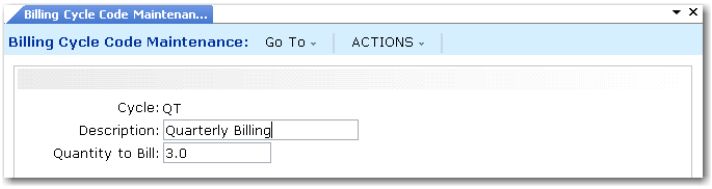
Fig. 9.1
SSM Accounting Control (36.9.10), Service Contract Billing Frame



Billing Cycles

You bill some contracts monthly, some quarterly, and some annually. To identify different billing cycles, create and maintain codes in Billing Cycle Code Maintenance (11.5.18.1).

Fig. 9.2
Billing Cycle Code Maintenance (11.5.18.1)



The Quantity to Bill value represents the number of months in the billing cycle. When a contract is released to invoice with this billing cycle, the system calculates the invoice amount by multiplying the unit price by the number of units covered, and then multiplying this amount by the number of months in this billing cycle (Quantity to Bill).

Example For a quarterly billing cycle code, set Quantity to Bill to 3, billing three months of service each quarter.

Always enter a whole number for the quantity to bill, since a contract cannot be billed more than once in a month.

Specify a default billing cycle in SSM Accounting Control. This value supplies a default for the Billing Cycle field on the contract header when contracts are created. Billing cycle can be modified at multiple levels of a contract: contract header, default end user and items, and item details.

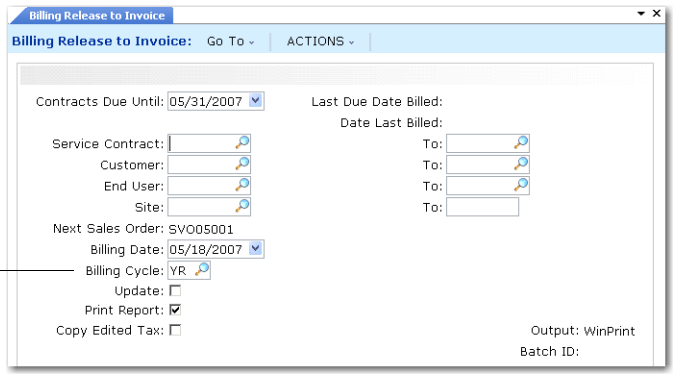
You can accept the default or specify a different billing cycle code at various levels below the contract header. However, you cannot specify a cycle that indicates less frequent billing than the cycle specified on the header. For example, the header billing cycle is annual. You cannot specify a billing cycle of every two years for a contract line.

You can delete a billing cycle code only if it is not currently referenced by any contracts or quotes.

You can use the billing cycle as a selection criterion in Billing Release to Invoice (11.5.18.13), illustrated in Figure 9.3. However, it is best to bill all cycles together. Enter a date in the Contracts Due Until field. Select a date greater than or equal to the date to be billed.

Fig. 9.3
Selecting a Billing Cycle to Release

This field is normally left blank, but you can create invoices based on the billing cycle.



Period Based Billing

When this field is No, the system creates contract invoices for periods—determined by the billing cycle—that begin with the contract start date. With this setting, the system bills a year-long contract with a start date of January 15 and a monthly billing cycle on January 15, February 15, March 15, and so on. This example assumes Bill in Arrears is No.

If Period Based Billing is No, the system takes into account the length of the month when the contract start date is at or near the end of a month. For example, the system bills a contract that started on January 31 on January 31, February 28 (except leap years), March 31, and April 30. A contract starting on April 30 would be billed on April 30 and May 31, not May 30, since the system knows that April 30 is the last day of the month for April, corresponding to May 31 in May.

When Period Based Billing is Yes, the system invoices on the first day of the appropriate calendar month (usually the next month), regardless of the actual start date of the contract. In the previous example, invoicing occurs on February 1, March 1, and so on.

Prorating Partial Periods

Prorate Partial Periods determines how the system handles partial periods that do not fit into a monthly cycle. In the previous example, if this field is Yes, the system generates a separate invoice for the period of January 15 through January 31. From that point on, invoicing is synchronized with the first of the month: The system creates a prorated invoice again at the end of the year for the period January 1 through January 14.

If Prorate Partial Periods is No and Period Based Billing is Yes, the covered days that do not fit cleanly within a month are essentially given away. If you want to ensure complete invoicing, set Prorate Partial Periods to Yes.

Partial billing periods can result when Period Based Billing is Yes, but they may also occur if contract start and end dates do not follow monthly cycles. For example, if Period Based Billing is No and you have a contract from January 22 to April 5, the system bills for two full months from January 22 to February 21, and February 22 to March 21. This leaves 15 days of coverage.

The price for coverage is in terms of monthly units. To determine the price for a number of days less than a month, the system uses the number of days in the month of the last coverage day. In the previous example, the last day of coverage is April 5. April has 30 days. So the prorated price is 15 divided by 30, resulting in 0.5 months. If the last day of coverage was May 5, the calculation would use 31 days and have a slightly different result.

The header start and end date determine the billing periods for a contract. The system then attempts to fit each line within the periods defined by the header. If a contract line begins or ends on a different day than the contract header, this can result in partial periods for the line that are then either dropped or prorated, depending on the control program settings.

For example, a contract has header dates of January 15 to March 14 and a monthly billing cycle. Period Based Billing and Bill Arrears are both No. The billing periods for the contract would be January 15 to February 14 and February 15 to March 14. The system bases line-item billing on the same periods.

The first line item on the contract has start and end dates of February 1 to February 28. The system bills this as two partial periods using the header billing periods. The system bills line coverage for February 1 to February 14 in the first period and coverage for February 15 to February 28 in the second period. If Prorate Partial Periods is No, this line would generate a 0 invoice amount during both periods, even though it appears to be for a month.

Billing in Arrears

Contracts are billed in arrears on the day following the end of each billing cycle. For example, if you have a contract on a monthly cycle that is billed in arrears and the first period is January 1 to January 31, the invoice is generated on February 1, the first day of the next monthly billing cycle.

Set a default value for bill in arrears in SSM Accounting Control. The system uses this setting for each new contract. You can change it.

The setting of Bill Arrears affects which revenue type can be used with a contract:

- When Bill Arrears is Yes, you can choose cash basis or accrued.
- When Bill Arrears is No, you can choose cash basis or deferred.

See “Managing Deferred and Accrued Revenue” on page 235.

Billing Customers or End Users

You can use the Bill End Users field in SSM Accounting Control to indicate who normally receives invoices generated for contracts by Billing Release to Invoice:

No: Only one billing address, specified in the contract header, is associated with the contract. Billing Release to Invoice generates all contract invoices to this address.

Yes: Multiple billing addresses can be associated with the contract, one for each contract end user. At least one invoice is generated in Billing Release to Invoice for the bill-to address associated with each end user defined on the contract.

Important When Bill End Users is Yes, you must ensure that your end users are also defined in End User Create.

Note The invoice for contract-wide additional charges is always sent to the header billing address, regardless of the value of Bill End Users.

The control program field sets the default for the same field in the header of new contract quotes and contracts.

Summarized or Detail Billing

Set a default value for Bill Summary in SSM Accounting Control. The value for each contract determines the format of invoices generated by Billing Release to Invoice.

When Bill Summary is Yes for a contract, the details that are not printed on an invoice are stored in the database. You can view these details using Billing Detail Report.

The effect of summarized billing depends on the settings of Bill End Users and Item End Users. When you are billing the contract customer, Billing Release to Invoice generates one invoice to the bill-to address on the contract header. When you are billing the contract end users, Billing Release to Invoice generates one invoice for each end-user bill-to address.

Note The exceptions to generating single invoices are noted in the following section.

Table 9.1 illustrates the effects of various control settings when you are billing the contract customer (Bill End Users is No).

Table 9.1
Interaction of Customer Invoice Options

Item End Users	Bill Summary	Invoice Content
No	No	Detailed billing information for each end-user/item combination, sequenced by end user.
Yes	No	Detailed billing information for each item/end-user combination, sequenced by item number.
No	Yes	Summary of one line per end user; the summary amount includes all charges for all items linked to the end user.
Yes	Yes	Summary of one line per item on the contract; the summary amount includes all charges for all end users linked to that item.

When Bill End Users is Yes, Item End Users has no affect on the invoice. This is illustrated in Table 9.2.

Table 9.2
Interaction of End-User Invoice Options

Bill Summary	Invoice Content
No	One line per item, sequenced by item line number
Yes	One line per invoice, for total of all items for the end user

Constraints on Summarized Billing

Summarized billing is not always possible, even when Bill Summary is Yes. If any of the following differ for billable lines, separate invoices are always generated:

- If billing end users, the detail bill-to address
- Language
- Currency
- Exchange rate

Note The system limits invoices to 999 lines. If the setting of Bill Summary would result in more than 999 lines on an invoice, Billing Release to Invoice creates separate invoices as needed.

In addition, details within an invoice can be summarized only when they share the following characteristics:

- Service type
- Contract line type: either a contract detail or additional charge

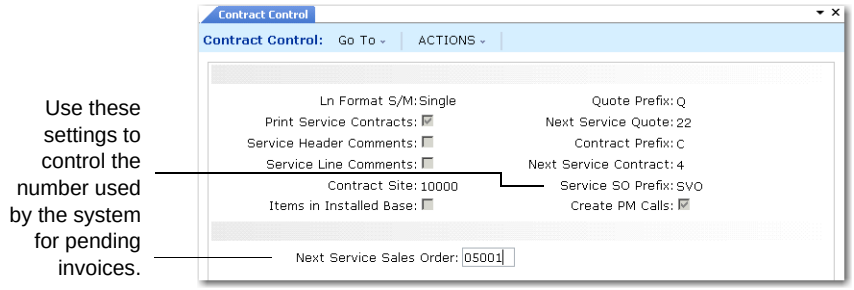
- Tax attributes, including taxable, tax environment, tax class, tax usage, tax included
- Sales account, sub-account, cost center
- Project

Service Sales Order Prefix

When you release a contract to invoicing, the system creates a sales order you can print and post using the Sales Orders/Invoices module. It is usually best to set up a prefix and a different number range for contract sales orders. This helps distinguish them from standard sales orders.

Do this by specifying values for Service SO Prefix and Next Service Sales Order in Contract Control (11.5.24).

Fig. 9.4
Setting up a Service SO Number in Contract Control



In this example, the Service SO prefix is S, and the next service sales order number is 0002145.

Managing Deferred and Accrued Revenue

When you create a contract, you indicate what type of revenue recognition you want to use. The default value for new contracts is set in the Revenue Type field in SSM Accounting Control.

You can choose one of three ways of recognizing revenue:

Cash Basis: In cash-basis accounting, revenue is recorded in the period it is actually received.

Accrued: In accrual basis accounting, revenue is recorded in an Accrued Revenue account in the period in which it is earned, even though cash is not received in that period. To use this revenue type, Bill Arrears must be Yes. When you invoice at the end of service coverage, this lets you post accrued amounts during the duration of the contract.

Deferred: In deferred accounting, collected revenue is held in a deferred account and is posted periodically over the contract duration. To use this revenue type, Bill Arrears must be No. You invoice at the beginning of the contract coverage and perform your normal invoicing procedure. Total revenue is posted to a Deferred Revenue account and moved periodically over the duration of the contract.

Note General revenue, as well as discount and additional charges revenue, are accrued or deferred; revenue from taxes is not.

Revenue Accounts

If you are using deferred or accrued revenue types, set up Deferred and Accrued Revenue accounts at the system level, by product line, or for combinations of product line, channel, site, and customer type.

To find deferred and accrued accounts, the system searches first for alternate sales accounts set up in Sales Account Maintenance (1.2.17) using:

- The product line of the service type in effect
- The channel specified on the contract header
- The contract site
- The customer type

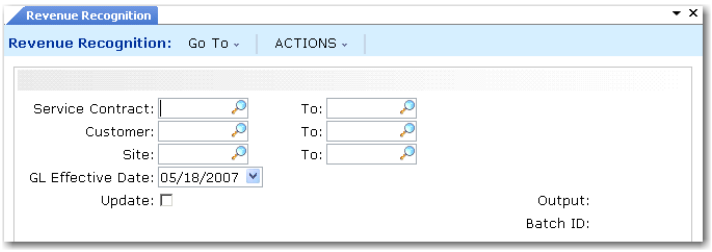
If these do not exist, it uses accounts set up in Product Line Maintenance (1.2.1). If these do not exist, it uses accounts defined in Domain/Account Control (36.9.24).

Note The setting of Use Item Product Line in SSM Accounting Control (36.9.5.10) does not affect the search for Deferred and Accrued Revenue accounts. These accounts apply to the contract as a whole, not individual lines. Therefore, the product line associated with the service type is always used in the search for accounts.

Recognizing Revenue

Run Revenue Recognition (11.5.18.21) each month for the system to recognize accrued and deferred revenues for billing cycles other than monthly.

Fig. 9.5
Revenue Recognition (11.5.18.21)



Select revenue to be updated by range of contract, customer, and site codes and indicate when the GL transactions should be effective. Set Update to No to generate a report of revenue amounts that the system needs to update without making any changes. The system validates that you have security access to the site range.

Important Do not modify the details that have been accrued on a contract after running Revenue Recognition. For example, you can add new contract lines, but do not change the billing cycle or start date of lines that have been accrued.

Deferred Revenue

When the revenue type of a contract is deferred, release the contract for billing to generate a pending invoice. Post and print the invoice. This creates the following transactions:

Debits Accounts Receivable

Debits Sales Discount

Credits Sales (for the current month)

Credits Taxes, Trailer Charges

Credits Deferred Revenue (for remaining billed months)

Posting the invoice also creates revenue records that can be displayed with Deferred/Accrued Revenue Report (11.5.18.22), Accrued Revenue Report (11.22.1), and Deferred Revenue Report (11.22.2). The reports show the invoiced, recognized, accrued, or deferred amounts, and the number of periods left for recognition.

Running Revenue Recognition then creates the following transactions:

Debits Deferred Revenue

Credits Sales

The number of months to bill on the contract must be greater than one. For deferred revenue, running Revenue Recognition is not needed for contracts and contract lines with monthly billing cycles, since monthly billing and accounting functions update revenue totals. However, when the billing cycle is less frequent than monthly, monthly accounting totals do not include unrecognized revenues held in deferred accounts.

Accrued Revenue

When the revenue type of a contract is accrued, you run Revenue Recognition before releasing the contract to an invoice. This creates the following GL transactions:

Credits Sales (for the monthly billing)

Debits Accrued Revenue (for the monthly billing)

Run Revenue Recognition every month until the billing cycle is complete. Then release the contract for billing to generate a pending invoice. Post and print the invoice. This creates the following transactions:

Debits Accounts Receivable (for all billed months)

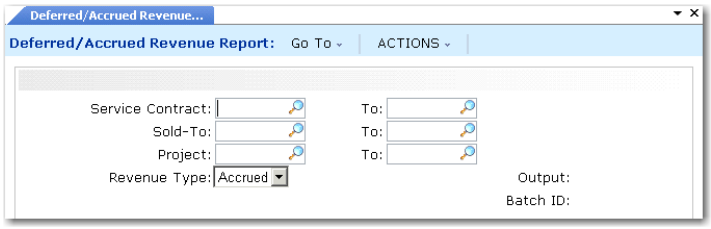
Credits Accrued Revenue (for all billed months)

For accrued revenue, running Revenue Recognition creates revenue records that can be displayed with Deferred/Accrued Revenue Report (or, alternatively, the Accrued Revenue Report (11.22.1) and the Deferred Revenue Report (11.22.2)). The reports show the total amount to be accrued, the amount already accrued, the amount remaining to be accrued, and the number of periods left for accrual.

Viewing Deferred/Accrued Revenue Records

Run Deferred/Accrued Revenue Report (11.5.18.22) to display records created and updated by Revenue Recognition. Optionally, use Deferred Revenue Report (11.22.2) and Accrued Revenue Report (11.22.1) to display deferred revenue records and accrued revenue reports respectively.

Fig. 9.6
Deferred/Accrued Revenue Report (11.5.18.22)



You can select records by range of contract number, customer code, and project. You can display either accrued or deferred records on one report; you cannot display them together.

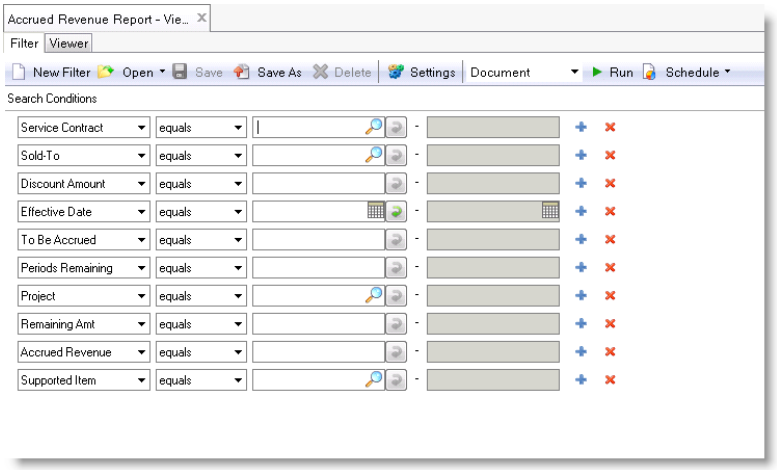
Fig. 9.7
Deferred/Accrued Revenue Sample Report

```
fssdefrp.p     11.5.18.22 Deferred/Accrued Revenue Report      Date: 02/19/07
Page: 1                        MOW Industries                  Time: 12:09:48
                            Accrued Revenue Report


Service Contract: 640      Sold-To: 101      Project:

                                                                 Remaining Periods
Item Description  Eff Date To be Accrued Accrued Revenue to be Accrued    Left
---- ------------ -------- ------------- --------------- ------------- -------
1000 Service Item 03/01/07        180.00           15.00         165.00   11.0

                          Totals 180.00          15.00        165.00
```

Accrued Revenue Report

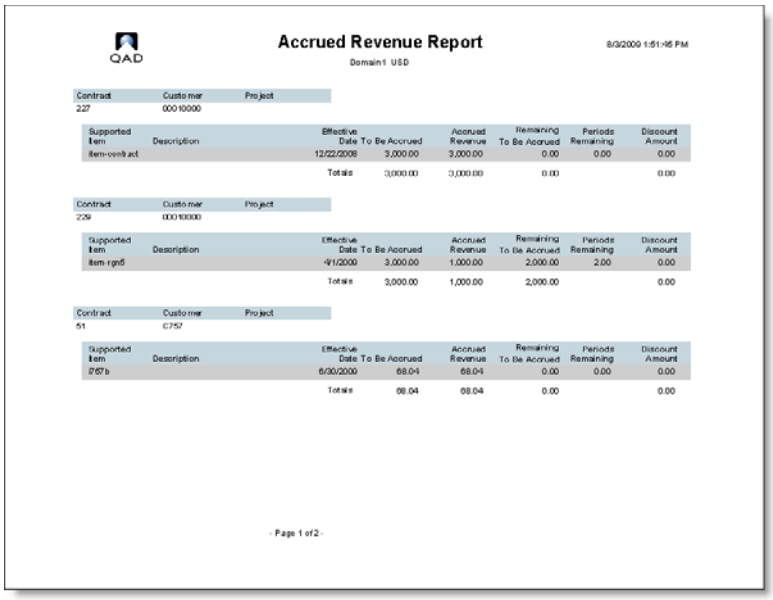
Use Accrued Revenue Report (11.22.1) to display accrued revenue records created and updated by Revenue Recognition.

Fig. 9.8
Accrued Revenue Report (11.22.1)



You can select records by range of various criteria, including accrued revenue. The report displays the contract number and customer on the header, followed by the corresponding line details underneath. Line details correspond to contract line details. The report displays the accrued revenue, revenue to be accrued, and period left to be accrued.

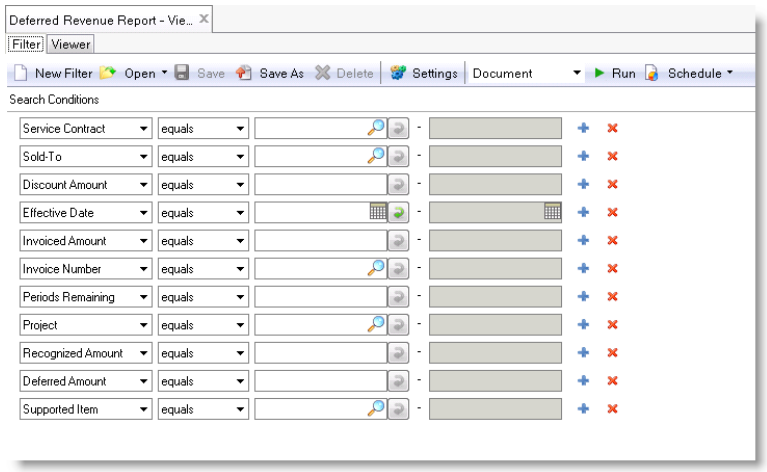
Fig. 9.9
Accrued Revenue Report Sample



Deferred Revenue Report

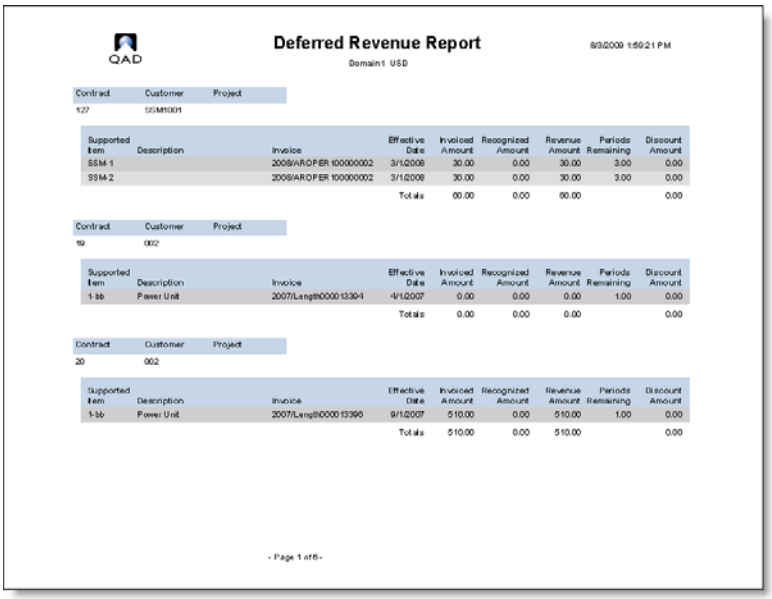
Use Deferred Revenue Report (11.22.2) to display deferred revenue records created and updated by Revenue Recognition.

Fig. 9.10
Deferred Revenue Report (11.22.2)



You can select records by range of various criteria, including deferred amount. The report displays the contract number and customer on the header, followed by the corresponding line details underneath. Line details for deferred revenue correspond to sales order line details. The report displays the invoice number, invoice amount, recognized amount, deferred amount, and period left to be deferred.

Fig. 9.11
Deferred Revenue Report Sample

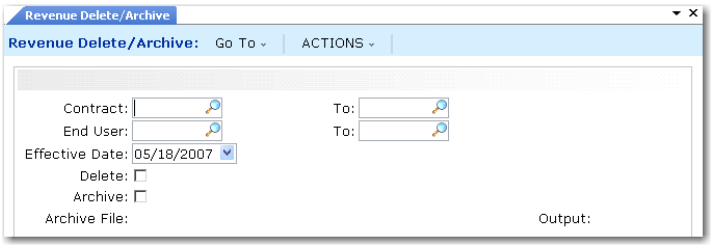


Deleting Revenue Records

Use Revenue Delete/Archive (11.5.18.23) to archive or delete deferred or accrued revenue records with zero amounts when online history is no longer needed. These records are needed only while open billing periods remain on the contract.

Note If you do not execute this program, revenue records are archived by Contract Delete/Archive (11.5.13.23) when their related contracts are processed.

Fig. 9.12
Revenue Delete/Archive (11.5.18.23)



You can delete and archive revenue records by range of contract number or end-user address.

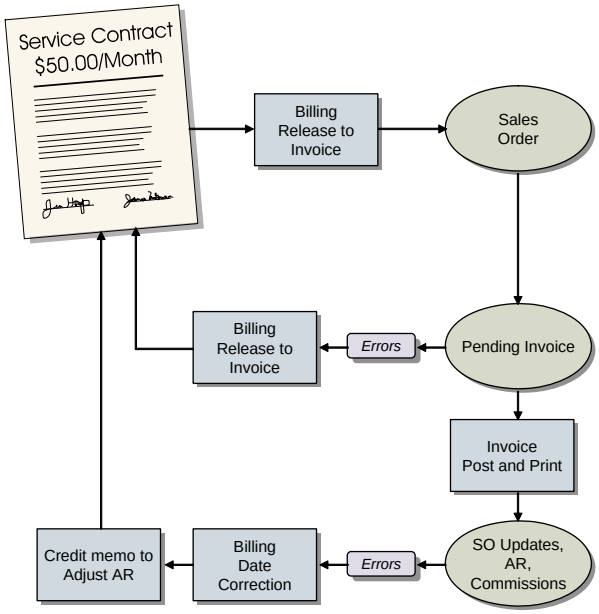
Releasing Contract Invoices

Use Billing Release to Invoice (11.5.18.13) to generate sales orders that serve as pending invoices for selected contracts with lines that are ready to bill. Print and post these pending invoices with functions on the Sales Orders/Invoices menu. Billing cycle codes control when a given contract generates a pending invoice.

The content of contract invoices is determined by the value of Bill Summary for the contract. The billing address is determined by the value of Bill End Users.

See “Summarized or Detail Billing” on page 233.

Fig. 9.13
Billing Cycle Flow



The system maintains a transaction history (ISS-SO) for contract billing. If Keep Contract History is Yes in SSM Accounting Control, ORD-SO transactions are also maintained.

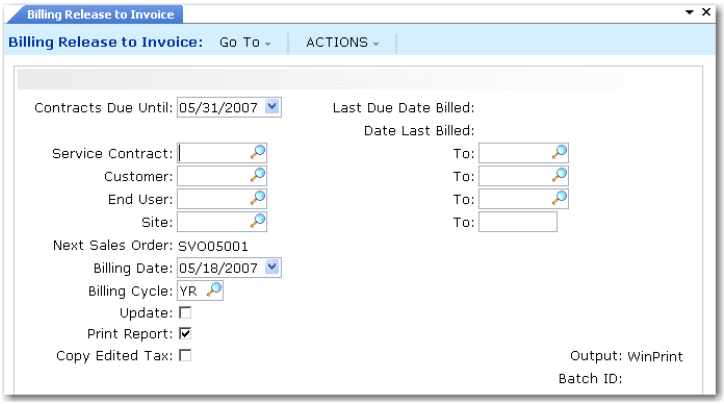
To prevent billing problems, execute Billing Release to Invoice with Update set to No and Print Report set to Yes before you actually generate invoices. This creates a report listing contracts that would be selected, without updating them. When you have verified the contracts and billing, you can re-execute the function to generate the pending invoices.

The amount to invoice is based on the contract line price, quantity, and billing cycle. Prices for contract line items are stated as the price of service coverage for one installed unit for one month. To calculate the invoice amount, the system multiplies the line-item price by the number of units covered, and multiplies the result by the number of months in the specified billing cycle.

To indicate that a contract has been billed, Billing Release to Invoice updates the Coverage and Last Bill fields on the contract detail. When all contract lines have been fully billed for the contract header billing cycle, the contract header is updated to the next coverage date, and Last Bill and Next Bill are updated. You must run Billing Release to Invoice at least once during each contract billing cycle to update Coverage and Last Bill dates.

Billing Release to Invoice does not create any GL transactions. These are created by Invoice Post and Print (7.13.4) and Revenue Recognition (11.5.18.21).

Fig. 9.14
Billing Release to Invoice (11.5.18.13)



Contracts Due Until. This date serves as the cut-off date used to determine the last day of the billing period.When Bill Arrears is No, lines are billed when the detail coverage start date or next bill date is the same as or earlier than the due date. When Bill Arrears is Yes, due date must be after the coverage end date

Last Due Date Billed and Date Last Billed. These fields are output only. Date Last Billed is the date the Billing Release to Invoice was last run. Last Due Date Billed is the date that was previously in the Contracts Due Until field. Whenever you run the release program, the system updates these dates.

Service Contract and To. Beginning and ending numbers determine the range of contracts to be billed.

Customer and To. Beginning and ending address codes determine a range of contracts to be billed.

End User and To. Beginning and ending address codes determine the range of contract lines to be billed.

Site. Optionally, enter a range of site codes for selecting contracts to bill. Leave blank to include all contracts that meet the other selection criteria.

Note You must have site security access to all sites in the range.

Next Sales Order. This output-only field indicates the first sales order number to be generated when Update is Yes. This number is found in Contract Control.

Note If you want to differentiate contract billing from other sales orders, set them up with a unique sales order prefix in the control program.

Billing Date. Enter the date the system should use as the order date for the pending invoices generated for selected contracts. The default is the system date.

Billing Cycle. Optionally, enter a billing cycle code to select contract lines for billing. Set up cycle codes in Billing Cycle Code Maintenance. Leave Billing Cycle blank to generate invoices for lines regardless of billing cycle.

Update. Set Update to No and Print Report to Yes to view a report of what will be billed without generating invoices.

Print Report. Enter Yes to print a report listing contract lines billed. Set Update to No and Print Report to Yes to generate a simulation of contract lines that would be billed based on the current input selections.

For each contract line billed, the report lists the contract number, pending invoice number associated with the line, service type, end user, line number, covered item, item quantity, duration being billed, currency, price, and extended price (quantity * duration * price).

Copy Edited Tax. Indicate how you want the system to manage tax amounts that were modified in Contract Maintenance:

No: Taxes are recalculated based on current tax data, overwriting any manual changes previously entered.

Yes: The system copies the edited amounts to the pending invoice and uses them in the billing calculation.

When Update Tax Allowed is Yes in Tax Rate Maintenance (29.4.1) for a tax rate, you can modify the taxable base (amount subject to tax) and calculated tax amounts in Contract Maintenance. To change any other tax details, you must update the related fields on the order or modify the tax setup data.

Reprinting an Invoice

Carefully manage the invoice print process since you do not want to send multiple copies of an invoice to a customer by mistake.

- Use Preview Invoice Print (7.13.3) to review an invoice before sending it to the customer. This program marks an invoice so it cannot be mistaken as an original.
- Use Invoice Print or Reprint (7.13.12) to print an invoice that has been posted. Select invoices to include by number range. You can print only invoices that have been posted.

Note The country for the bill-to customer determines the numeric and date formats on the printed invoice.

Correcting a Billing

You cannot use Pending Invoice Maintenance (7.13.1) to correct invoices generated through contract billing. This is because an incorrect invoice reflects an incorrect contract, and you must fix the contract in the SSM functions.

Service/Support Management offers two paths for correcting billing errors: one before contract invoices are posted to Accounts Receivable and one after.

- If you have not posted the invoice, use Billing Reversal Maintenance (11.5.18.18) to delete it.
- If you have posted the invoice, create a manual credit and use Billing Date Correction (11.5.18.19).

Each time you bill a contract, the system updates the last bill, next bill, and coverage dates for the contract and each line item. If a contract has been billed in error, these dates must be reset. Billing Release to Invoice uses the next bill date to determine which contracts are eligible for billing. Reverse the next bill date value for an incorrectly billed contract so it can be re-released to invoicing.

Correcting an Unposted Invoice

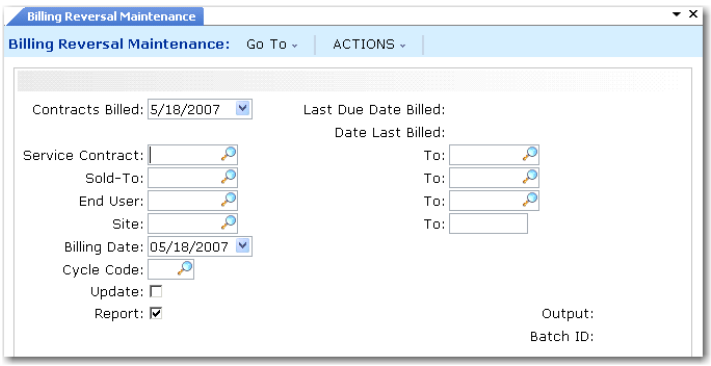
If you have billed a contract in error and the invoice has not been posted, use Billing Reversal Maintenance to reverse the effects of the billing. This program removes mistakenly billed amounts from unposted contract invoices. If all billing amounts are reversed on an invoice, the invoice is removed from the system.

To correct an unposted invoice, follow these steps:

1. Use Billing Reversal Maintenance to delete the pending invoice and reset most billing dates. Billing Reversal Maintenance resets Coverage Date on both the contract header and detail and Next Bill Date on the header. It does not reset Last Bill Date since there was some billing activity.
2. Use Contract Maintenance to correct the elements of the contract that are in error, such as price, quantity, or billing cycle.
3. Use Billing Release to Invoice to re-release the contract to billing.

Figure 9.15 illustrates Billing Reversal Maintenance (11.5.18.18).

Fig. 9.15
Billing Reversal Maintenance (11.5.18.18)



Use this function to reverse a range of invoices selected by contract number, customer, end user, or billing cycle. The Contracts Billed field is the critical selection criterion; this must match the date you executed Billing Release to Invoice.

Execute this function first with Update set to No and Report set to Yes to review the potential impact of the reversal before you perform it.

Contracts Billed. Enter the date that the pending invoice amounts were generated. This is the date you executed Billing Release to Invoice (11.5.18.13).

Note This is not necessarily the same as the value specified in the Billing Date field in Billing Release to Invoice. You can change Billing Date from the default, which is the current system date.

The billing date becomes the order date of the pending invoice. The execution date becomes the ship date, displayed in reports such as Sales Order Tracking Inquiry (7.13.10).

Last Due Date Billed and Date Last Billed. These fields are output only. Date Last Billed is the date Billing Release to Invoice was last run. Last Due Date Billed is the date you previously entered in the Contracts Due Until field. Whenever you run the release program, the system updates these dates.

End User and To. Enter an end-user range for selecting contract billings to reverse. Leave blank to reverse billings for all end users that match the other criteria.

When an end-user range is specified, only detail information for matching end users is reversed. When summarized billing has been used, the reversed amounts are subtracted from the summarized totals.

Billing Cycle. Optionally enter a billing cycle for selecting pending invoices to reverse. If you specify a Billing Cycle, Billing Reversal Maintenance selects invoices only for this billing cycle code. If Billing Cycle is blank, the system processes all billing cycle codes.

Billing Date. The default is the system date. The system uses Billing Date as the effective date for transaction history. No selection is based on this date.

Correcting a Posted Invoice

If you billed a contract in error and have posted the invoice, you can use Billing Date Correction (11.5.18.19) to reset the billing dates on the contract header and contract line items.

Important The financial impacts of service functions are managed outside the SSM module. You must correct the billing itself by issuing a credit invoice or memo to negate the incorrect invoice amount.

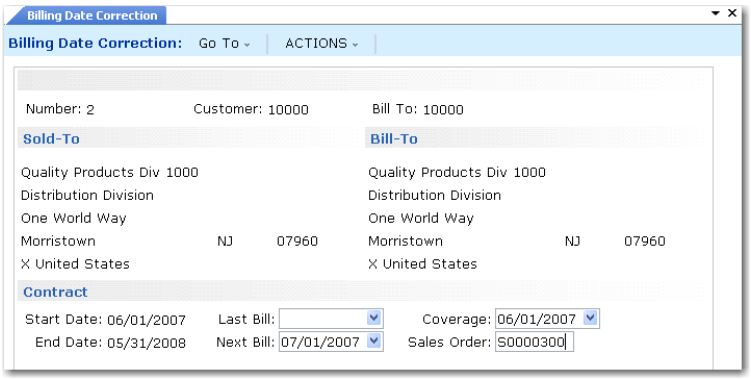
Billing Date Correction works on one contract at a time. You must manually correct each contract posted incorrectly. To prevent lengthy corrections, establish procedures and verify contract invoices *before* you post them. Do this by executing the release function with Update set to No and Print Report set to Yes before creating the service sales orders.

To correct a posted invoice, follow these steps:

1. Create a manual credit invoice using Pending Invoice Maintenance (7.13.1). Then use Invoice Post ant Print (7.13.4) to credit the mistakenly billed amount.
2. Use Billing Date Correction to reset billing dates that were updated by Billing Release to Invoice. You must reset the dates on each affected contract line.
3. Use Contract Maintenance to make the necessary changes to the contract data, such as changes to price or quantity.
4. Use Billing Release to Invoice to re-release the contract to billing.

Figure 9.16 illustrates Billing Date Correction (11.5.18.19).

Fig. 9.16
Billing Date Correction (11.5.18.19)



Once you select a contract to modify, the system fills in the other fields with current data from the contract record. You can modify billing dates for the header, line items, and additional charges on this contract. Lines and additional charges display in additional frames.

By default, the sales order number and line fields in the Contract Detail frame display the pending invoice of the last contract line billed. You can update these fields.

Note The contract start and end dates can only be changed in Contract Maintenance.

Reviewing Contract Financial Data

Use the following reports to view financial information about contracts:

- Use Deferred/Accrued Revenue Report (11.5.18.22) to view records created and updated by Revenue Recognition (11.5.18.21). Alternatively, use the Accrued Revenue Report (11.22.1) and the Deferred Revenue Report (11.22.2).
- Use Contract Cash Flow Report (11.5.13.21.1) to see the incoming cash to expect from contract billings.
- Use Contract Deferred Income Report (11.5.13.21.2) to determine for a base date the deferred or accrued income amount for any invoiced contracts with Revenue Type set to C (cash basis). If Revenue Type is A (accrued) or D (deferred), this report is not needed.

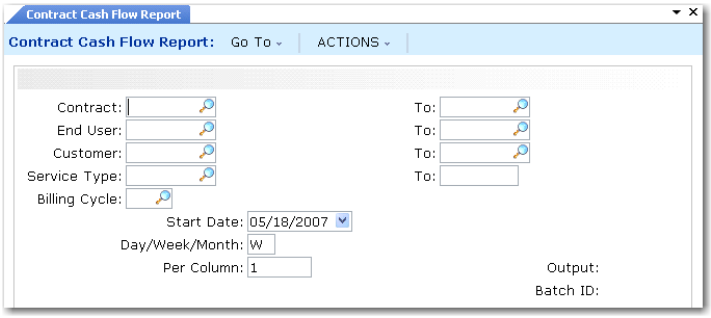
See page 238.

Contract Cash Flow

Contract Cash Flow Report enables you to see the incoming cash that can be expected from contract billings over a specified period. A heading line for each customer reported displays, with a line for each end user on the contract. Totals for each customer and for all customers display at the bottom of the report.

Figure 9.17 illustrates Contract Cash Flow Report.

Fig. 9.17
Contract Cash Flow Report (11.5.13.21.1)



Select contracts to include by range of contract number, end user, customer, service type, and billing cycle code. The value for Start Date represents the beginning date in the first of six dated columns. The report is sorted in contract number sequence.

The level of detail of the output is based on the choice for Day/Week/Month. The Per Column field lets you specify how many of the grouping choices (D/W/M) should appear in each of the six dated columns.

The report displays one line per end user on each selected contract, with a line for contract totals. The display includes columns labeled Prior and Future. These represent the amount of cash flow for contract periods prior to the start date and for the balance of the contract in future periods. All amounts are expressed in base currency.

Contract Deferred Income Report

Contract Deferred Income Report (11.5.13.21.2) provides information about deferred and accrued income for invoiced contracts when you are not using Revenue Recognition. This usually does not apply to monthly contracts; it is more significant for quarterly and annual contracts billed in advance.

This report is useful if you have contracts with a cash basis revenue type that are not billed in arrears. When the payment for the entire period is received in advance, only a small portion can be recorded as income. The balance must be recorded, via a manual journal entry, into a liability account. Since you still owe the coverage for the future, you cannot declare it as actual income.

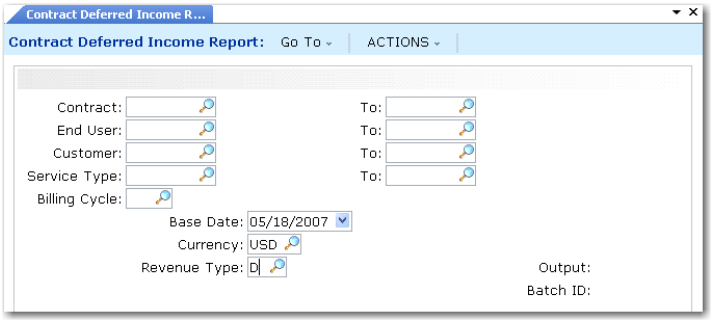
The deferred income report enables the accountant to take a periodic look at contracts to determine how much revenue they must accrue, and how much they can record, via a journal entry, as actual income.

To handle deferred revenue automatically, set up contracts with a revenue type of deferred. Then use Revenue Recognition to create the appropriate GL transactions on a regular basis.

See “Managing Deferred and Accrued Revenue” on page 235.

Figure 9.18 illustrates Contract Deferred Income Report (11.5.13.21.2).

Fig. 9.18
Contract Deferred Income Report (11.5.13.21.2)



Select contracts for reporting by range of contract number, end user, customer, service type, and billing cycle. Base Date defaults from the system date. It is used to determine the number of days of contract coverage that have already been provided.

Optionally, you can enter a valid currency code to limit the selection to contracts associated with that currency. If you specify a currency code, all amounts display in that currency. Otherwise, amounts display in base currency.

Use the Revenue Type field to limit the report to contracts with accrued, cash basis, or deferred revenue. Leave the field blank to include all revenue types.

Figure 9.19 illustrates a sample report. The report displays one line for each contract line and a line for the contract total.

Fig. 9.19
Sample Deferred Income Report

```
fssarp07.p a          11.5.13.21.2 Contract Deferred Income Report      07/01/07

Base Date: 07/01/07

Contract End User Line Item   Curr Cyc Begin    End      Billed  Realized Deferre
-------- -------- ---- -----  ---- --- -------- -------- ------- -------- -------
110      00000001 1    44-100 usd  YR  05/01/06 04/30/07 1476    250      1226

                                       Contract Total:  1476    250      1226

                                         Report Total:  1476    250      1226
```

Contract 110 has one item, for a monthly amount of $123.00. The total billed for this contract is $1476.00, 12 months in advance. This is indicated by the YR billing cycle code—Cyc column on the report.

The contract begins coverage on 05/01/07 (Begin) and ends coverage on 04/30/08 (End). Using 07/01/07 as its base date, the Start Date specified when the report was run, the report program performs the calculations listed in Table 9.3.

Table 9.3
Calculating Deferred Income

Calculated Amount	Results
Contract Total Amount =	Billed
Billed / 365 days =	Daily Amount
Covered Days =	Base Date - Begin Date

Calculated Amount	Results
Realized =	Covered Days * Daily Amount
Deferred =	Billed – Realized

Using the actual values from the sample report, Table 9.4 shows the calculations.

Table 9.4
Deferred Income Amounts

Calculated Amount	Results	Actual Amounts
Contract Total Amount =	Billed	1476.00
Billed / 365 days =	Daily Amount	4.04
Covered Days =	Base Date – Begin Date	182 – 94 = 62
Realized =	Covered Days * Daily Amount	4.04 * 62 = 250.00
Deferred =	Billed – Realized	1476.00 – 250.00

Chapter 10

PM Scheduling

You create and maintain service contracts for preventive maintenance just like any other service contract. However, preventive maintenance involves some unique issues. This chapter reviews service contracts from the perspective of these special requirements.

Business Background

Preventive maintenance (PM) is managed service that attempts to prevent breakdown or serious problems with an item. In preventive maintenance, calls are created according to a predetermined, regular schedule.

During the PM call, a service technician performs services on an item already in the installed base. These services typically involve cleaning, diagnostic checking, and replacement of consumable items such as inks, lubricants, toner cartridges, and high failure parts. Preventive maintenance is essential in some industries, such as aircraft maintenance, and has become standard in others, such as business copiers.

Without preventive maintenance, the traditional service contract is more or less an insurance policy, an agreement protecting the customer when something goes wrong with a product. With preventive maintenance, the service contract becomes a tool for managing an ongoing service relationship involving regular service engineer visits. Service contracts offer full preventive maintenance scheduling.

Setting Up PM Scheduling

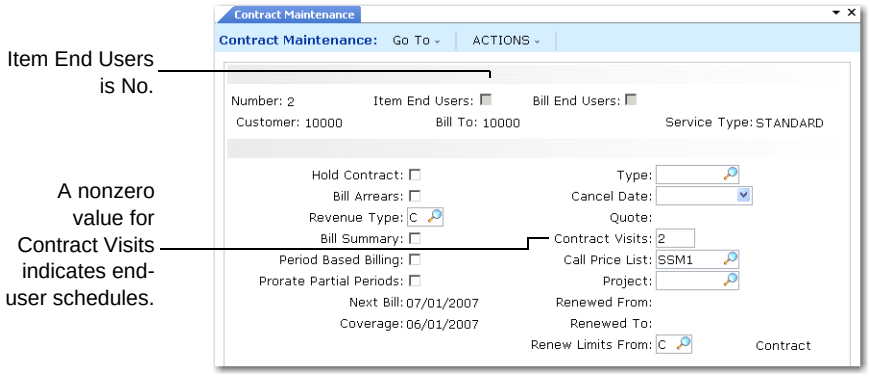
Preventive maintenance scheduling is part of Contract Maintenance (11.5.13.1) and requires a new or existing service contract. How scheduling occurs depends on the value of Item End Users on the contract:

- When Item End Users is No, you can create schedules for each end user on the contract, for individual line items on the contract, or for a combination of the two.
- When Item End Users is Yes, only item schedules can be created.

End-User Schedules

Figure 10.1 illustrates the header Visits field in Contract Maintenance.

Fig. 10.1
Filling in Visits in Contract Maintenance (11.5.13.1)



To create a preventive maintenance schedule that applies to the each end user:

1 Specify a number of visits on the contract header. A nonzero value in this field activates scheduling. The number of visits indicates the number of times during the service contract duration that PM visits will be made to each end-user site. After you complete line-item entry, an End User PM Schedule window displays proposed dates for the PM visits.

Note If you do not specify header visits, you can still generate PM schedules for individual contract line items.

2 Set the PM Item field to Yes for the items on the contract requiring visits. This field defaults to Yes if Days between PM is any nonzero value for the item in the Service Item Maintenance (11.3.7). When the system creates a PM call, it includes all items with PM Item set to Yes as line items, unless they already have individual schedules.

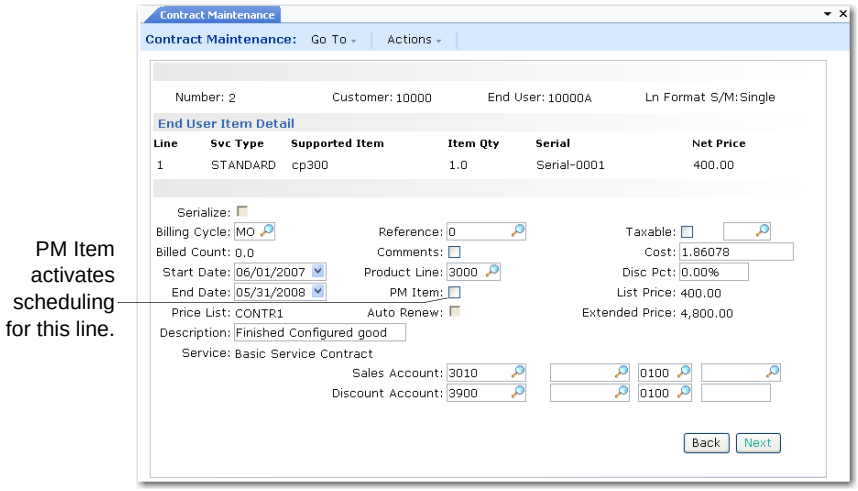
See Figure 10.2 on page 253.

Note If you create end-user schedules and none of the items on the contract have PM Item set to Yes, you can still create a call for the first visit, but it will not have any line items. This can be useful if you want to generate general follow-up calls at specific intervals.

Scheduling Visits for a Line Item

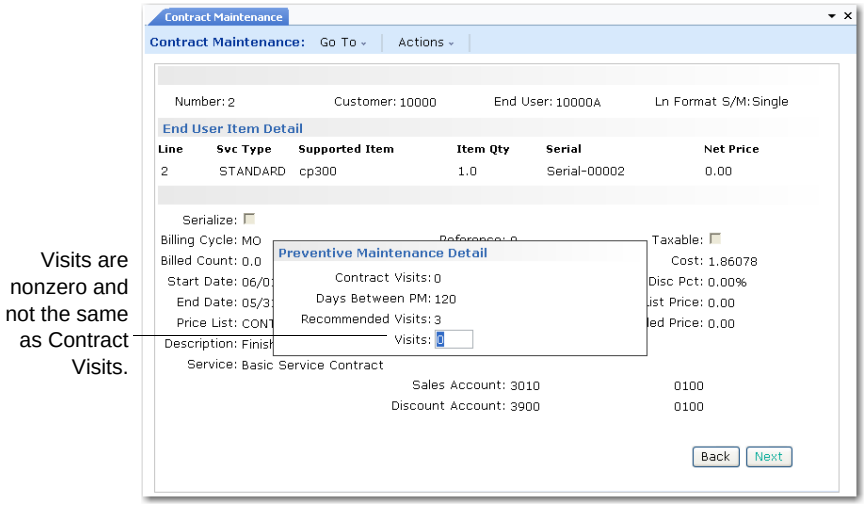
The PM Item field in Contract Maintenance must be Yes to set up preventive maintenance schedules for individual line items. This field defaults to Yes if Days between PM is any nonzero value for the item in Service Item Maintenance (11.3.7).

Fig. 10.2
Setting PM Item to Yes in Contract Maintenance (11.5.13.1)



A Yes in the PM Item field activates a PM detail pop-up window.

Fig. 10.3
Generating a Line-Item Schedule



If this contract is for end users with items, the Contract Visits field displays the value of the Visits field on the header. In item/end-user sequence, the Contract Visits field is always 0 (zero), since the field cannot be updated on the header.

The effect of the line-item Visits field varies depending on the value of Item End Users. When Item End Users is No:

- Leave the default 0 (zero) or enter the same number of visits as the end-user schedule to add this item to the calls created for the end user.
- Enter any other value to create a separate schedule for the item. The item schedule displays before the end-user schedule.

If Item End Users is Yes, an end-user schedule does not exist. Enter any nonzero value to create a PM schedule for this line item.

To help you determine how many visits to schedule for this item, the system displays the Days Between PM value specified for this item in Service Item Maintenance. Based on this number of days and the duration of the contract, the system recommends a number of visits.

Table 10.1 summarizes the settings for the PM Item and Visits fields when Item End Users is No.

Table 10.1
PM Item and Visits Field Settings

Desired Effect	PM Item	Visits
Exclude item from preventive maintenance	No	N/A
Include item in end-user PM schedule	Yes	0 or same value as specified on contract header
Generate separate PM schedule for this item	Yes	Any integer other than contract header value

Changing an Existing Contract

You can add a PM schedule to an existing contract by changing the number of visits to a nonzero value. When the system calculates the schedule, it divides the number of visits into the remainder of the contract duration.

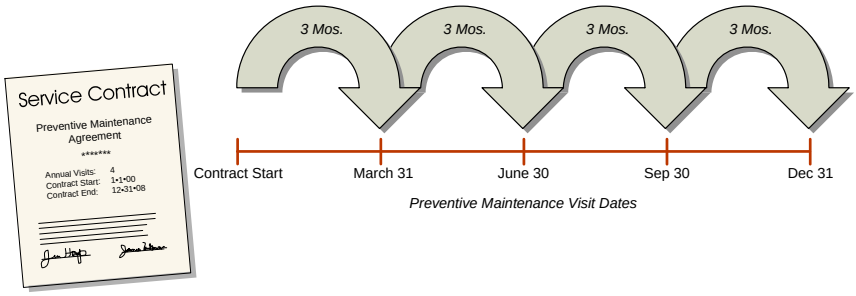
Once a schedule exists, the system does not recalculate it since calls based on it may already exist. If you change the number of visits when a schedule already exists, manually adjust the dates.

Note If you add more line items to a contract that have PM Item set to Yes, the system adds them to any existing scheduled call.

Scheduling Dates

Preventive maintenance visits are calculated by taking the length of the contract in days and dividing it by the number of PM visits requested for the covered item. The system then back-schedules the visits starting from the end date of the contract.

Fig. 10.4
Calculating Schedule Dates



This figure illustrates a contract that starts on 1/1/08 and ends on 12/31/08. Four PM visits are requested.

1 The system divides the contract length in days by number of visits.

   365/4 = 91

2 Then, starting from the last day of coverage, the system back-schedules visit dates at approximate 91-day intervals. This would result in calls scheduled for March 31, June 30, September 30, and December 31.

Creating PM Calls

The first call in the PM schedule can be created directly in Contract Maintenance. Or you can manage the process yourself using the Call Generator.

Control Setup

Create PM Calls in Contract Control (11.5.24) determines whether the system generates PM calls in Contract Maintenance.

Create PM Calls is Yes

If Create PM Calls is Yes, the system generates scheduled calls automatically.

- The call associated with the first date on the PM schedule is generated before the PM schedule frame displays. While the entire schedule is predetermined, only one call is opened at a time.
- The next call is created when a scheduled call is closed. The system uses the schedule, based on the number of visits and contract duration information, to determine the next call's date.

Create PM Calls is No

If Create PM Calls is No, PM calls are not automatically generated. The system calculates dates and displays the schedule, but does not create the first call.

Note You can still generate a call from this PM Schedule frame by selecting a schedule date and clicking Next. The system then prompts you to create the call.

If you do not create calls during PM scheduling, you normally create them later with the Call Generator. Using the Call Generator, you can create all PM calls within a range of dates at one time.

Setting Create PM Calls to No is also useful if you want to use the BOM type feature, described next. If the system creates the call, you do not have the opportunity to specify a BOM type.

See "Generating Groups of Calls" on page 307.

Note Text entered in the Comment field on the PM Schedule frame before the call is generated is used for the call description.

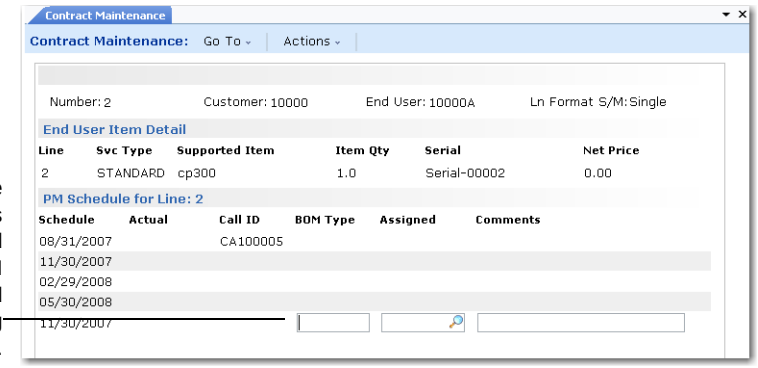
Using BOM Type

You can set up any number of service BOMs for a single item in Service Structure Maintenance (11.19.5). Similarly, you can set up multiple routings in Service Routing Maintenance (11.19.17). Service BOMs list the items normally used during a service activity, and the routings list the steps to follow.

However, you can associate only one PM BOM and routing with an item in Service Item Maintenance (11.3.7). The system uses this PM BOM and routing by default when a PM call is created.

You may have slight variations on a standard PM BOM and routing depending on how often you service the covered item. The BOM type enables you to create variations of a standard BOM and routing based on a type code. Use the BOM Type if you have more than one standard PM BOM and routing. Set up BOM types in Generalized Codes Maintenance for field sap_bom_type.

Fig. 10.5
Contract Line-Item PM Schedule Frame



Your standard BOM and routing may be slightly different for an annual visit, a quarterly visit, or a monthly visit. You can create three BOM types—A for annual, Q for quarterly, and M for monthly—and associate the appropriate one with the scheduled date. When the call is generated, the system determines the PM BOM and routing associated with the item in Service Item Maintenance. Then it appends the BOM type letter to this code.

Example Service item 113 is defined in Service Item Maintenance with a PM BOM code of 113-pm and a PM routing code of 113-pm. Now, in the scheduling frame of Contract Maintenance, you specify a quarterly BOM type (Q). The system-generated PM call would specify a BOM and routing code of 113-pmQ.

For this feature to work correctly, the BOMs and routings must have been created with Service Structure Maintenance and Service Routing Maintenance.

See Chapter 21, “Service Structures and Routings,” on page 557.

PM Call Default Values

The system uses the following information to determine the default values for automatically generated PM calls:

- Call default information for the PM work code, defined in Call Default Maintenance (11.1.21.10)
- End-user record
- Service contract type

You can control the way this call is defined by setting up special call defaults for the PM work code. For example, a separate queue is often set up for preventive maintenance with its own status codes and escalation sequences, if you are using call escalation.

Using the Call Generator

Use the Call Generator (11.1.8) to create PM calls for a range of dates and contracts at one time. The most important advantage of using the Call Generator to create PM calls is it gives you more control over the calls open date.

When the system generates calls in Contract Maintenance, the call open date is the current system date. In the Call Generator, you can specify a call open date. The call open date is important because it determines effective limits and levels of coverage.

See “Generating Groups of Calls” on page 307.

Example You have a preventive maintenance schedule for an item that has a yearly PM interval. The first call is created from Contract Maintenance on 7/1/07, setting the call open date. The PM schedule date (6/30/07) sets the next event date on the call.

A year later, you dispatch an engineer to perform the PM service. Activity is recorded in CAR. The system looks for contract limits effective on the call open date (7/1/07). If you are using effective dates to provide phased coverage, the coverage effective when the service is performed may be quite different from the coverage provided a year ago. Based on the call open date, the system finds the older coverage.

Another drawback of creating calls far in advance is the extra load the calls place on the system for functions that need to search through the open calls.

For both these reasons, you may prefer to simply set up PM schedules in Contract Maintenance and create the calls closer to when the service needs to be performed. How frequently you generate calls can be affected by whether you are using engineer scheduling and how far in advance you want to schedule engineers.

Scheduling Subsequent PM Calls

PM calls are processed in Call Activity Recording like any other service calls. To schedule each subsequent PM call on a contract, you must first close the preceding one. Close a call by setting its status to the Close status as defined in Call Management Control (11.1.24). When you close a PM call, the system displays the close date in the Actual date field in the PM schedule frame.

If Create PM Calls is Yes in Contract Control when a call is closed, the system automatically generates the next call on the schedule. It uses the following values when creating the call:

- The next open date on the PM schedule becomes the new call’s next status date.
- If specified, BOM type determines the BOM and routing associated with the call.
- The Assigned Engineer on the PM schedule is associated with the call.
- Comments on the PM schedule are used for the call description.
- The open date of the new call is set to the close date of the previous one.

Note When a PM call is canceled, the next call is generated just as if the call had been closed.

When a PM call for an item in the installed base is closed, the system updates the installed base record. This update occurs regardless of the setting of Create PM Calls.

- The last PM date is updated to the call closure date.

- The next PM date is reset based on the last PM date plus the value of Days Between PM defined for the item.

Note This update also occurs for a call line with the PM work code even when the work code on the call header is not the PM work code. However, in this case, no call is ever generated.

Chapter 11

Call Management

A fundamental concern in service is the management of information flow between end users and your internal service operations. This means managing incoming calls. Calls record end-user interaction and maintain visibility over open problems and support needs. This chapter introduces calls and their management.

What Is Call Management?

A call refers to a unique record of communication between the end user and the service organization. Each call identifies the end user, the nature of the problem or request, the urgency associated with that request, and the products involved.

The actual communication related to the call can take any form: telephone call, physical visit or service call, electronic mail. The call, in terms of processing, is a record used to track activity between the service organization and the end user and to generate statistics about this activity.

Call management handles all kinds of end-user input, covering a range of needs. This input can be classified into three broad categories, indicating the level of response needed.

- *Inquiries.* These may be general questions about availability, releases of product, or marketing-related issues. Not tracking them can result in lost business. The callers do not have to be current customers.
- *Questions.* End users may have specific questions about the product. Some may be simple; others may require research for an answer, or, in some cases, reveal deeper issues or design problems that need more complex responses.
- *Service Needs.* Usually the primary concern of a service and support organization is to support the installed base. This may include installing new equipment, fixing broken equipment, correcting faulty design, or performing preventive maintenance.

A call is created with the goal of closing it. Closing a call means the problem, question, or service situation has been resolved to your standards.

Note If you want to reduce the overhead of creating calls in Call Maintenance, you can design a pending call system that only captures the data essential to your organization. If these calls require service activity, they can then be transferred to Call Maintenance and updated there. Pending calls are discussed in Chapter 12, “Using Pending Calls,” on page 329.

SSM functions work together to enable a service organization to:

- Create calls.
- Maintain visibility over call status.
- Change call status automatically based on user-defined criteria.
- Select an appropriate engineer for the call.
- Order items to service a call.
- Record activity—items, labor, expenses—for a call.
- Create invoices for service activity.

Other functions provide alternate ways of resolving calls, such as creating an RMA, RTS, or service request.

The operation of these functions depends on call setup and control program settings. These enable each company to tailor the call management process to their own business needs and requirements.

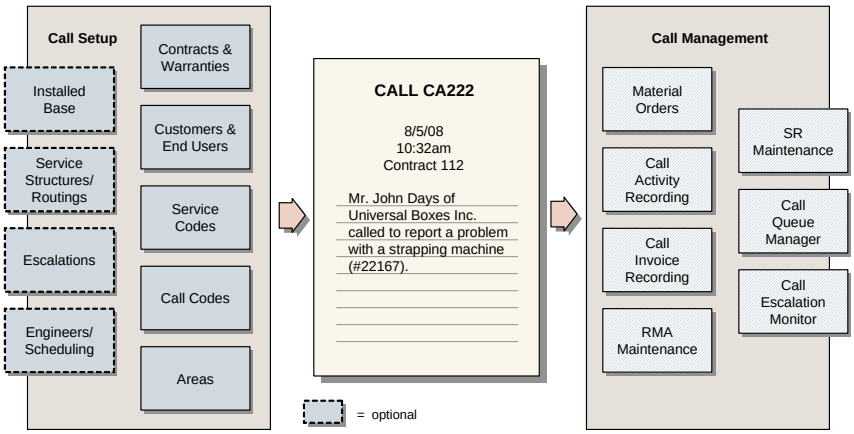
Setup for Calls

Call creation can be relatively simple or complex, depending on the system features you are using. The basic process requires the following:

- Implementation decisions about the installed base must be made. See Chapter 2, “Installed Base,” on page 11.
- You can create end users directly in Call Maintenance, but at least one customer must exist.
- At least one service type must exist to provide default coverage. If you provide warranties or contracts, you must define them. Associate warranties with service items in Service Item Maintenance.
- Set up codes, including call statuses, call types, and call queues, using the appropriate maintenance function. In addition, you should define some generalized codes.
- Set up call defaults to streamline data entry during call creation.
- Review and define the settings in Call Management Control and SSM Accounting Control to reflect your business practices.
- To record the service activity required to resolve a call and produce an invoice, set up the codes required for Call Activity Recording. See Chapter 3, “Service Setup,” on page 63.

Other optional features you may want to set up include service structures and routings, escalations, areas, and engineers. Figure 11.1 illustrates functions related to supporting and resolving calls.

Fig. 11.1
Functions Supporting Call Management



Methods of Creating Calls

There are a number of different ways that calls can be created in the system: directly, indirectly, and by data transfer.

Create calls directly using:

- Call Maintenance (11.1.1.1), described in “Using Call Maintenance” on page 284
- Call Generator (11.1.8), described in “Generating Groups of Calls” on page 307

Create calls by transferring data using:

- Call Quote Release to Recording (11.1.1.11) described in “Creating a Call from a Quote” on page 373
- Pending Call Maintenance (11.1.3.1) or Pending Call Transfer (11.1.3.7), described in Chapter 12, “Using Pending Calls,” on page 329

- QAD Mobile Field Service when syncing call data from a mobile device, described in *Technical Reference: QAD Mobile Field Service*

Create calls indirectly:

- As part of the preventive maintenance scheduling associated with Contract Maintenance (11.5.13.1), described in “Creating PM Calls” on page 256
- From Invoice Post and Print (7.13.4) when you post a sales order or RMA invoice and an item on the order is defined as requiring an installation call

Call Management

Once a call exists, you use other functions to manage and direct it through the system. Again, these functions are optional, since a call can simply be opened and closed. However, to meet the need captured by the call record, most organizations require a call management process that incorporates some or all of the features provided by the system.

Since call management covers a broad scope, different chapters cover different functions. This chapter covers the following main functions.

Call Setup (11.1.21). Definition of call codes, including statuses, types, and queues, and creation of call defaults.

Call Maintenance (11.1.1.1). Records calls and assigns service engineers. Records call information such as queue, status, date and time stamp, comments, and any other categorization of the call as it moves toward resolution.

Call Queue Manager (11.1.6). A call monitoring tool that sorts calls by attributes such as status, assigned-to, and priority. It also enables you to find a call and edit it directly in Call Maintenance.

Call Generator (11.1.8). This utility enables you to create a number of calls at once for a range of PM schedules or a range of installed base items and end users. If you use preventive maintenance scheduling but choose not to create calls directly from Contract Maintenance, use the Call Generator to create them later. Generating calls for installed base items can be useful in case of a product recall or general upgrade.

The remaining call and call-related functions are covered in other chapters.

Pending Calls (11.3). Some service organizations want to capture a minimal amount of data about contact with an end user and then determine later if the contact needs to managed in Call Maintenance. Pending call features let you design your own data entry system and then close the pending call or transfer it to Call Maintenance. See Chapter 12, “Using Pending Calls,” on page 329.

Call Quotes (11.1.1.7). Some service organizations, especially those that repair large and expensive items, go through a preview process before creating calls. The call quote functionality supports the creation of quotes for one or more line items with estimated labor, expenses, and items to be consumed. When the quote is accepted, you can turn it into a call. See Chapter 13, “Call Quotes,” on page 369.

Escalation Monitor (11.1.13.13). Call escalation is an automated process that helps ensure calls are resolved. When enabled, the Escalation Monitor examines every call in the system and escalates each according to the set of escalation instructions you attach to the call. See Chapter 16, “Call Escalation,” on page 469.

Call Activity Recording (11.1.1.13). Supports recording and tracking the items, labor, and expenses used in servicing a call. This data forms the basis for generating a call invoice. See Chapter 14, “Call Activity Recording,” on page 381.

Call Invoice Recording (11.1.1.15). Call Invoice Recording gives supervisory personnel a tool for reviewing call activity call-by-call and generating and correcting a pending invoice for the activity. See Chapter 15, “Call Invoice Recording,” on page 443.

Service Requests (11.1.15). You can link calls to service requests, which require longer-term changes to the product design, rather than to an individual item. Use service requests to relay information from the support staff to engineering. Repeated calls concerning the same problem can be handled by a single service request. See Chapter 19, “Service Requests,” on page 511.

Return Material Authorization (11.7.1). A call can be linked for reference to a return material authorization (RMA). This is typically the case for items that require a simple replacement. This may occur when the item arrives in an unusable condition or the wrong item is ordered. If your organization does not do call billing, you can handle all repairs with work orders generated from RMAs. See Chapter 23, “Return Material Authorizations,” on page 593.

Material Orders (11.11). You can use a material order (MO) to order items required to complete the activity for a call. The MO is then linked to the call and the items ordered on it must be consumed in Call Activity Recording or returned to stock. See Chapter 20, “Material Orders,” on page 519.

Service Engineers and Schedules (11.13). The individuals in the service organization who are responsible for resolving calls are normally set up as engineers. Use engineer scheduling functionality to streamline the assignment of engineers to calls in Call Maintenance. Engineer paging functionality enables an engineer to be paged when a new call is assigned. See Chapter 17, “Engineers and Scheduling,” on page 479.

Area Management (11.15). Set up and associate service areas with end users and engineers to assist in the call scheduling process. You can also set up default sites by area. See Chapter 18, “Area Maintenance,” on page 505.

Service Structures and Routings (11.19). Service structures (BOMs) list the items normally required to complete a service activity, and service routings define the steps or operations that must be taken. If these are defined, you can specify them on a call and print them on the call as instructions to the engineer. You can also load them automatically into Call Activity Recording, greatly streamlining the data entry process. See Chapter 21, “Service Structures and Routings,” on page 557.

Setting Up Calls

This section discusses setup issues directly related to calls: call status codes, call type codes, call queues, call defaults, and call control program settings. Table 11.1 lists functions on the Call Setup Menu (11.1.21).

Table 11.1
Call Setup Menu (11.1.21)

Menu Number	Description	Program
11.1.21.1	Call Status Code Maintenance	fscasmt.p
11.1.21.2	Call Status Code Inquiry	fscasiq.p
11.1.21.4	Call Types Maintenance	fsfctmt.p
11.1.21.5	Call Types Browse	fsbr028.p
11.1.21.7	Call Queue Maintenance	fscaqmt.p
11.1.21.8	Call Queue Browse	fsbr026.p
11.1.21.10	Call Default Maintenance	fscdfmt.p

Setting Up Call Status Codes

A call is managed according to its status, which relates to the call's position in its life cycle. Is the call active, pending, an emergency, or closed? Calls are moved from status to status either manually or by the Escalation Monitor. Call Activity Recording also can make certain call status changes.

Create status definitions in Call Status Code Maintenance (11.1.21.1). You can set up as many status definitions as you need. Define up to six in Call Management Control for the system to apply. Unless you are using call escalation, you must apply other status changes manually. Therefore, you may want to keep the call life cycle simple.

Call status codes are user defined and can take any format an organization chooses. Some service organizations prefer numerical status codes or abbreviations. Others use more intuitive names. Meaningful codes make it easier to understand quickly where a call is in its life cycle.

For example, when a new call comes in, its status can be OPEN. Later, when you assign an engineer to the call, the status becomes ASSGND. When the problem is resolved, the call status is CLOSED.

Call Activity Recording uses call status codes when it processes calls and makes decisions. In CAR, you assign statuses to the call and to the call line items.

Special Statuses

Certain statuses have special meaning to the call management programs. Define these special statuses in the Call Status frame of Call Management Control (11.1.24).

Open Status. This is the general status for an open call and the initial status for a new call, unless you are using escalations. An open call is dynamic; its item line and other data can change at any time.

Hold Status. The hold status prevents recording new activity or generating an invoice for a call or line in Call Activity Recording. A material order cannot be ordered for a call on hold. For anything further to happen to the call, change its status. You can still generate an invoice for existing activity in Call Invoice Recording, if necessary.

Complete Status. The complete status means the call is ready for invoicing—at least one invoiceable report with detail exists. However, you can still modify related data, order service items for it with a material order, and record new activity.

Close Status. The close status is the final status of a call and indicates all service activity for this call is finished and ready for invoicing. Once a call is closed, you cannot record more activity or create material orders for it. However, you can reopen closed calls by changing their status. You can move closed calls to history and delete and archive them when they are fully invoiced. See “Managing Call Status Changes” on page 310 for details on the requirements and effects of call closure.

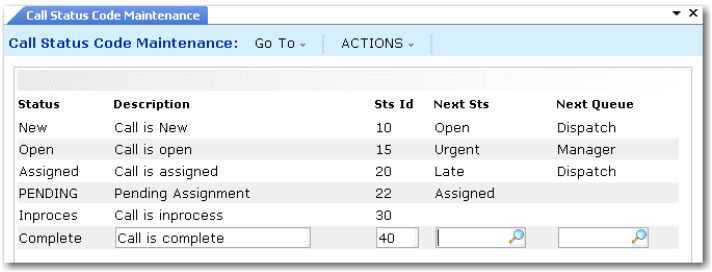
Cancel Status. Canceling a call is similar to closing it, but only a call without service activity can be canceled. You cannot generate an invoice for a canceled call since you cannot record activity for it.

These statuses are especially important in Call Activity Recording and Call Invoice Recording.

Call Status Code Maintenance

Define call status codes with Call Status Code Maintenance (11.1.21.1).

Fig. 11.2
Call Status Code Maintenance (11.1.21.1)



Status. Enter a unique name (maximum 8 characters) identifying this call status. Making the name recognizable can help users quickly identify its purpose.

Description. Enter a brief description (maximum 24 characters) of the code to help users identify its use and purpose.

Sts ID. This field can indicate the order in which statuses occur in the life cycle of a call. A lookup displays call statuses in numeric order as defined by the status ID, rather than alphabetically.

Next Status. Specify the next status that normally follows this status in the call life cycle. The next status specified here provides a default for the Next Status field in Call Escalation Maintenance when you define an escalation with a call status as part of the key. The system also uses it in the Next Status field of Call Maintenance if no other default is found.

Next Queue. Specify the next queue to which the system should route calls with the next status. This field is for reference; you can use it when setting up escalations.

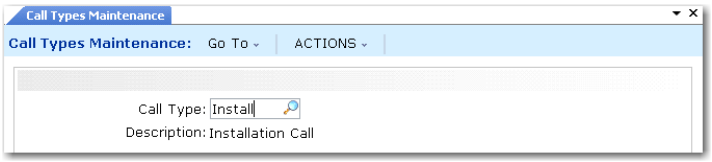
Call Types

The call type code provides a user-defined way to categorize calls. Types are best for broadly classifying the reason for calls. For example, you may want to define different call types for marketing and sales calls, for operational questions that you often answer immediately, and for problems that require the attention of field service personnel. These business situations often require different kinds of call management.

Within each call type, you can use other call parameters such as work code to further qualify the call.

Define call types with Call Types Maintenance (11.1.21.4).

Fig. 11.3
Call Types Maintenance (11.1.21.4)



Call Type. Enter a unique name or code for this call type.

Description. Enter a brief description (maximum 24 characters) of the code to help users identify its use and purpose.

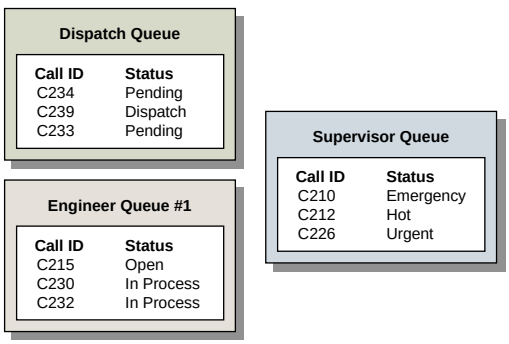
Call Queues

You can place each call in a call queue when you create it. The queue is a holding area you define to indicate who is responsible for the call. You also use queues with escalation sequences to redirect incomplete calls automatically so they obtain needed attention.

Sample Queues

Each queue is a unique place where calls are routed according to their problem, status, or other criterion. Queues are tools for locating and tracking calls. Use the Call Queue Manager to review and update calls according to queue. You define call queues to fit your service process. Figure 11.4 illustrates some sample queues.

Fig. 11.4
Sample Call Queues

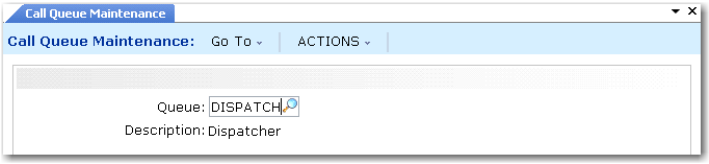


In Figure 11.4, new, unassigned calls are placed in the dispatch queue, where they await assignment to an engineer. The engineer queue is for calls that have been assigned to engineers and are being resolved. The supervisor queue is for calls that must be brought to the attention of a supervisor. Each call has a status reflecting its urgency.

Call Queue Maintenance

Define as many call queues as you need in Call Queue Maintenance (11.1.21.7). Specify two queues—a default call queue and default quote queue—in Call Management Control. Unless you are using call escalation, you must move calls from one queue to another manually. Therefore, you may want to limit the number of queues to a well-defined set.

Fig. 11.5
Call Queue Maintenance (11.1.21.7)



Queue. Enter a name or code uniquely identifying this queue.

Description. Enter a brief description (maximum 24 characters) of the code to help users identify its use and purpose.

Open Calls by Queue Operational Metric

Use the Open Calls by Queue metric on the Service and Support Operational Metrics page in the Metrics folder to view a snapshot of open calls by call queue.

For details on creating or modifying operational metrics refer to *Administration Guide: QAD .NET User Interface*.

Setting Up Call Defaults

For most service organizations, calls generally fall into a small number of typical patterns. Streamline the data entry required for recording call information by setting up multiple sets of default call information to be applied to calls when they are created.

Note Set up defaults for call quotes with the same maintenance function.

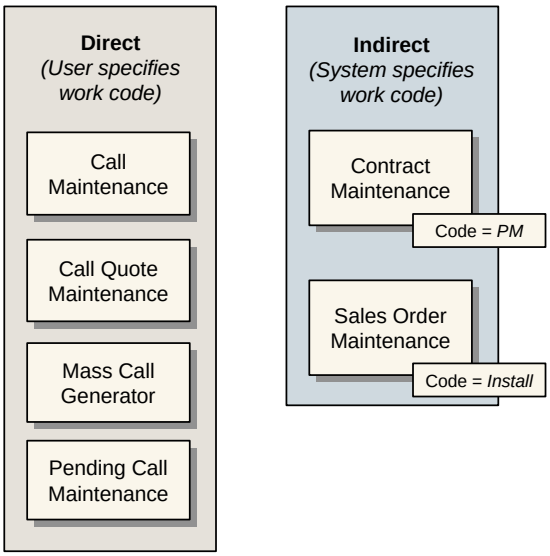
The call defaults serve as templates for the typical kinds of calls you take and are often based on work code. You can override the defaults for individual calls. For example, you might need to assign a problem/skill other than the default. To minimize changes for new calls, enter default information that is appropriate for as many calls as possible.

You can create calls directly and indirectly. Create them directly with Call Maintenance (11.1.1.1) or the Call Generator, or by releasing a quote to a call. Calls are created indirectly in either of two ways.

- The system creates PM calls as part of the scheduling associated with Contract Maintenance (11.5.13.1). PM calls are always created with the PM work code, as defined with Call Management Control, and any defaults set up for it in Call Default Maintenance (11.1.21.10). The PM call is set up in the same currency as its associated contract.

- The system creates installation calls when you post a sales order or RMA invoice and an item on the order is defined as requiring an installation call. Installation calls are always created with the install work code, as defined with Call Management Control, and any defaults set up for it in Call Default Maintenance. The install call is set up in the same currency as the sales order that initiated it.

Fig. 11.6
Call Defaults Used in Call Creation



Regardless of how the call is created, the system searches for an appropriate set of defaults when it builds the call record. When you create calls or call quotes manually and call or call quote defaults exist, a pop-up enables you to specify the values for the system to use in searching for appropriate values. If no defaults exist, this pop-up does not display.

See “Call Default Precedence” on page 273 for details on the order in which call defaults are processed.

Using Call Defaults with Escalations

You can use call defaults in conjunction with escalations. If both are in effect when you create a call in Call Maintenance, some defaults may not be used. When you create a call directly in Call Maintenance, the escalation sequence *always* determines the values for Status, Next Status, and Queue.

Calls created by the system in the background—installation calls from invoice post and PM calls from contract schedules—are not initially affected by escalations. This is because these calls are normally scheduled some time in advance. The system escalates the call only after the call reaches the next status date and time initially set by the system.

Default Key Values

Call defaults are built around three key call attributes: work code, model, and service group. When you define a set of defaults, you use one or more of these keys. Then when you create a call in Call Maintenance, you can select the set of defaults you want to use based on this key.

If the system cannot find a set of defaults that matches the values specified on the Call Defaults pop-up, it continues looking for less exact matches. The system looks for call defaults with any combination of values in the key in the sequence listed in Table 11.2.

Table 11.2
Search Order for Call Default Key Values

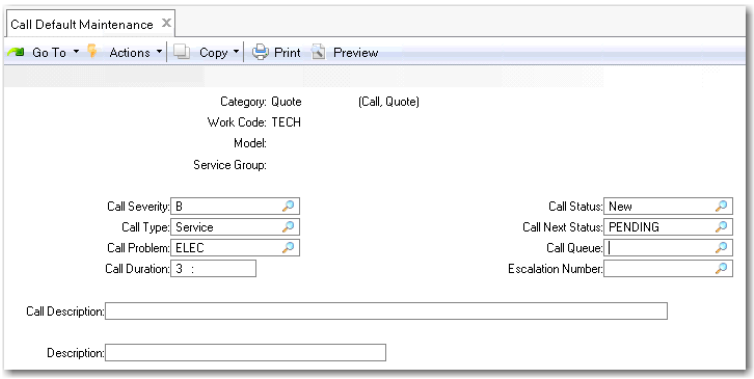
Search Order	Work Code	Model	Service Group
1	✓	✓	✓
2	✓	✓	
3	✓		✓
4		✓	✓
5	✓		
6		✓	
7			✓
8			

Note The value the system uses for category in the search is determined by the program executing the search. From Call Maintenance, category is always call. From Call Quote Maintenance, category is always quote.

Call Default Maintenance

Define default call information with Call Default Maintenance (11.1.21.10).

Fig. 11.7
Call Default Maintenance (11.1.21.10)



Category (Call/Quote). Category must be either Call or Quote and determines where the defaults are used. Call Maintenance uses only call defaults with a call category. Call Quote Maintenance uses only defaults with a quote category. To define a set of generic defaults for all calls, specify call in the Category field and leave the other key fields blank.

Work Code. This field can be blank. If specified, it is part of the default search key, and enables you to base call defaults on the kind of work being done. Work codes provide a general means for categorizing the kind of work needed to address a call, and tie into invoicing and service limits. Define work codes with Work Code Maintenance (11.21.1).

Define default work codes in Call Management Control (11.1.24). The system uses these defaults when calls are created as follows:

- The technical work code when calls are created with Call Maintenance
- The install work code for automatically generated installation calls
- The PM work code for automatically generated preventive maintenance calls.

See “Work Codes” on page 65.

Model. This field can be blank. If specified, it is part of the default search key. Specify the model when you set up an item with Service Item Maintenance (11.3.7). Model is maintained as part of the installed base record also.

Note Set up codes in Generalized Codes Maintenance for field pt_model.

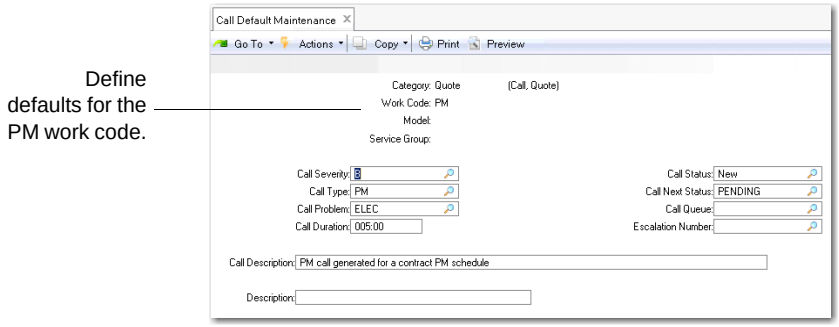
Service Group. This field can be blank. If specified, it is part of the default search key. You can assign an item to a service group in Service Item Maintenance (11.3.7). Service groups provide a way to group service cost according to any user-defined criteria.

Note Set up codes in Generalized Codes Maintenance for field pt_svc_group.

The remaining fields on this frame, except for Remarks, define the actual default information the system uses in Call Maintenance or Call Quote Maintenance. The Remarks field is for reference only; use it to enter remarks about the current defaults.

Example Call default information is established for a preventive maintenance call (work code PM).

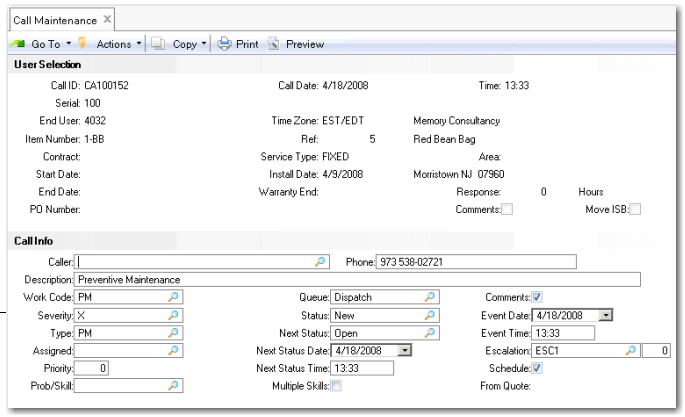
Fig. 11.8
Call Defaults for PM Work Code



When a user creates a PM call, it looks like Figure 11.9. The system has loads the correct default information into the call.

Fig. 11.9
Call Defaults Displayed in Call Maintenance

Defaults display when you create a PM call in Call Maintenance.



Call Default Precedence

To provide the most flexibility in setup and implementation, you can define call defaults in a number of ways. Service organizations with simple requirements may set up only a few very generic defaults. As requirements grow and change, you can refine these defaults.

Since defaults may exist in more than one place, the system follows the rules summarized in Table 11.3 to determine default precedence.

Table 11.3
Call Default Precedence Rules

Field	End User	Call Default	Escal. Seq.	Cont./ War.	User Pref.	Control Program	Other
Description		1					
Duration		1				2	
Escalation	1	2			3	4	
Next Status Date/Time			1				
Next Queue			1				2 Call Status
Next Status		2	1				3 Call Status
PO Required	1						
Priority	1		May bump		4	3 Def Serv Type	2 War/ Serv Type
Problem		1					
Queue		2	1		3	4	
Service Type				1		2	
Severity		1	2				
Status		2	1			3	

Field	End User	Call Default	Escal. Seq.	Cont./ War.	User Pref.	Control Program	Other
Time Window					1	2	
Type		1	2				
Work Code						1	
Structure Window					1	2	

Note Calls created by the system in the background—installation calls from invoice post and PM calls from contract schedules—are not initially affected by escalations. This is because these calls are normally scheduled in advance. The call is escalated only after the call reaches the next status date and time initially set by the system.

Control Settings

Service Management Control (11.24) and Call Management Control (11.1.24) affect call creation, call tracking, escalations, and call queue management. This section discusses some settings in these functions that are especially important.

See Chapter 25, “Control Programs,” on page 641 for complete descriptions of control program settings.

For Which Items Can You Take Calls?

Service Management Control determines whether you can take calls only for items in the installed base, for any item defined in the item master, or for any item at all.

- Set Items In Installed Base to Yes to restrict the calls you take to items in the installed base. Setting this field to No enables you to take calls for any item.
- Items Must Exist determines whether you can take calls only for items that exist in your item master. This setting is generally used to restrict service to items you manufacture and sell.

See “Restricting Support to the Installed Base” on page 25.

Default Call Service Type

If you are using warranties or contracts, most items referenced on calls already have terms and conditions of coverage. If you are not using these sources of coverage or if not all items you service are covered, specify a service type to determine basic coverage conditions required by the call.

Specify the default service type in Call Management Control (11.1.24). It sets the response time, priority, and coverage hours for items that have no coverage.

The service type in the control program must be a contract type defined with Contract Type Maintenance. Normally, this contract type is used when you bill for time and materials and provides no coverage. If any coverage is provided on this service type, create it with an associated charge code of Covered.

See “Charge and Revenue Management” on page 80 for more information on charge codes.

Calls from Unknown Users

Every call must reference a valid end user, and every end user must be attached to a valid customer. Some service organizations regularly receive calls from end users who are not already registered in the installed base. This is typical for products sold through retail outlets when the customer does not contact you unless something goes wrong.

Since Call Maintenance is often used in an interactive mode, you can take calls for unknown end users without having to set up a valid customer record. You first create a dummy customer in Customer Create and Customer Data Maintenance. Then you specify this customer number in the Temporary Customer field in Call Management Control.

Now, when you take a call, leave End User blank. A pop-up window enables you to create a new end user. By default, this end user is associated with the temporary customer. In this way, the call is taken smoothly and a record established.

Note In order to create an end user as part of Call Maintenance, you must have security permission to the End User Create (27.20.3.1) activity.

Whether you can record activity against this call or close it depends on the Call Activity with Temp field in Call Management Control. If you do not want activity recorded against the temporary customer, set this field to No.

In this case, create a customer for the end user in Customer Create and then add the caller as an end user of this customer, using End User Create. Finally, modify the call to reference the valid end user.

Assigning Engineers to Calls

Two approaches can be used to assign engineers in Call Maintenance, represented by two fields in Call Management Control.

- *Schedule New Calls*. If Yes, the Schedule field defaults to Yes in Call Maintenance, initiating the engineer scheduling sequence. This sequence follows a set of rules in ranking potential engineers and enables you to select one or more to be assigned to the call.
- *Assign Primary Engineer*. Rather than scheduling engineers, you can designate an engineer who typically works on an end user's items. If Assign Primary Engineer is Yes, the system assigns, by default, the end user's primary engineer to new calls. Assign a primary engineer to the end user in End User Data Maintenance.

If both these fields are Yes in Call Maintenance, the system assigns the primary engineer and you can assign additional engineers. Note, however, that if you select the primary engineer again, the system creates two engineer transaction records for the primary engineer, each with an estimated number of hours the system considers part of the engineer load for scheduling purposes.

If you use engineer scheduling, you probably also want to set Call Time Window to Yes in Call Management Control. When this field is Yes, the Travel and Estimated Time window appears in Call Maintenance, enabling you to enter an estimated time for the engineer. If this window does not display, the system uses the default estimated times for the appropriate work code in Call Management Control.

The estimated call length is important, because it is used to calculate engineer availability during call scheduling if Display by Calls is No in Engineer Schedule Control.

See Chapter 17, “Engineers and Scheduling,” on page 479 for details on scheduling features.

Creating and Updating Calls

The primary program for managing calls is Call Maintenance (11.1.1.1). Call Maintenance controls calls from a variety of perspectives.

Call Information. Where is a call placed in your support organization (Queue)? How is it categorized (Problem, Type, Severity)? When should it be updated (Next Status Date and Time)? Where is the call in relation to the call life cycle (Status)?

Management. How should the system manipulate the call to ensure that it is addressed in a timely fashion (escalations)?

Engineer Assignment. Which service engineer should be assigned to work on this call? Who is best equipped for the particular problem? Who is available to do the work?

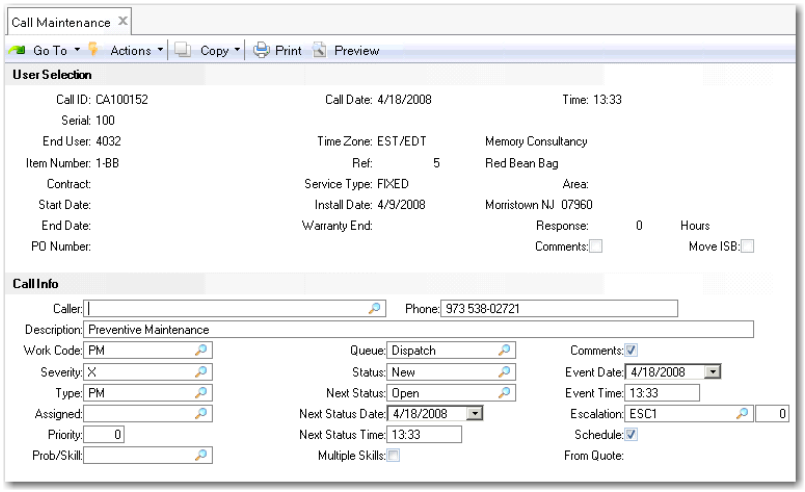
Repair Information. What items and procedures should be used when servicing the call items?

Service Summary Information. What problems were encountered on this call? How were they resolved?

Call Entry Overview

Enter calls in Call Maintenance (11.1.1.1), illustrated in Figure 11.10.

Fig. 11.10
Call Maintenance (11.1.1.1)



Entering calls in Call Maintenance is easy, since it is often used in an online environment where support personnel enter information as they interact with end users. Some of the features that facilitate data entry include the following:

- The system automatically generates call numbers from the Call Prefix and the Next Call ID fields in Call Management Control.

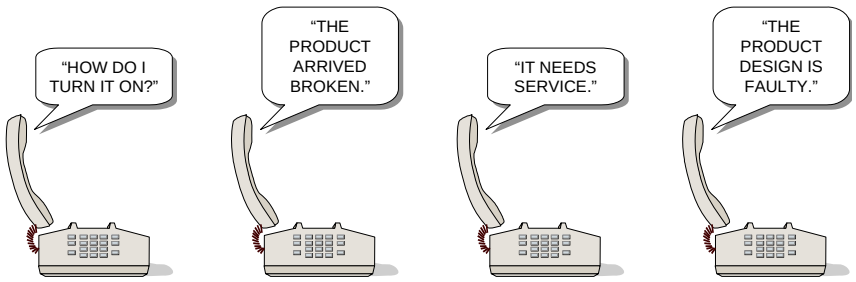
- If you receive a call from a new end user, you can define the end user directly in Call Maintenance, without having to add a detailed end- user record in End User Create (27.20.3.1) and End User Data Maintenance (11.9.1). For details, see “Calls from Unknown Users” on page 275.
- You can look up end users in a variety of ways using the End User Selection pop-up.
- The system retrieves the coverage detail from the warranty defined with Service Item Maintenance or the active service contract. Otherwise, it uses the default service type defined in Call Management Control.
- If the end user has been set up to require a purchase order for service, you can enter it on the first frame. This prevents wasting time on calls that cannot be serviced.
- You can enter call comments from the first frame, so you can record the details reported by the end user immediately, and make decisions about other fields later.
- You can establish various default values for most call fields. See “Setting Up Call Defaults” on page 269.

Call Life Cycles

Once a call record exists, other service functions can be used to resolve it. You can print output from data entered on call records. Printed calls are not simple reports. They are the service engineer’s guide for work to be performed. Printed calls include information about the customer, end user, call items, and comments. You can direct the system to print the items and operations required in the service activity.

Call Maintenance handles incoming calls of all kinds. In Figure 11.11, four types of calls are routed to separate operations. In actual practice, a single call might include all these scenarios.

Fig. 11.11
Call Life Cycles



Questions

For simple calls, the support engineer answers the caller’s question and closes the call. Usually the service organization wants to track these inquiries. For example, a support department can create a database of frequently asked questions and use it for training and quick resolution of calls on the front line. The same database often provides useful feedback to other departments.

Note To filter out calls that do not require service activity, you may want to design a pending call system. Pending calls are discussed in Chapter 12, “Using Pending Calls,” on page 329.

RMAs

Handle simple replacement calls that do not require an on-site engineer by issuing an RMA. See Chapter 23, “Return Material Authorizations,” on page 593 for details.

Call Activity Recording

Calls regarding product failures may require a visit by a service engineer. Replacement items may be needed, items may need to be returned to the factory for repair, or an entire system may need to be shipped back and replaced. Preventive maintenance and installation calls are two other types of calls that require the intervention of an engineer. Information from the call is used to resolve billing issues associated with the service activity.

Service Requests

Recurring problems reported by calls can result in the creation of a service request. You can use service requests internally to track problems that may require product design changes. See Chapter 19, “Service Requests,” on page 511 for details.

Updating Call Records

When a call is linked to an RMA or an SR, the link is by reference only. RMA Maintenance and SR Maintenance use information from the call record, but they do not operate directly on it, other than to create the reference link.

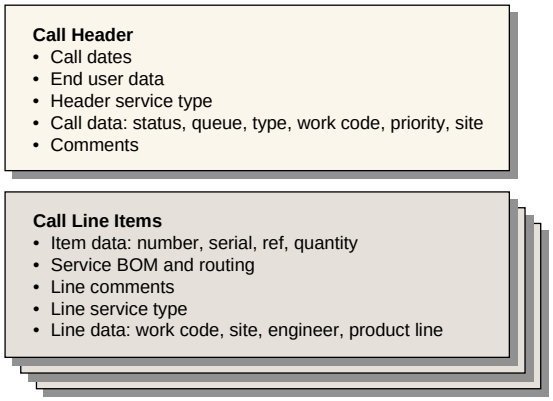
This is not true of the relationship between Call Maintenance and Call Activity Recording. Call Activity Recording is an extension of Call Maintenance. The call record is directly updated from both functions.

Call Record in Call Maintenance

The call record created in Call Maintenance has two parts: the header information and call line information. This distinction is not as clear in Call Maintenance as it is, for example, in RMA Maintenance, where line items are specified in a separate frame. To streamline taking calls and retrieving information from the installed base, you specify the first call item directly in the call header. But the logical distinction remains.

Figure 11.12 illustrates the two levels of information. There can be many call items, but only one call header.

Fig. 11.12
Call Header and Line Items



The call header provides defaults for some of the line item data. You can modify these elements in the header and at the line level.

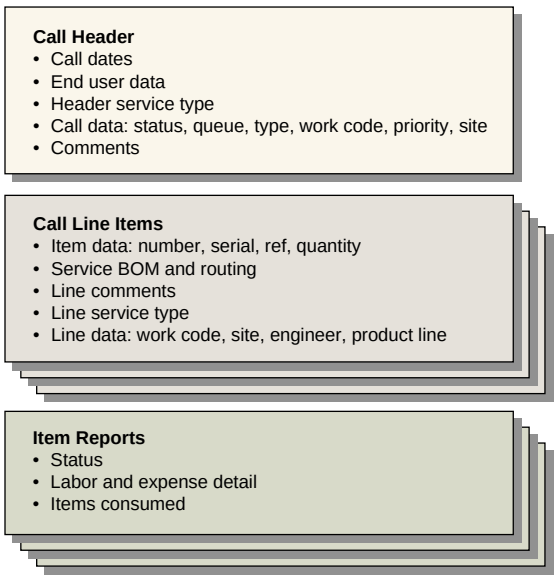
Call Record in Call Activity Recording

In Call Activity Recording, you can update some of the fields of the call record created in Call Maintenance. Most of the header fields are display-only in CAR and cannot be changed. Line item data can be changed. However, CAR adds a layer of data beneath the line item: the report. Use the report to record the details of labor, expense, and item usage.

See Chapter 14, “Call Activity Recording,” on page 381.

Figure 11.13 illustrates the addition of the report level, below the call line item. Each line can have one or more reports.

Fig. 11.13
Call Header, Line Items, and Reports



After a report has been created for a call line item, you cannot modify many of the fields associated with the line. This is true in CAR and in Call Maintenance, since they update the same record. The following details cannot be changed:

- The end user on the call. Contract coverage is specific to end users, and warranty can be based on end-user type. The end user also determines the call's customer and default bill-to in Call Activity Recording.
- The item number, serial, and reference, which define the item being repaired. The system uses this information to calculate the service type and applicable coverage limits, as well as the default BOM and routing for service activity.
- The quantity of the item. The system multiplies the operation run time and item quantity on the service BOM and routing by the quantity of the item being serviced and also used in installed base updates.
- The service type and work code. The system uses the work code to calculate applicable service limits and determine if the repair is for a fixed price or not. Once you begin recording activity, you cannot change these features.
- The site associated with the item, which CAR uses to determine where service inventory is located.
- The BOM and routing associated with the item, which are exploded in the first report for the item in CAR, defining the default set of items used and operations performed.

Active Call History

The system keeps track of events related to a call in a call history table (ca_hist). The records in this table are updated when:

- A call is created in any of the ways supported by the system. See "Methods of Creating Calls" on page 263 for a list.
- A call is modified or reviewed in Call Maintenance.
- The call status is changed in Call Maintenance, Call Activity Recording, Call Queue Manager, or Engineer Assignment Maintenance.

As a result, this table shows the history of all status changes to a call and when they occurred. The first record always indicates the current call information.

Status history may be important for generating reports in a regulatory environment. View call history using Call Detail Inquiry (11.1.1.3). Fields tracked in history include the status, priority, assigned engineer, problem, next status, next status date and time, and the event date and time.

Note The active call history table is not the same as the call history table used for keeping an online history of inactive calls. See "Moving Calls to History" on page 315.

Call Currency

You do not normally specify currency for a call until you initiate service activity in Call Activity Recording, since billing information is created in CAR. In some cases, however, currency is set in Call Maintenance and you cannot change it in CAR.

Only one currency can be associated with a call, which means that all call lines must be in the same currency. This limitation is imposed by sales order processing, which is the basis of call billing.

Each contract line also reference a currency, which defaults from the end user associated with the line. Any coverage limit amounts on the contract line are defined in terms of the contract-line currency. To apply those limits correctly, the call currency and the contract-line currency must be the same.

As soon as you add an item to a call that derives its coverage from a contract, the call's currency is set in Call Maintenance and cannot be changed. Any other lines added in Call Maintenance or later in CAR that are covered by a contract must use the same currency, or an error is generated.

See "Contract Currency" on page 187 for details.

Credit Standing and Calls

Credit Hold Option in SSM Accounting Control affects how calls are processed when the customer associated with the end user initiating the call is on credit hold or over their credit limit. This field can have one of three values:

0 (zero): Service calls are accepted regardless of the customer's credit status.

1: Service calls are accepted, but a warning displays and the call status is updated to the hold status specified in Call Management Control.

2: Service calls are not accepted from customers who are on credit hold or who are over their credit limit. An error message displays and you cannot record the call until you set Credit Hold to No in Customer Modify.

Call Management and Multiple Time Zones

Multiple Time Zones (MTZ) is an optional feature of SSM that enables you to manage your response to end users located in more than one time zone. Activating MTZ affects time-sensitive data in key service functions including call management, engineer scheduling, coverage checking, creation of installed base records, and reports and inquiries that display dates and times.

MTZ has its most pervasive effect in Call Maintenance and call-related functions where most dates and times are displayed relative to the end user's time zone.

The screens illustrated in this chapter all assume that MTZ is not being used. To review alternate versions of the screens with MTZ active, see "Time Zones and Call Management" on page 109.

See Chapter 4, "Multiple Time Zones," for complete details regarding setting up and using MTZ.

Determining Call Coverage

A call record identifies an end user and an item. Once an item is uniquely identified in Call Maintenance, the system searches for valid coverage. This search occurs in the first frame of Call Maintenance, since coverage determines some of the other values of the call, such as:

- Response time, indicating how long it should take to get back to the caller
- Priority, indicating how important the call is
- Coverage hours, indicating the business hours service is available

The system uses coverage hours in conjunction with response time to calculate the call's next status date and time, which is important for call scheduling.

Coverage can be found on a warranty or service contract. If the system finds neither, it uses the Default Call Service Type in Call Management Control.

Coverage and Call Dates/Times

The system looks at various information to suggest a timing sequence for events related to a call. When a call is first created in Call Maintenance, the event date and time reflect the current system date and time. Event date and time update each time you access the call from Call Maintenance or it is escalated by the Escalation Monitor.

If you are not using escalations, the system considers two factors when calculating the call's next status date and time:

- The response time from the call's service type. Response time is an agreed-upon time within which you want to respond to a call from your customer.
- The coverage hours defined for the call's service type. These specify the days and hours your organization is open for service.

Example You take a call at 4:00 PM (16:00 hours) with default coverage. The default service type specifies a 4-hour response time. Your coverage hours are 8 AM to 5 PM, Monday through Friday. If response time is simply added to the call event time, a next status time of 8 PM (20:00 hours) would be calculated. This would create a problem, since you are only open until 5:00 PM (17:00 hours).

Since the system knows your service coverage hours are only until 5:00 PM, it schedules the next event three hours into the next business day.

If you are using escalations, the calculation of next status date and time is determined by the days and time allowed in the status of the first escalation step. The Escalation Monitor also checks the Use Calendar Days in Escalation field to determine whether to use calendar days or work days in the calculation.

See "Use Calendar Days in Escalation" on page 477.

Multiple Sources of Call Coverage

For each item on a call, more than one source of coverage can exist, and each can have different terms and conditions.

- A warranty associated with an installed base record can exist for the item.
- A contract can exist with a line for the specific item/serial/reference number.
- A second line for exactly the same item can exist on the same contract with a different service type. This enables you to use different service types and price lists for different hours of coverage. In this case, a call taken during the day could receive one kind of coverage, one taken at night another.
- A blanket contract may exist for the end user and item, covering all items with this number. See "Blanket Coverage" on page 191.

- A blanket contract may exist for the end user with a blank item, covering any items for this end user.

Whenever multiple coverage sources exist, you can select the one to be used for the call. A lookup lists each coverage source, the start and end date, service type, whether a contract is a blanket contract, and the hours of coverage. The more specific coverage sources are listed first.

Note This lookup displays when you create a call or add more lines to it in Call Maintenance or Call Activity Recording.

The lookup lists the coverage records in the following prioritized order.

1. Warranty for an installed base record
2. Contract with a line for the specific item/serial/reference number using a service type with coverage hours that include the call open time
3. Contract with a line for the specific item/serial/reference number using a service type with coverage hours that do not include the call open time
4. Blanket contract for the end user and item covering the call open time
5. Blanket contract for the end user and item not covering the call open time
6. Blanket contract for the end user covering the call open time
7. Blanket contract for the end user not covering the call open time

It is unlikely that any one item would have all these coverage sources. The lookup appears only if more than one source of coverage exists. If you do not select one of the listed coverage sources, the system uses the first by default.

When it creates calls in the background, the system uses alternate methods for determining the coverage to select, based on a standard method of prioritizing coverage sources.

- Installation calls created during invoice post always use warranty coverage, if available, then the highest prioritized contract coverage.
- Coverage for calls created in the Call Generator is based on your input selection of Warranty or Contract.
- PM calls created as part of Contract Maintenance always use the contract from which they are generated.

Call Open Date/Time and Coverage

When the system searches for call coverage, it uses the call open date and time. It also determines if the day is a holiday.

Note If MTZ is active, open date and time are relative to the end user's time zone.

For contract coverage to be considered valid, the call open date must be within the range of the contract line's start and end dates, and the contract currency must match the call currency. If more than one coverage source exists, the system checks the call's open time to see if it fits within the range of available hours for the service type associated with the contract line.

The same algorithm is used to determine consumption of contract limits when you post a call invoice. The call open date is used to determine the effective limits. You cannot update the start and end dates of a contract header or line to exclude an attached call's open date. This is also true of limit records: you cannot modify the effective dates to exclude the open date of a call that references them.

Using Call Maintenance

This section gives field-by-field reference information for Call Maintenance (11.1.1.1). Some frames are required, others display depending on field settings. Each frame listed in Table 11.4 is described in detail in the following sections.

Table 11.4
Call Maintenance Frames

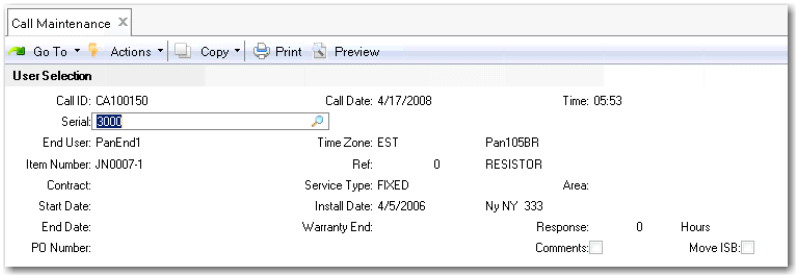
Frame	Req	Purpose
User Selection	Y	Enter information identifying the item and end user initiating this call.
Installed Base Move	N	Enables you to move an item to a new end user while creating a new call line.
End User Selection	N	If End User is blank, displays so you can select an end user.
End User	N	Enables you to create a new end user.
Calls for End User	N	If new call and other calls exist for end user, enables you to cancel the call you are creating and switch to an existing call.
Comments	N	If Comments is Yes in call header, enter comments detailing the problem reported by the user.
Call Defaults	N	Specify values used to search for applicable call defaults.
Call Info	Y	Enter or modify detailed information related to the call.
Multiple Skills	N	If Multiple Skills is Yes in the Call Info frame, specify the list of skills required.
Travel and Estimated Time	N	If field is Yes in Call Management Control or user preferences, modify call duration and travel time.
Override Scheduling Options	N	If Schedule is Yes in the Call Info frame and Override Scheduling Options is Yes in Engineer Schedule Control, choose options for limiting engineers for scheduling.
Call Scheduling	N	If Schedule is Yes in the Call Info frame, select appropriate engineer for call.
Call Engineer Schedule Maintenance	N	If Schedule is Yes in the Call Info frame and appropriate schedules are available, modify start and end date or estimated time.
Comments	N	If Comments is Yes in the Call Info frame, view or update call header comments.
Item Service Structure Detail	N	If field is Yes in Call Management Control or user preferences, modify site, BOM, and routing associated with call's first item.

Frame	Req	Purpose
Call Update	Y	Enter final details about the call and select other optional frames.
Paging	N	If Page Engineer is Yes (see page 300) in the Call Update frame, page the engineer assigned to the call.
Call Item	N	If Multi Items is Yes in the Call Update frame, view details about call item or add more items to the call.
Coverage Information	N	If Coverage is Yes in the Call Update or Call Item frame, view coverage information related to this item.
Comments	N	If Comments is Yes in the Call Update or Call Item frame, view or enter comments about this call line.
Fault Codes	N	If Fault Codes is Yes in the Call Update or Call Item frame, enter codes for this item.
Call Print	N	If Print Call is Yes in the Call Update frame, enter output device for the print function.

User Selection Frame

Use the user selection frame to specify or create the end user initiating the call and record the item and associated information. Once you enter an item, the system displays its warranty or service contract information. You can also record comments about the call.

Fig. 11.14
User Selection Frame



Call ID. Enter a number or let the system generate one based on the call prefix and next call number in Call Management Control. Calls must have a unique prefix to distinguish them from quotes. The call ID identifies a call as it moves through its life cycle.

Note If you are using classification codes for grouping items in the installed base, you are prompted to enter a classification code before you can enter a serial number. The system searches for matching serial numbers only within items that belong to this class. To search all items, choose Done without making a selection. See “Classifying ISB Records” on page 30.

Serial. Enter the serial or lot number of the item being reported, if available. If the end user is calling about an item in the installed base, you can use this field to retrieve end user, item, and warranty information. If the item you enter in the Item field is defined as serial or lot-number controlled, a warning displays if you do not specify a number. The installed base cannot be updated until a number is provided.

End User. Enter the end user initiating this call. If specified, the end user must have been previously defined. If you want to select end users by attributes other than the code—such as phone number or zip code—leave this field blank to display an End User Selection frame. You can also create end users directly from Call Maintenance by leaving this field blank and answering Yes when prompted to create a new end user on the following frame.

A number of data elements associated with the call can default from the end-user record. These include: Area, Caller, Phone, Priority, Assigned, Escalation, Travel Distance, Travel Time, and Time Zone (if MTZ is active). The call scheduling sequence uses information associated with the end user to award points to engineers (area, primary and secondary engineer, and time zone). The end user also determines the customer and default bill-to addresses for Call Activity Recording and Call Invoice Recording.

Clicking Next with a blank End User field displays the End User Selection frame. Use this frame to find an appropriate end user record for the call.

See “End User Selection Frame” on page 289.

If you are creating a call for an end user that already has other calls, the system prompts you to display these calls when you click Next. Selecting a call from this window replaces the call you were about to create. Use this feature to combine calls for the same end user.

See “Calls for End User Pop-Up” on page 290.

You cannot change the end user associated with a call after you open reports in Call Activity Recording.

Item Number. Specify the number of the item requiring service. If the end user supplied an installed base serial number, the system fills in this field. If this item is in the installed base, it must belong to the end user entered previously.

Two control program settings affect the validation of this field.

- When Items Must Exist is Yes in Service Management Control, this field is validated against items defined in the item master. If Items in Installed Base is Yes, the item must also exist in the installed base before you can take a call for it.
- When System Level on Calls is Yes in Call Management Control, the next/previous processing in this field is affected. Only items in the installed base that have a system type that matches the system type specified for System Level in Service Management Control display.

If the item you enter has been set up in the item master as serial- controlled, a warning displays if you do not specify one. The installed base cannot be updated until a serial number is provided.

Ref. Specify an installed base reference number to uniquely identify this item. If you leave the Ref field blank or enter a question mark (?), the system suggests the next available reference number by scanning current ISB records.

Reference numbers are used in the installed base for non-serial controlled items to ensure the item identification is unique. The ISB reference should not be confused with the inventory reference number. While they both uniquely identify items, the ISB reference identifies items in the installed base; the inventory reference identifies items in inventory.

The Contract, Service Type, Start Date, Install Date, End Date, Warranty End, and Response fields default from any contract or warranty associated with the specified item/serial/ref combination or the standard coverage defined in Call Management Control. Area defaults from the end user.

PO Number. Specify a purchase order number for the service associated with this call. This field is required if the end user reporting the problem has been defined in End User Data Maintenance as requiring a purchase order. The field for the end user defaults, in turn, from the end user's customer.

Comments. This field always defaults to No. Specify Yes if you want to enter comments immediately. This is especially useful if you are taking information directly over the phone. Specify No if you do not want to enter comments at this point. When comments are updated, the system adds a line displaying the current date, time, and user ID. You can enter comments at other points in Call Maintenance.

When MTZ is active, comment date and time display relative to the user's time zone, if the user has defined a preferred time zone in Service/Support User Preferences.

ISB Move. Select the field and click the Next button to access the Installed Base Move frame. This frame lets you update the location of installed base items from one end user to another. See "Installed Base Move Frame" on page 287.

Call Date, Time. These default to the current system date and time but can be changed during entry if you are recording a call taken earlier. The system uses the call open date in the search for valid coverage sources (warranty or contract), price lists, and service BOMs and routings.

If MTZ is active, call open date and time display relative to the end user's time zone.

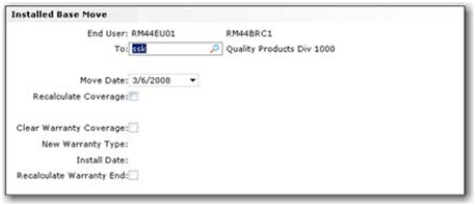
Installed Base Move Frame

Use the Installed Base Move frame to update the location of installed base items from one end user to another. This function is useful for corporations that move equipment between divisions and diverse locations.

You can access the Installed Base Move function when you create a new call or a new call line in the User Selection frame. When you enter a serial number and an end user not previously associated with the item, the system prompts you to update the end user record. If you choose Yes, the Installed Based Move frame opens, which lets you specify the new end user, as well as warranty and coverage options.

See "Installed Base" on page 11 for more information on installed base items.

Fig. 11.15
Installed Base Move Frame



End User. Displays the end user that the item is currently associated with.

To. Specify the end user to which to move the item.

Move Date. Specify the date on which to move the item. The system uses this date to check for contract and warranty coverage.

If you change the default Move Date value, it is most often to a date earlier than the current one. If you set the date ahead, service coverage for the From End User might not be valid, and warranty coverage for the To End User is not valid until the install date.

Recalculate Coverage. If you are moving an item with warranty coverage, the coverage may no longer be appropriate for the new end user. Specify Yes to Recalculate Coverage to choose coverage options.

Clear Warranty Coverage. Select the field to clear the warranty coverage for the new end user.

New Warranty Type. Specify an alternative warranty type for the end user.

Install Date. Specify a new installation date for the item.

Recalculate Warranty End. Select the field to recalculate the warranty end date for the item based on the new install date.

When you complete the fields in the Installed Base Move frame and click Next, the system displays the Items to Move Screen frame.

The Items to Move Screen frame lists the item number, serial number, reference, and item description of the item to move. If the item is a component of a parent configuration, you must move the entire configuration and all of the configuration's related components.

Fig. 11.16
Items to Move Frame

Item Number. This field displays the item to move.

Serial. This field displays the serial number of the item to move.

Ref. This field displays the reference number for items that are not serial number controlled. For serialized items, the reference is always zero because the serial number must be unique. If an item is not serial controlled, the ISB reference number uniquely identifies the item in the installed base.

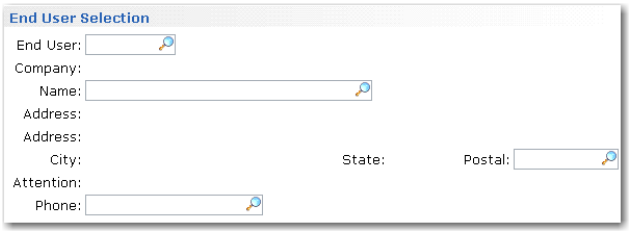
Description. This field displays a description of the item to move.

Moved. Indicates if the item has been moved to the new end user.

End User Selection Frame

The End User Selection frame displays if you leave the end user for this call blank and click Next or press Enter.

Fig. 11.17
End User Selection Frame



This frame assists you in selecting an end user based on four key pieces of information: number, contact name, zip code, and contact phone number. These data elements represent the kind of information that is often obtained directly from a caller on the phone.

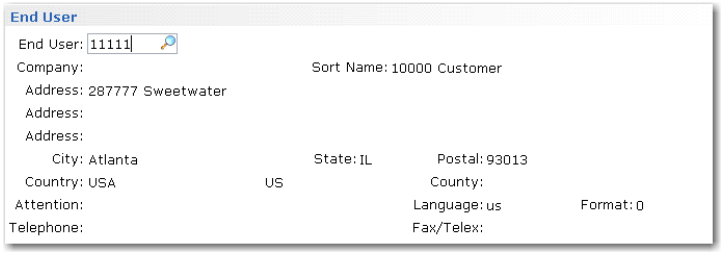
Populate these fields in one of three ways: by direct input, by next/previous processing, or by lookup browses. When you enter a value, the system attempts to find an end user or end-user contact record that matches; otherwise, a warning displays.

When you click Next and the system finds a valid matching record, you are returned to Call Maintenance with that end-user number. If a matching record is not found, the system prompts you to create a new end user. The system carries over any values specified in the End User Selection frame to the next frame.

End User Frame

This frame displays when you answer Yes to create a new end user.

Fig. 11.18
End User Creation Frame



By default, the new end user is associated with the temporary customer, as defined in Call Management Control. This enables you to define an end user without having to attach them to a valid customer. This is essential if you service items sold through distributors or retailers and end users contact your company directly for service.

See “End Users” on page 15.

Note Change the temporary customer to a defined one if you know the customer related to the new end user.

The remaining fields on the frame specify basic end-user address information; specify further details about the end user in End User Data Maintenance. If you entered values on the End User Selection frame, they are carried over to the appropriate fields.

Note In order to create an end user as part of Call Maintenance, you must have security permission to the End User Create (27.20.3.1) activity.

If Multiple Time Zones is active, you are prompted to specify an end-user time zone, which defaults from the end user's customer. The time zone determines how times are displayed and stored in Call Maintenance when you take a call for this end user.

See page 103 for details.

Calls for End User Pop-Up

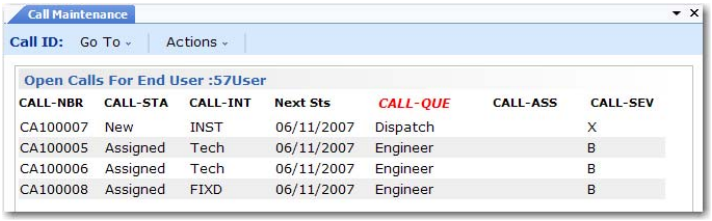
When you are creating a call for an end user with other open calls, you are prompted to display them. If you respond Yes, you are prompted to display call line item detail. Open calls are not complete, canceled, or on hold.

You can view calls at the call level or the line item level. The call level provides high-level information about the call; the line item level shows information related to the specific items on the call, such as part number and serial number.

In either window, select a call by pressing Enter. This replaces the call you were about to create with the one you select. This feature helps to prevent creating redundant calls in the system. If the call you are taking is about a different item, you can add it to the existing call.

The following lookup displays if you choose not to display call line-item detail. It displays call-level information.

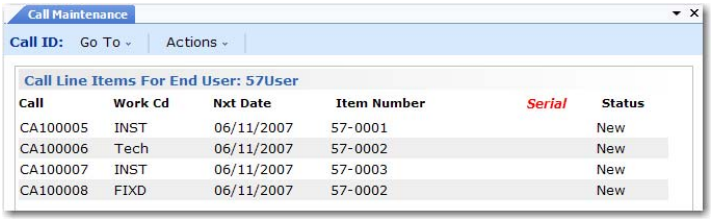
Fig. 11.19
Open Calls For End User



Selecting a call from this lookup replaces the record you were about to create with the selected record. You can use the Pivot command to alternate the sort order of the display between queue and assigned engineer.

If you respond Yes to display call line item detail, a different view of the call information displays.

Fig. 11.20
Call Line Items For End User



Use Pivot to alternate the sort order of the display between item number and serial number.

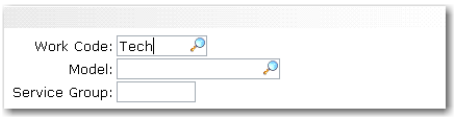
Note If you have entered a serial number in the Call Maintenance header, the system shows you call lines for items with a serial number the same as or greater than the one you entered.

Call Defaults Pop-Up

When you enter a new call and call defaults have been defined with Call Default Maintenance, a pop-up displays between the first and second frame of Call Maintenance, as illustrated in Figure 11.21. Use this pop-up to specify the values to use in searching for the most appropriate call default record for this call.

See “Default Key Values” on page 270 for the system’s search order.

Fig. 11.21
Call Defaults Pop-Up



Work Code. When you create a call directly in Call Maintenance, the work code defaults from the technical work code as specified in Call Management Control. You can change this, but you must specify a work code. The call header work code sets the default for each new line added to a call.

Note Changing the call header work code does not affect any existing lines on the call.

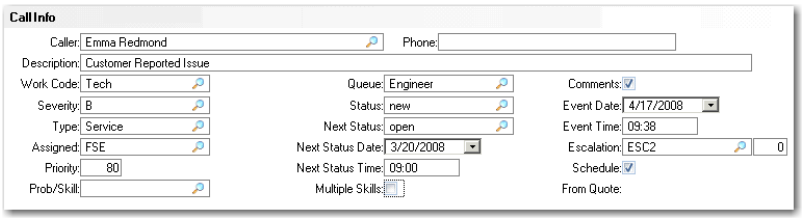
Model. If an item number has been specified in the call header, the system displays the item’s model. For items in the installed base, the system reads this from the installed base record. For other items, it is determined from the value specified with Service Item Maintenance. Otherwise, it is blank.

Service Group. If an item number has been specified in the call header, the system displays the service group associated with the item in Service Item Maintenance. Otherwise, it is blank.

Call Info Frame

If you have created call defaults and performed other call setup activities, most of the fields in this frame already have default values.

Fig. 11.22
Call Info Frame



Caller. Defaults from the first Primary Contact associated with the end-user record, if one exists. If you created a new end user in the previous frame, Caller defaults from the Attention field.

Description. Brief description of the call. Description may default from Call Default Maintenance. This description appears on most reports and places where the call is referenced. For example, when you select a call in the Call Queue Manager, its description displays at the bottom of the screen.

Work Code. For a call you created directly in Call Maintenance, defaults from the technical work code specified in Call Management Control (11.24). The install work code is the default for system-generated installation calls, and the PM work code for system-generated preventive maintenance calls.

Severity. Severity indicates the end user's perception of how bad the problem is. May default from call defaults set up with Call Default Maintenance. Set up values in Generalized Codes Maintenance (36.2.13) for the field ca_severity.

Type. Enter a type defined with Call Type Maintenance (11.1.21.4). Types provide an additional way to categorize calls in a user-defined way. If you are using call defaults, this field may default from Call Default Maintenance.

Problem/Skill. May default from Call Default Maintenance if you are using call defaults. Problem/Skill is an optional code with a dual purpose: it represents the kind of problem reported on a call and the kind of skill required to fix it. If you are using engineer scheduling, an engineer receives points if he or she has a skill that matches the call's problem. Set up values in Generalized Codes Maintenance for field fsskill.

Multiple Skills. Select the field if the engineer requires more than one skill in order to resolve the problem. The default value for this field is set in Call Management Control (11.1.24). See "Call Management Control" on page 644 for more information.

If you select the Multiple Skills field in the Call Info frame, the Multiple Skills frame opens when you click Next. This frame lets you define the list of skills an engineer requires.

Assigned. Must be a valid engineer defined in Engineer Maintenance. If Assign Primary Engineer is Yes in Call Management Control, this field defaults from the primary engineer associated with the end user. You can enter another engineer or leave the field blank. A warning displays if the engineer specified has a non-available status.

The engineer specified in the Assigned field is considered the call engineer, and displays by default as the engineer for each new line added to the call. Assigning an engineer creates an engineer transaction record.

Yes in the Schedule field initiates the engineer scheduling sequence, which presents engineers available to service this call prioritized according to the points defined in Engineer Schedule Control.

If you assign an engineer in the call header and also select an engineer in the Availability frame, another engineer transaction record is created. This is true even if you select the same engineer again: two transaction records are created for the same engineer.

If you leave the Assigned field blank and select more than one engineer during scheduling, the system alphabetically assigns the first engineer to the call header.

The system uses information associated with the engineer when determining the call site, which can also affect the BOM and routing suggested by the system in the Item Service Structure Detail frame.

The engineer scheduling sequence in Call Maintenance considers only the engineer associated with the call header when calculating engineer load. If different engineers are specified for some line items, their availability is not affected.

Priority. Enter a number to indicate how important this call is. Lower numbers indicate higher priority. In order of precedence, the value in the Priority field defaults from:

- The Call Priority field in End User Data Maintenance (if this is not zero)
- The Priority field in either Warranty Type Maintenance or Contract Type Maintenance.
- The priority of the Default Call Service Type defined in Contract Control
- The user's priority defined in Service/Support User Preferences

If an escalation is in effect, the system deducts the number of points in the Bump Priority field from the initial default value.

Queue. Enter the queue to which this call is assigned. Set up queues with Call Queue Maintenance (11.1.21.7). For a new call, this field defaults first from the escalation sequence in effect, then from Call Default Maintenance, then from any default set in Service/Support User Preferences, and finally from the queue specified as the Default Call Queue in Call Management Control.

Status. Indicate the position of this call relative to the call's life cycle. Define call statuses with Call Status Maintenance (11.1.21.1). For a new call, status defaults first from Call Default Maintenance, then from the Open status set up in Call Management Control. Statuses are affected by the Escalation Monitor, if escalation is active. This field can be controlled through field security.

Next Status. The status code that normally comes next, after the call completes the first status. The next status can default from Call Default Maintenance, or you can specify it when you create a status code. If escalation is active, the escalation sequence sets the next status and the system escalates calls to the next status within a specified time period.

Next Status Date, Time. The date and time the system next updates the call. The system calculates these fields in different ways, depending on whether escalations are being used:

- When call escalation is in effect, the system sets and updates the date and time according to the escalation sequence assigned to the call—the Days and Time Allowed in Status fields. This date calculation can be affected by Use Calendar Days in the Escalation in Escalation Control.
- Without call escalation, when you add a call the system bases the next status date and time on the response time and coverage days of the service type in effect. See "Coverage and Call Dates/Times" on page 282 for more detail.

You cannot leave Next Status Date blank if an engineer is assigned to the call, since the date is needed to update the engineer's availability. This is true even when Schedule New Calls is No in Call Management Control.

The effect of the next status date and time depends on options in Call Maintenance:

- If you are using call scheduling, the next date and time determine when the scheduling sequence attempts to schedule an engineer. These fields determine the default start date and time in the Call Engineer Schedule Maintenance frame.

- If you are using escalations, the next date and time determine when the Escalation Monitor executes the next step in the escalation associated with the call. Each step in an escalation can change the call's status, priority, queue, or notify key individuals about the call.
- If you are not using either of these options, this field is for reference; manually update and track it.

From Quote. Output-only reference field that has a value only if this call was created from a call quote.

Comments. Indicate whether a frame for recording call comments should display. The value in this field defaults from the Call Comments field in Call Management Control, unless comments already exist. In this case, Comments always defaults to Yes.

Event Date, Time. For a new call, the system sets these fields to the system date and time, then updates them along with the call record. If escalation is in effect, the system updates these fields when Escalation Monitor changes an aspect of the call.

Escalation. Enter a valid escalation code set up with Escalation Maintenance. Defaults, in order of priority, from the end user initiating the call, call defaults in effect, user preferences, or the Default Call Escalation field in Escalation Control.

Sequence Number. Represents the next sequence of this escalation to be run against this call by the Escalation Monitor. A sequence is a particular step in a call escalation. You can override the next sequence step to escalate the call rapidly.

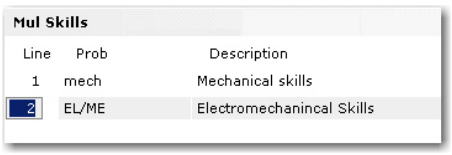
Schedule. Defaults from Schedule New Calls in Call Management Control. If Yes, two frames for scheduling an engineer display: the Availability frame and the Call Engineer Schedule Maintenance frame. To use the scheduling feature of Call Maintenance, create and associate schedules with engineers in Engineer Maintenance. The Availability frame displays engineers in an order based on weighted values defined in Engineer Schedule Control.

Multiple Skills Frame

Use the Multiple Skills frame to define the list of skills that an engineer requires to correct the problem recorded in the call.

To open the Multiple Skills frame, select the Multiple Skills field in the Call Info frame and click Next. Create a separate line for each skill. Engineering scheduling assigns points to engineers if their skills meet a call's skill requirements. See "Engineers and Scheduling" on page 479 for more information.

Fig. 11.23
Multiple Skills Frame



Line. Enter the line number that identifies the skill. To define the skills an engineer requires to resolve a call line, create multiple entries for each call, each with a different line number.

Problem. Specify one of the skills an engineer requires to resolve the call.

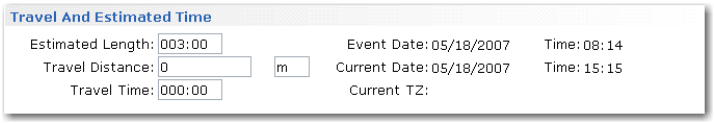
Travel and Estimated Time Frame

The Travel and Estimated Time frame appears only if Call Time Window is Yes in Call Management Control or if the user executing the procedure has set Call Time Window to Yes in Service/Support User Preferences (11.21.23).

If engineer scheduling is being used and Display by Calls is No in Engineer Schedule Control, the system uses the estimated length of the call to calculate engineer availability.

Note Additional fields display if MTZ is active: Event Date and Time, Current Date and Time, and Current Time Zone. See page 110 for details.

Fig. 11.24
Travel and Estimated Time Frame



Estimated Length. Enter the call duration. Defaults first from call defaults, if you are using them, then from the various call lengths associated with different work codes in Call Management Control (11.1.24).

You can define five default call lengths in Call Management Control: one each for PM, Install, Update, and Corrective work codes and a general default that applies to the Technical work code and any others for which a default is not found. This enables you to estimate duration based on the kind of work being performed.

The value you specify for estimated length defaults into the Hours field of the Call Engineer Schedule Maintenance frame as the amount of time the engineer needs for this call. The system adds either the hours for an engineer or the number of calls to determine engineer load, which is used by engineer scheduling to assign points.

Travel Distance. Designates the distance from the support office to the end user; defaults from the value specified in End User Data Maintenance. If you include travel time as part of the call duration, you can adjust the estimate based on the travel distance.

Travel Unit of Measure (M, K). M indicates travel distances represent miles; K indicates kilometers. Defaults from the value specified in End User Data Maintenance (11.9.1), which in turn defaults from Call Management Control.

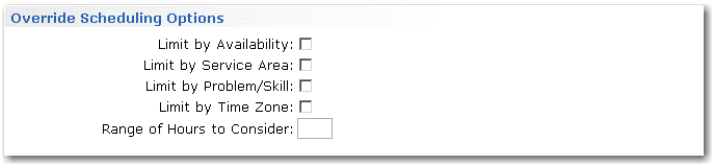
Travel Time. Designates the number of hours required to travel the distance between end-user installation and service office. Defaults from Travel Time in End User Data Maintenance. This field is for reference only and does not affect the estimated call length.

Note If you want the engineer scheduling function to take travel time into account, add it manually to the estimated time.

Override Scheduling Options

If you are using engineer scheduling and Override Scheduling Options is Yes in Engineer Schedule Control, a pop-up displays in Call Maintenance so you can modify the rules by which engineers are included or excluded from scheduling.

Fig. 11.25
Override Scheduling Options Pop-Up



Two additional options—Limit by Time Zone and Range of Hours to Consider—are available when MTZ is active.

Limit by Availability. Defaults from Engineer Schedule Control and indicates whether the system should consider for scheduling only engineers with an available status and available hours or calls on the date being examined.

Limit by Service Area. Defaults from Engineer Schedule Control and indicates whether the system should consider for scheduling only engineers with a service area that matches the area associated with the call.

Limit by Problem/Skill. Defaults from Engineer Schedule Control and indicates whether the system should consider for scheduling only engineers with a skill that matches the call problem.

See “Time Zones and Call Management” on page 109 for details.

Availability Frame

If the Schedule field is Yes for this call and you have completed the setup required for engineer scheduling, a pop-up window displays, where you can select one or more engineers.

You can assign more than one engineer to a call; however, only one is considered the call engineer. This is the engineer code that displays in the Assigned field in the call header. If you select multiple engineers for assignment and no one is currently assigned to the call, the engineer with the highest point score is considered the call engineer.

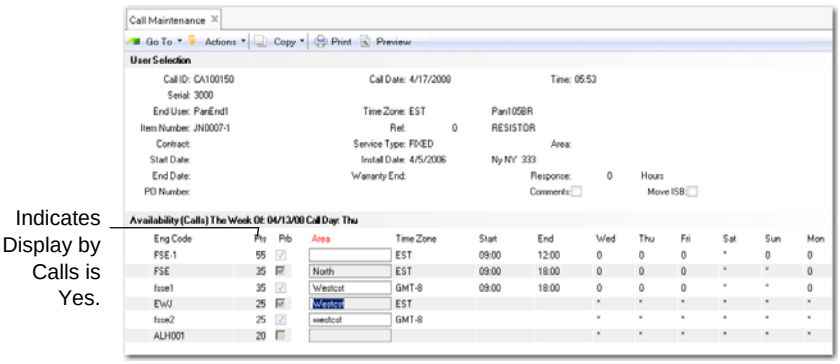
To calculate availability, the system follows these steps:

1. Determines which engineers to include based on their availability status and the limiting options selected.
2. Determines each engineer’s total available hours or calls based on working schedules—detail, master, or on-call.
3. Determines how many hours or calls are assigned each day and subtracts them from the available hours or call load to calculate the engineer’s final availability.

See Chapter 17, “Engineers and Scheduling,” on page 479.

This window's appearance depends on Display by Calls in Engineer Schedule Control. In Figure 11.26, Display by Calls is Yes.

Fig. 11.26
Call Maintenance Scheduling



The system initially displays available engineers prioritized by point totals. Use Pivot to sort the display by area.

The availability frame shows:

- The total number of scheduling points assigned to the engineer. The system calculates points based on the values in Engineer Schedule Control for area, problem, availability, primary engineer, and time zone (when MTZ is active).

  Note Engineer points are used only to recommend engineers for a call; you can still select any one you want.

- Whether the engineer's skill matches the problem (Prb = Yes).
- The engineer's area.
- The work schedule for the engineer, used to calculate availability.

  Note If MTZ is active, the engineer's time zone displays rather than the schedule.

- The time of day the engineer is scheduled to start and stop working on the call's next status date.
- The number of unconsumed hours or calls for the engineer for the day before and two days after the next status date.

An asterisk (*) under a day of the week indicates the engineer is not available, and two plus signs (++) indicate the engineer is available as a result of an on-call schedule.

Note When engineers are scheduled, the system uses an infinite schedule. This means the system does not prevent you from scheduling more than 24 hours in a day or more than the engineer's call load allows. When this happens, the availability points display as a negative quantity.

Select the engineer you want to assign to the call. An asterisk appears to the left of the selected engineer. You can select more than one engineer to assign to each call line.

If an engineer is entered in the Assigned field on the call header, it is not necessary to select the engineer again. Select an engineer if you want more than one engineer assigned to the call. Selecting the same engineer again creates two transactions for the engineer, doubling the individual's load, which is probably not what you want.

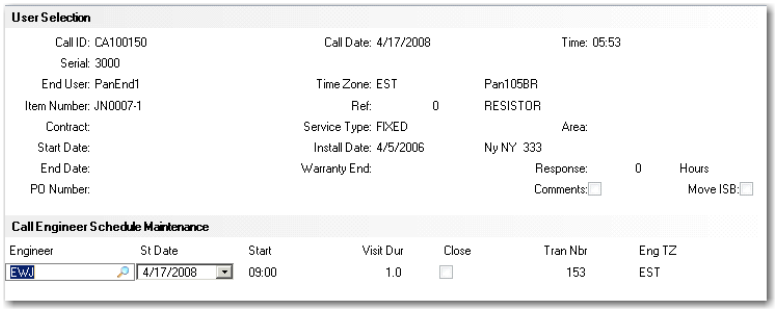
Call Engineer Schedule Maintenance Frame

If Schedule is Yes and you select an engineer, the Call Engineer Schedule Maintenance frame displays.

Use this frame to edit the default scheduling information for this engineer. It is similar to the frame displayed in Engineer Assignment Maint (11.13.15.8), where you can modify the same data. Multiple transactions can exist for one engineer. Use the Next/Previous keys to display all the transactions.

See Chapter 17, “Engineers and Scheduling,” on page 479 for details.

Fig. 11.27
Call Engineer Schedule Maintenance Frame



Note When MTZ is active, the system enters the scheduled start date and time in the end user’s time zone, which displays in the Call Maintenance header frame.

St Date. Defaults from Next Status Date on the call header, but can be modified. If only one engineer transaction exists for a call, updating this field also updates the call’s Next Status Date value.

Start. Defaults from Next Status Time on the call header, but can be modified. If only one engineer transaction exists for a call, updating this field also updates the call’s Next Status Time value.

Hours. The estimated number of hours required for this engineer to complete the call. Defaults from the Estimated Length field. If only one engineer transaction exists for a call, updating this field also updates the call’s estimated length.

Close, Tran Nbr. Output-only field of the call transaction number and a Yes/No field indicating if this call transaction number has been closed.

Eng Area. Displays the service area associated with the engineer.

Note If MTZ is active, this column is replaced by engineer time zone.

Item Service Structure Detail Frame

This frame displays only if Call Structure Window is Yes in Call Management Control or if the user executing the procedure has set Call Structure Window to Yes in Service/Support User Preferences (11.21.23).

Fig. 11.28
Item Service Structure Detail Frame

Engineer Area. Output-only field that displays the assigned engineer's area. If no engineer is assigned, this field is blank.

Site. Indicate the inventory site where repair parts for the item being serviced reside. Call Activity Recording uses the site when parts are issued in the repair of this item. This field cannot be modified once you open reports for this item in CAR. The site associated with the first call item determines the value for the call site on the CAR header.

The system follows a sequence to derive a default site, beginning with an engineer. If an engineer is not assigned in Call Maintenance, the sequence begins with the third step.

- The key site and location the system uses is the one associated with the assigned engineer in Engineer Maintenance (11.13.1). If you leave the engineer site blank and specify a location, the system uses the area site, but the engineer location takes precedence over the area location.
- If the engineer does not have a site or location, the system uses the ones associated with the engineer's area in Area Maintenance (11.15.1).
- If these values are all blank, the system uses the default spares site/location set up in Default Site Maintenance (11.21.13).
- If a site has still not been found, the system uses the site and location defined when the call item was set up in Item Master Maintenance (1.4.1).
- If a site has still not been found, the system uses the site associated with the end user's customer in Customer Data Maintenance (2.1.1).

BOM Code. Must be a valid service BOM set up with Service Structure Maintenance. It defaults from the BOM code for the current work code associated with the item in Service Item by Site Maintenance (11.3.9) first. If no BOM is specified for the site, the system looks for a BOM set up with Service Item Maintenance. For the PM work code, the system uses the PM BOM code; for the install work code, the system uses the install BOM; otherwise, the repair BOM code is the default.

This BOM prints on the call to assist the engineer in servicing the item. It also defaults into CAR and can be auto-loaded into the item usage frames of CAR. This field cannot be modified once you open reports for this item in CAR.

Routing. Must be a valid service routing set up with Service Routing Maintenance. It defaults from the routing associated with the item in Service Item by Site Maintenance (11.3.9) first. If no routing is specified for the site, the system looks for a routing associated with the item in

Service Item Maintenance. For the PM work code, the system uses the PM routing; for the install work code, the system uses the install routing; otherwise, the repair routing is the default.

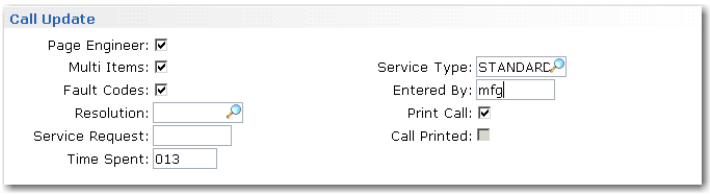
This routing prints on the call to assist the engineer in servicing the item. It also defaults into CAR and can be auto-loaded into the labor/expense and item usage frames of CAR. This field cannot be modified once you open reports for this item in CAR.

Note When a call is referenced on an RMA and you release the RMA to a work order, the system uses the repair routing defined in Service Item Maintenance or Service Item by Site Maintenance on the rework work order, even if you specified a different routing on the call.

Call Update Frame

The Call Update frame always displays.

Fig. 11.29
Call Update Frame



Page Engineer. Indicate if the Engineer Paging frame should display to initiate paging. This field defaults to Yes for a new call when three conditions are true:

- An engineer has been assigned to the call.
- The Dispatcher field in Call Management Control is Yes.
- The selected engineer is a field engineer in Engineer Maintenance.

Multi-Items. Indicate whether the Call Items frame should display. Set this field to Yes if problems for more than one item are being reported on this call, or if you want to view the detail for the first item specified on the call header.

Fault Codes. Defaults from Use Fault Code in Call Management Control. Setting Fault Codes to Yes displays a frame where you can enter various fault, problem, cause, and resolved codes for the first line item on the call. The title of the Fault Code frame displays as `Fault Codes for Call Line x`, so it is clear which line the codes are associated with.

Note To standardize usage, set up values for these codes in Generalized Codes Maintenance.

Resolution. An optional code you define that identifies how the problem is going to be resolved. When you enter a service call, the resolution code may be blank, indicating the call is not resolved. The resolution code is normally filled in later, once the call is resolved or forwarded.

Note Set up values with Generalized Codes Maintenance for the field ca_resolve.

Resolution codes can indicate the type of solution, such as the adjustment or repair that was made, or they can indicate how the call was forwarded, such as the entry of an RMA or service request. The call resolution is typically more generic than the resolution codes in the Fault Codes pop-up.

Service Request. Validated against service requests created with Service Request Maintenance. If you associate a service request with a call when you create it, the SR number displays by default. Since multiple calls can reference the same SR, you can also manually enter an SR number. See Chapter 19, “Service Requests,” on page 511.

Time Spent. The amount of time spent on this service call. Calculating time can be important to service organizations that bill for telephone support time rather than on-site services.

The system can calculate the time spent. If Total Call Time in Call Management Control is Yes, the system tracks the elapsed time in decimal hours from the time you enter the Call Info frame. It stops when you reach the Call Update frame.

If additional time is taken after this, manually increase the time spent. Each time you access a call in Call Maintenance, the system adds any additional time spent to the current total time.

When this field is No, the time spent defaults to zero and must be entered manually.

Service Type. Defaults from the warranty or contract type defined in the call header. While you can modify the service type currently in effect, attributes determined by the previous service type are not changed, including response time, priority, and coverage days. The system considers the limits associated with the new service type, however, in Call Activity Recording. This field cannot be modified once you open a report for the first item in Call Activity Recording.

Set field security on this field if you do not want the default service type modified.

Entered By. A system-maintained field to record the user ID of the person who entered this service call. For reference only.

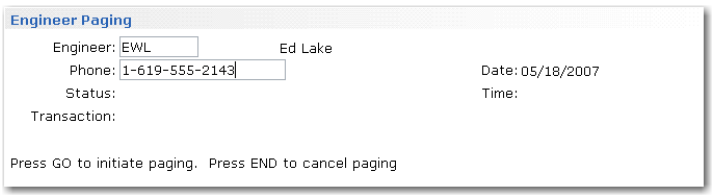
Print Call. If Yes, the system prompts you to enter an output device so the call can be printed directly from Call Maintenance.

Call Printed. This is an output-only field maintained by the system. For a new call, this is always No. When you print a call, the system sets it to Yes. This field is for reference only; it does not restrict the reprinting of the call.

Engineer Paging Frame

If Page Engineer is Yes, the Engineer Paging frame displays.

Fig. 11.30
Engineer Paging Frame



Engineer. The code identifying the engineer assigned to the call displays by default. The employee name of this engineer displays next to the code.

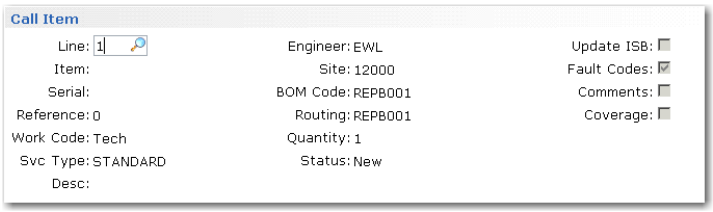
Phone. If the engineer being paged has been set up with a pager number in Engineer Maintenance, it displays in this field. This is the number the system passes to the paging program.

Date and Time are display only. When you click Next, the system initiates paging. Set up the paging program and paging statuses in Paging Control (11.11.24).

Call Item Frame

If Multi-Items is Yes, the Call Item frame displays so you can update information for each line item.

Fig. 11.31
Call Item Frame



Call Line. The line number associated with this item on the call.

Item, Serial, Reference. Uniquely identifies the item being repaired. The reference is the ISB reference number. These fields cannot be updated once you open a report for the item in Call Activity Recording.

Work Code, Engineer, Site. These fields default from the call header, but can be changed for each line item. If this is a new line and you change the engineer, the default site is recalculated based on information for this engineer. Once the record is created, changing the engineer does not change the site.

Svc Type. The system calculates this field based on the item entered. If the item is currently covered by a contract or warranty, the associated service type displays by default. Otherwise, the system uses the default call service type from Call Management Control. This field cannot be updated once you open a report for the item in Call Activity Recording.

BOM Code, Routing. These default from the BOM codes and routings defined first for the item in Service Item by Site Maintenance, then in Service Item Maintenance, based on the work code specified.

Quantity. For an item not in the installed base, quantity defaults to one, but can be modified. If the item added to the call already exists in the installed base, its ISB quantity displays by default. This field cannot be updated once an open report exists for this call line in Call Activity Recording.

Status. This field can be security protected. Displays the current status of the call line. The call line status is important in Call Activity Recording and determines whether the detail recorded for the line should be included on the call invoice.

Normally, the system sets the line status in CAR. The status is available in Call Maintenance to give you added flexibility and control. Each line on a call can have a different status. For example, you can cancel one line found to be unnecessary, while leaving other lines open.

Update ISB. Use this field to decide for each line item on the call if the system should add it to the installed base, overriding other settings. It defaults to Yes when:

- The item is already in the installed base. In this case, Update ISB defaults to Yes regardless of other settings.

- The Installed Base field in Service Item Maintenance is Yes for the item, *and* the Create ISB field is Yes for the current end user in End User Data Maintenance.
- The item is not defined in the item master, but Create ISB is set to Yes for the current end user in End User Data Maintenance.

Note The value of Create ISB for a new end user defaults from the Create ISB field in End User Control.

If the item has been set up in the Item Master as serial or lot-number controlled and a number is not specified, the system sets Update ISB to No and it cannot be changed. Lot and serial-controlled items must be added to the installed base with an appropriate number. If the Item field is blank, Update ISB also defaults to No.

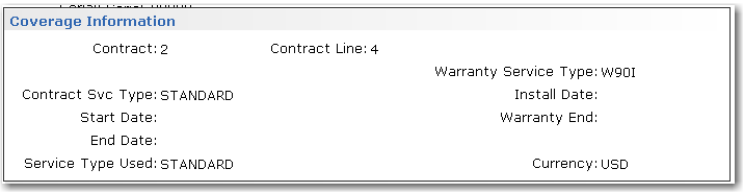
Fault Codes, Comments. These fields are the same as the comparable fields for the first call line in the Call Update frame.

Coverage. Defaults from Coverage Window in Call Management Control. If Coverage is Yes, the following frame displays coverage information.

Coverage Information Frame

When you create a call, the coverage information for the first item displays in the call header. However, each item on a call can be covered by a different contract or warranty. The Coverage Information frame shows detailed information for any line on the call.

Fig. 11.32
Coverage Information Frame



The system uses the call open date to search for effective limits. These limits may be derived from a contract, service type, or warranty, as indicated in the header of the frame. The system also displays the currency associated with the call line.

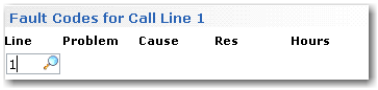
If service coverage limits are derived from a contract, the system includes the amount consumed against the limits in the display.

See “Levels and Limits of Service” on page 128 for details.

Fault Codes Pop-Up

If Fault Codes is Yes, a pop-up window for recording codes displays as illustrated in Figure 11.33. Fault codes are tied to a particular line, as indicated by the heading of the pop-up window. You typically enter fault codes after work on the call is complete and specific data is available regarding the problem and resolution. You can use this data for generating custom call reports.

Fig. 11.33
Fault Codes Pop-Up



Line. You can enter more than one line of information. The system increments the line number.

Problem. Set up problem codes in Generalized Codes Maintenance for field ccd_problem. These codes are generally more specific than the call problem on the call header.

Cause. Set up cause codes in Generalized Codes Maintenance for field ccd_cause. Use these codes to categorize the source of the problems reported on calls.

Resolved. Set up resolution codes in Generalized Codes Maintenance for field ccd_resolution. Use these codes to categorize the solution applied to the reported problem. These codes are typically more specific than those specified for the Resolution field of the Call Update frame.

Hours. Indicate the number of hours spent working on the resolution to the problem recorded on this line. The engineer scheduling sequence does not consider this figure, but it can be important in statistical reporting, especially if one engineer visit addresses multiple problems.

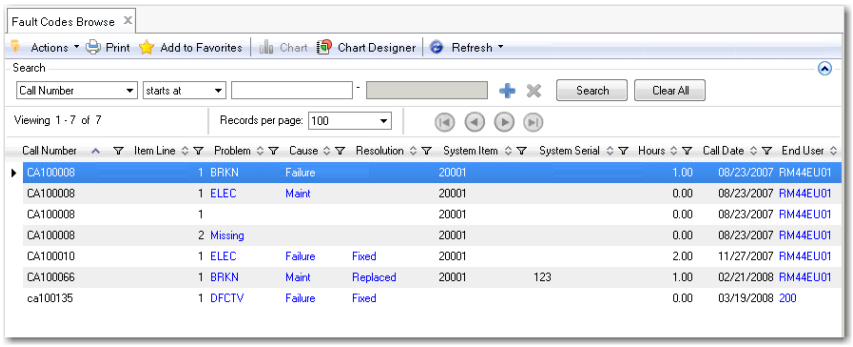
Fault Codes Browse

The Fault Code Browse (11.1.19.7) displays the problem fault code activity associated with calls. Fault codes are generally recorded after work on the call is complete and specific data is available regarding the problem cause.

Using the Fault Code Browse, you can display data on fault codes, end users, engineers, and service types. The browse also includes the ability to drill down for details, such as descriptions or names, and to create sub-groups for data, such as problem codes for items, cause codes for end users, and resolution codes for engineers.

The browse also provides the ability to chart data to display the percentage of each type of problem fault code.

Fig. 11.34
Fault Code Browse (11.1.19.7)

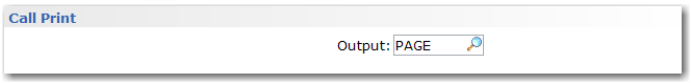


Note Use the Fault Code Analysis operational metric on the Service and Support Operational Metrics page in the Metrics folder to view a snapshot of calls received categorized according to fault codes. This metric allows you to identify the fault codes that occur most frequently and to determine appropriate corrective action, if required. For details on creating or modifying operational metrics refer to *Administration Guide: QAD User Interface*.

Call Print

If Print Call is Yes, the system prompts you to enter an output device.

Fig. 11.35
Call Print Frame

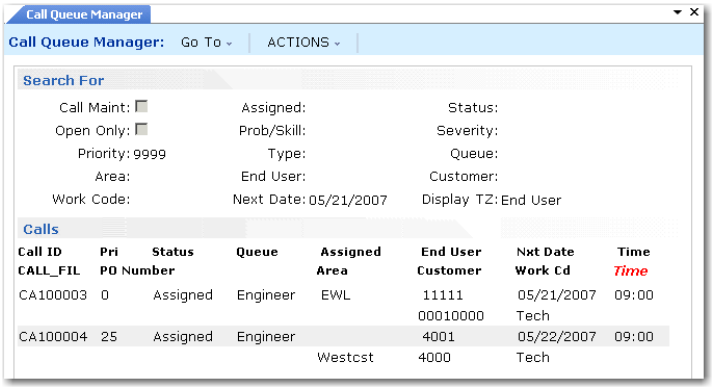


When you print from Call Maintenance, the system includes any BOMs and routings associated with the item in the output.

Monitoring Calls in Call Queue Manager

The Call Queue Manager (11.1.6) is a multipurpose tool for sorting and manipulating call records. In busy support environments, you usually need to view and edit calls according to preselected criteria. For example, a supervisor may scan calls by status, service engineer, or priority.

Fig. 11.36
Call Queue Manager (11.1.6)



You can specify any number of search criteria for reviewing calls.

Note Selecting calls by work code can take noticeably longer than other selection criteria. Keep this in mind when displaying a large number of calls.

When Multiple Time Zones is active, you can select a display time zone to use when reviewing calls. The next status date and time of each call display relative to the time zone selected.

See “Displaying Call Information” on page 112 for more information.

Display Order

The Queue Manager setting in Call Management Control determines how the Call Queue Manager sorts and displays calls. An individual user can override this value with a preference set in Service/Support User Preferences (11.21.23).

Values can be 0 (zero) through 3, and each has a different effect on primary and secondary sort orders:

0 (zero): Displays calls by next date and time. Pivot sorts by end user.

1: Groups calls by assigned engineer, then priority. Pivot sorts by queue.

2: Sorts by the assigned engineer. Pivot sorts by end user.

3: Sorts by area. Pivot sorts by customer.

When you enter the Call Queue Manager, the system displays an informational message describing the sort method currently in use.

Maximizing Display Area

Because of window size restrictions, information for four calls displays at one time. Before calls are displayed, you are prompted to retain visibility of the search criteria. If you respond No, the screen clears before displaying calls. The display area is optimized so that an additional three calls can be included—a total of seven in the character user interface.

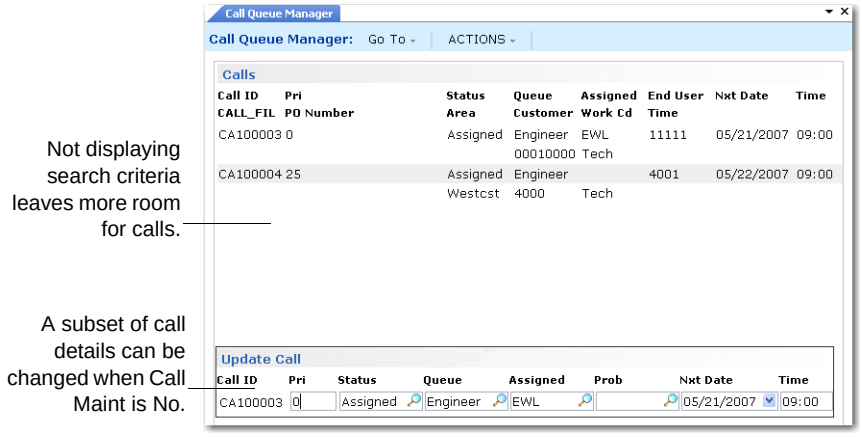
Editing Calls

You can edit call records directly from the Call Queue Manager in two ways, depending on the Call Maint field.

Call Maint is No

Review the list of calls displayed on the window. Press Enter while your cursor is positioned on a call to update call detail.

Fig. 11.37
Updating a Call in the Queue Manager



From this frame, you can change call priority, status, queue, assigned engineer, problem code, and next date and time. A call dispatcher is responsible for monitoring calls and can use this feature to redirect the calls and assign them to appropriate engineers.

Note In Figure 11.37, the search criteria are not displayed, so that more calls are displayed.

Call Maint is Yes

With this setting, pressing Enter on a call in the list takes you directly to Call Maintenance, providing full call editing functionality. This setting is best suited to service engineers who must perform detailed editing of their calls.

The display in the Call Queue Manager is updated automatically, using the time interval in Queue Manager Pause in Call Management Control (11.1.24).

Displaying Calls by Next Date and Time

You can set up the Call Queue Manager to display calls in the order of next status date and time (Queue Manager is 0). In this case, you specify the next activity date to start with in the Next Date field of the selection criteria. The date defaults to the system date. If you have overdue calls, you should set the date to the earliest possible next activity date to view all overdue calls or calls about to become overdue.

When set up this way, the Queue Manager displays the call with the oldest next status date and time first. You can use Pivot to view all the open calls for a particular engineer ordered by oldest open call first.

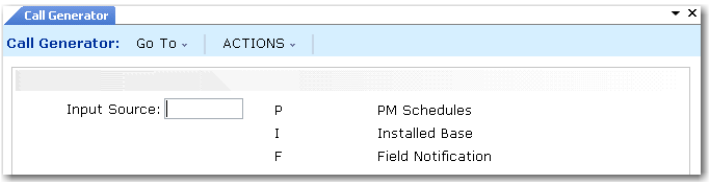
Generating Groups of Calls

You can use Call Generator (11.1.8) to generate three types of calls:

- The next scheduled call on contract preventive maintenance schedules
- Calls for a range of items in the installed base
- Calls related to field notifications

Input Source in the initial Call Generator frame determines the kind of call generated.

Fig. 11.38
Call Generator Initial Frame (11.1.8)



This section discusses generating calls for PM schedules and installed base items. The chapter on the installed base discusses generating calls for field notifications.

You can also use the Call Generator to generate PM calls for items in the installed base, apart from a PM schedule—internal maintenance schedules for your own equipment, for example. Or, you can use it to generate calls to remind end users without contracts that equipment is due for PM, thus generating extra service revenue.

See “Creating Field Notifications” on page 52.

Important This utility can generate a large number of calls at one time. If run by mistake, it may take some time to eliminate the unneeded calls. You should limit who can run this program using security features. When generating calls, consider running the program in batch.

Generating PM Calls

If Create PM Calls is No in Contract Control, the system creates preventive maintenance schedules, but does not actually generate calls. Instead of going through the Contract Maintenance sequence again, generate the calls using the Call Generator

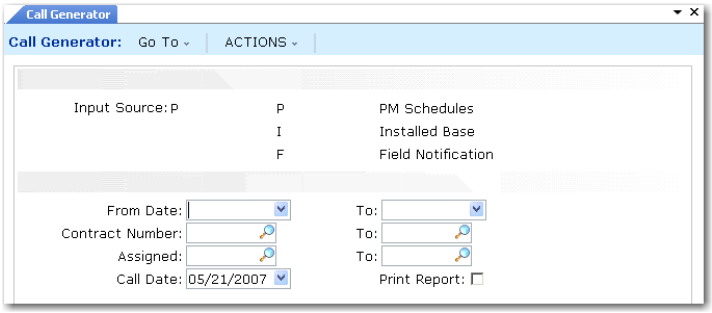
Other reasons may influence you to create PM calls with the Call Generator rather than with Contract Maintenance. The Call Generator offers more control over the calls, since you can specify a call open date. This is important because the system searches for valid coverage limits based on the call open date.

The Call Generator also enables you to keep the number of open calls to a minimum, since calls need not be created until near the time service is due. These issues are discussed in more detail in Chapter 10.

See “Using the Call Generator” on page 258.

Figure 11.39 illustrates the Call Generator when Input Source is P.

Fig. 11.39
Call Generator for PM Calls



You can generate calls based on a range of schedule dates, a range of contract numbers, and a range of assigned engineers.

When Create PM Calls is Yes in Contract Control, the system creates only the first call on a PM schedule. In the call generator, one call is created for each scheduled date within the date selection range. If your date range is wide, more than one call may be created for a particular schedule.

Example A item on a contract has a visit scheduled every 30 days, starting on 01/01/07. You execute the Call Generator with a date range of 01/01/07–03/01/07. Three calls are generated for this item.

You can generate a report listing the calls created during the execution of the Call Generator. If you choose not to generate a report, a message displays when the program completes, indicating the number of calls created and the range of call numbers.

Note To execute the program in batch, specify Yes to Print Report.

Generating Installed Base Calls

You can also use the Call Generator for items in the installed base. Use this feature to meet many needs relative to installed base updates that do not require the additional level of control provided with field notifications.

When creating calls for installed base items, specify a work code. The system uses appropriate defaults set up with Call Default Maintenance, if available. If you specify the PM work code, one field of the item selection criteria changes. Instead of selecting installed base items based on ship date, you can select items based on their last PM date.

You can also combine calls for items in the installed base, so the items for one end user are put on one call. Only one currency can be used on the call.

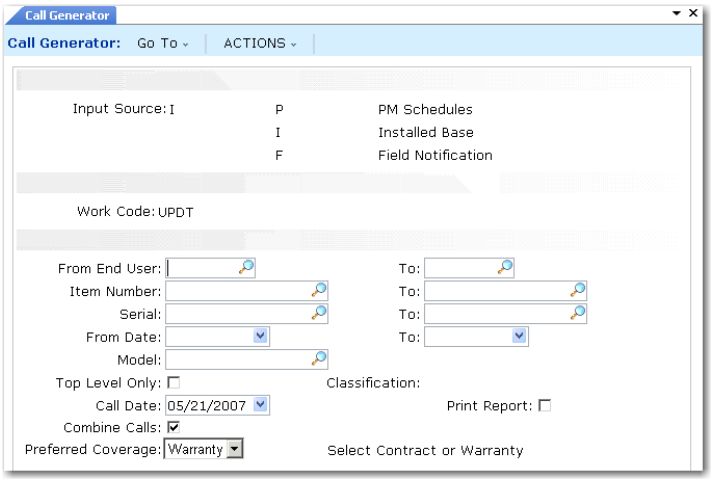
See “Call Currency” on page 280.

Items in the installed base may include a product structure beneath them. To limit calls to parent items only, set Top Level Only to Yes. If you are using classification codes to group items in the installed base, you can also select items using a code.

See “Classifying ISB Records” on page 30.

Figure 11.40 illustrates the Call Generator when Input Source is I.

Fig. 11.40
Call Generator for Installed Base Calls



Work Code. The default is blank. Enter any valid work code defined with Work Code Maintenance. The system uses the work code specified for calls generated and finds call defaults created in Call Default Maintenance.

From End User, To. This field can be blank. If it is not, the system creates calls only for end users within the range.

Item Number, To. This field can be left blank. If it is not, the system creates calls only for installed base items with numbers within the range.

Serial, To. This field can be blank. If it is not, the system creates calls only for installed base items with serial numbers within the range.

From Date, To. This field can be blank. If it is not, the system creates calls only for item numbers with a date within the specified range. Select items on PM schedules based on a range of last PM dates. Select items in the installed base based on a range of ship dates.

Model. If you are tracking installed base items by model number, enter a model number in this field to include only items with this model in the calls generated.

Top Level Only. Set to Yes to create call lines only for parent items. Set to No to create call lines for each item in the installed base configuration.

Classification Code. Optionally enter a classification code for grouping installed base items. When specified, calls are generated only for items with this classification and all codes beneath it in a hierarchy. See “Create Classification Codes” on page 33.

Call Date. Defaults from the system date, but can be modified. Specifying an open date for calls generated during this execution of the Call Generator gives you more control over when the system begins processing the calls. This can be especially significant if you use effective dates on coverage limits, since the system uses the call open date when determining coverage terms that apply to an item.

Combine Calls. Specify Yes to generate one call for each end user. The system creates multiple lines for each installed base item for this end user. Specify No to create one call for each installed base item.

Preferred Coverage (Warranty/Contract). The system uses this value if overlapping coverage exists for an installed base item.

Print Report. Indicate whether the system should generate a printed report listing the calls created.

No: A report is not generated, but a message does display when execution completes indicating the number of calls created and the range of call numbers.

Yes: You are prompted for an output device for the report and Batch ID. Set to Yes to run in batch.

Managing Call Status Changes

You can define any number of call statuses, representing various stages in the call life cycle. You can move a call from one status to any other, unless the status is the Complete, Closed, Hold, or Cancel status defined in Call Management Control.

In these four cases, the system checks to ensure that the status change is valid. Many of these validations are related to the kind of transactions that have taken place in Call Activity Recording. Table 11.5 summarizes the validations the system makes when completing, closing, or canceling a call. The following sections provide more detail.

Table 11.5
Requirements for Call Status Changes

	Complete	Close	Cancel
No reports	Error	OK	OK
No invoiceable or invoiced detail	Error	OK	N/A
Reports exist	OK	OK	Error
Open MO	OK	Error	Error
Temporary Customer (Call Activity with Temp is No)	Error	Error	OK
Temporary Customer (Call Activity with Temp is Yes)	OK	OK	OK
Reports on Hold (call line)	OK	Error	N/A
Reports on Hold (call)	Error	Error	N/A
Status of line is not closed, complete, or canceled	Error	Error	N/A
Invoiceable report has unprocessed transactions	Error	Error	N/A

Completing a Call

The complete status indicates a call is ready for invoicing, or a report has been invoiced. Since recording activity in Call Activity Recording is a preparation for invoicing, the system always attempts to set the call line and call status to complete, unless Close on Recording is Yes in Call Management Control. In this case, the system attempts to close the lines and the call first. If this does not succeed, then the system attempts to complete it. If that fails, the line and call statuses are unchanged, with one exception. If the line was previously complete or closed, the system sets it to the open status.

Requirements to Complete a Call Line

The system makes a number of checks before a call can be completed, at three different levels: call, call line, and line reports. If it encounters any errors when trying to complete lines, it displays a message.

The status of lines that cannot be completed is unchanged, unless they were previously closed or completed. This could happen if you added more detail to a previously complete line. In this case, they are reset to the open status. If you try to change the line status to complete, the system produces more precise error messages.

Existence of a Report

Since completing a call line is preparation for invoicing and valid afterward, at least one report must exist with an invoiceable or closed status and fully processed detail, or a message displays.

Call Status

To complete a line, the current status of the call cannot be closed, canceled, or hold. If it is, a message displays.

Open MOs

The system warns the user if open MOs are attached to the call or call line. This is only an error when the status is closed. The call cannot be closed until all quantities on the MO are either consumed or returned.

Temporary Customer

If the call was created for the temporary customer specified in Call Management Control, Call Activity with Temp must also be Yes in the control program. Otherwise, an error is generated. This error does not occur under normal circumstances, since if Call Activity with Temp is No, you should not be able to access the call in Call Activity Recording to create a report.

Requirements to Complete a Call

The requirements to complete a call are more stringent than to complete a line, since all call lines must be either closed, complete, or canceled. To complete a line, the system verifies that at least one invoiceable report exists. To complete the call, however, the system verifies that all reports associated with a complete line are either closed or invoiceable with fully processed detail. If a call cannot be completed, a message displays in the Call Status frame of CAR.

If you attempt to manually change the call status to complete, the system generates more exact errors listing line numbers with open reports.

Open MOs

The system warns the user if open MOs are attached to the call or call line. This is only an error when the status is set to closed. The call cannot be closed until all quantities on the MO are either consumed or returned.

Line Status

To complete the call, all lines must be closed, completed, or canceled, or a message displays.

Existence of a Report

Since completing a call is preparation for invoicing, at least one report must exist with an invoiceable status and fully processed detail. If the call has since been invoiced, the complete status is still valid if closed reports exist. However, if you have canceled the lines on the call, you cannot set the call status to complete; you must close or cancel it.

If you are finished with a call without recording activity, you must close it, but not complete it. Warning messages display if the system cannot complete the call or line.

Report Status

Two checks are made on the status of reports created for the call in Call Activity Recording. If a report exists, but has no transaction detail, you must close it before the call can be completed or a message displays.

If you create reports in CAR and record transaction detail, the report status must be invoiceable or closed. The system sets the report status to H (hold) if it encounters any errors while issuing inventory. A call with a report on hold cannot be completed.

Closing a Call

A call is closed when its status is set to the Close Status in Call Management Control. This status is the final status of a call and indicates service activity for this call is finished and ready for invoicing. Once a call is closed, you can record no more activity. However, you can reopen closed calls by changing their status.

If you take calls for items that are not in the installed base, the system creates an installed base record when the status of the call is set to closed. Normally, however, if any activity has been recorded for the call, the installed base record is created in Call Activity Recording. You can also move closed calls that are fully invoiced to history and then archive and remove them from the system.

Close calls from the following functions:

- Call Maintenance
- Call Activity Recording
- Call Queue Manager
- Engineer Assignment Maintenance

With slight variations, each program makes similar verification and produces similar effects. You cannot use escalation sequences to close calls automatically.

Effects of Closing a Call

The system takes a number of actions when a call is closed.

- If the call is for an item that is not yet in the installed base and no activity is recorded in Call Activity Recording, the system can create an ISB record when the call is closed. You can decide per line item which items to add to the installed base. If activity is recorded, the ISB record is created in CAR, rather than at call closure.
- Engineer transactions for the call are closed.
- If the call was generated as part of the PM scheduling sequence in Contract Maintenance and Create PM Calls is Yes in Contract Control, the system generates a new PM call. It is scheduled for the next open date on the contract’s PM schedule.
- If the install work code is associated with the call, the system sets the installation date, next PM date, warranty duration, and warranty expiration based on the call closure date and time.
- The system clears the call next status field, as well as the next status date and time, since no more activity is expected for this call. In addition, the call close date and time are set.

Differences Between Complete and Closed

Both complete and closed can mean you are done with a call except for creating the invoice. Complete is much less final than closed. You can close a call with no intention of creating an invoice. However, to be complete, invoiced or invoiceable reports must exist on the call. Some other differences include:

- MOs can be open for a complete call, but not for a closed call.
- Closed calls can be archived and deleted.

Requirements to Close a Call

The system makes checks at three levels before a call can be closed: call, call line, and line reports. When the system detects an error, it stops checking and displays the error. If possible, it also displays the source of the error by indicating the line number or the report number that did not pass verification.

Note A call can be either closed or canceled if no activity has been recorded. How you want to use these two statuses is up to you.

Multiple Engineers

If more than one engineer has been assigned to the call, it cannot be closed from Engineer Assignment Maintenance. This restriction prevents one engineer from updating the call status when another engineer is not finished.

Open MOs

No open MOs can be attached to the call. If an MO was associated with the call, the call cannot be closed until all quantities on the MO are either consumed or returned.

Temporary Customer

If the call was created against the temporary customer specified in Call Management Control, Call Activity with Temp must also be Yes in the control program.

Line Status

Each line item on the call with reports must have a status of closed, complete, or canceled, or a message displays. You can still close a call directly from Call Maintenance if you have not recorded any activity against it.

Report Status

Two checks are made on the status of reports created for the call in Call Activity Recording.

- If a report has been created but has no transaction detail, you must manually close it before the call can be closed. Otherwise, the system assumes this report still needs to be invoiced and generates an error if you attempt to move the call to history.
- If you create reports in CAR and add transaction detail to them, the status of the report must be invoiceable or closed or a message displays. The system sets the report status to H (hold) if it encounters any errors while issuing inventory. A call with a report on hold cannot be closed.

Report Transactions

If detail has been recorded in Call Activity Recording, the system verifies that all inventory has been successfully issued. It also verifies that all labor and expense transactions have been posted to the proper GL accounts. If not, a message displays.

Moving Calls to History

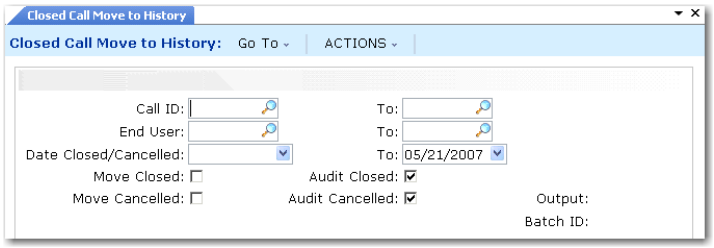
Maintain complete call history online by moving closed and canceled calls to a separate history table. While closed calls no longer appear in the Call Queue Manager unless you specifically request them, they do appear on call browses, inquiries, and reports until you move them to history. Moving them to history can reduce the number of records you need to review to find calls being worked on.

You can review, but not modify or invoice, data related to calls in the history table with Call Print with History Report (11.1.1.5).

Select calls to be moved by range of call ID, by range of end user associated with the call, or by the close date. You can move only closed calls, only canceled calls, or both closed and canceled calls matching the other criteria by changing the Move Closed and Move Canceled field values.

You can also produce a report of calls that would be affected by setting both Move fields to No and both Audit fields to Yes. The report is generated to the specified output device.

Fig. 11.41
Closed Call Move to History (11.1.1.21)



Executing Closed Call Move to History (11.1.1.21) copies closed or canceled calls within the specified date range from the call master (`ca_mstr`) table to the call history (`chm_mstr`) table, then deletes the call from the call master. You can keep or delete and archive this history with Call/Quote History Delete/Archive (11.1.1.23).

Note Canceling a call sets the close date in the same way closing it does.

Canceling a Call

A call can be canceled only if no activity has been recorded for it. The cancel status is an important metric tool. Many times customers call in a panic and log a call. When they have calmed down, they realize the source of the problem and call back to cancel the call.

Tracking the number of canceled calls can be useful in determining if there is an educational problem with users at a site. It may support an opportunity to do some marketing for training revenue or update products so they are more user friendly.

Note You can move canceled calls to history and archive/delete just like closed calls.

Effects of Canceling a Call

Canceling a call has many of the same effects that closing a call does.

- If all the conditions are met, the system prompts you to add an item to the installed base when a call is canceled. This is so you can record that this end user has the item, even though the reported issue turns out to be invalid.
- The system closes the engineer transactions for the call if more than one engineer was assigned to it. Any estimated hours calculated as part of the engineer's work load for engineer scheduling purposes are removed.
- If the call was generated as part of the PM scheduling sequence in Contract Maintenance, the system generates a new PM call and schedules it for the next open date on the contract's PM schedule.
- The system clears the call's Next Status field, the Next Status Date, and the Next Status Time, since no more activity is expected for this call. In addition, the call close date and time are set.

Requirements to Cancel a Call

Two requirements must be met to cancel a call. The system makes the same checks if you cancel an individual line.

Open MOs

Open MOs cannot be attached to the call. If you associated an MO with the call, you can only cancel it when all quantities on the MO are either consumed or returned, or an error displays.

No Reports

No reports can exist for the call. An error displays even if no detail has actually been recorded. If no service is required for a call and a report has been opened, you can manually close the report and close the call, but you cannot cancel it.

Placing a Call on Hold

You can place any call on hold. When a call or call line is on hold, you can record activity for it only after you change its status. MOs cannot be ordered for it. In addition, an invoice cannot be generated in CAR. Since you may want to invoice for activity already recorded for a call on hold, you can generate an invoice in Call Invoice Recording, but a warning displays.

When placing a call on hold, you are warned if any of the following conditions exist.

Open MOs

A warning displays if an MO is attached to the call with quantities that are neither consumed nor returned.

Incomplete Report Transactions

If detail has been recorded in Call Activity Recording, the system warns you if all inventory has not been successfully issued. The system also warns you if all labor and expense transactions have not been posted to the proper GL accounts.

Creating a Parts List

Parts List Maintenance (11.1.10) enables you to create and maintain a list of parts for an item referenced in a Call Maintenance (11.1.1.1) call line.

After you enter the call ID for which to define the list of parts, the system loads the corresponding item and end user. You can then define the relevant call line number and begin building a parts list.

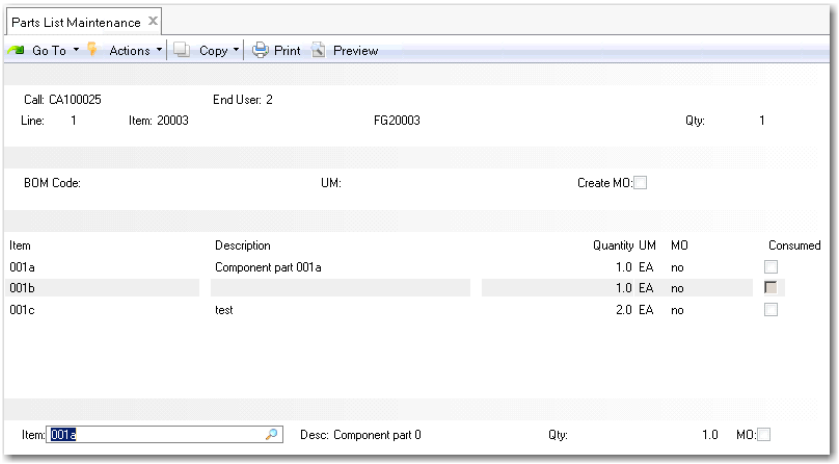
You can create a new parts list or base the parts list on an existing Bill of Materials (BOM). The system displays an existing BOM, if one was already associated with the call line. However, you can update this value. If you change the default BOM, the call line in Call Maintenance is also updated. When you specify or update the BOM code in Parts List Maintenance, the system displays a scrolling frame that lists its constituent parts. You can then add any other required parts to that list.

If any items on the parts list are unavailable, you can generate a material order for them. The system then associates the material order with the call line defined in the header. You can create a single material order for each parts list line, but a parts list in total can have multiple material orders. If you create a material order for a line on the parts list, the line cannot be edited in Parts List Maintenance. You must use Material Order Maintenance (11.11.1).

The Consumed field next to each parts line indicates which items have been placed on a Call Activity Recording (CAR) report. If you select an item row that has not been placed on a CAR report, an additional frame displays, enabling you to edit the Item Number, Quantity, and Material Order fields for the parts line. You can also delete a part from the list if it has not been placed on a CAR report.

When you have defined the parts list, you can optionally save it as a new service BOM code/service structure. If you select Yes, you must enter a new BOM code, a start effective date, and an end effective date. You must also define the engineer who requires the part and a ship-to address ID.

Fig. 11.42
Parts List Maintenance (11.1.10)



Call. Specify the call for which you want to define a list of parts. The call ID identifies a call as it moves through its life cycle. The call must already be recorded in Call Maintenance.

End User. Displays the end user who initiated the call. This value defaults from Call Maintenance.

Line. Specify the call line for which to define a list of required parts.

Item. Displays the item that requires service.

Qty. Displays the quantity of the item on the call line.

BOM Code. Displays the BOM code defined for the item. This defaults from the call line's BOM code.

You can update the default BOM code to another code. This action also updates the call line in Call Maintenance.

UM. Displays the unit of measure for the BOM.

Create MO. Select the field to create material orders for all items on the BOM.

If you do not select the Create MO field at this stage, you can still create MOs for individual parts by selecting and editing the lines (if the items have not been placed on a CAR report).

Note When you associate a material order with a line on the parts list, you cannot edit the line in Parts List Maintenance. Use Material Order Maintenance to make any subsequent changes.

Item. Displays the items that comprise the BOM.

Description. Displays a description of the item.

Quantity. Displays the quantity of the item required for the BOM. You can edit the quantity by selecting the line, which opens the record in the end frame of the screen.

MO. Indicates whether a material order has been generated for the item. If generated, the field will display the associated material order number. If the field is selected, a material order will be created for that item. If no material order has been generated, you can edit the value in the field by selecting the line, which opens the record in the end frame of the screen.

Consumed. Indicates if the item has already been placed on a CAR report. If you select an item row that has not been placed on a CAR report, an additional frame displays, allowing you to update the item number, quantity, and Material Order field. You can also delete a part from the list, if it is not on a CAR report.

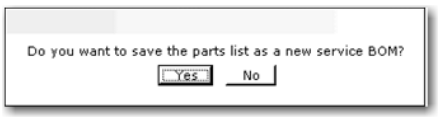
Item. You can add to the parts list by specifying an item number that is not already on it. The new item record is then added to the list.

Qty. Enter the quantity for a new parts list item. If an existing item has not been placed on a CAR report, you can update its quantity also.

MO. Select the field to create a material order for the item.

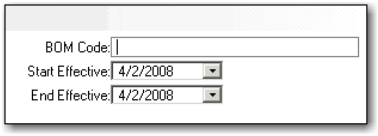
If you add new items to a BOM or create a completely new parts list, you can save the parts list as a new BOM service structure.

Fig. 11.43
Save as New BOM Dialog



If you select Yes, a pop-up window opens that enables you to specify the new BOM code.

Fig. 11.44
New BOM Code Pop-Up



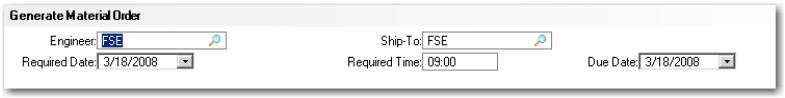
BOM Code. Specify the new BOM code.

Start Effective. Specify the date from which the new BOM code is effective.

End Effective. Specify the date on which the new BOM code will become inactive.

If a material order has been created for any part in the new service structure, the Generate Material Order Frame frame displays, which lets you specify the information used to create the material order.

Fig. 11.45
Generate Material Order Frame



Engineer. Specify the engineer who requires the new part. The default value is the engineer associated with the call line.

Ship-To. Specify the destination for the material order. It can be the engineer's address or an associated end user address.

Required Date. Specify the date on which the engineer requires the part. The default is the call's next status date.

Required Time. Specify the time the engineer requires the part.

Due Date. Specify the date on which the part is due. The default is the call's next status date.

Maintaining Depot Orders

Use Depot Order Maintenance (11.1.2.1) to manage depot orders. Depot orders cannot be created manually: a depot order is a service call that is associated with a work code that has Repair Center set to Yes.

The header frames of Depot Order Maintenance contain fields that display information defaulted from the call: call ID, sold-to, bill-to, name and address, and ship-to information. Other fields are used to record receipt and delivery data. The Confirmed field defaults to Yes; it can be set to No to indicate that customer authorization for the repair has not yet been received. Other fields on the headers contain tax environment, salesperson, and freight-related information.

When entering information about a specific line item, you indicate the repair type for the item: Repair or Replace. If Replace is selected, the system automatically generates a second depot order line with a repair type of Replacement.

You use the Item Repair Data frame to record information about the item repair; for example, if the repair type is Replacement, you can specify an alternate item ID. The alternate item ID would then be used by the system when a repaired end-item is returned to inventory (that is, restocked) rather than sent back to the customer. Restocked items often use an alternate item ID to indicate they are restocked, as opposed to new, items.

You also can use the Item Repair Data frame to record BOM code, routing, service type information, and pricing information. You can use either fixed pricing or time and materials pricing types.

Use the Item Receipt frame to record receipt information for the returned item: receipt date, quantity, site, and so on. An Item Receipt Shipment Data frame displays shipment information, such as the actual date of shipment; this frame is updated when the repair or replacement item is shipped out using sales order shipments or the workbench.

If a depot order line is identified as being a replacement repair type, an MO is created automatically for this line using the alternate item ID if one has been specified on the depot order; otherwise the MO uses the item ID. The remainder of the information required to create the MO defaults from the depot order/call. The system uses the existing credit checking functionality to ensure that the order does not exceed authorized credit limits.

Use the Depot Order browse (11.1.2.2) to view information about current depot order records, such as status of the call/call line, receipt, and shipment dates.

Depot Order Maintenance Flow

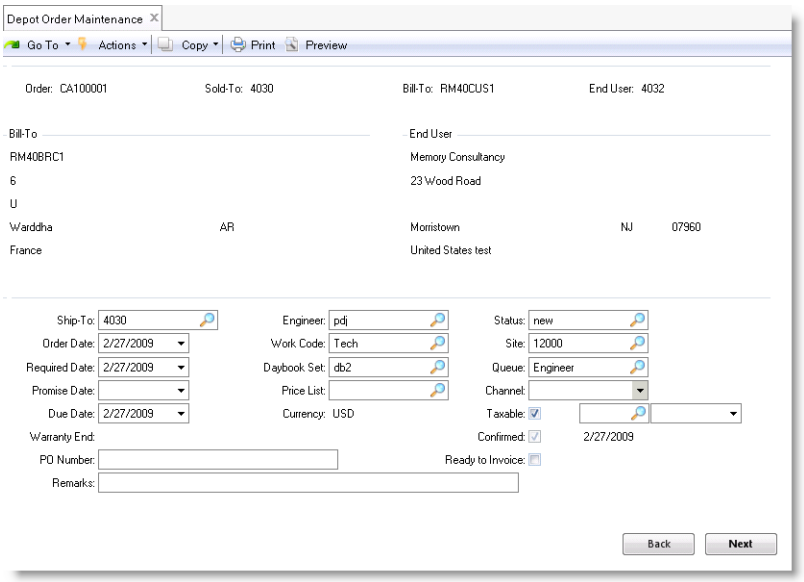
Depot order maintenance occurs in the following order:

1. Fill out the Depot Order Maintenance header, including customer, end user, and call, and coverage information specific to depot order processing. This sets up default values for line item issues and receipts.
2. Specify items to be shipped to the customer.
3. Specify items to be received from the customer for repair or replacement.
4. Enter trailer information, including trailer codes, tax, and standard credit information.
5. Complete the trailer that totals billing amounts and trailer codes.
6. Optionally ship or receive directly from Depot Order Maintenance. You can also use the separate ship and receive functions.

Header Frame

Figure 11.46 illustrates the header frame that displays basic identifying information about the depot order. Many field values are defaulted from the call information.

Fig. 11.46
Depot Order Maintenance (11.1.2.1), Header Frame



Order. Enter a valid depot order number. Valid order numbers are those for service calls that are associated with a work code that has Repair Center set to Yes.

Sold-To. This read-only field displays the customer associated with the call's end user.

Bill-To. This read-only field defaults from the Sold-To value unless you define the sold-to address with a different bill-to.

End User. Defaults from the bill-to address.

Ship-To. Defaults from the End User ID. If you update it, the value must be a valid ship-to assigned to the sold-to.

Order Date. Displays the call date of the associated call. Order Date defaults from the system date. You can change this value. For example, if you take an order over the phone and do not enter the order into the system until three days later, you can change the date to reflect the day you took the order.

Required Date. Enter the date on which the customer requires the item to be delivered. If left blank, this field defaults to the due date.

Promise Date. Indicate the date the customer was promised delivery. The promise date can be different than the due date. Promise dates include delivery transit time, while due date is the date the items must be ready for shipment.

Due Date. Enter a date on which the repaired item is due to be shipped.

Warranty End. This read-only field displays the warranty end date based on the warranty duration and install date.

PO Number. Specify a purchase order number for the item associated with this call. This field is required if the end user reporting the problem has been defined in End User Data Maintenance as requiring a purchase order.

Remarks. Any remarks specified for the sold-to customer display by default. You can change these to make them specific to this depot order. Remarks display on printed documents.

Engineer. The code identifying the engineer assigned to the call displays by default. The employee name of this engineer displays next to the code.

Work Code. Defaults from the call. Work codes designate what type of work is performed during service activity. You can enter another work code that has Repair Center set to Yes, if required.

Daybook Set. Enter the daybook set that will be used when this order is invoiced. This value defaults from Customer Data Maintenance. At Invoice Post and Print, the system assigns an invoice number based on one of the daybooks in the specified set.

Price List. This read-only field displays the price list used to calculate the line item price. For a replace line, this value will always be 0.

Currency. Defaults from the currency of the customer bill-to record associated with this call. The first time through, you can select any currency, but after you move to the next frame, you cannot change the currency.

Status. Enter an 8-character code identifying the call status. Calls that have been recorded but have not yet been acted upon are typically given a New status. Once the associated item has been inspected and the customer has accepted the service quote, the status must be updated to indicate the depot order/call can be acted upon.

Site. Indicate the inventory site where repair parts for the item being serviced reside. Depot Order Maintenance uses the site when parts are issued in the repair of this item.

Queue. Defaults from the call and indicates the queue to which you assigned this call. Set up queues with Call Queue Maintenance (11.1.21.7).

Channel. Specify an optional code identifying the distribution channel through which this depot order originated. Channel can be used to determine GL sales and COGs accounts affected by inventory transactions. This field is validated against Generalized Codes Maintenance (36.2.13).

Taxable. Enter Yes if activity for this call is subject to tax; otherwise, enter No. The tax status defaults from the end-user tax data.

Confirm. The default is Yes. You can set this field to No to indicate that customer authorization for the repair process has not yet been received. This field must be set to Yes in order to ship items against this order.

Ready to Invoice. This field is initially set to No. After you have shipped or received items, the system sets it to Yes. Invoice Post and Print examines this field. It must be Yes before you can post the invoice. You can change the field to prevent invoicing. If you ship more items later, the system sets Ready to Invoice to Yes so the depot order can be selected the next time invoices are posted.

Ready to Invoice cannot be set to Yes if an open MO exists. In addition, for a repair or replacement line, at least one shipment line must have been shipped. For a replace line, the line must be completed.

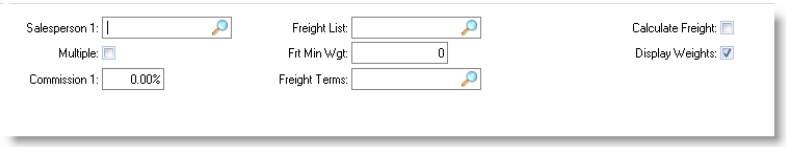
When you click Next, the tax environment pop-up window displays fields related to the tax usage, tax environment, and so on. These fields default from the depot order header. For details about these fields, refer to *User Guide: QAD Financials*.

When you click Next, the pop-up window exits and the second header frame of Depot Order Maintenance displays.

Second Depot Order Header

For depot order lines that are not replace lines, a second header frame displays when you click Next on the first header frame.

Fig. 11.47
Second Depot Order Maintenance Header Frame



Salesperson 1. Defaults from the sales person for the sold-to address. Identifies the salesperson to receive commission and quota credit for this depot order. The salesperson information on each line item defaults from the salesperson and commission rate on the header. You can change it on each line item. To change the salesperson on a line item, set Multiple to Yes.

Multiple. Indicate whether more than one salesperson is responsible for this depot order. If this field is Yes, a pop-up window prompts you to enter up to four salesperson codes.

Commission 1. Specifies the commission percentage this salesperson is to receive. Besides the normal commission rate for the salesperson, you can enter commission rates for sales to specific customers or sales of specific product lines.

Freight List. Defaults from the freight list for the sold-to address. Freight list codes identify a set of shipping rates for different zones and shipping weights or units. The freight list on the header sets the default for each line item.

Freight Minimum Weight. Defaults from the freight minimum weight for the sold-to address. This field is the minimum weight on which to base the shipping charge if the freight list type is bulk. This field does not apply to freight lists of type unit. For bulk freight lists, shipments that weigh less than this amount are charged based on a minimum weight charge, not the shipment weight.

Freight Terms. Defaults from the freight terms for the sold-to address. The freight terms determine how the system applies freight charges. They can be added to the order trailer, added to the unit cost for each ordered item, displayed as a freight allowance, or not calculated.

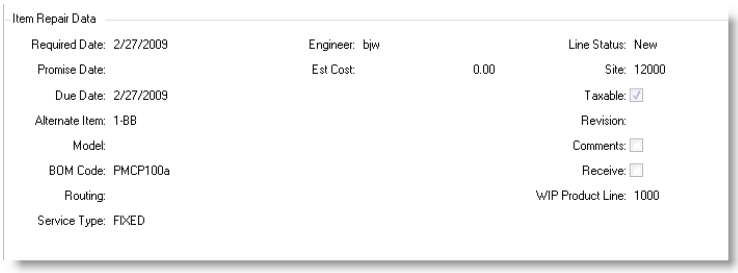
Calculate Freight. Defaults to Yes for a new order; otherwise, defaults to No. If Yes, the system calculates site- and currency-specific freight charges on RMAs. Charges can be calculated for the line item's shipping weight for unit price lists or for the order's total shipping weight for bulk price lists. Calculated freight charges appear on the trailer.

Display Weights. Specifies whether to display the Freight window for each line item, which enables you to enter or modify data in the Freight Class and Freight Ship Weight fields. For inventory items, these fields default from the item master. For memo items, you must specify them. The Freight window also shows information the system uses to calculate freight for the line item, so you can review freight amounts easily.

Line Frame (Repair Data)

When you click Next on the second depot order header frame and select the item, the Item Repair Data frame displays. This frame allows you to record information about repair dates, pricing details, alternate item ID, and so on.

Fig. 11.48
Item Repair Data Frame



Item Number. Specify the number of the item requiring service. If the end user supplied an installed base serial number, the system fills in this field. If this item is in the installed base, it must belong to the end user entered previously.

Quantity. By default, this field displays the quantity of the item from the ISB. For a repair line, if the work code is not fixed, this field can only contain a value of 1.

Unit of Measure. This field defaults from Item Master Maintenance.

Lot/Serial. This field defaults from the call line item.

Repair Type. Indicates the type of the repair being performed to the returned item. You can modify this field when the value is Repair.

Required Date. Enter the date on which the customer requires the item to be delivered. If left blank, this field defaults to the due date.

Promise Date. Indicate the date the customer was promised delivery. The promise date can be different than the due date. Promise dates include delivery transit time, while due date is the date the items must be ready for shipment.

Due Date. Enter a date on which the repaired item is due to be shipped.

Alternate Item. If entering a replacement line, you can enter an alternate item number for the depot order line. This value is used only for internal tracking by the system.

This field is used when a repaired end-item is to be returned to inventory (restocked) rather than returned to the customer. Restocked items often use a different item number to indicate they are repaired items, not new items.

The Alternate Item is the item ID for inventory issued out of the stockroom on an MO, consumed against the depot order, and then shipped to the customer. The item number, not the alternate item number, is invoiced.

This field can be left blank even if the order line is for a replacement item. In this case, you may want to retrieve a new item from inventory and ship to it the customer, as opposed to a rotable/restocked item.

Model. Enter the model number associated with this item. Many organizations service products by model.

BOM Code. Enter a valid service BOM for the part set up with Service Structure Maintenance.

Routing. Enter a valid routing code for the part set up with Service Structure Maintenance.

Service Type. This field defaults from the call. If necessary, you can modify this value. Enter a service type defined in Contract or Warranty Type Maintenance.

This value can be updated only if no activity has been posted against the order/call, or if the status of the order/call is complete and it is ready to be invoiced. No changes can be made to the service type if the line has been either partially or fully invoiced.

The service type for a replacement line cannot be changed and is read-only. This constraint ensures that the service type of the replacement line matches the service type of the corresponding replace line.

Engineer. The code identifying the engineer assigned to the order/call displays by default. The employee name of this engineer displays next to the code.

Estimated Cost. Enter an estimated cost if using fixed pricing; the system calculates charges using the value entered. If time and materials is used, the field defaults to blank.

Note When setting a repair type line to complete, the value in the Estimated Cost field is updated according to the actual price logged in Call Activity Recording.

Line Status. Defaults from the call line. Before a replacement (or a returned) item can be shipped back to the customer, the line status must be complete.

Site. Defaults from the previous instance of this field in the first header frame.

Taxable. Enter Yes if activity for this call is subject to tax; otherwise, enter No. The tax status defaults from the end-user tax data.

Revision. Revision is used to track the revision level of the part that requires service, which may differ from the current revision level of the item in the Item Master. This value defaults from the Item Master but can be updated if required.

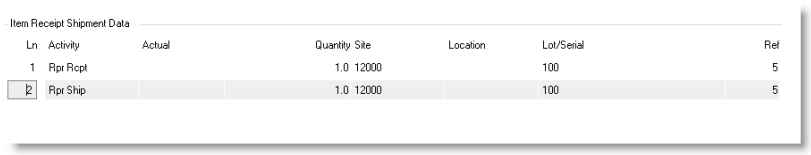
Comments. Defaults to Yes if comments exist; otherwise defaults to No. If Yes, the standard comments frame displays when you click Next, so you can enter or review comments associated with this item.

Receive. Controls whether the Item Receipt frame will be displayed. Set to Yes to display the frame.

Line Frame (Receipt/Shipment Data)

Use this frame to review shipment data, such as activity (repair receipt, repair shipment), actual date of activity completion, and so on; these fields are read-only. The data on this frame updates when the repair or replacement item is shipped using sales order shipments or the workbench.

Fig. 11.49
Receipt/Shipment Data Frame



Reference. This field defaults from the call line item. Lot reference, site, location, and lot/serial number specifically identify inventory quantities.

Transaction Type. Indicates the type of the transaction. Possible values are Repair Receipt, Repair Shipment, or Replacement Shipment.

Quantity. By default, this field displays the quantity of the item from the ISB.

Estimated Date. Displays the estimated date for completion of this transaction type.

Actual Date. Displays the actual date for completion of this transaction type.

Site. Defaults from the depot order header or from the customer site.

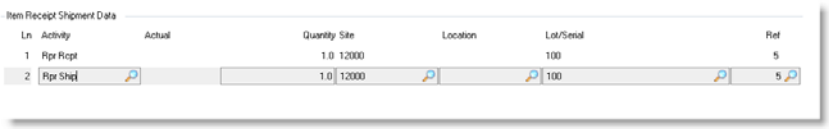
Location. Displays the inventory location at the site from which the items are being issued.

Item Receipt Shipment Data Frame

Use this frame to record receipt details of the depot order item. Several fields on this frame—Item Number, Description, and Item Type, Unit of Measure, and End User—default from the depot order header or the call/call line.

Note This frame displays when the Receive field is set to Yes on the Repair Data frame.

Fig. 11.50
Item Receipt Frame



Item Number. This field defaults to 1.

Description. Enter a brief description (maximum 24 characters) of the code identifying its use and purpose.

Item Type. Defaults from the call/call line and validated against generalized codes. The value can be SW (software), S (system), or O (other). You can add codes in Generalized Codes Maintenance.

Lot/Serial. This field defaults from the call line item.

Quantity. By default, this field displays the quantity of the item from the ISB.

Unit of Measure. This field defaults from Item Master Maintenance.

Receipt Date. This field displays the value entered in the Actual Date field in the Receipt/Shipment Data frame.

Site. Defaults from the previous instance of this field in the Receipt/Shipment Data frame.

Location. Defaults from the previous instance of this field in the Receipt/Shipment Data frame.

End User. Displays the end user that the item is currently associated with.

Trailer Frame

The trailer is the same as that for a sales order and displays charges, credits, and information for shipping and invoicing. Most trailer fields—including include CR Initials, Credit Card, Action Status, Partial OK, and Ship Via—default from the bill-to address.

Chapter 12

Using Pending Calls

This chapter introduces pending calls and describes how to configure and use functions related to them.

Introduction to Pending Calls

The features associated with pending calls enable an administrator to design a custom data-entry system for call data and later transfer this data to a standard call.

Since Call Maintenance is designed to meet the needs of a broad spectrum of users and types of organizations, a particular organization may need to use only a subset of features to model their business processes. However, users of Call Maintenance must still navigate through every field and frame even when the features they represent are not being used.

The extra navigation may become a critical issue in a busy help desk environment, where users of the system are responding to requests in real time. In addition, calls for product update information and calls with available solutions are often opened and closed with no further action needed. For these types of calls, the complex validations of Call Maintenance can be an unnecessary overhead. While it is important to record the contact data, there may be no need to take further action.

Using the functions on the Pending Call Menu, service administrators can design their own call-entry systems, selecting which fields display and in what order. These systems can be as simple or complex as needed. Administrators can design a set of frames that always display or include conditional branching based on the values of key fields. Field validations can be included during call entry, or validations can occur later.

Administrators can design multiple paths through the call-entry process by creating various profiles, which are then associated with users or user roles as needed. In this way, a help desk clerk can be prompted for one set of information, while a help desk supervisor can be prompted for another.

Data associated with call fields can be loaded with a setup utility, and the development of profiles can begin with demonstration profiles provided with the system. Administrators can create their own fields as needed to support processing of pending calls.

Important Designing a pending call system requires in-depth understanding of Call Maintenance and some understanding of the underlying Progress database. You may want to request the help of QAD Global Services to implement a system that meets your needs.

Pending calls can be transferred to Call Maintenance as part of the call- entry process or transferred as a group later using a batch program. The transfer activity can be executed in a simulated mode so that any errors and warnings can be reviewed and corrected before the actual transfer is attempted. If necessary, a pending call can be canceled without ever becoming a call in the call master.

Once pending calls have been transferred, the call life cycle can continue without users having to update the call in Call Maintenance. Engineer scheduling can occur, calls can be escalated, and service activity can be recorded for the call and invoiced, as needed.

Pending Call Programs

Table 12.1 lists programs on the Pending Call Menu (11.1.3).

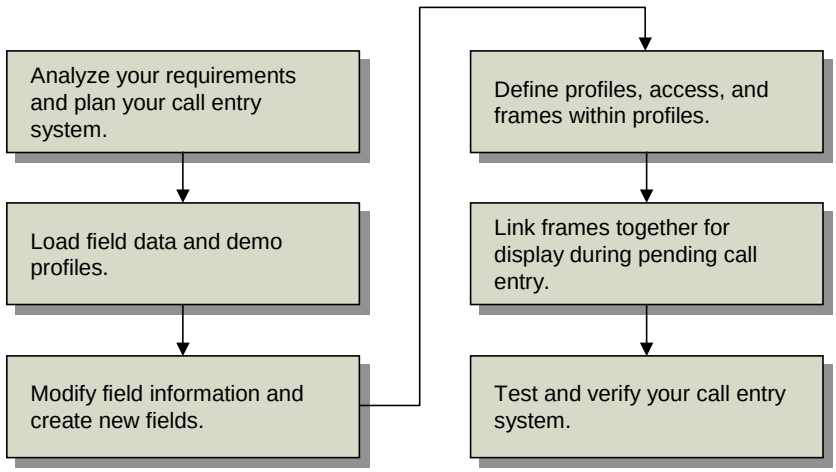
Table 12.1
Pending Call Programs

Menu Number	Description	Program Name
11.1.3.1	Pending Call Maintenance	fspcmt.p
11.1.3.3	Pending Call Inquiry	fspciq1.p
11.1.3.5	Pending Call Data Report	fspcrp2.p
11.1.3.7	Pending Call Transfer	fspcup1.p
11.1.3.11	Pending Call Delete/Archive	fspcarc.p
11.1.3.13	Pending Call Field Maintenance	fspcflmt.p
11.1.3.15	Pending Call Frame Maintenance	fspcfrmt.p
11.1.3.17	Pending Call Frame Sequence Maintenance	fspcfsmt.p
11.1.3.19	Pending Call User/Role Default	fspcugmt.p
11.1.3.21	Pending Call Profile Report	fspcrp1.p
11.1.3.23	Pending Call Setup Utility	fspcutil.p

Overview of Pending Calls

Figure 12.1 illustrates a basic workflow for designing a pending call system.

Fig. 12.1
Pending Call Design Workflow



To design a pending call system, follow these steps:

1. Plan your system by analyzing your business needs and the features of Call Maintenance that support them. For details, see “Planning a Pending Call System” on page 336.
2. Load system data about fields you can use and load demonstration profiles. For details, see “Load System Data” on page 339.
3. Modify field information if needed and add your own local variables for managing call entry. For details, see “Update Field Data” on page 341.
4. Define profiles, give users access to them, and specify the frames and the fields on the frames within each profile. For details, see “Create Profiles” on page 345.

5 Specify the sequence in which frames display for users in Pending Call Maintenance. For details, see “Link Frames for Display” on page 350.

6 Test your call-entry system before releasing it to production use.

Pending Call Status

The call status is an important attribute of a call that indicates its position in the call life cycle. See “Setting Up Call Status Codes” on page 266 for details. Call statuses can be modified automatically if you are using call escalation.

The call status field can be updated as part of the pending call data entry. This field then applies to the call after the pending call is transferred.

Pending calls have their own statuses that are managed internally by the system and can be viewed on various reports. A pending call can have one of the following statuses:

Entered. This status is assigned automatically when a pending call is created.

Transferred. This status is assigned automatically when a pending call is transferred. A transferred pending call can no longer be updated in Pending Call Maintenance.

A final status exists when you manually cancel a pending call rather than transferring it in Pending Call Maintenance:

Canceled. When Cancel Pending Call is Yes in the Pending Call Validation frame, the status of the pending call is set to Canceled. Pending calls with this status cannot be updated, transferred, or deleted. See “Cancel Pending Call” on page 364.

Scope of Pending Calls

Call management supports a robust set of features for managing and resolving calls. In contrast, the pending call system is intended to help you quickly record data related to a customer contact before creating a call. To use many call-management features, you must transfer the pending call to Call Maintenance.

Table 12.2 lists features associated with standard calls and indicates for each feature whether it is available with pending calls.

Table 12.2
Contrast of Calls and Pending Calls

Call Maintenance Feature	Pending Call Maintenance Feature
Escalate call.	No. Can set defaults used after the pending call is transferred to a call.
Schedule engineer.	No. Can set defaults used after the pending call is transferred to a call.
Page engineer.	No
Implement user exits.	No
Update call history.	No
Print call during record creation.	No

Call Maintenance Feature	Pending Call Maintenance Feature
Select a serial number from the installed base.	Yes. This is implemented through a preconfigured frame that displays when Search ISB is Yes. See Table 12.3 on page 335.
Select items from the installed base using classification codes.	Yes. This is implemented through a preconfigured frame that displays with Search ISB is Yes. See Table 12.3 on page 335.
Display existing calls for end user and choose one to update.	Yes. This is implemented through preconfigured browse frames that display when either Search Calls or Search Call Items is Yes. See Table 12.3 on page 335.
View times from end-user perspective.	Yes. When Multiple Time Zones (MTZ) is active, dates and times are affected the same way they are in Call Maintenance.
Close a pending call.	No. Before transfer, you can cancel a pending call. During transfer, you can transfer and delete. After transfer, pending calls can be deleted or archived.
Calculate total time spent.	No. This feature applies only to Call Maintenance.
Select an end user by ID, sort name, zip code, or phone number.	Yes. This is implemented through a preconfigured frame that displays when Search End User is Yes. See Table 12.3 on page 335.
Create end users during data entry.	Yes. You can do this from the End User Selection frame by leaving end user blank.
Calculate response time, next status date, and next status time based on service coverage.	Yes
Display service coverage details.	Yes. This is implemented through a preconfigured frame that displays when Coverage is Yes. See Table 12.3 on page 335.
Choose which coverage to use when multiple sources exist.	Yes. This is implemented through a preconfigured frame that displays when Search Coverage is Yes. See Table 12.3 on page 335.
Reference call on a material order.	No
Reference call on an RMA.	No
Update the installed base.	No. While you can add the Update ISB field to Pending Call Maintenance, its value is checked only in Call Maintenance (11.1.1.1) and Call Activity Recording (11.1.1.13).

Design of Pending Call Maintenance Frames

The frames that display in Pending Call Maintenance are similar to frames in other functions, but have some special attributes. Unlike standard frames, a static definition is not used for pending call frames since they are configured for each user. When a user enters Pending Call Maintenance, the frames are built dynamically from the information entered in Pending Call Frame Maintenance and Pending Call Frame Sequence Maintenance.

These frames have the following attributes:

- Only one column of fields displays on a frame. You cannot have multiple columns. Since a frame has 18 active rows, you cannot add more than 18 fields to a frame. (This number is smaller if you use other options, such as adding blank lines to create logical groups of fields.)
- Only one frame displays at a time. In other functions, multiple frames may display, including pop-ups. A frame in Pending Call Maintenance always replaces the one that displayed before.
- Next/previous processing is not supported on fields.
- Field labels are limited to 20 characters. Because you cannot vary where the fields display, all fields start at the same position in the frame. As a result, room for labels cannot vary in length.
- Some scrolling windows are implemented with filtered search. Call Maintenance (11.1.1.1) includes lookups on some fields that use information previously entered to filter the values that display in the lookup. In Pending Call Maintenance, the order of field entry may not be the same as in Call Maintenance, so there is no guarantee that these lookups will work correctly. The same functionality is provided using a filtered search mechanism. See the following section for details.
- Clicking Next does not always display another frame. When you click Next in Pending Call Maintenance, the system searches for defaults based on the current field input. If new data is found that updates fields in the current frame, the current frame redisplays.

Using Preconfigured Frames

When a user creates a call in Call Maintenance, certain frames display based on conditions defined in the program's business logic. When you design a pending call system, you must explicitly define each frame, the fields that display on it, and the frame sequence based on your own business logic.

However, a subset of predefined frames can be used in Pending Call Maintenance. These are similar to frames that display in Call Maintenance. You invoke these frames by specifying the name of the program that displays them.

The display of these frames in Call Maintenance is typically conditional. You can make the display of these preconfigured frames conditional in Pending Call Maintenance based on the value of a logical field, or have them always display.

Table 12.3 lists the programs you use to display preconfigured frames and describes what each frame lets you do. The Condition column indicates a logical variable you can place on a frame to conditionally invoke these programs.

See “Define Conditions within a Condition Set” on page 354.

Note All of these features are implemented in the DEMO profile provided with the system. You can review the setup of the DEMO profile to see how the conditions are defined and the programs specified. See “Load System Data” on page 339.

Table 12.3
Preconfigured Frames

Program	Frame Displayed	Condition	Description
fsclsfdr.p	Classification Codes	l-header-clsf_filter l-detail-clsf_filter	Displays the classification lookup for selecting a classification code for filtering installed base items. When a code is selected, any fields that display ISB records—such as item, lot/serial number, or reference—are filtered using the code. See “Classifying ISB Records” on page 30 for details.
fseusel.p	End User Selection	l-search-enduser	Displays a frame that lets you search for an end user based on end user number, sort name, postal code, and telephone number. See Figure 12.13 on page 358. You can also create an end user from this frame by leaving End User blank. If you respond Yes when prompted to create the end user, the same frames that display in Call Maintenance display in Pending Call Maintenance to let you specify end user address information and the customer associated with the new end user. See Figure 11.18, “End User Creation Frame,” on page 289.
fspcsr1.p	Installed Base Items	l-search-isb	You can add this program to follow a field that prompts for the serial number of the item requiring service. The call-entry clerk can verify that the item exists in the end user’s installed base, if needed. See Figure 12.14 on page 358.
fspcsr2.p	Coverage for Item	l-search-coverage	Displays multiple sources of coverage for an item and lets you select the one you want to use for this call. Multiple sources of coverage exist, for example, when an item is under warranty and on a contract at the same time. When this frame is not displayed and multiple sources of coverage exist, the system selects the most specific coverage, starting with a warranty; a contract for the item, lot/serial, and reference number; or a blanket contract.
fscpcsr3.p	Open Calls for End User Call Line Items for End User	l-search-call l-search-call-item	Displays existing calls or call line-item detail for the end user specified. The user can then choose an existing call to update and go directly into Call Maintenance, depending on how the profile is defined. See Figure 12.16 on page 358.

Program	Frame Displayed	Condition	Description
fscamtm.p	Call Maintenance	l-call-exists	Use this to go directly to Call Maintenance when other calls exist for the end user.
fscammt.p	Call Comments	l-header-comments l-call-info-comments l-item-comments	Displays the standard transaction comments frames for entering comments and indicating where they should print. Comments are associated with the call header or line depending on where this program is executed. See Figure 12.21 on page 360.
fscarmtx.p	Coverage Information and Coverage Limits	l-coverage	Displays coverage information and limit details for an item, if applicable. This is the same frame that displays in Call Maintenance and Call Activity Recording when Coverage is Yes. See Figure 12.26 on page 362.
fspcup2.p	Call Validation		Lets you validate a pending call from Pending Call Maintenance and optionally transfer it to a call. See Figure 12.28 on page 364. Otherwise, you can use a batch utility.

Planning a Pending Call System

Pending calls support a flexible approach to the way you design a call-entry system. However, the final destination of the pending call is to become part of the call system. To make the most effective use of the pending call-entry tools, you need to understand other call management functions of SSM and how those features apply to pending calls.

You also need to spend time modeling your own business processes carefully so that you understand how to map call-entry features to your requirements.

This section discusses some of the issues you should consider in designing a call-entry system. Topics covered include:

- Modeling your business requirements
- Understanding how to design pending calls to make effective use of call defaulting logic

Modeling Your Business Requirements

Before building a pending call-entry system, you must consider the specific requirements of your service environment. Here are some of the kinds of questions you should think about.

Types of Users

How many different types of users are involved in recording call information? Do the individuals that handle the phones record only basic data that is then followed up by a more experienced customer service representative? Or do you try to determine all aspects of the customer’s issue in the initial call? The answer to this question will determine how many call profiles you need to create.

Call Management

How many of the features of call management do you plan to use? For example, if you do not use escalations, you do not need to prompt for values related to escalations. If you do not use field engineers, you do not need to prompt for travel time and distance. You should review the way the system uses each field in the call record to determine if it is required for your business activity.

Using Call Defaulting Logic Effectively

SSM offers many ways to streamline call entry by setting up default values for most fields in Call Maintenance. Call Maintenance is designed to prompt first for the fields that have the most significant impact on defaulting logic for other fields. You should consider these relationships between fields carefully when you design your pending call-entry process.

A default DEMO profile is provided with the system that closely parallels the flow of control used in Call Maintenance. It is expected that most users can start with the DEMO profile as a model and remove and rearrange fields as needed. If you preserve the basic frame sequence supplied in the default model, the standard defaulting logic of Call Maintenance should also be preserved.

Defaulting in Pending Call Maintenance

Pending Call Maintenance uses these rules for determining defaults for related fields:

1. It uses the same rules that Call Maintenance uses for determining defaults, including the default search order, described in “Call Default Precedence” on page 273.
2. It searches for a default only when all the fields needed to find the default have been displayed to the user. For example, if only two of three fields required to find a default have been prompted for or displayed, no defaulting occurs. See “Effect of Work Code, Model, and Service Group” on page 338 for an example.
3. If one of the fields that would be populated by a default already has a value because the user specified it, the existing value is retained; it is not updated.
4. The system searches for default values for fields even when the target fields are not displayed to the user in Pending Call Maintenance (as long as rule 2 has been met).

Understanding Critical Fields for Defaulting

In Call Maintenance, a few critical fields determine default values for many other fields in the call record. In most cases, it is important to prompt for these fields first so that the related information is available.

Effect of Item and End User

In Call Maintenance, many defaults are set by the combination of item and end user. The end-user record can provide defaults for the following fields:

- Area
- Caller
- Phone
- Escalation
- Travel Distance
- Travel Time

- Priority
- Assigned
- Time Zone (if MTZ is active)

In addition, the end user:

- Determines points assigned to engineers during call scheduling (based on area, primary and secondary engineer, and time zone)
- Determines the customer and default bill-to addresses for Call Activity Recording and Call Invoice Recording

The fully qualified item (item, lot/serial number, and ISB reference number) is used to retrieve information about the installed base and service coverage. For example, the Contract, Service Type, Start Date, Install Date, End Date, Warranty End, and Response fields default from any contract or warranty associated with the specific item referenced on the call.

If you design a call-entry profile that prompts for fields related to item and end user before prompting for these elements, the system retains the values that the users specify and ignores values that would have defaulted. As a result, it is very important to understand the sequence in which you want to prompt users for data.

Effect of Work Code, Model, and Service Group

A pop-up frame displays in Call Maintenance after you complete the first frame. This pop-up prompts for the three key fields—Work Code, Model, and Service Group—that are used when defining call defaults in Call Default Maintenance.

If an appropriate call default record is found, many fields in the next frame are populated, including:

- Call Severity
- Call Type
- Call Problem
- Call Duration
- Call Description
- Call Status
- Call Next Status
- Call Queue
- Escalation

When you design a pending call system, you should consider the impact of call defaults. If you plan to use defaults, you need to prompt for the work code, model, and service group before prompting for any of the other fields listed here.

Important Pending Call Maintenance does not search for defaults until it has values for all three fields.

You must add all three of these fields to a frame before Pending Call Maintenance searches for call default records. If you do not use model or service group when setting up defaults, you still must add them to a frame for the defaults to be found. In Pending Call Frame Maintenance (11.1.3.15), you can specify that these fields are not updateable, but they must exist in the frame.

Creating a Pending Call System

This section describes the various programs that you use when setting up a pending call system. Refer to the work-flow diagram for a high-level overview of these steps.

See Figure 12.1, “Pending Call Design Workflow,” on page 331.

Load System Data

You can use Pending Call Field Maintenance (11.1.3.13) to create information about the fields you are going to place on frames for display in Pending Call Maintenance. However, since a call record includes many fields and also updates fields in related tables, this process can be very tedious.

A utility is provided to make setting up and maintaining profiles easier. Use Pending Call Setup Utility (11.1.3.23) to:

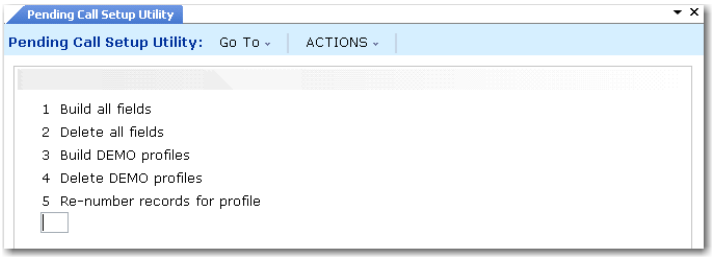
- Load or delete data about fields that can be added to pending call profiles.
- Load or remove demonstration profiles.
- Renumber records in a profile.

Loading data includes information about fields in the following tables:

- Call master (ca_mstr)
- Call lines (itm_det)
- Call fault codes (ccd_mstr)

Some other fields from tables related to calls also are available, such as fields from pt_mstr, isb_mstr, sa_mstr, and ad_mstr. In addition to database fields, records for some local variables that affect processing of calls are also loaded.

Fig. 12.2
Pending Call Setup Utility (11.1.3.23)



Load Field Data

Enter 1 to load the default information about fields that can be used for building pending call profiles. The load includes information for fields from ca_mstr, itm_det, and ccd_mstr, as well as some local variables that affect processing of calls. You can review this information using Pending Call Field Maintenance.

Note Reloading field data after you loaded it previously and made changes replaces the changed records with the default system data. However, any user-created fields are not affected.

Most of the information that you load this way cannot be modified, since it reflects the underlying definition of the database tables that store call data, as well as the requirements of the business logic that is part of Call Maintenance.

Delete All Fields

Enter 2 to delete all the information about fields currently in the database. Use this option to clear out old information if you decide not to use pending calls. You might also use this function during a testing sequence when you have added new fields and do not want to retain them. You can then use option 1 to reload system data.

Important This function deletes all fields related to pending calls, both those loaded by this utility and those you create in Pending Call Field Maintenance.

Load Demonstration Profiles

Enter 3 to load system-supplied demonstration profiles. You can use these profiles as the basis for creating your own by copying and then modifying them. Using demonstration profiles as templates may speed up the development of your own call-entry profiles. You can also use them for training and learning.

Use this option both for an initial load or after you have changed demo profiles and now want to revert to the system default information. Reloading demo profiles deletes any records found and then refreshes them. Normally, you should use this option if you want to continue testing with demo profiles.

Currently, two demo profiles are provided:

- DEMO includes all of the fields that display in Call Maintenance.
- DEMOMIN includes a minimum subset of Call Maintenance fields.

Note To use the demo profiles, you must also load the default field information since the demo profiles depend on this data. If you delete fields (option 2) and do not delete demo profiles (option 4), the demos will be unusable until you reload fields (option 1).

Delete Demonstration Profiles

Enter 4 to remove the demonstration profile data from your database. Typically you would only use this option if you no longer wanted to use the pending call system.

Note Option 4 updates any users or roles that currently have the demo profiles associated in Pending Call User/Role Default (11.1.3.19) and sets the profile to blank. See “Create Profiles” on page 345.

Renumber Records

Enter 5 to renumber the sequences in a specified profile. This function affects the sequence numbers associated with frames, fields, condition sets, and conditions that you define in Pending Call Frame Sequence Maintenance.

Executing this function resequences these numbers in increments of 10. This makes it easy to add new records between existing records. When you enter option 5, you must supply a valid profile ID.

Note Executing option 5 has no effect on the way a profile functions; it simply updates sequence numbers in the specified profile and in other profiles that refer to it.

Update Field Data

Use Pending Call Field Maintenance (11.1.3.13) to review field information loaded with Pending Call Setup Utility or to create new field information.

When a field that is loaded by the setup utility is used in Call Maintenance, it is marked as not maintainable. In this case, you cannot update the following fields: Type, Active, and Temporary. These field attributes reflect the underlying definition of the database tables that store call data, as well as the requirements of the business logic that is part of Call Maintenance.

The default value for many of the attributes of a field depends on:

- Whether the field is a database field or a local variable
- Whether the field is used in Call Maintenance and affects the business logic related to calls
- Whether the field is loaded by the setup utility or created in Pending Field Maintenance

Table 12.4 indicates how the default for five field attributes is set based on these conditions.

Table 12.4
Default Values for Fields

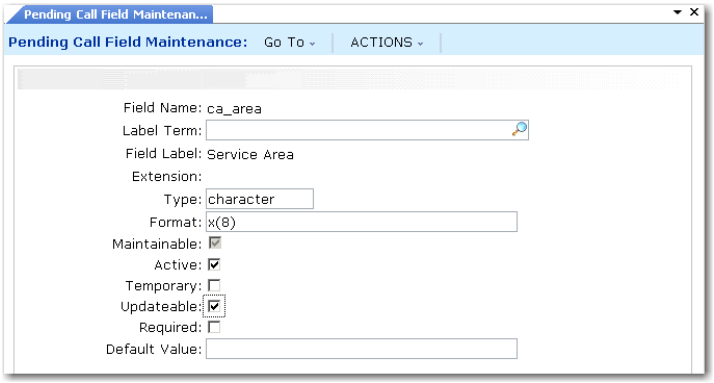
Field Name	Loaded DB Fields Used by Call Maint	Loaded DB Fields not Used by Call Maint	Loaded Local Variables	Fields Created in Field Maint
Maintainable	No	Yes	No	Yes
Active	Yes	No	Yes	Yes
Temporary	No	No	Yes	Yes
Updateable	Yes	No	Yes	No
Required	Yes/No	No	Yes/No	No

Some field attributes default to Pending Call Frame Maintenance (11.1.3.15) when you add the field to a frame. Attributes such as required, updateable, and default value can be modified for particular frames. See “Define Frame Contents” on page 347.

Typically, you use this program to:

- Add your own local variables to use in managing the pending call-entry process. When you create your own fields and mark them as active, you can then add them to frames using Pending Call Frame Maintenance.
- Update call fields that are not currently updated in Call Maintenance. For example, you can display any of the user fields in the call master table for update in Pending Call Maintenance and create user-defined labels for them. When you transfer the pending call, the system copies this data from the pending call to the call master.

Fig. 12.3
Pending Call Field Maintenance (11.1.3.13)



Field Name. Enter the name of the field (maximum 24 characters) you want to modify or create. This field is required.

Note You cannot modify or delete any fields with Maintainable set to No. Many of the fields loaded with Pending Call Setup Utility are not maintainable.

By default, any new fields you create are considered temporary. While the value can affect processing in Pending Call Maintenance, the value is not stored in the database.

See “Temporary” on page 343.

Label Term. Optionally specify a label term. When a term is specified, the first 20 characters of the label associated with this term display as the label for this field in Pending Call Maintenance.

If you leave Label Term blank, the system retrieves the label associated with the term and field as defined in the label maintenance functions (36.7) on the System Administration menu. If no term exists for the field, the system uses the field name in uppercase letters as the label.

For an existing field, specify a label term only if you want to override the standard label.

See *User Guide: QAD System Administration*.

Extension. This field displays the type of document being updated in this program. For pending calls, Extension is always Call, and cannot be updated.

Type. Specify the data type of the associated field using standard Progress syntax. Valid values include character, integer, decimal, logical, date.

This field cannot be blank. You cannot update the data type of fields loaded using Pending Call Setup Utility with Maintainable set to No.

Format. Specify the format of the field being added using standard Progress syntax. For example, enter x(24) for a character field that contains 24 characters or >>9 for a three-digit integer field.

This field cannot be blank. You cannot update the format of fields loaded using Pending Call Setup Utility with Maintainable set to No.

Maintainable. This field is set by the system and determines whether the following fields of the associated record can be manually edited: Type, Format, Active, and Temporary. You cannot modify the value determined by the system. The system sets the default as follows:

- Database fields and local variables that are used in Call Maintenance and loaded by Pending Call Setup Utility are set to No. Information about these fields reflects the structure of the tables that support call records and cannot be modified.
- Database fields loaded by Pending Call Setup Utility that are not used in Call Maintenance are set to Yes. You can change values associated with these fields since they do not affect processing of call records.
- Database fields and local variables that you create in Pending Call Field Maintenance are set to Yes. Since these fields are user defined, you can always edit them.

Active. Indicate whether this field can be included on a frame.

No: The field is not included in the lookup browse. If you enter the field name manually, an error displays.

Yes: The field is displayed in the lookup browse of available fields in Pending Call Frame Maintenance and can be selected for inclusion on a frame.

The system sets the default for this field as follows:

- Database fields and local variables that are used in Call Maintenance and loaded by Pending Call Setup Utility are set to Yes. This value cannot be modified.
- Database fields loaded by Pending Call Setup Utility that are not used in Call Maintenance are set to No, and can be changed.
- Database fields and local variables that you create in Pending Call Field Maintenance are set to Yes and can be changed.

Note If you have placed a field on a frame and then change it to inactive, it no longer displays in Pending Call Maintenance.

Temporary. Indicate whether this field is temporary.

No: The value entered in the field is saved as part of the pending call record. No is the default for database fields loaded using Pending Call Setup Utility.

Yes: The field is used only during the data-entry process and is not saved as part of the pending call record. Yes is the default for new fields that you create in this function, since typically they are not database table fields.

The system sets the default value for this field as follows:

- All database fields loaded by Pending Call Setup Utility are set to No, both those that are used and those that are not used.
- All local variables are set to Yes, both those loaded by Pending Call Setup Utility and those you create with Pending Call Field Maintenance.

You can change the value of Temporary only for fields with Maintainable set to Yes. These are database fields that are not used in Call Maintenance and fields created in Pending Call Field Maintenance.

Note This field provides flexibility if you add custom database fields and want to save data or if you create your own field data rather than loading it with the setup utility. However, typically you should not change the default values. Setting Temporary to No for a non-database field has no effect, since the system has nowhere to save the value. Setting Temporary to Yes for a database field means data is not saved that may be needed to create a valid call. In this case, errors are generated when you attempt to transfer the pending call to Call Maintenance.

Updateable. Indicate if this field is typically updated by users. The value you specify here sets the default value for the Updateable field when it is added to a frame in Pending Call Frame Maintenance.

No: When you add this field to a frame in Pending Call Frame Maintenance, Updateable defaults to No. If you do not change it in that program, users cannot update the value of the field on the associated frame when they create a pending call.

Yes: When you add this field to a frame in Pending Call Frame Maintenance, Updateable defaults to Yes. If you do not change it, users can update the value of the field when they create a pending call.

When you design frames, you may want some information to display for the user's information, but not be modified. You also may want to prompt for information on one frame and display it on another. This attribute is controlled by the setting of Updateable in the frame, which defaults from this setting for this field.

The system sets the default value for this field as follows:

- Database fields and local variables that are used in Call Maintenance and loaded by Pending Call Setup Utility are set to Yes.
- Database fields loaded by Pending Call Setup Utility that are not used in Call Maintenance are set to No.
- Database fields and local variables that you create in Pending Call Field Maintenance are set to No.

Note The item line number and fault code line number cannot be updated in Pending Call Maintenance regardless of the value defined here.

Required. Indicate whether this field is required when a call is created.

No: The pending call transfer function does not generate an error when this field is blank.

Yes: When you transfer a pending call, a value must be specified for this field or the transfer is not completed.

The value you specify here defaults to Pending Call Frame Maintenance when you add this field to a frame. However, you can change it. This lets users leave the field blank during initial call entry, even though a value must be specified before the call can be transferred.

The system sets the default value for this field as follows:

- Database fields and local variables that are used in Call Maintenance and loaded by Pending Call Setup Utility are set to Yes if Call Maintenance requires a value. Otherwise, they are set to No.
- Database fields loaded by Pending Call Setup Utility that are not used in Call Maintenance are set to No.
- Database fields and local variables that you create in Pending Call Field Maintenance are set to No.

Note You can set Required to Yes for a field you create in this program. You can use this to control whether users must enter a value in Pending Call Maintenance. During transfer, however, the system validates only fields that Call Maintenance requires.

Default Value. Optionally specify a default value to display in this field when this field is added to a frame in Pending Call Frame Maintenance. You can change the default if needed when adding the field to a frame.

The value specified in Pending Call Frame Maintenance sets the default when users create new pending calls in Pending Call Maintenance.

Leave this field blank if you want the system to use the same logic as Call Maintenance to search for a default value for the field.

This field is not validated. You must ensure that the value you specify is consistent with the type and format of the associated field; otherwise, errors are generated during pending call entry or transfer.

For example, for a logical field, specify Yes if you want the field to default to Yes. If you specify a string such as OK, errors are generated either in Pending Call Maintenance or when the call is transferred.

Note In non-English environments, specify the English Yes or No as the default value for logical fields. These are then displayed to the user in the correct language.

Create Profiles

Pending Call Frame Maintenance (11.1.3.15) lets you complete a number of setup tasks related to pending calls. You can:

- Create, modify, or delete a pending call profile, which identifies a specific method for entering data in Pending Call Maintenance. When you are creating a new profile, you can start with an existing one as a template to reduce data entry.
- Specify a default profile that applies to all users and user roles without an assigned profile in Pending Call User/Role Default (11.1.3.19).
- Assign user and role access to a profile.
- Create frames associated with a profile and specify which fields display on them.

You can delete a profile only when:

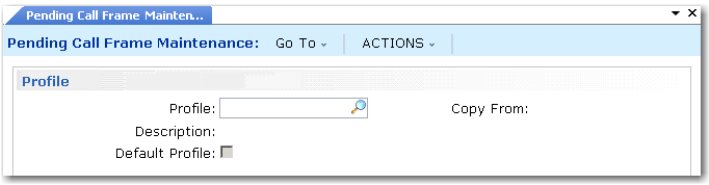
- It is not referenced as part of a frame sequence by another profile.
- It is not the default profile of any user or role.

After creating profiles and frames, use Pending Call Frame Sequence Maintenance (11.1.3.17) to specify the order in which frames display during pending call entry.

See “Link Frames for Display” on page 350.

Figure 12.4 illustrates the first frame of Pending Call Frame Maintenance.

Fig. 12.4
Pending Call Frame Maintenance (11.1.3.15), Profile Frame



Profile. Enter a value (maximum 16 characters) identifying the profile you want to edit, create, or delete.

When you are creating a new profile, you can start with an existing profile, such as the system-supplied DEMO, by specifying a value in the Copy From field. This minimizes data entry for similar profiles.

See “Load Demonstration Profiles” on page 340.

Copy From. If you are creating a new profile, specify an existing profile ID in this field to begin with a copy of it. The system creates a new record based on the one you specify, including frame details, frame field details, frame sequence details, and frame sequence condition details.

Description. Enter a brief (maximum 40 character) description of this profile.

Default. Indicate whether this profile should be used as the default profile for any users or roles without an associated profile.

No: This profile applies only to the specific users and roles with which it is associated.

Yes: This profile applies to all users without an assigned profile, as well as to any users or roles assigned to it.

Only one profile can be designated as the default. When you enter Yes, the system determines if another default profile exists. If it does, a warning displays and you are prompted to continue. If you choose to continue, the current profile becomes the default.

Use Pending Call User/Role Default (11.1.3.19) to assign profiles to users and roles.

See “Assign Default Profiles to Users and Roles” on page 355.

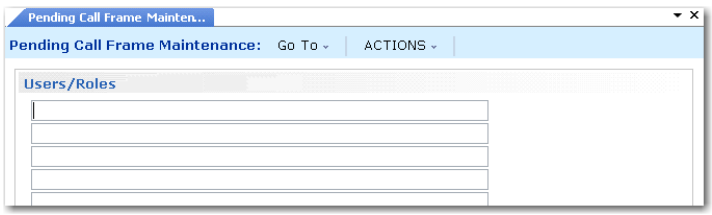
Assign Access to Profiles

Before a user can execute the frames defined in a profile, they must have security access. If you do not want to implement security for profiles, do not assign any users or roles. This has the same effect as assigning all users and roles.

See *User Guide: QAD Security and Controls* for details on users and security.

Note Assigning security access to a profile is a separate task from assigning a default profile. A user must have both to be able to execute Pending Call Maintenance.

Fig. 12.5
Pending Call Frame Maintenance (11.1.3.15), Users/Roles



Users/Roles. Enter a list of user IDs or role names that can access the associated profile. Leave blank if you do not want to restrict access to the profile.

Create user IDs and in User Maintenance (36.3.1). Create user roles in Role Create (36.3.6.1) and associate them with users in Role Membership Maintain (36.3.6.6).

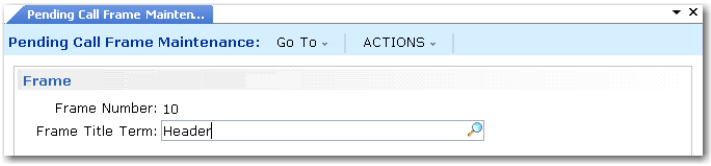
Separate user IDs and role names with commas. Spaces are eliminated upon entry. An asterisk indicates all user IDs or roles. The exclamation point is used to restrict specific users by user ID or role.

For example, the string ap,sales means only users associated with role ap or sales have security access. The string !user1,* means all users except user1 have access. Exclusions must be entered first. Specifying *,!user1 is the same as * (all roles).

Define Frames

Use the next frame in Pending Call Frame Maintenance—illustrated in Figure 12.6— to add, modify, or delete frames associated with the current profile. You can delete a frame after specifying its number only when it is not referenced by any frame sequence in this or any other profile.

Fig. 12.6
Pending Call Frame Maintenance (11.1.3.15), Frame Frame



Frame Number. Enter a value from 1 to 999 identifying this frame in this profile.

Note This number is used strictly to identify the frame and its contents. The sequence in which frames display is determined by the information you enter in Pending Call Frame Sequence Maintenance (11.1.3.17).

Number frames by 10's or 100's, so you can add new frames without renumbering existing ones. For example, if you define frames 10, 20, and 30 and want to add another frame between 20 and 30, you can enter it as frame 25. You can also use Pending Call Setup Utility to renumber frames.

Frame Title Term. Optionally specify a label term identifying the translated title for this frame. When a term is specified, the long label associated with this term in Label Master Maintenance (36.4.17.1) displays as the label for this frame in Pending Call Maintenance.

If you leave this field blank, the system creates a frame label based on the profile ID and frame sequence number, with the following form:

Profile xxxxxxxx Frame nnn

See *User Guide: QAD System Administration* for details on labels.

Define Frame Contents

Figure 12.7 illustrates the frame you use to add, modify, or delete fields from the current frame definition. After you specify a field number, you can use Delete to remove the field from the frame.

The fields you add to frames must be defined in Pending Call Field Maintenance and marked as active. Field values such as Updateable, Required, and Default Value default from settings in Pending Call Field Maintenance. The term used to find the field label is also defined here.

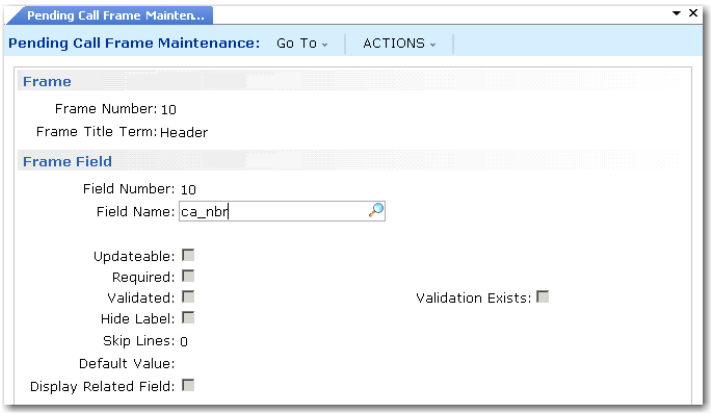
See "Update Field Data" on page 341.

Each field you specify displays on a separate line on the associated frame, with or without a label based on the value of Hide Label. You can place a field on more than one frame, and specify different options for each frame where it displays. For example, you can add a field for update on one frame and then display it without allowing update on another.

When you add a field to a frame, the system ensures that sufficient room exists on the frame to display it; if not, an error displays. A frame can contain up to 18 lines. The system calculates the number of lines already used by adding:

- The total number of fields specified on the frame
- The total number of skip lines specified for all fields in the frame
- The total number of related fields (Display Related Field is Yes) specified

Fig. 12.7
Pending Call Frame Maintenance (11.1.3.15), Frame Fields



Field Number. Enter a value from 1 to 999 indicating the display sequence for this field on the specified frame when it is used during the creation of pending calls.

Number fields by 10’s or 100’s, so you can add new fields without renumbering existing ones. For example, if you define fields 10, 20, and 30 and want to add another field to display between 20 and 30, you can enter it as field 25. You can also use Pending Call Setup Utility to renumber frames.

Field Name. Enter the name of an active field to display on this frame. You can specify only fields marked as active in Pending Call Field Maintenance.

The system displays up to 20 characters of the field label below the field name. The term for finding the appropriate label is specified in Pending Call Field Maintenance.

Updateable. This field defaults from the same field in Pending Call Field Maintenance. Enter Yes if you want users to be able to update the value of this field on this frame when it displays in Pending Call Maintenance. Otherwise, enter No.

Required. Enter Yes if users must enter a value in this field when it displays in Pending Call Maintenance. Otherwise, enter No.

When Yes, an error displays in Pending Call Maintenance when the field is left blank.

This field defaults from Pending Call Field Maintenance. Even though a field is required to create a call in the call master, you can set required to No when it displays on this frame. Do this if you want to let users leave the field blank during initial call entry.

For example, the customer service representative has a call profile that lets fields be blank. Later the supervisor reviews the pending call with a different profile and fills in required fields before transferring it to Call Maintenance. An error is generated during call transfer when required fields do not have a value.

Validated. You can modify this field only when Validation Exists is Yes.

No: Do not validate the field during data entry.

Yes: Use the existing validation to validate the user's entry in Pending Call Maintenance.

Note A non-blank field validation is managed with the Required field. When you set Validated to Yes, the system performs all validations but still lets the user leave the field blank unless Required is also Yes.

Field values must be valid before a pending call can be transferred to Call Maintenance. However, if you want to record data quickly, you can delay verification by setting this field to No. After initial data entry, you can modify the pending call later to ensure data is correct.

You can generate a report indicating any errors or warnings that would be generated during transfer before you transfer the pending call to Call Maintenance.

Validation Exists. This display-only field indicates whether a validation is available for this field. When setting this field to Yes, the system looks for both validations built into the database schema and code validations.

No: The Validated field cannot be updated. No validations occur in Pending Call Maintenance.

Yes: You can specify whether you want this validation to occur by setting the Validated field to Yes or No.

Hide Label. Indicate whether to include the label for this field.

No: The label associated with the label term specified in Pending Call Field Maintenance displays next to this field in this frame in Pending Call Maintenance.

Yes: The label for this field does not display on this frame.

Skip Lines. Optionally enter an integer representing the number of blank lines to be allocated on the frame before this field. Leave the default 0 (zero) to place this field on the next available line.

Use this field to organize fields into logical groups in the presentation of the frame.

Default Value. Optionally specify a default value to display in this field when a new pending call is created in Pending Call Maintenance. This field defaults from a value specified in Pending Call Field Maintenance.

Leave this field blank if you want the system to use the same logic as Call Maintenance uses to search for a default value for the field in Pending Call Maintenance.

This field is not validated. You must ensure that the value you specify is consistent with the type and format of the associated field; otherwise, errors will be generated during pending call entry or transfer.

For example, for a logical field, specify Yes if you want the field to default to Yes. If you specify a string such as OK, errors are generated either in Pending Call Maintenance or when the call is transferred.

Note In non-English environments, specify the English Yes or No as the default value for logical fields. These are then displayed to the user in the correct language.

Display Related Field. You can modify this field only when a related field currently displays next to this field.

No: The related field does not display on this frame in Pending Call Maintenance.

Yes: The field related to this field displays below it on this frame in Pending Call Maintenance.

Related fields provide more information that helps users identify a record. For example, the sort name is often displayed next to the Customer ID field, letting you associate a meaningful name with a shorter ID.

Related Field. This field displays the name of the field that is related to the field specified in Field Name. When a value displays, you can update the value of Display Related Field.

Note You can choose your own related fields to display by adding a field to a frame and setting Updateable to No. When the user clicks Next and the value is found through defaulting logic, the screen redisplays so the user can see the related value. You can use this method for any field that is generated by defaulting logic.

Link Frames for Display

Use Pending Call Frame Sequence Maintenance (11.1.3.17) to specify the order in which frames display for a profile in Pending Call Maintenance. For every combination of profile ID and frame number, you can create a separate sequence for moving forward (click Next) through the frame and exiting (click Back) the frame.

You can link frames together in a number of ways:

- Link frames within a single profile by number.
- Link to a frame in a different profile by profile ID and number.
- Specify a program to run as well as a next frame to display when that program completes execution.
- Specify one or more sets of conditions with alternate frames to display based on whether the condition or conditions are true.
- Specify a default frame sequence when no conditions are true.

You perform three tasks in this program:

- Define a default sequence for frames to display in Pending Call Maintenance. You can define different default sequences based on whether the user is moving forward through the frame or is exiting the frame.
- Add one or more condition sets to support alternate frame display.
- Specify one or more conditions for each condition set that must be true for that display sequence to be used.

You can design simple or complex sequences using Pending Call Frame Sequence Maintenance. You should carefully analyze your business requirements to determine how you want users to enter data in Pending Call Maintenance.

Much of the information associated with a call defaults from other related data. You should carefully consider this defaulting logic as you determine the order in which fields and frames display.

See “Using Call Defaulting Logic Effectively” on page 337.

Define Basic Sequence Elements

Figure 12.8 illustrates the first frame of Pending Call Frame Sequence Maintenance, where you define the basic elements of a sequence, including the direction, an optional next program to run, the next frame number to display, and the profile the frame is associated with.

When you define frame sequences, you can start with frames in one profile and then link to a frame in another profile. You might use this feature to give a user an expanded view of the pending call fields based on a certain condition.

Note Once you link to another profile, the user stays in that profile unless it also invokes a different profile.

Example User CSR1 typically enters only high-level call data, and SupRep1 adds details later. However, occasionally CSR1 may need to add details. You create a logical variable labeled Create Call Detail and add it to the last frame of CSR1’s default profile. When CSR1 responds Yes to this field, you branch to a second profile that contains detailed fields.

You can also use access to control which frames display. However, access cannot be set up to be conditional as frame sequences can. With this approach, CSR1 is assigned PROFILE1 that includes a subset of basic fields. You then create PROFILE2 with more detailed fields. You give CSR1 access to PROFILE1 and SupRep1 access to PROFILE1 and PROFILE2 using Pending Call Frame Maintenance.

See “Assign Access to Profiles” on page 346.

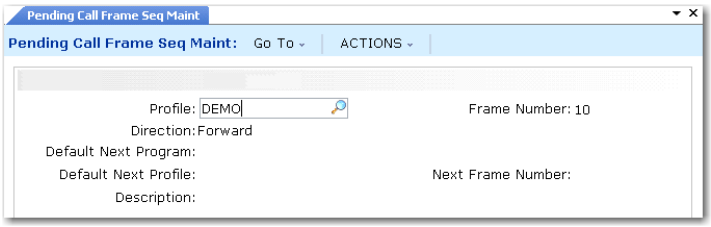
You link the last frame of PROFILE1 to the first frame of PROFILE2 and assign PROFILE 1 to both CSR1 and SupRep1. When SupRep1 executes Pending Call Maintenance, the frames from both profiles display. When CSR1 executes Pending Call Maintenance, only the set of frames that are part of PROFILE1 display.

In addition to specifying the next frame to display when the user clicks Next or Back, you can optionally specify a program to run. You must choose from one of a set of predefined programs that display preconfigured frames such as comments or installed base records.

See “Using Preconfigured Frames” on page 334.

Figure 12.8 illustrates the first frame of Pending Call Frame Sequence Maintenance.

Fig. 12.8
Pending Call Frame Sequence Maintenance (11.1.3.17), Frame Sequence Configuration



Profile. Enter the ID of an existing profile defined with Pending Call Frame Maintenance.

Frame Number. Enter the number identifying a frame within this profile to be linked to another frame. The frame number must exist in this profile or an error is generated.

A frame sequence is uniquely identified by a combination of profile ID, frame number, and direction. Thus, every frame within a profile can have at least two alternate sequences associated with it depending on whether the user is entering or exiting the frame.

Direction. Enter the navigation direction associated with this frame sequence. Valid values are:

Forward. This sequence applies when the user clicks Next.

Backward. This sequence applies when the user clicks End.

Default Next Program. Optionally enter the name of next program to run when no condition sets apply. Each of these programs displays a non-configurable frame. When users complete the frame (or sequence of frames, as in the case of Call Maintenance) displayed by the program, the next frame specified in the frame sequence displays for input.

A default next program always executes before the next frame in the next profile displays.

Specify one of the following programs:

- `fsclsfdr.p` executes the Classification code lookup.
- `fscamtm.p` executes Call Maintenance.
- `fscammt.p` executes the call comments sequence.
- `fspcup2.p` executes the call validation and transfer function.
- `fspcsr1.p` lets you search for a record in the installed base.
- `fspcsr2.p` displays multiple sources of coverage for an item and lets you select the one you want to use for this call.
- `fspcsr3.p` displays existing calls or call line item detail for the end user specified.
- `fseusel.p` displays an End User Selection frame that lets you search for an end user or create a new one.
- `fscarmtx.p` displays coverage information and limit details for an item.

See “Using Preconfigured Frames” on page 334 for details about these programs.

Default Next Profile. Enter the ID of a valid profile containing the next frame to display in Pending Call Maintenance when no condition sets apply. This is typically the profile you are currently maintaining but can be any other valid profile.

Leave this field blank and Next Frame Number set to 0 if you want to terminate the display sequence or implement conditional branching. The system then evaluates the next sequential condition set to determine which profile and frame to use. If none exists, the first frame in the profile then redisplays in Pending Call Maintenance.

Note If you specify a different profile, the user executing this sequence in Pending Call Maintenance must have access to both profiles or the frames do not display.

Next Frame Number. Enter the number of an existing frame to use next within the next profile when no condition sets apply. Leave Next Profile blank and the default 0 if:

- You do not want another frame to display. This indicates the end of the sequence in Pending Call Maintenance and the first frame of the profile redisplays.

- You want to implement conditional branching. The system evaluates the next sequential condition set to determine which profile and frame to use.

If you are switching profiles (Default Next Profile is not the same as the current profile), you can:

- Enter a specific number to start with that frame.
- Leave the default 0 and the system will display the first frame in the frame sequence.

Description. Enter a brief (maximum 40 characters) description of this frame sequence to help identify its purpose.

Define Condition Sets

Use condition sets to implement conditional branching in the display of frames. For example, you can design a sequence where the user is always prompted to enter call comments. Or you can add a logical field to a frame so the user can specify Yes or No to entering comments. You then set up a condition based on the value of the logical field so that the comments frame displays only when the value of the Comment field is Yes.

Each frame sequence can be associated with multiple condition sets, which are evaluated in order based on the condition sequence number. This lets you link together a sequence of events, such as running one program, followed by another, and then followed by a frame. Within a condition set, programs are always executed first; then the system looks for the next profile and frame.

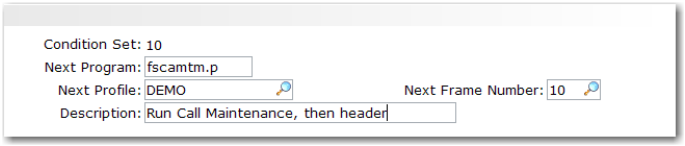
To implement options that do not already exist in Call Maintenance, create your own fields in Pending Call Field Maintenance (11.1.3.13) and add them to frames in Pending Call Frame Maintenance (11.1.3.15).

Multiple conditions can belong to a condition set. All of the conditions must be true for the next action to be taken.

Note Review the condition sets in the DEMO profile loaded with Pending Call Setup Utility for examples of how to implement conditional branching.

Figure 12.9 illustrates the frame in Pending Call Frame Sequence Maintenance for defining condition sets.

Fig. 12.9
Pending Call Frame Sequence Maintenance (11.1.3.17), Condition Sets



Condition Set. Enter a number (from 1 to 999) identifying this condition set. Leave the default 0 if no conditions apply. In this case, the default behavior always occurs, since it is unconditional.

When all conditions within the set are true, the next program, next profile ID, and next frame number associated with the condition set determine the configuration of Pending Call Maintenance. The next program is always executed before the next frame displays.

If any condition within the set is false, the entire set is bypassed. The system then evaluates the next condition set (determined by sequence number). If none of the condition sets is true, the default next program is run or next frame within the next profile displays in Pending Call Maintenance. If multiple condition sets are true, they are all processed sequentially.

Number condition sets by 10's or 100's, so you can add new sets without renumbering existing ones. For example, if you define condition sets 10, 20, and 30 and want to add another between 20 and 30, you can enter it as 25. Use Pending Call Setup Utility to renumber condition sets.

Next Program. Optionally enter the name of the next program to run when this condition set applies. This field is the same as the Default Next Program field, but applies only when this condition set is true. See "Default Next Program" on page 352.

Next Profile. Enter the ID of a valid profile containing the next frame to display in Pending Call Maintenance when this condition set applies. This field is the same as the Default Next Profile field, but applies only when this condition set is true. See "Default Next Profile" on page 352.

Next Frame Number. Enter the number of an existing frame to use next within the next profile when this condition set applies. Leave Next Profile blank and the default 0 if you do not want another frame to display. This indicates the end of the sequence in Pending Call Maintenance and the first frame of the profile redisplays.

If you are switching profiles (Next Profile is not the same as the current profile), you can:

- Enter a specific number to start with that frame.
- Leave the default 0 and the system will display the first frame in the frame sequence.

Define Conditions within a Condition Set

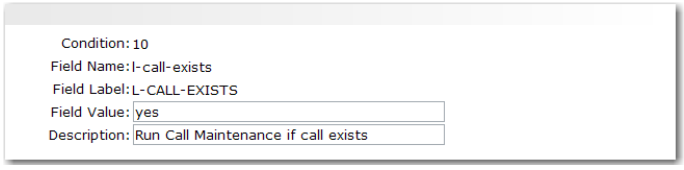
If you are using conditional branching, you first define condition sets and then define the conditions that are part of the set. The condition identifies a field name and value (or range of values) that must be true. When all conditions within the set are true, the next program, next profile ID, and next frame number associated with the condition set determine the configuration of Pending Call Maintenance.

If any condition within the set is false, the entire set is bypassed.

You can define complex conditions using Boolean operators such as less than, greater than, and equal to.

Figure 12.10 illustrates the frame in Pending Call Frame Sequence Maintenance for defining conditions.

Fig. 12.10
Pending Call Frame Sequence Maintenance (11.1.3.17), Conditions



Condition. Enter a number (from 1 to 999) identifying a condition within this condition set. Each condition set can include multiple conditions. These are evaluated in order based on the sequence number specified in this field.

Number conditions by 10's or 100's, so you can add new conditions without renumbering existing ones. For example, if you define conditions 10, 20, and 30 and want to add another between 20 and 30, you can enter it as 25. Use Pending Call Setup Utility to renumber condition sets.

Field Name. Enter the name of an active field to be evaluated as part of this condition. You can specify only fields marked as active in Pending Call Field Maintenance.

When this profile is used to determine the sequence of frames in Pending Call Maintenance, the system compares the value entered in this field with the list of values specified for the condition to determine the program to run or next profile and next frame to display.

The system displays up to 20 characters of the field label (as specified in Label Master Maintenance) below the field name.

Field Value. Enter the string that must match the string specified for Field Name for this condition to be true. You can enter:

- A specific value
- A comma-separated list of specific values using any of the following operators: =, >, <, <>, >=, <=
- A comma-separated list of ranges (separated with a hyphen) using either the = operator for values within the range or the <> operator for values outside the range

The system performs the matching using OR logic; when the first match is found, the condition is considered true.

For example, to match the value of *string*, you can enter any of the following:

- string or =string, for equal comparison
- >string, for greater than comparison
- <string, for less than comparison
- <>string, for not equal to comparison
- >=string, for greater than or equal to comparison
- <=string, for less than or equal to comparison
- string1-string2 or =string1-string2, for values within a range
- <>string1-string2, for values outside a range

Description. Enter a brief (maximum 40 characters) description of this frame sequence condition or its effect.

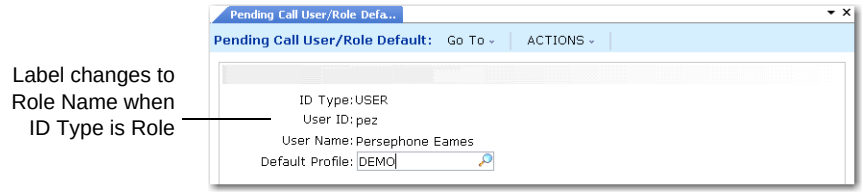
Assign Default Profiles to Users and Roles

Use Pending Call User/Role Default (11.1.3.19) to assign a default profile to specific users or user roles. This function is optional. If you do not assign profiles with this program, the profile ID designated as the default profile in Pending Call Frame Maintenance applies to all users.

The sequence of frames that displays in Pending Call Maintenance is determined by the default profile associated with a user. Make sure that you have also given users appropriate security access to the default profile in Pending Call Frame Maintenance.

Be careful when assigning default profiles to user roles if your users typically belong to more than one role. In this case, the system assigns them the first profile associated with the first role it finds, which may not be what you want.

Fig. 12.11
Pending Call User/Role Default (11.1.3.19)



ID Type. Indicate the type of default being defined. Valid values are:

User: This default applies to a specific user ID.

Role: This default applies to a user role.

Based on your selection for ID type, you are prompted to enter either a user ID or user role.

User ID. If ID Type is User, enter a valid ID of a user defined with User Maintenance (36.3.1). The full name of the user displays in the User Name field.

Role Name. If ID Type is Role, enter a role defined with Role Create (36.3.6.1). The description displays in the Role Description field.

Default Profile. Specify the ID of the default profile for this user or role. Define profiles with Pending Call Frame Maintenance (11.1.3.15).

Creating a Pending Call

Use Pending Call Maintenance (11.1.3.1) to create and modify pending calls. The configuration of the frames in this program is based on the profile associated with the user who is executing it. This can be as simple or as complex as is required to accommodate a particular set of business requirements.

This section illustrates how to create a call using the DEMO profile loaded using Pending Call Setup Utility. The DEMO profile creates a sequence of frames similar to Call Maintenance.

Review the information in “Design of Pending Call Maintenance Frames” on page 333 to understand the special attributes of frames in this program.

For information about the fields in Pending Call Maintenance, review the corresponding field description for Call Maintenance in “Using Call Maintenance” on page 284.

Processing in Pending Call Maintenance

When a user executes Pending Call Maintenance, the system:

- Determines any default values.

- Builds the first frame based on details specified in Pending Call Frame Maintenance and Pending Call Sequence Maintenance and displays the frame to the user.

When the user enters data in applicable fields and clicks Next (or presses Enter on last field), data is collected from the screen. The system:

- Validates any fields with Validated set to Yes in Pending Call Frame Maintenance and displays the first error found
- Verifies that a value is entered in any fields with Required set to Yes in Pending Call Frame Maintenance and displays the label of the first missing field, if any
- Generates default values for fields without data based on the values the user entered in other fields in the frame
- Redisplays the same frame if any field on the frame has a generated value

Sample Pending Call

This section illustrates how the sequence of frames works using the DEMO profile supplied with the system. This profile closely emulates the flow of control in Call Maintenance, and illustrates most of the features you can implement. You can use it as the basis for developing your own custom profiles by removing fields and frames that you do not use.

Figure 12.12 illustrates the first frame of Pending Call Maintenance. Some of the features of Call Maintenance that occur based on user input are triggered in this frame by specifying Yes to a field used as a condition. In Figure 12.12, the following fields are used like this:

- Search ISB
- Search End User
- Search Coverage

Fig. 12.12
Pending Call Maintenance (11.1.3.1), User Selection

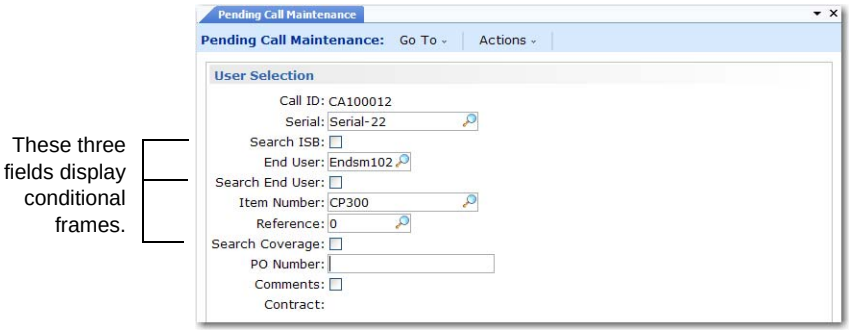


Figure 12.13 illustrates the frame that displays when you enter Yes to Search End User and `fseusel.p` is defined as the program to execute when l-search-enduser is true. This frame is similar to the pop-up that displays in Call Maintenance (see “End User Selection Frame” on page 289) when you leave the End User field blank and click Next or press Enter. You can find an end-user record by number, sort name, postal code, and telephone number.

If you leave End User blank and click Next in the frame illustrated in Figure 12.13, an additional frame displays where you can create a new end user. This is just like the frame in Call Maintenance, and not illustrated here. See “End User Frame” on page 289.

Fig. 12.13
Pending Call Maintenance Example, End User Selection

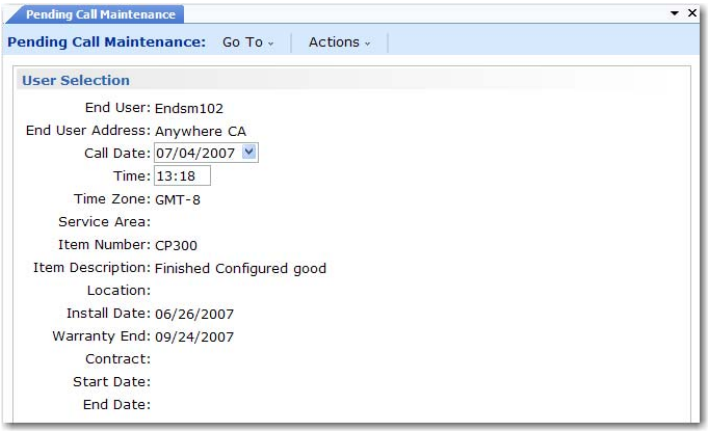
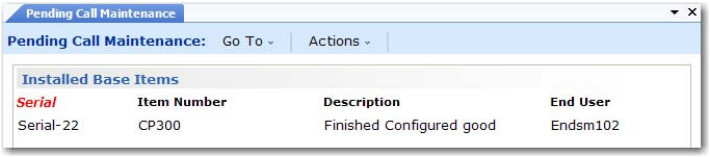


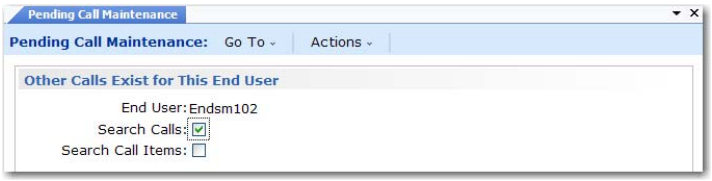
Figure 12.14 illustrates the frame that displays when you enter Yes to Search ISB and `fspcsr1.p` is the program to execute when l-search-isb is true. This search must occur after the user has entered a serial number to search for.

Fig. 12.14
Pending Call Maintenance Example, Installed Base Items



The frame in Figure 12.15 displays when you add a condition to check for other calls for the specified end user.

Fig. 12.15
Pending Call Maintenance Example, Other Calls Exist for This End User



When `fscpcsr3.p` is defined as the program to execute based on the condition that Search Calls is Yes (l-search-call is true), the frame in Figure 12.16 displays. A slightly different frame displays when Search Call Items is Yes.

Fig. 12.16
Pending Call Maintenance Example, Open Calls for End User

Figure 12.17 illustrates the second User Selection frame that lets you modify the call open date and time if necessary.

Fig. 12.17
Pending Call Maintenance Example, Second User Selection Frame

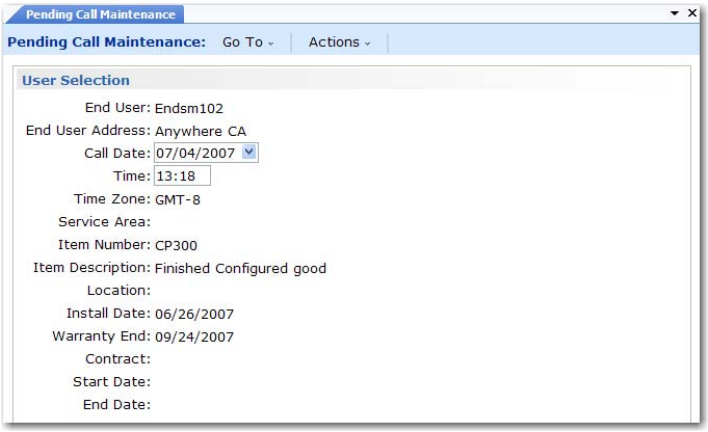


Figure 12.18 illustrates the Default frame in the DEMO profile. This frame is similar to the pop-up in Call Maintenance that prompts for the same three fields, which comprise the key for call default records defined in Call Default Maintenance. Pending Call Maintenance does not search for call defaults until these three fields have all appeared on a frame, either together or separately.

Fig. 12.18
Pending Call Maintenance Example, Default

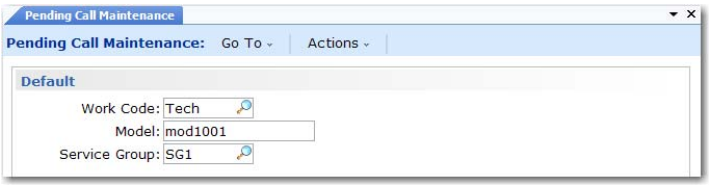
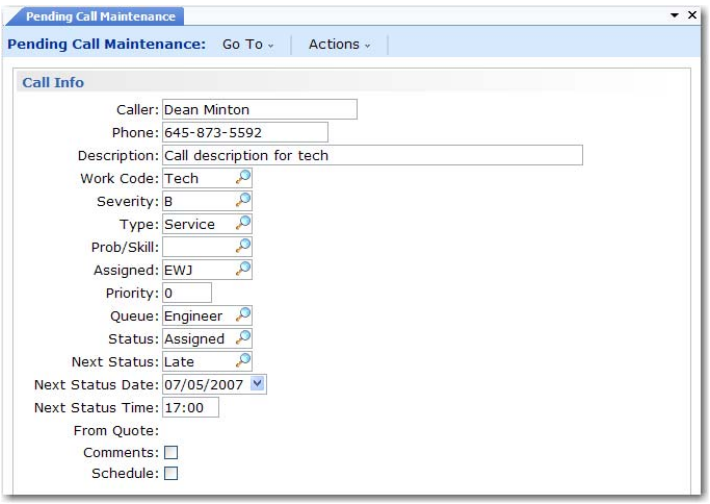


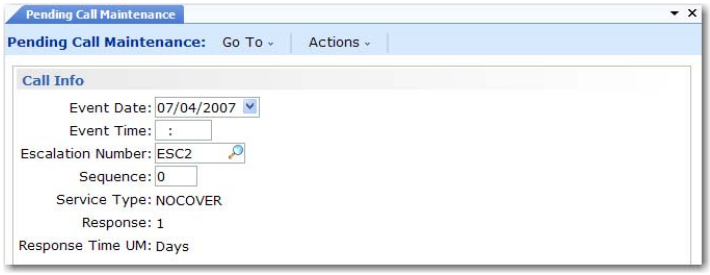
Figure 12.19 illustrates the Call Info frame in the DEMO profile. This frame is similar to the Call Info frame in Call Maintenance, where most of the key fields related to a call are updated.

Fig. 12.19
Pending Call Maintenance Example, Call Info



Because frames in Pending Call Maintenance can include at the most 18 fields, a second frame is needed to accommodate all the fields that display in one frame in Call Maintenance. Figure 12.20 illustrates this frame.

Fig. 12.20
Pending Call Maintenance Example, Second Call Info



When `fscammt.p` is defined as the program to execute based on the condition that Comments is Yes (l-call-info-comments is true), the frame in Figure 12.21 displays.

Fig. 12.21
Pending Call Maintenance Example, Comments

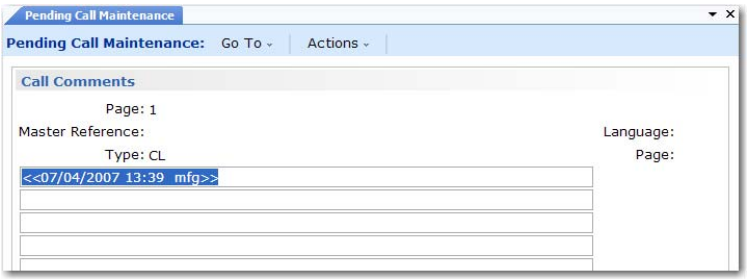


Figure 12.22 illustrates the Travel and Estimated Time frame in the DEMO profile.

Note Even if this frame is part of a profile, it displays only when Call Time Window is Yes for the user in Service/Support User Preferences (11.21.23) or for the system in Call Management Control (11.1.24).

If you are using escalations, the default values for some of the fields in this frame are updated based on the escalation and sequence specified in the previous frames. While pending calls are not escalated when the Escalation Monitor runs, the default next event date and time are affected by an escalation associated with them. Once the pending call is transferred, the next sequence of the escalation will be executed.

The first four fields in this frame always display in Call Maintenance. The remaining fields display only when Multiple Time Zones (MTZ) is enabled in Service Management Control (11.24). These fields will not have values in Pending Call Maintenance when MTZ is not enabled. If you base your profiles on the DEMO profile and do not use MTZ, use Pending Call Frame Maintenance to remove these fields.

Fig. 12.22
Pending Call Maintenance Example, Travel and Estimated Time

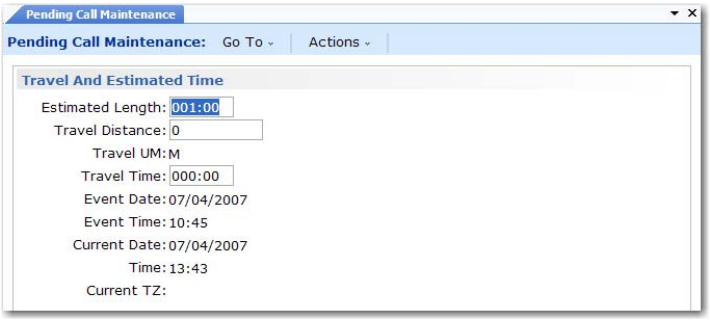


Figure 12.23 illustrates the Item Service Structure Detail frame in the DEMO profile. The fields in this frame all apply to the first line item on the call.

Note Even if this frame is part of a profile, it displays only when Call Structure Window is Yes for the user in Service/Support User Preferences or for the system in Call Management Control.

Fig. 12.23
Pending Call Maintenance Example, Item Service Structure Detail

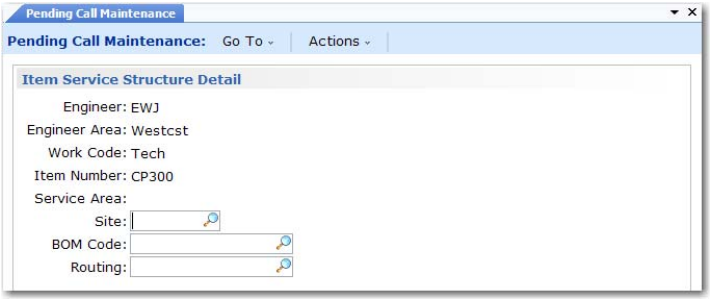


Figure 12.24 illustrates the Call Update frame in the DEMO profile, which is similar to the same frame in Call Maintenance. The fields in this frame apply to the call record, not line items. You can add more lines to the call by setting Multi Items to Yes.

Fig. 12.24
Pending Call Maintenance Example, Call Update

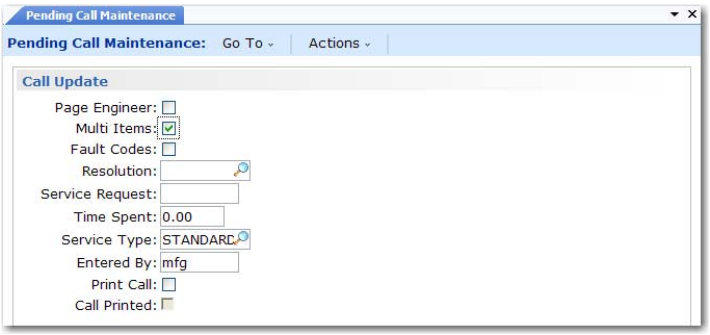
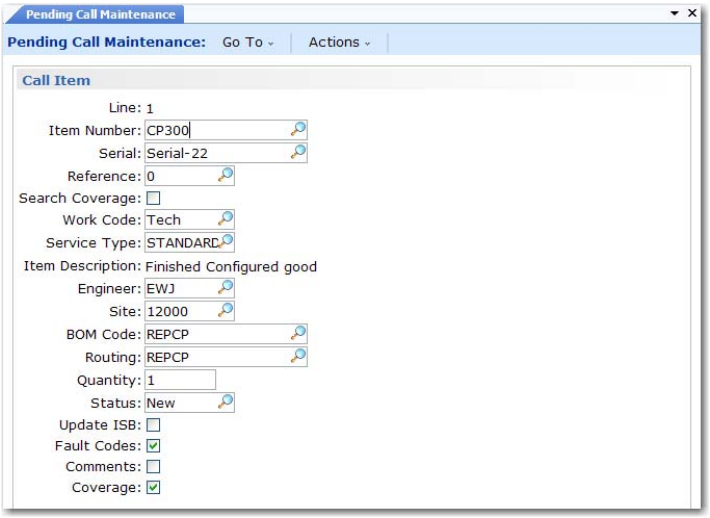


Figure 12.25 illustrates the Call Item frame in the DEMO profile, which displays when Multi Items is Yes in the previous frame. The fields in this frame apply to the indicated call line item. The line number begins with 1 and automatically increments through existing lines each time you click Next. After all existing lines display, clicking Next adds the next line. You cannot use Next/Previous directly in the line number field.

Fig. 12.25
Pending Call Maintenance Example, Call Item



The Coverage Information frame illustrated in Figure 12.26 displays when `fscarmtx.p` is specified as the next program to execute when Coverage is Yes (l-coverage is true).

The fields in this frame are display only, like the similar frame in Call Maintenance and Call Activity Recording and for informational purposes only. A second frame is included when coverage limits exist.

Fig. 12.26
Pending Call Maintenance Example, Coverage Information

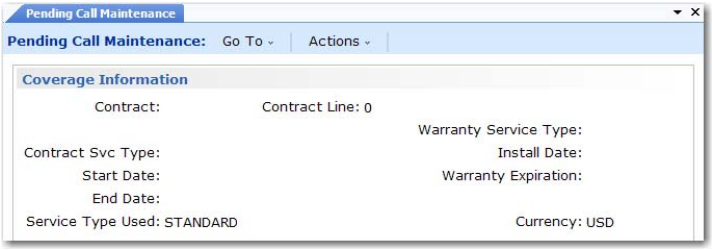
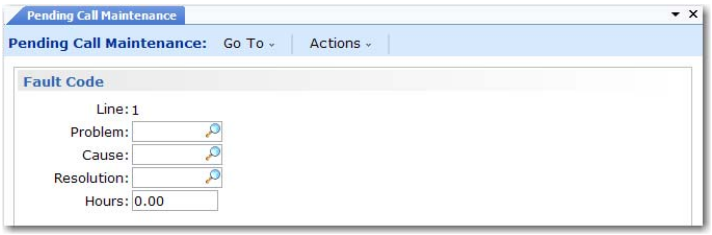


Figure 12.27 illustrates the Fault Code frame in the DEMO profile that displays when Fault Codes is Yes in the previous Call Item frame. The line number is like the item line number field (see Figure 12.25). It begins with 1 and automatically increments through existing lines each time you click Next. After all existing lines display, clicking Next adds the next line. You cannot use Next/Previous directly in the line number field.

Fig. 12.27
Pending Call Maintenance Example, Fault Code



A final frame displays when `fspcup2.p` is specified as the next program to execute. This frame is used to validate and transfer the pending call to Call Maintenance. This frame is discussed in the following section.

In Call Maintenance, clicking Back at this point returns the cursor to the first call header frame. The DEMO profile has been configured with backward frame sequences, which let you navigate backwards through all frames, except for the second call info and user selection frames. You can modify this design by changing the frame sequence records.

See Figure 12.28 on page 364.

Transferring Pending Calls

Pending calls are typically a preliminary step before creating an actual call record. The system supports two ways of transferring pending calls to call master records:

- Use Pending Call Transfer (11.1.3.7) to create active calls for a range of pending calls. This program takes the data specified for one or more calls in Pending Call Maintenance and creates corresponding call records that can be maintained in Call Maintenance.
- Transfer calls one at a time in Pending Call Maintenance by specifying `fspcup2.p` as the next program to run in a pending call profile. This method provides some additional options that do not exist in Pending Call Transfer.

The system validates the data for each call before it is transferred. You can optionally ignore warnings but errors prevent a call from being successfully transferred.

Transferring a pending call:

- Copies all data from the pending call table to appropriate call-related tables, including comments, call lines, and fault codes.
- Automatically changes the pending call status from Entered to Transferred. A transferred pending call can no longer be updated in Pending Call Maintenance.

Status displays on various reports such as Pending Call Data Report (11.1.3.5). Use this report to view pending calls by date transferred. You can also archive and delete pending call records by transfer date in Pending Call Delete/Archive (11.1.3.11).

Transferring Calls One At a Time

When `fspcup2.p` is part of the profile being used in Pending Call Maintenance, the frame illustrated in Figure 12.28 displays.

Note This is the way the DEMO profile is configured.

Before the frame displays, the system:

- Processes all data for the current pending call ID
- Validates all fields, generating one error message or warning message per field

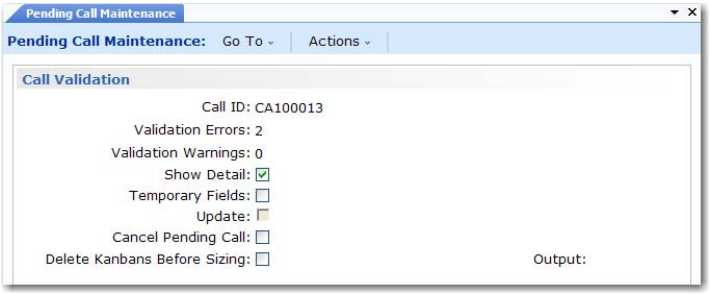
If any errors or warnings are found, the Call Validation frame redisplays with the error and warning count and the system sets defaults for various fields as follows:

- Show Detail is set to Yes and Temporary Fields is set to No.

- Transfer Call is set to No and can be updated only if all messages generated during validation are warnings. If errors are found, the call cannot be transferred.
- Cancel and Delete Pending Call are both set to No by default and can be changed.

When no errors or warnings are found, Show Detail is set to No and Transfer Call is set to Yes.

Fig. 12.28
Pending Call Maintenance Example, Call Validation Frame



Show Detail. Enter Yes to display a report listing the pending call field values and any related error or warning messages.

Temporary Fields. When Show Detail is Yes, indicate if you want to include the value of temporary fields in the report output:

No: Only data for fields that are transferred to the call are shown in the report.

Yes: In addition to pending call data that is transferred to Call Maintenance, the report displays the value of temporary fields associated with the pending call, such as data from control programs, the end user record, item record, or contract.

Use this option when you initially design and test pending call profiles to verify that call defaulting occurs the way you expect.

Transfer Call. Enter Yes to transfer the pending call record and create a valid call record in the call master table.

Enter No to run the transfer program in report-only mode without updating the database. If Show Detail is Yes, a report prints for review with SIMULATION displayed at the top of each page.

This field defaults to No if any errors or warnings were generated during validation (either Validation Errors or Validation Warnings is not 0). You can modify this field when warnings exist; when errors exist, the field is set to No and cannot be modified. Errors must be corrected before the pending call can be transferred.

Set Show Details to Yes to see which fields generated errors or warnings.

Cancel Pending Call. Enter Yes if you want to cancel this pending call; otherwise, enter No.

You cannot set Cancel Pending Call to Yes if either Transfer Call or Delete Pending Call is Yes.

When Cancel Pending Call is Yes, the status of the pending call is set to Canceled. Pending calls with this status cannot be updated, transferred, or deleted.

Status displays on various reports such as Pending Call Data Report. Use this report to view pending calls by date canceled. You can also delete/archive pending calls by cancel date using Pending Call Delete/Archive.

Note The status change does not occur until you click Back in this frame.

Delete Pending Call. Enter Yes if you want to delete this pending call; otherwise, enter No.

You cannot set Delete Pending Call to Yes if Cancel Pending Call is Yes. However, you can set both Delete Pending Call and Transfer Call to Yes at the same time. This lets you transfer the pending call to the call master and remove the pending call record from the database in one operation.

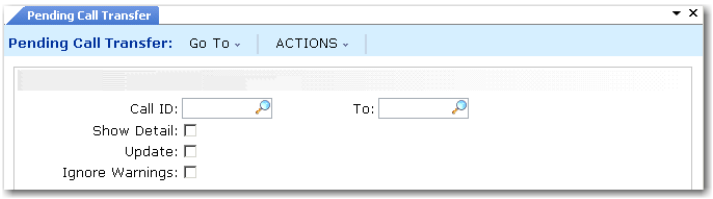
Note The record is not deleted until you click Back in this frame.

Transferring Calls in Batch

Use Pending Call Transfer (11.1.3.7) to create active calls for a range of pending calls. Set Transfer Calls to No and Show Detail to Yes to view a report of any errors the system detects regarding the pending call data. This option generates a report listing each field in the pending call and any associated error. The report is marked as a simulation, since the database is not actually updated. Correct any errors using Pending Call Maintenance before attempting to transfer the call since errors prevent the transfer from completing successfully.

When you are sure that the range of pending calls you are specifying will not generate any errors, set Transfer Calls to Yes to update the call master table with the new call data.

Fig. 12.29
Pending Call Transfer (11.1.3.7)



Call ID. Enter a range of IDs for pending calls to be transferred. Only pending calls with a status of Entered are selected for transfer.

Show Detail. Indicate whether to display details for all the fields in the pending call record.

No: The report shows one line for each call transferred, including the call ID and status.

Yes: Information is listed for each field in the pending call record, including the field name, field label, and field value. Fields are listed in order for the call header, followed by each call line, followed by each line of fault code information.

Note You cannot display temporary fields when you use this program to transfer calls. This is possible only with the frame that displays in Pending Call Maintenance. See “Temporary Fields” on page 364.

Any error or warning messages generated are only included on the report if Show Detail is Yes, since they are associated with specific fields. Unless you are sure that no errors will be generated, set Show Detail to Yes so that you can identify fields that must be modified for the transfer to succeed.

Transfer Calls. Enter Yes to transfer pending call records and create valid call records in the call master table.

Enter No to run this program in report-only mode without updating the database. A report prints for review with SIMULATION displayed at the top of each page.

Ignore Warnings. If Transfer Calls is Yes, indicate whether any warnings generated during the transfer should be ignored.

No: When Transfer Calls is Yes, a call generating a warning is not transferred. The appropriate warning is written to the report.

Yes: When Transfer Calls is Yes, a call is transferred even when it generates one or more warning messages.

Viewing Pending Call Data

Table 12.5 summarizes pending call reports.

Table 12.5
Pending Call Reports

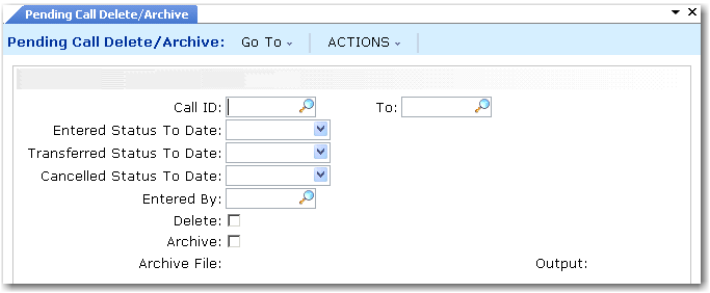
Report	Menu Number	Description
Pending Call Data Inquiry	11.1.3.3	Displays summary information about a specific pending call.
Pending Call Data Report	11.1.3.5	Displays summary or detailed information about pending calls, based on various selection criteria such as ID, customer, or end user; item and serial number; date created, transferred, or canceled; and existence of a field or range of field values. The summary displays one line for each call, including the call ID and status; the creation date, time, and user ID; and the last modification date, time, and user ID. The detailed report lists information for each field in the pending call record, including the field name, field label, and field value. Fields are listed in order for the call header, followed by each call line, followed by each line of fault code information.
Pending Call Profile Report	11.1.3.21	Displays information about the user IDs and groups associated with a profile, as well as its frames, fields, and frame sequences.

Removing Obsolete Pending Call Records

Use Pending Call Delete/Archive (11.1.3.11) to delete and archive pending call records and associated data such as comments and fault codes when online history is no longer needed. You can select records by status change date and by the ID of the user who created them.

This program is like other delete/archive programs in. Run a report first by setting Delete and Archive to No. When you are sure only appropriate records are selected, change Delete to Yes.

Fig. 12.30
Pending Call Delete/Archive (11.1.3.11)



Chapter 13

Call Quotes

This chapter introduces call quotes and their role in the service process. With call quotes, service organizations can provide estimates for services such as repairs, installation, and preventive maintenance. The estimate can provide details about labor, expenses, and items to be consumed.

Overview of Call Quotes

To sell services to prospective customers, many service organizations provide quotations, which outline the labor, expenses, and replacement items (components) required for service or repair work. Quotations include the terms and conditions for the detailed services.

In Service/Support Management, call quotes are based on user-defined codes such as invoice sort, charge code, and service category. This enables a service organization to structure service proposals the same way it invoices service activities. To maintain this structure, call quotes are similar to Call Activity Recording (CAR).

Fields in Call Management Control that affect call quotes include Next Quote ID, Quote Prefix, Days Until Expire, and Default Quote Queue.

See Chapter 25, “Control Programs,” on page 641 for details of control program settings.

Call Quote Life Cycle

Some service organizations let customers review the cost of repairs before they are made, especially for expensive items. The customer sends the item to the service center, or a field engineer reviews the item at the customer’s site. The engineer estimates the labor, expenses, and parts required to repair the item.

This detailed estimate is a *call quote*. Call Quote Maintenance is an entry point to the same frames used in Call Activity Recording (CAR). In CAR, the engineer records the labor, expenses, and parts consumed during a repair. In Call Quote Maintenance, the engineer uses the same frames to record estimates before the repair is done.

After you enter the details of a quote, Call Quote Maintenance displays a summary similar to the summary frame of Call Invoice Recording (CIR). This frame summarizes the pending invoice amounts, based on the engineer’s estimates. CIR generates a pending invoice. Call Quote Maintenance creates a simulated invoice. Both use the same method to summarize costs and display them by invoice sort.

Two limitations exist for a call quote’s simulated invoice amount:

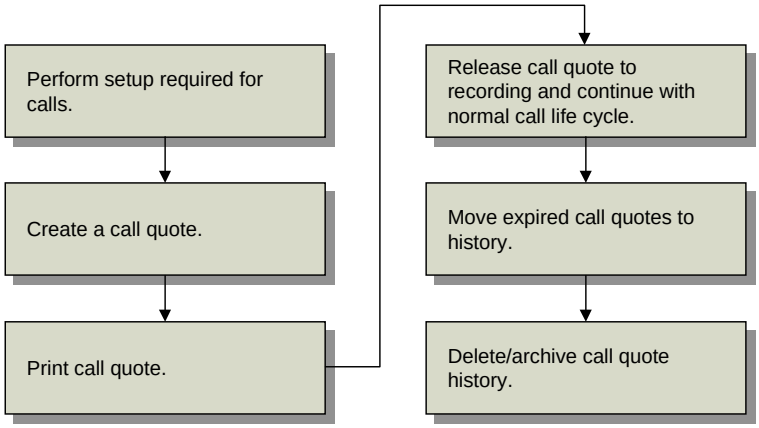
- Call Quote Maintenance uses service type just as Call Maintenance does, to determine product line, price list, response time, priority, and coverage days. However, instead of using the limits and levels of coverage, it calculates all quantities as 100% billable. See “Calculating Quote Amounts” on page 371.
- Call Quote Maintenance does not calculate taxes. When you create a sales order and generate an invoice in Call Invoice Recording, the system calculates taxes in the sales order trailer.

Other differences between Call Quote Maintenance and Call Activity Recording include:

- You can open only one report for each call quote line. In CAR, you can open multiple reports.
- The status of call quote reports is always Quote. The status determines whether a report can be invoiced. Quote reports cannot be invoiced.

Figure 13.1 illustrates the life cycle of a call quote.

Fig. 13.1
Call Quote Workflow



The call quote life cycle has the following steps:

1. Because a call quote can become a call, call quotes require the setup normally used for Call Maintenance: end-user information, service BOMs and routings, engineers, status codes, queues, and service types and contracts. Because a call quote's input process is the same as Call Activity Recording, call quotes need the same setup as Call Activity Recording, including charge codes and charge product lines.

   To minimize data entry when creating call quotes, create sets of quote defaults in Call Default Maintenance (11.1.21.10) by setting category to Quote. You can access defaults you created in Call Quote Maintenance.

   See "Setting Up Call Defaults" on page 269.

2. Create quotes in Call Quote Maintenance (11.1.1.7). To simplify data entry for similar repair operations, copy an existing quote in Copy Call Quote (11.1.1.12).

3. Print call quotes using Call Quote Print (11.1.1.10).

4. If the customer accepts the quote and decides to proceed with the repair, use Call Quote Release to Recording (11.1.1.11) to create a call based on the quote. The quote number that initiated the call displays in the Call Info frame of Call Maintenance.

   Releasing a quote sets a closed date so it cannot be released again.

5. Use Expired Quote Move to History (11.1.1.22) to move expired or released quotes to a history table and delete them from the call master table.

6. From the history table, you can archive and delete quotes with Call/Quote History Delete/Archive (11.1.1.23).

Calculating Quote Amounts

When creating a quote, you prepare a detailed estimate of the labor, expenses, and parts required to repair the item. If the item to be serviced has no contract or warranty coverage, you can simply use current list prices for items and service categories to calculate the billable amount.

Call Quote Maintenance uses service type information to identify the product line, repair and cost price lists, response time, and hours of coverage. However, even if the item is under contract or warranty, the levels and limits of coverage are not considered. The quoted repair is estimated at the full list price for items, expenses, and labor.

This approach to estimating is used because there is no way to be sure that coverage in effect on the quote open date will still be in effect on the call open date.

- Coverage may expire before you perform the repair because the end date of the warranty or contract is reached.
- Coverage terms may have been defined with effective dates so that the same terms are no longer in effect when the call is created.
- If you are using contract limits, coverage can also expire if other calls consume the amount before you release the quote.

As a result, the actual amount billed for the call may be less than the quote. To indicate this, create master comments explaining that the prices are subject to coverage terms in effect when the quote is released.

Using BOMs and Routings

When you create a quote for items defined in Service Item Maintenance (11.3.7), you can use the repair, PM, and installation BOM and routing for labor and item details. Operations defined in the routing can be loaded in the Labor/Expenses detail. Items specified on the BOM can be loaded into the Item Usage frame.

Using service BOMs and routings streamlines data entry for standard repair sequences. You can customize the sequence for the quote.

When the quote is released to a call, you can decide if you want item usage records copied into Call Activity Recording. If you copy the detail, the engineer can simply adjust the existing records to reflect the work performed during the repair. However, if you plan to order items for the call with material orders and load them as item usage, you can choose not to copy the usage records during the release process.

See Chapter 21, “Service Structures and Routings,” on page 557.

Important You should either copy the item usage to the call or load item usage from material orders associated with the call, but not do both. If you do, item usage records will be doubled.

Allocations and Requirements

When creating a quote, you can also create general allocation records. Do this when:

- The quote is likely to become a call.
- Inventory is limited.

Note No MRP requirements are associated with call quotes.

You cannot perform detail allocations (picking) in Call Activity Recording or Call Quote Maintenance. In CAR, you can identify the specific inventory you used for the call—for example, by item number, site, location, serial number, and inventory reference number. For call quotes, you can create general allocations only. The detail about specific items used must be recorded in CAR. For this reason, the Multi-Item frame does not display in Call Quote Maintenance.

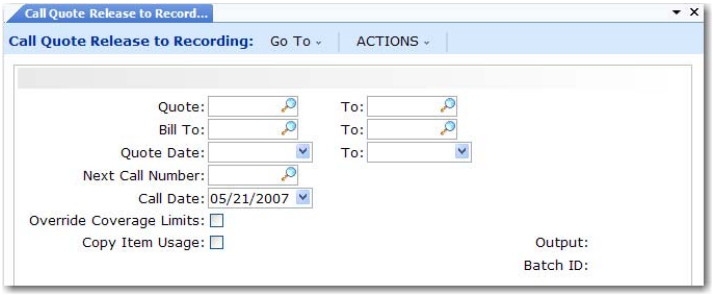
When you create a call from the quote, Call Quote Release to Recording:

- Updates MRP and quantity required to reflect the call's requirements
- Sets the required date for MRP to the call's next status date

Creating a Call from a Quote

Use Call Quote Release to Recording (11.1.1.11) to create calls from selected call quotes. You can release a quote to a call only once. To be released, the quote must have the open status defined in Call Management Control.

Fig. 13.2
Call Quote Release to Recording (11.1.1.11)



Call Quote Release to Recording performs the following actions:

- Sets the quote number as the Reference field in the Call Info frame of Call Maintenance and in Call Activity Recording
- Sets the call number in the Reference field of Call Quote Maintenance
- Copies the quote data to the call including the quote comments
- Copies all usage records unless Copy Item Usage is No; then only labor and expense usage is copied
- Transfers the quote's engineer load to the call
- Creates MRP requirements
- Deletes the quote's allocations and re-creates them for the call
- Closes each quote report, so it cannot be updated
- Sets the quote's closed date to the release date

The first set of fields in Call Quote Release to Recording provides ways to select quotes for release. Call Date defaults from the system date, but you can modify it.

Note Leave Next Call Number blank to supply the next number from Call Management Control.

A released quote, like an expired quote, is closed. You can move it to history, delete, and archive it.

Calculating Coverage during Release

If a contract covers items on a quote, Call Quote Release to Recording calculates coverage based on the consumption of contract limits. Set Override Coverage Limits to Yes to apply coverage even to amounts over the limits. Set it to No to use the contract limits.

If a service type (warranty or generic) provides the coverage, Call Quote Release to Recording calculates the percentage of coverage without consideration of limit amounts.

The release report informs you of limits that were overridden. You can modify coverage amounts in Call Activity Recording.

Note When Multiple Time Zones (MTZ) is active, the quote date range and call date are relative to the customer's time zone, since Call Quote Release to Recording uses Call Date to find default charge codes and limit coverage. Refer to Chapter 4, "Multiple Time Zones," for more information.

Errors in Releasing Quotes

Call Quote Release to Recording generates errors if either of the following occurs:

- Credit Hold Option is 2 in SSM Accounting Control and the customer or end user on the quote is on credit hold.
- The customer on the quote requires a purchase order and you have not specified one on the quote.

Printing Quotes

Call Quote Print produces a document for the customer, showing the items to be serviced and details about labor, expenses, and items to be used. The quote document uses the company address specified in SSM Accounting Control.

The quote does not include information about applicable coverage or taxes. You can create master comments, printed on the report, explaining that the prices are subject to coverage amounts in effect when the quote is released.

Expired Quotes

Quotes remain in effect for a period controlled by Days to Expire in Call Management Control. The system adds the value in Days to Expire to the quote creation date to determine the quote's expiration date.

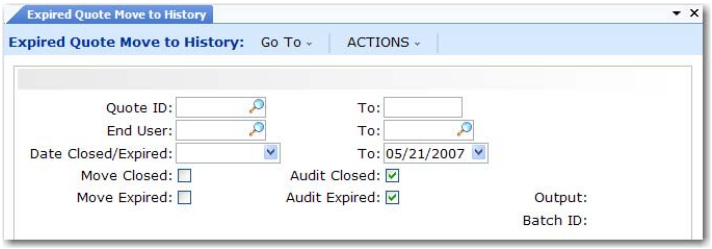
When you access a quote in Call Quote Maintenance, a warning displays if the quote is expired. You cannot release an expired quote. Change the expiration date to reactivate the quote.

Move released or expired quotes to a history table with Expired Quote Move to History (11.1.1.22). Delete and archive quotes from the history table with Call/Quote History Delete/Archive (11.1.1.23).

Moving to History

Maintain quote history on line by moving expired and released (closed) quotes to a history table.

Fig. 13.3
Expired Quote Move to History (11.1.1.22)



Expired Quote Move to History has the following options:

- Select quotes by quote ID range, by end-user range, or by expiration or close date range. Releasing a quote sets the close date.
- Move closed quotes, expired quotes, or both using Move Closed and Move Expired.
- Produce a report of potentially affected quotes without moving them by setting both move fields to No and both audit fields to Yes.

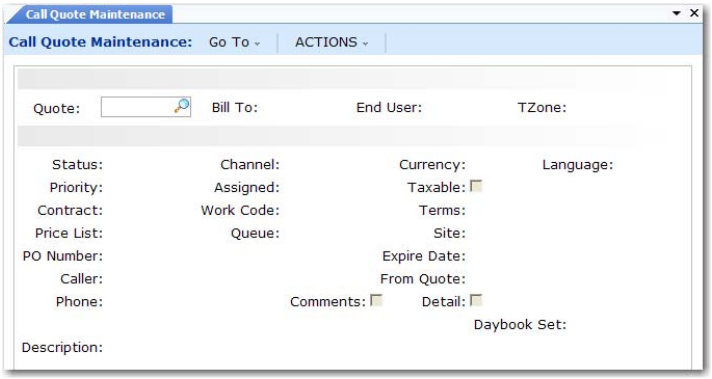
Expired Quote Move to History copies quotes meeting the specified criteria from the call master (ca_mstr) to call history (chm_mstr), then deletes the quote from call master. You can save the quotes in the history table, or delete and archive them with Call/Quote History Delete/Archive (11.1.1.23).

Moving a quote to history removes any general allocations or engineer load associated with it.

Call Quote Maintenance

Define defaults for call quotes with Call Default Maintenance (11.1.21.10). See “Setting Up Call Defaults” on page 269 for details. Some defaults display in Call Quote Maintenance (11.1.1.7). Others appear when you create a call from the quote.

Fig. 13.4
Call Quote Maintenance (11.1.1.7)



Quote. Enter a number or let the system generate one from the quote prefix and next quote number in Call Management Control. You must distinguish call quotes from calls with a unique prefix.

Bill-To. Enter a customer bill-to address indicating the customer responsible for this quote.

End User. Enter the end user associated with the items to be serviced. To search for an end user or create a new one, leave this field blank. In this case, the End User Selection frame displays. See “End User Selection Frame” on page 289.

Contracts Pop-Up

When you enter an end user, a pop-up window displays the contracts that are in effect for the end user. When you select a contract, the call price list associated with the contract defaults into the Price List field, and the contract number defaults into the Contract field.

If you bypass this pop-up, you can enter the contract in the Contract field, and its price list displays. If there is no contract, the price list associated with the Default Call Service Type, defined in Call Management Control, displays.

The service type used for line-item coverage depends on whether you select a contract for coverage or if the item is in the installed base and covered by warranty:

- If a contract is specified, its service type is used.
- If an item in the installed base is covered by a warranty, this service type is used.
- Otherwise, the default call service type in Call Management Control is used.

Quote Defaults Pop-Up

When you create a quote and quote defaults exist, a pop-up window displays between the first and second frame of Call Quote Maintenance, like the one that displays in Call Maintenance.

Enter values in the pop-up to find the most appropriate defaults. The work code initially defaults from the technical work code defined in Call Management Control.

See “Call Defaults Pop-Up” on page 291 for an example.

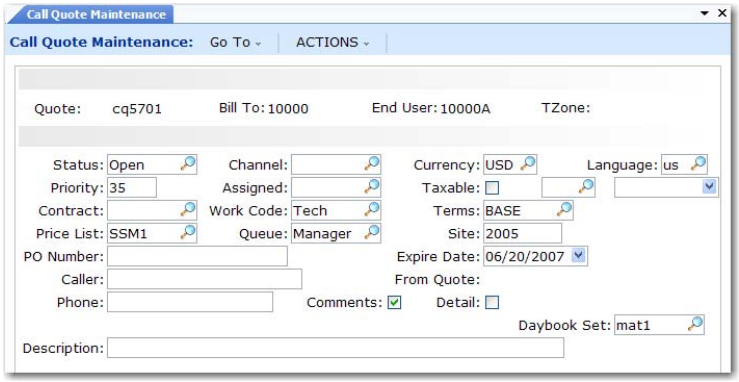
If no defaults match the work code, model, and service group, the system looks for a match by work code and model, then work code alone. If no defaults match the work code, it uses defaults set up for call quotes, as opposed to calls.

See “Setting Up Call Defaults” on page 269 for more information on the search algorithm.

Quote Header Frame

If you are using quote defaults, many header fields have information when they display.

Fig. 13.5
Call Quote Header



Status. Indicate where the quote is in its life cycle, which determines the status of the call created from it. Define statuses of quotes and calls in Call Status Code Maintenance (11.1.21.1). For a new quote, the status defaults first from Call Default Maintenance, then from the Open status in Call Management Control.

Priority. Enter a number indicating how important this call quote is. Lower numbers indicate higher priority. In order of precedence, the value defaults from:

- Call Priority in End User Data Maintenance
- If Call Priority is blank and you select a service contract, the Priority field in Contract Type Maintenance
- If no contract exists, the Priority field of the Default Call Service Type in Call Management Control
- Service/Support User Preferences

Contract. If you previously selected a contract, its number defaults into this field. If not, enter the contract now. The call price list associated with the contract type displays by default in the Price List field when the quote is created. If you change the contract later, you must enter the correct price list.

Price List. Use a repair price list. This field determines prices for service on this quote. If you previously selected a contract, the default is the call price list associated with the contract. If no contract is selected, the default is the price list associated with the Default Call Service Type in Call Management Control.

PO. Specify a purchase order number for the service activity associated with this quote. A warning displays if this field is blank and the end user requires a purchase order. Before you release the quote, you must supply a purchase order.

Caller. Defaults from the primary contact in the end-user record.

Phone. Defaults from the telephone number for the primary contact in the end-user record.

Description. Enter a brief description of the quote. The field defaults from Call Default Maintenance.

Channel. An optional code identifying the distribution channel originating this call quote. Use Channel to determine GL sales account and COGs accounts affected by inventory transactions in CAR and CIR. Set up optional sales accounts with Sales Account Maintenance (1.2.17) based on product line, site, customer type, and channel.

Assigned. If Assign Primary Engineer is Yes in Call Management Control, the Assigned field defaults from the primary engineer assigned to the end user. You can enter another engineer or leave the field blank.

Work Code. If you are not using quote defaults, this field defaults from the technical work code in Call Management Control (11.1.24). Set up work codes in Work Code Maintenance (11.21.1). The work code indicates the type of service performed and affects invoicing and service limits. See “Work Codes” on page 65 for details.

Queue. Enter the queue to which this quote is assigned. Quotes use the same queues as calls, set up with Call Queue Maintenance (11.1.21.7). For a new quote, this field defaults from current quote defaults, then from the user’s default quote queue in Service/Support User Preferences, then from the default quote queue in Call Management Control.

Currency. Defaults from the currency of the customer bill-to record associated with this call. The first time through, you can select any currency, but after you move to the next frame, you cannot change the currency.

Taxable. Sets the default value for each line item, which you can mark individually as taxable or not. If Taxable is Yes, enter a tax class and effective date. See Chapter 7, “Taxes in SSM,” on page 165.

Terms. Defaults from the credit terms associated with the bill-to address of the customer initiating the call.

Language. Defaults from the language associated with the end user, then the customer initiating the call. Use Language to select appropriate comments to print on an invoice.

Expire. Calculated by the system, this field is the current date plus the value in the Days to Expire field in Call Management Control. Expired quotes cannot be released to recording.

Note If MTZ is active, the expiration date displays with a value relative to the end user’s time zone.

Site. The site on the header determines the default tax environment associated with the quote. Site for items can differ from the call site. For items, the site is the place where repairs are performed or where the assigned engineer gets parts for the service activity. This information is important in Call Activity Recording. The system follows these steps to assign a default site:

- Uses the site/location associated with the assigned engineer in Engineer Maintenance (11.13.1). If you leave the engineer site blank and specify a location, the system uses the area site. The engineer location takes precedence over the area location.
- Uses the site or location associated with the engineer’s area if the engineer does not have a site or location.
- Uses the default spares site/location in Default Site Maintenance (11.21.13) if the above values are blank.
- Uses the site/location defined in the item master if a site still has not been found.
- Uses the site associated with the end user’s customer in Customer Data Maintenance if a site still has not been found.

Reference. When you release this quote to recording, the number of the call created from the quote displays in this field as a reference.

Comments. If Yes, you can review or update comments associated with the quote. After you select or enter comments, you can specify where you want them to print.

Detail. Determines whether the Detail field for each line in the Labor/Expense and Item Usage frames defaults to Yes or No. Set this field in the header for more control over line item entry.

Item Selection Frame

After you enter an item requiring repair, the system fills in the item details, which you can modify. Frames display for recording labor, expenses, and items to be consumed during the repair.

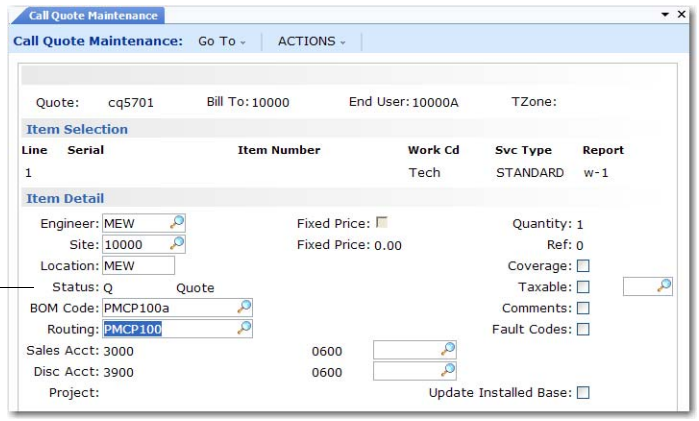
If you attached a repair BOM and routing to the item in Service Item Maintenance (11.3.7), the items and operations load into the detail frames for this quote. You can modify the items and quantities.

See “Item Selection Frame” on page 416.

Note In CAR, you can use the Report field to open multiple reports for recording activity against a call line, so that progressive invoicing can take place. In Call Quote Maintenance, you cannot open multiple reports against an item.

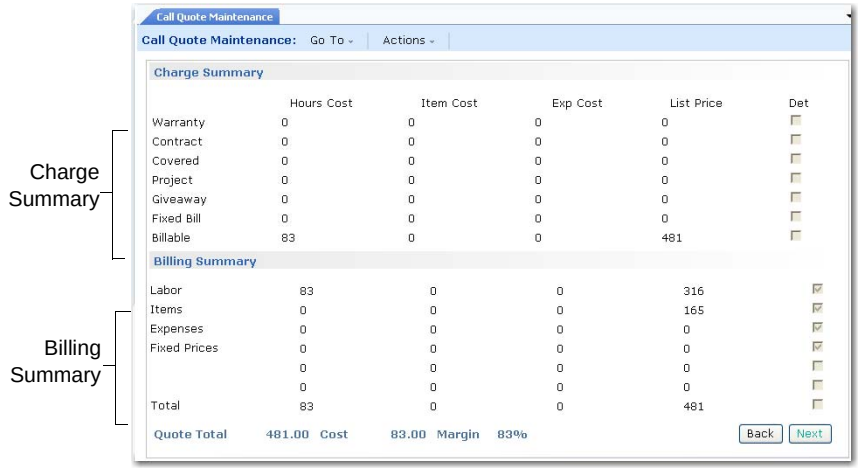
The status of reports on quotes is Quote, indicating the system does not invoice these amounts.

Fig. 13.6
Item Selection Frame



After costs are recorded, a summary frame displays.

Fig. 13.7
Call Quote Maintenance Summary



These frames summarize the cost of the proposed service and the amount to bill to the customer. Unlike Call Invoice Recording, Call Quote Maintenance does not calculate taxes and all service is billable to the customer.

See “Understanding CIR Summaries” on page 448.

Chapter 14

Call Activity Recording

With Call Activity Recording (CAR), you can record the parts, labor, and expenses used in servicing a call. This detail becomes the basis for generating an invoice either at the end of CAR or later in Call Invoice Recording (CIR). This chapter discusses the process of recording labor, expense, and item usage in CAR.

Introduction to CAR

Call Activity Recording (CAR) provides a flexible, comprehensive way to record labor, expenses, and items consumed during a call. CAR information supports other areas, including:

- *Call Invoicing*. Call Activity Recording helps create accurate call invoices, managed in Call Invoice Recording (CIR).
- *Engineer Reporting*. Call Activity Recording supports detailed engineer reporting. You can report the labor performed, the items consumed, and expenses encountered, even item by item, while servicing the call. Indicate charges as warranty, contract, covered, billable, fixed billable, project, or giveaway.
- *Cost Flow into GL*. CAR uses control codes to manage the cost flow into the general ledger. You can record costs in specific service accounts and control GL reporting.

Several fields in control programs affect processing in Call Activity Recording.

- In Call Management Control: Close on Recording, Exchange UM, Fixed Price UM, Item Svc Category, Labor Svc Category, Return Status, Scrap Status, and Service Work Center
- In SSM Accounting Control: Modify Sales Accounts and Invoice From Recording

See Chapter 25, “Control Programs,” on page 641 for a description of control program settings.

CAR in the Call Life Cycle

Call Activity Recording is designed to support a wide variety of service contexts. Use it for field engineers who provide preventive maintenance or other services. Use it in a repair depot environment or for telephone support. With CAR, you can set work codes, charge codes, service categories, service types, and invoice sorts in a combination specific to your business.

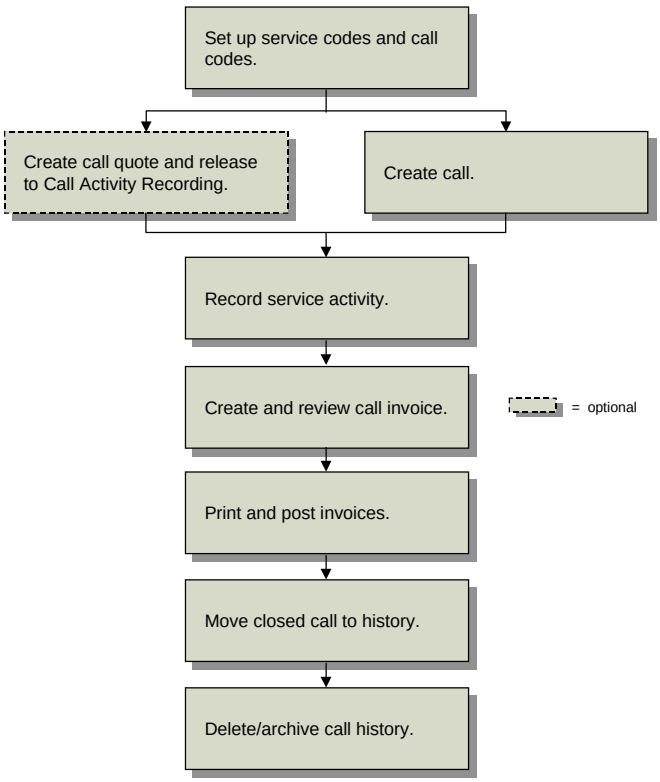
Primary functions of CAR are:

- Recording parts, labor, and expenses used for a call
- Recording items returned for a call
- Producing invoices from the call data for customer billing

  Note You can also generate invoices in Call Invoice Recording.

Figure 14.1 illustrates how Call Activity Recording fits into the call life cycle.

Fig. 14.1
Call Activity Recording in the Call Life Cycle



As shown in Figure 14.1, several activities precede Call Activity Recording and several follow.

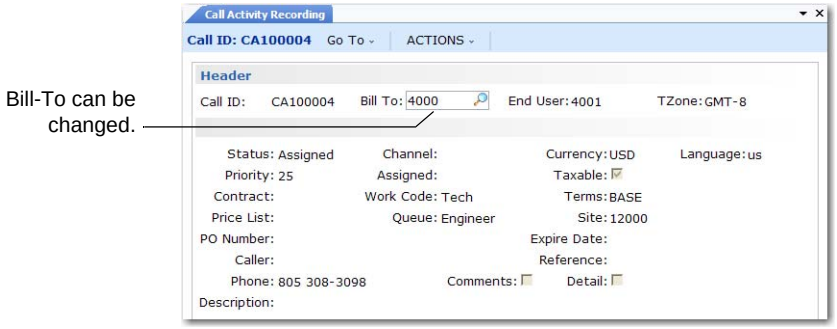
1. First, perform service code and call setup. Settings in Call Management Control (11.1.24) affect processing in CAR, in particular the Call Statuses frame and Call Recording/Invoicing frame. See Chapter 3, “Service Setup,” on page 63.
2. Create a call in Call Maintenance, or by using a background method for installation calls or PM scheduled calls. Or create a call quote and release it to a call.
3. Record labor, expenses, and items consumed in this call in Call Activity Recording. You can generate the invoice in CAR.
4. If you did not generate the invoice in CAR, generate it in Call Invoice Recording. Review the invoice in summary or detail format. See Chapter 15, “Call Invoice Recording,” for details.
5. Post and print the invoice using Invoice Post and Print (7.13.4).
6. When all work is finished, close the call and move it to history.
7. Periodically delete and archive closed calls to regain space.

How Is CAR Used?

Use Call Activity Recording for calls with an open status. The end user must reference a valid customer unless Call Activity with Temp is Yes in Call Management Control. In this case, you can record a call for the temporary customer. Bill-to defaults from the end user's customer. You can change the bill-to code in the Call Activity Recording header if you have not generated an invoice for the call. If a pending invoice exists, you cannot change the bill-to.

Sometimes a call remains open for several weeks—for example, during a lengthy installation project. You can generate several reports for the call in Call Activity Recording and invoice them separately.

Fig. 14.2
Changing Bill-To in Call Activity Recording



The lower frame in Figure 14.2 displays information to define the call, such as call priority, status, price list, a description, the assigned engineer, and the first item's work code. Most fields default from the call and cannot be changed.

In other fields, you enter new information not available in Call Maintenance, such as channel, currency, taxable status and class, terms, site, and detail level.

See Chapter 7, "Taxes in SSM," on page 165 for details about how the system applies tax defaults in CAR.

Specifying Currency

Billing information comes from the prices and costs of service you record in CAR. In some circumstances, you can modify the call currency in CAR. However, if the system set the currency in Call Maintenance, you cannot change it in CAR.

Effect of Contract Coverage

Because you can associate only one currency with a call, each call line references the same currency. Sales order processing, which forms the basis of call billing, imposes this limitation.

Each contract line also reference a currency, which defaults from the end user associated with the line. Any coverage limit amounts on the contract line are defined in terms of the contract-line currency. To apply those limits correctly, the call currency and the contract-line currency must be the same. For this reason, as soon as you add a call line that has contract coverage, the system sets the currency in Call Maintenance and it cannot be changed.

Any other lines you add in Call Maintenance or CAR that derive coverage from a contract must reference the currency already defined for the call.

See “Contract Currency in Calls” on page 188 for details.

Currency for Other Coverage

If coverage comes from a warranty or the default call service type, you can edit the currency when you first access the call in CAR. The currency defaults from the bill-to address for the end user’s customer, or the customer if no separate bill-to address is defined.

You many need to modify currency when your support desk accepts calls from customers with offices in more than one country. For example, a support desk in Germany that covers a European region can change the currency on an incoming call to use an appropriate price list.

Example If the customer’s base currency is Dutch guilders but the call comes from a Paris office, the service engineer can change the call’s currency to French francs.

After you establish a call’s currency, you cannot change it. Be careful when using multicurrency capabilities.

Currency and Price Lists

The price list in CAR can be updated as needed. It defaults either from:

- The Call Price List field of the contract providing coverage
- Or, if a contract is not available, the Call Price List field of the call’s service type

The system uses currency in searching for prices. If you change the currency, ensure that the call price list supports the new currency.

Exchange Rate

When you enter a non-base currency, the system looks for a valid exchange rate defined in Exchange Rate Create (26.4.1), effective on the call open date. An exchange rate pop-up enables you to specify a spot rate, and to indicate if the exchange rate is fixed or not. By default, the system displays both components of the exchange rate relationship. One of these is the base currency and the other is the call currency.

This system uses this rate to convert limit amounts from the base currency to the contract currency. Prices and costs are converted from base to the call currency, and the exchange rate is maintained in transaction history.

When you post the call invoice, the system uses the exchange rate effective on the date of invoice post, unless you have indicated that the exchange rate is fixed.

For details, see the Multiple Currency chapter in *User Guide: QAD Financials A.*

Tracking Purchase Orders

You can enter a purchase order number in Call Activity Recording. Some companies require purchase orders for service billings. You specify whether a customer requires a purchase order in Customer Data Maintenance. The customer value defaults to each end user associated with the customer.

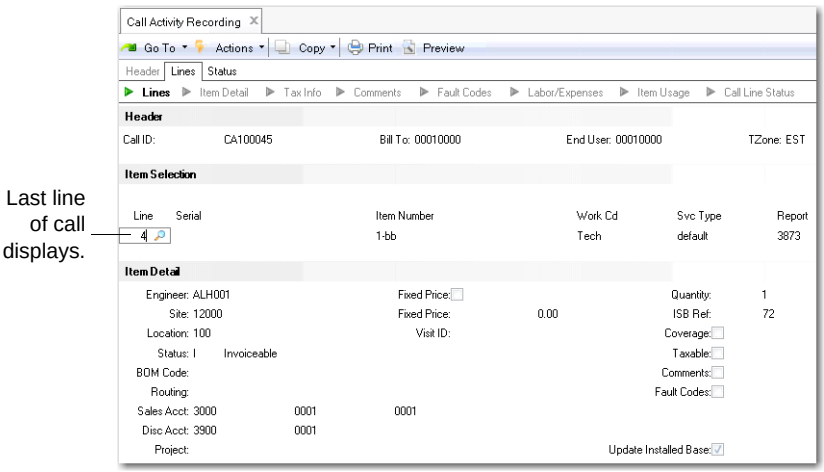
If the end user requires a purchase order, you can enter a call, but you cannot record activity for it until you specify a purchase order.

If the end user does not require a purchase order, you can use the purchase order field for reference. If you specify a purchase order, it is printed on the call invoice.

Displaying Call Items in CAR

The Item Selection frame appears after the CAR header. It displays the items you recorded in Call Maintenance for this call.

Fig. 14.3
Item Selection Frame in Call Activity Recording



When you access the Item Selection frame, the last item appears, as indicated by the number in the Line field. This way you know immediately how many items are on the call. Use Next/Previous to view other call items.

You can add items to a call using the CAR Item Selection frame. Use this feature if an end user wants more items repaired after the call is created. Instead of opening a new call, you can add lines to the existing one.

Select a line item on the call to record labor, expenses, and items used in detail frames.

Multiple Time Zones in CAR

Activating Multiple Time Zones (MTZ) affects Call Activity Recording. Most call dates and times refer to the end user's time zone. The exception is the tax date. It refers to the domain time zone, like other system tax dates.

See Chapter 4, "Multiple Time Zones," for details.

Generating Usage Records Automatically

You can enter details about a call manually or use one of several methods to streamline data entry and create usage records automatically. Two significant methods are using:

- Loading bills of materials (BOMs) and routings
- Ordering items for a call with material orders (MOs)

Using BOMs and Routings in Calls

When you define an item in Service Item Maintenance (11.3.7), you can specify a repair, installation, and preventive maintenance (PM) BOM and routing, which are used as follows:

- When the system generates a PM call for the item or you create a call with the PM work code in Call Maintenance, the system uses the PM BOM and routing.
- When the system generates an installation call during invoice post or you create a call with the install work code in Call Maintenance, the system uses the installation BOM and routing.
- When you specify other work codes in Call Maintenance, the system uses the repair BOM and routing.

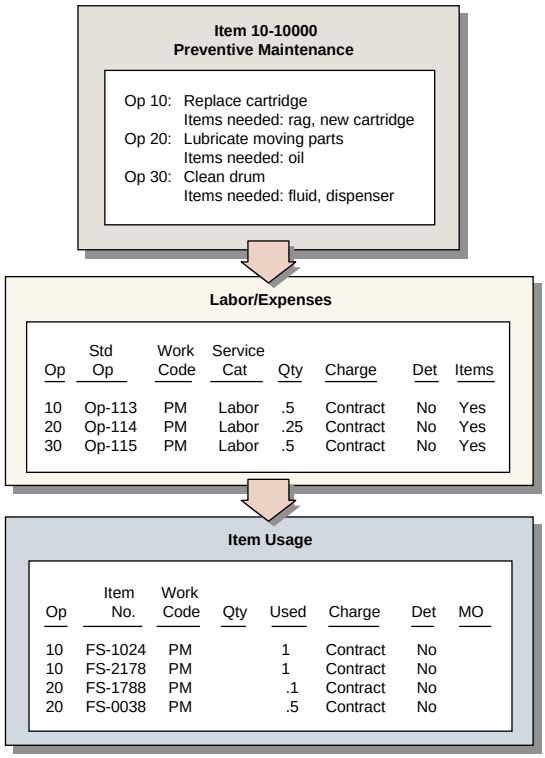
You can change these defaults the first time you view the call in CAR.

Use BOMs and routings to streamline data entry for standard repair sequences in CAR. When you specify BOMs and routings, the system:

- Enters routing operations into the Labor/Expenses frame
- Enters any BOMs associated with specific operations as items for that operation in the Item Usage frame
- Enters items from the top-level service BOM into the first operation that has no items of its own

Figure 14.4 illustrates how service BOMs and routings are defined and then loaded into CAR.

Fig. 14.4
Routing and BOMs Loaded into CAR



In addition to providing labor/expense detail, routings can affect the cost of labor. Standard cost for labor is derived from the work centers associated with routing or standard operations. If you do not use these, the system calculates standard costs using the labor rate for the Service Work Center in Call Management Control.

Note If you do not use service BOMs and routings, you must manually enter the operations and items you used for the repair in CAR, unless you order items with a material order (MO).

When a BOM is initially loaded in CAR, the system does not check to determine if sufficient inventory exists in the default site and location. These checks are not done until you actually execute the item usage frames.

See Chapter 21 for information on service BOMs, routings, and standard operations.

Connecting MOs to a Call

Engineers can obtain parts for service by ordering them with a material order (MO). The MO transfers the required inventory to the engineer's site and location.

An MO can reference a call. Use MOs without a call to replenish general stock. If you specify a call on the MO, items must be used for that call or returned to general inventory.

See "MO With Call" on page 526.

When MO items exist for a call line, the system displays a pop-up in CAR listing them. You can select some or all of these items and the system loads them into the Item Usage frame of CAR.

To close a call line, you must account for all MO items, either by using them or returning them. The same is true for the call itself.

See “Material Order Selection Frame” on page 424 for details.

Using MOs or BOMs to Load CAR Item Usage

The two ways of automatically entering items in CAR—through MOs or service BOMs—normally are separate alternatives. You can use them together, but you could enter more items than you intend.

If an engineer orders items with an MO for a call, they must be loaded and consumed in CAR. If you also attach a BOM to the item, the same items could be loaded again, resulting in duplicate items appearing in the usage frame. You might also get duplicates if you release a quote that has details about items needed, then order the items on an MO.

You must decide which method best fits your business practices and establish procedures to prevent overlaps.

To warn you of possible duplicates, the system checks the call when you create an MO for it. If the call line has items generated from a BOM, a warning displays.

Fixed Pricing in CAR

Some companies charge a fixed fee for repairing an item rather than basing the fee on the items used and the time spent for the repair. You can use fixed prices in Call Activity Recording.

Fixed pricing is an alternative to contracts and warranties. When you use fixed pricing, the system disregards all coverage details. When you complete a fixed price repair, you can record the details of the service to track service costs. However, the invoicing process uses the fixed price rather than the costs or prices of elements of the repair.

When you provide service for one line item at a fixed price, the system includes all details in the price. You cannot perform part of the service at a fixed price and charge regular prices for other items or services on the same line. To provide fixed and non-fixed service for the same item, create two lines for the item and record the fixed and non-fixed service separately.

Example A computer company charges a flat rate of $150 to repair a monitor for a customer. When recording the activity, the company uses a fixed price work code and charge code. It invoices the customer $150, but records the hours worked and items consumed in CAR, so it can review the service costs. The monitor repair might cost two hours of labor and five or six parts for a total of $93, or it might cost $1,000.

Recording the detail for fixed price repairs lets you review over time how closely the fixed price matches the repair cost.

Requirements

For fixed pricing, set up these codes:

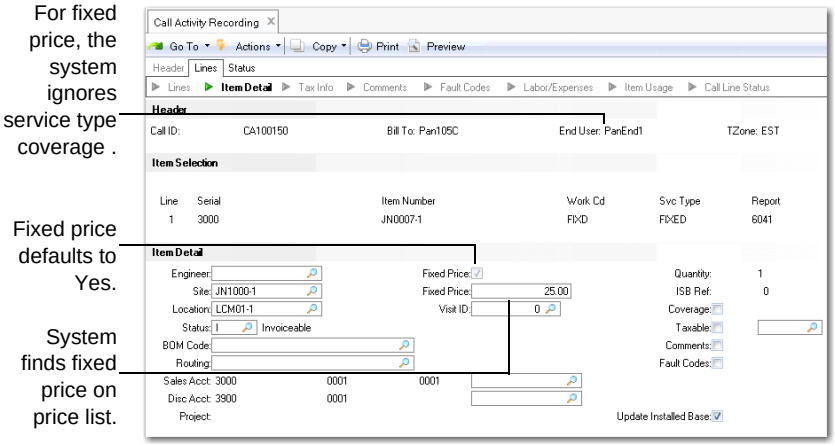
- A work code with Fixed Price set to Yes
- A charge code with Fixed Billable set to Yes

- An invoice sort with Include Fixed Prices set to Yes
- Service repair price lists using the fixed price unit of measure

Note Define the fixed price unit of measure in Call Management Control.

When you specify a work code with Fixed Price set to Yes in CAR, the Fixed Price field in CAR defaults to Yes. The system searches for a price on the call price list with the fixed price unit of measure and uses this price as the repair price. The system also suggests a fixed billable charge code for each line of detail recorded.

Fig. 14.5
Specifying Fixed Pricing in CAR



For fixed pricing, create one invoice sort with Include Fixed Price set to Yes. Do not associate service categories with this invoice sort. Use it exclusively for presenting fixed price amounts in Call Invoice Recording.

Note When fixed pricing applies, the price, covered amount, and extended price for each recorded detail are zero and cannot be changed.

Multiple Reports

For fixed pricing, you charge the customer a fixed amount regardless of how much work you do. Once you invoice and post the fixed amount, any further reports added to the call line create zero invoice amounts.

You can adjust fixed prices in CAR or CIR until you post an invoice.

Taxes for Fixed Price Services

Normally, the system calculates taxes for each detailed labor, expense, and item usage record. For fixed pricing, it applies the tax rate to the fixed price. It does not consider tax data elements associated with detailed usage records.

See Chapter 7, “Taxes in SSM,” on page 165.

Calculating Coverage in CAR

The relationships among service types, charge codes, and product lines affect the financial impact of service activity in CAR. You can define and use charge codes in many ways. The system supplies defaults based on the service types and values defined in Default Charge Code Maintenance. You can change these defaults to redirect costs, but only within a set of rules. To record activity in CAR, you must understand the way the system applies these rules.

What Is the Source of Coverage?

When you access a call line in CAR, it already has a service type. This service type can be different for each item on a call. Using the item, serial number, and installed base reference, the system searches for a valid contract or warranty. If none is found, the default is the Default Call Service Type in Call Management Control. If both contract and warranty coverage exist, the system prompts you to choose either warranty or contract coverage for this item when you create a new call for the item or add the item to a call.

For any item, several conditions can be true:

- No coverage exists. The system uses the default call service type.
- Coverage exists only on a contract.
- Coverage exists only on a warranty.
- Coverage exists on both a warranty and contract and you select warranty.
- Coverage exists on both a warranty and contract and you select contract.
- A warranty is normally associated with the item in Service Item Maintenance, but this particular item does not have a warranty or it is expired.

Based on the coverage conditions, the system maintains three service types for each item on a call:

- *Warranty Code.* The warranty code can be blank. It comes from the installed base record first and can be either active or expired. If the item is not in the installed base but has a warranty code in Service Item Maintenance, that warranty is used. Warranty information is maintained even when a contract provides coverage.
- *Contract Type.* The contract service type can be blank. This information is only saved when a contract covers the item on the call open date. This is unlike the warranty code, which is kept for reference even if it is expired. The contract service type is saved even if it was not chosen as the source of coverage for the item.
- *Service Type Used.* This field always has a value. Service Type Used can be the warranty or contract saved in the previous two values. If there is no coverage, the value can come from the Call Default Service Type in Call Management Control. If you manually enter a service type on the call line, it is saved in this field.

You can change a call line’s service type only before you record activity for the line. Once you open reports, the field is display only.

Calculating an Initial Charge Code

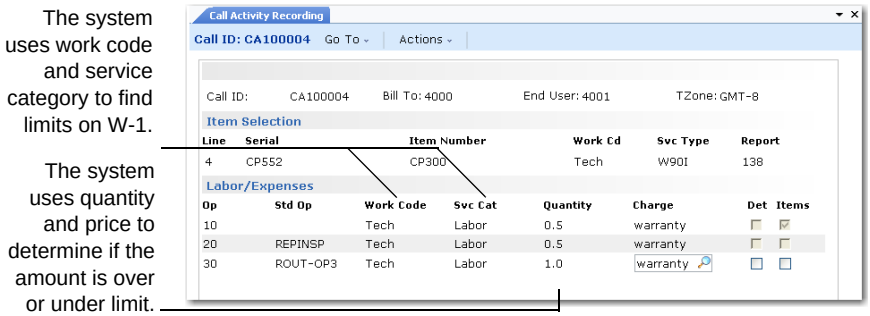
When you enter detail in the Labor/Expense or Item Usage frames of CAR, the system displays a default charge code. The system derives this default using:

- The service type of the call line
- The work code, service category, quantity, and price of the usage detail record

The system uses the work code and service category to search for applicable limits. It uses the quantity and price to determine if the amount on this line of detail is under or over the limits.

Note For fixed price repairs, no coverage checking takes place. The fixed price billable charge code defined in Default Charge Code Maintenance (11.21.21.13) is always used as the default. You can enter another charge code for the item, but only if it also has fixed price billable set to Yes.

Fig. 14.6
Calculating a Charge Code



For non-fixed price service, the system finds a default charge code using the following steps:

1. The system searches for applicable limits on the line item's service type. It first searches for limits based on the work code/service category, then based on the invoice sort for the service category, and then based on the total limit record.
   - If the service type is a warranty, the system examines the coverage record of the warranty type and uses the associated charge codes. If the warranty covers any amount, the system uses the under-limit charge code, which normally has Warranty set to Yes. If the warranty covers no amount, the system uses the over-limit charge code, which must have Billable set to Yes.
   - If a contract covers the call item, the system searches for coverage records at the contract line level, then at the header level, and finally at the contract type level. If a coverage record exists and has a charge code and over-limit charge code, the system uses these. The under-limit charge code normally has Contract set to Yes in Charge Code Maintenance. For the over-limit charge code, Billable must be Yes.
   - If you entered a service type for the line or used the default from Call Management Control, the system uses the charge code and over-limit charge code associated with its coverage records. For service types that provide coverage separate from a contract or warranty, you normally have an under-limit charge code with Covered set to Yes. For the over-limit charge code, Billable must be Yes.
2. If the system does not find coverage records or charge codes are not associated with them, it searches for a default charge code set up with Default Charge Code Maintenance (11.21.21.13), using the service type of the call line; the work code and service category of the usage detail; and end-user type of the call.
   - If the service type is a warranty and it provides coverage, the default warranty charge code is displayed.

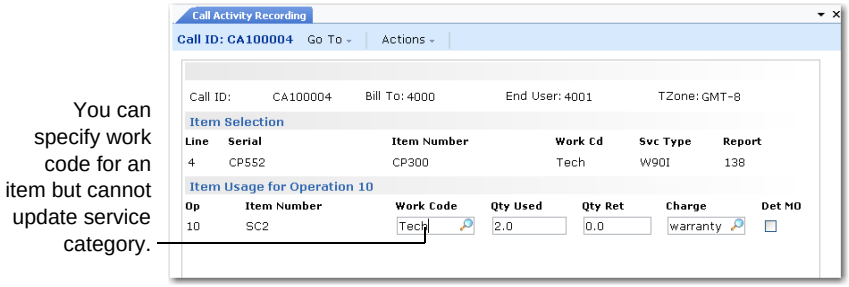
- If the service type is a contract and the line item's price is within contract limits, the default contract charge code is displayed.
- If coverage exists on the default call service type or a service type that you entered, the default covered charge code is displayed.
- If the warranty, contract, or service type provides no coverage, or the item has exceeded limits, the system displays the default billable charge code.

Calculating a Charge Code for Items

The system follows the same steps to calculate a default charge code for item usage that it does for labor and expenses. It uses the work code and service category to search for applicable limits on the call line's service type.

However, for items, the service category is less important.

Fig. 14.7
Calculating Item Usage Charge Code



The item service category defaults from Service Item Maintenance or from the Item Service Category in Call Management Control and cannot be changed. The system uses it to determine a default charge code and then displays it for review.

Recalculating Charge Codes

Because the system applies limits to a line of detail based on the work code and service category, it recalculates the charge code whenever you change these fields.

Example You record a labor operation for a call with a work code of PM, service category of Labor2, and quantity of 1. Based on these values, the system defaults a contract charge code of PM_CON.

After saving this line, you realize this operation is not part of the standard PM procedure, but is an additional repair that the technician made. So you return to the line and change the PM work code to REPAIR.

The system now searches for limits again, using the REPAIR/Labor2 combination rather than the PM/Labor2 combination. This can result in a different default charge code, like REP_CON. Or perhaps the contract does not cover the repair work, so the charge code changes from contract to billable.

Important If you change the default charge code, then change the work code or service category, the system overrides your charge code when it recalculates the limits and coverage.

If you change the quantity on a line of detail, the system does not change the charge code unless an additional quantity exceeds coverage limits. In this case, the system uses the over-limit charge code.

Changing Charge Codes

The system suggests five of the seven types of charge codes as defaults in CAR: contract, warranty, billable, covered, and fixed billable. You can enter giveaway and project mandatory charge codes as manual overrides.

Within the limitations described in this section, you can change any default charge code. When you change the charge code, the system may also change the service type used. The system then applies the limits of the new service type and calculates a new covered amount.

The system applies these rules for changing charge codes:

- You cannot mix fixed and non-fixed pricing in a line. You can change a fixed charge code only to another fixed charge code and any non-fixed charge codes to another non-fixed charge code.
- You can change any charge code other than fixed to a giveaway charge code, which covers 100% of the price. The usage record consumes no limits, regardless of the service type's coverage levels.
- You can change any charge code other than fixed to a project mandatory charge code if you previously specified a project for the call item.
- You can change covered, contract, or warranty charge codes to a billable charge code. The system ignores coverage levels on the service type and enters a default of zero for the covered amount.
- You can change contract, warranty, or billable charge codes to a covered charge code. The system changes the service type to the Default Call Service Type in Call Management Control, and applies its levels of coverage.

The system also applies rules for the following special conditions:

- *Both warranty and contract coverage exist for an item.* When dual coverage exists for an item on a call, you must choose one source of coverage to use, but both sources are stored with the record. You can then switch between them on each usage detail.

  If you chose warranty for the call item, you can change to contract for a specific usage detail. The system then uses the contract service type for that detail record and applies its limits and levels of coverage. If you chose contract for the call item, you can change to warranty for a usage detail and the system applies the warranty's coverage levels to the detail record.
- *A valid contract and an expired or unapplied warranty exist.* You can change a contract charge code to warranty even if the warranty is expired or was never associated with the item in the installed base record. This enables you to extend the warranty coverage, a requirement in some service contexts.

  For example, if an item has been fixed twice under warranty and fails again for the same reason a week after the warranty expires, you can offer service at the normal warranty coverage as a goodwill gesture. The system applies the level of coverage from the warranty type.

- *No contract exists and you specify a contract charge code.* If the item has no associated contract and you specify a contract charge code, a warning displays. The system changes the service type to the Call Default Service Type and applies its level of coverage to the detail record.
- *No warranty exists and you specify a warranty charge code.* If the item has no associated warranty code and you specify a warranty charge code, a warning displays. The system changes the service type to the Call Default Service Type and applies its level of coverage to the detail usage record.

The flexibility in changing charge codes lets you make adjustments in a dynamic service environment. However, you should consider the defaults as the normal way to use the system. Modify charge codes only after carefully considering the appropriateness and consequences of the change.

Charge Codes and Product Lines

Charge codes play an important role in accounting through association with product lines in Charge Product Line Maintenance. Connecting particular charge codes to product lines lets you segregate the cost of warranty service, for example, from the cost of contract service.

Managing costs with distinct accounts simplifies reporting and provides information on the profitability of your service activities. When you use charge codes this way, you can direct the cost of each labor, expense, or item usage record to a different product line.

To simplify accounting, you can associate only one product line with the item being repaired. The system uses that product line's WIP account for reports you generate for the call item. The system determines the product line by the setting of Use Item Prod Line in SSM Accounting Control.

"Detailed Accounting in CIR" on page 463 describes accounts affected.

To find the charge product line for a line of usage detail, the system uses the detail line's charge code, work code, service category, and service type. The product line and service group come from the call item. If no charge product line exists, the system uses the product line of the call item or the service type, depending on the setting of Use Item Product Line in SSM Accounting Control.

The product line for each usage record displays if Detail is Yes. You cannot modify the product line directly. The only way to change it is to change the usage record's charge code.

See "Search Order for Product Line" on page 87 for details on the search algorithm.

Consumption of Limits in CAR

When coverage comes from a warranty or service type, the system considers the level of coverage on the type, not any limit amounts. Warranty types have no limit amounts. The system considers limit amounts only for contracts.

When limits come from a contract line or contract header, the amounts recorded for the limits accumulate. As activity occurs, the system monitors the amounts you charge and compares them with the contract's limits. When you exceed the limits, the system changes the default charge code from an under-limit to an over-limit code.

Example You have a contract coverage limit for labor of 100% up to $100. On the first line of labor usage, you record $85. The system supplies the under-limit charge code by default, and suggests a covered amount of $85. On the second line, you record another $25. The system again suggests the under-limit charge code because there is some coverage, and asks if you want to cover the over-limit amount. If you respond No to this prompt, the covered amount defaults to $15 and the billable amount to $10.

Limit amounts are actually consumed when the call invoice is posted. However, the system also tracks limit amounts used. If you take another call for this item before posting the invoice for the previous one, the system considers any labor usage over the limit, since it looks at both the used and consumed amounts.

Use the Limits Consumption Inquiry (11.5.13.21.4) and Limits Consumption Report (11.5.13.21.5) to review amounts consumed and used for a particular contract. In this context, *consumed* means the invoice for the activity has been posted. *Used* means the activity has been recorded, but not yet posted.

See page 184 for details on these reports.

Line and Header Limits

If you define limits at the contract line level, the system monitors each line against its own limits. When you define limits at the header level, the system calculates consumption based on all contract lines.

Example You have a coverage limit for labor at 100% up to $100. When this limit is at the contract line level, each line gets $100 of labor coverage. When defined at the header, if the first line uses $100 of labor, no coverage is available for other line items. The charge code in CAR defaults to the over-limit code.

Inventory Processing in CAR

The information you record in CAR initiates inventory transactions for items you have consumed or exchanged. The system uses site and location information to manage inventory issues.

Determining Site and Location Defaults

Site and location defaults support a variety of ways engineers work and obtain repair parts. The system searches for a site and location as follows.

1. The system searches for a site and location for the assigned engineer in Engineer Maintenance. If you leave the engineer site blank and specify a location, the default is the area site but the engineer location.
2. If the engineer does not have a site or location, the defaults are the site and location for the engineer’s area.
3. If area site and location are blank, the system uses the default spares site and location defined in Default Site Maintenance.
4. If a default spares site and location are not defined, the defaults are the item’s site and location in the item master.

5 If the item's site and location are blank, the default is the site associated with the end user's customer in Customer Data Maintenance.

If the engineer works at a repair center, designate it as his default site. The system issues items to the call from the repair center site. An engineer in this type of environment typically would not use material orders to obtain inventory.

MOs are typically used when an engineer works remotely—for example, out of a repair truck or in a local office that obtains repair parts from a regional center. The MO transfers inventory to the engineer's home site and location. In this type of environment, an inventory transaction is needed to move inventory from its current site to the engineer's site, where you can issue and consume it on the call.

If inventory does not exist in the default sites and locations in CAR, you must specify them manually or errors occur during transaction processing.

Processing Inventory

Inventory processing in CAR is similar to a backflush operation. You are entering into the system information about labor that you already performed and items and expenses that you already consumed. Therefore, the system assumes you want to issue the inventory when you record it.

When you exit the usage frames, you can view a confirmation frame, illustrated in Figure 14.29 on page 435, listing the items to be issued and returned. Review the summary information to ensure that the items, sites, and locations are correct.

To make a change, respond No to the prompt. The Item Selection frame displays so that you can proceed through the detailed usage frames and adjust the data.

If you respond Yes at the confirmation frame, the next frame prompts you for an output device. Processing activity generates a report to the output device you specify. This report includes information about items you issued and returned, labor/expense transactions, updates to the installed base, and inventory errors or warnings generated during processing.

Figure 14.8 shows a sample report.

Fig. 14.8
CAR Processing Report

```
fscarmt.p  1.1.1.13 Call Activity Recording    Date: 06/17/07
Page: 1        Quality Products Corp           Time: 11:01:05

  Call  Line Item Number  Serial        ISB Ref  Report
  ----- ---- -----------  ------------- ------- --------
  CA115    2    10-10000     1043888/A2       0   402313

Type      Item/Operation  Serial/Work Code ISB Ref   Quantity
------   ---------        ---------------- -------  ---------
Items     44-1000                                        1.0 Processing
Items     44-3000                                        1.0 Processing
Items     44-4000                                        2.0 Processing
Items     44-4000                                       -2.0 Processing
Labor     10              Tech             LABOR          0.5 Processing
Labor     20              Tech             LABOR          1.0 Processing
Labor     30              Tech             LABOR          0.5 Processing
Expenses  40              Tech             Mileage       25.0 Processing
```

The report first indicates the call line being processed, then details the items, labor, and expenses for the line. Errors print below the record they refer to.

The various columns include the following information:

- Type is the invoice sort code associated with the transaction.
- Item/Operation is an item number for item issues or the operation number for labor and expense transactions.
- Serial/Work Code displays the serial number for item transactions and the work code for labor and expense transactions.
- Ref displays the ISB reference number for items and the service category for labor and expense transactions.

Inventory in CAR uses the same rules that govern inventory throughout the system. The location status determines the overissue policy. If the system encounters errors while issuing inventory, it sets the report status to hold. To complete the call line, you must correct the errors, set the report status to invoiceable, and reprocess the inventory transactions in CAR.

Shipping Documents

Many countries require that formal shipping documents accompany any movement of goods. If you are using shipping groups, you can record shipping information and generate shipping documents from Call Activity Recording when the address associated with the issuing site and the end user address belong to a valid shipping group and the inventory movement codes associated with the shipping group allow transaction type ISS-TR.

See the Shipping chapter in *User Guide: QAD Sales* for details.

Allocations and Requirements

You can create general allocations in the Item Usage Detail frame of CAR. Usually, you are recording items you already used and you issue the items immediately, so this step is not needed. Use it only if you are not issuing inventory immediately.

You can designate specific inventory to be issued, by site, location, lot/serial number, and reference. The system uses the information only for the inventory issue. CAR always performs general allocations. It does not detail allocate even if you enter inventory detail in the multi-items frame.

The system creates MRP requirements in CAR to reflect the quantity of items you specify. These requirements are deleted as soon as the inventory is issued. The required date for MRP is the call's next status date.

Issuing Inventory from Multiple Sites

When you create a call line in Call Maintenance, Call Quote Maintenance, or Call Activity Recording, the system displays a default line item site. When you open the first report for the line, you can change the site.

The default site determines other line item defaults, such as the BOM and routing if it was defined with Service Item by Site Maintenance. You can also change these defaults when you create the first report.

See “Determining Site and Location Defaults” on page 397 for details on the logic used to determine line item sites.

Important After you record activity, you cannot change the line item site. If you create new reports for the line item, they share the same site, BOM, and routing.

Even though you can associate only one site with a call line, you can still use inventory from multiple sites during a repair. When entering item usage detail, you can specify a different site for each item. During processing, CAR transfers the items to the line item’s site, then issues the items from that site.

This approach affects GL transactions. Costs are typically set up for each site using Item-Site Cost Maintenance (1.4.18). When CAR transfers items to the call site, appropriate GL transactions are created for any variance in costs between the two sites.

Using Multiple Reports

Service organizations often use prenumbered paper reports for engineers to record the items, labor, and expenses associated with servicing an item. Engineers can turn in these forms as they complete each job. For lengthy jobs, they may turn in the reports daily or weekly.

Call Activity Recording provides a similar report structure. You can record all activity for a line item on one CAR report, or create multiple reports for one line item. You can use the provided report IDs or enter IDs from your prenumbered report forms.

You can generate more than one invoice for activity that you record for a call or a call line. This is important, for example, if the call activity covers several weeks and you bill more frequently. Record expenses at the end of each day or week by creating multiple reports for a single line item.

You can modify a report unit the invoice is posted. After this, you can review the report, but you cannot update it.

Report Statuses

To indicate its position in the recording life cycle, each report you open for a line item has one of the following statuses:

- *Quote (Q).* A report opened in Call Quote Maintenance to record the activity needed for a line item has a status of Q.
- *Invoiceable (I).* The default status of a new report you open in Call Activity Recording is I, indicating that the report is ready for invoicing.
- *Hold (H).* You can mark reports hold to delay invoicing them. The system sets reports to Hold if an error occurs during transaction processing.
- *Closed (C).* When you post an invoice, the system sets the report status to C. You can also use this status to close a report with no detail. Once you close a report, you cannot reopen it. Only fault codes and comments can be updated.

In CAR, the report status indicates whether to include or exclude it from invoicing. The default report status is invoiceable. Report status offers you another level of control for call invoicing. Use the status to exclude a report from invoicing.

Example You enter a report in CAR but have not yet invoiced it. The engineer submits a second report that needs to be billed separately. Enter the second report and set its status to Hold. When you generate the call invoice, the system includes only the report with a status of invoiceable.

Multiple Reports and Generated BOMs

When you use a BOM and routing to generate item and labor usage records for an item, the system attaches all usage to the first report. If you open a second report to complete the service, the system does not move the remaining items and labor to the new report. Remove the unfinished steps from the first report and add them to the second one.

Correcting Report Errors

Use the call Status field to cancel a call if you have not opened any reports. You can also cancel or close individual lines on the call and continue processing the other lines. If reports exist, the call cannot be canceled.

Note Cancel status is defined in Call Management Control.

You cannot delete a call report opened by mistake. However, you can change its status to Closed if you have not recorded detail for the line. If you have recorded detail, delete each line of detail, then close the report.

If you have issued inventory or processed labor/expense transactions, you cannot delete the detail. You can adjust the price to prevent billing for the issued amounts or issue a credit memo if billing has already occurred.

To remove the cost of labor, expenses, or items issued by mistake, follow this process:

1. Enter a new operation for recording the correction in the Labor/Expenses or Item Usage frames.
2. For labor and expenses, enter a negative value in the Quantity field. For items, enter a negative quantity in the Qty Used field.
3. Process the new line to create reversing GL and inventory transactions.

Processing a correction has the following effects:

- For items, the system executes an inventory transaction to increase inventory at the site and location specified.
- The cost of the reversed item, labor, or expense is removed from the call record, so that margins and costs display correctly in Call Invoice Recording.

Note The system prevents you from entering a negative quantity when you are executing a swap. A swap occurs when the item being issued is the same as the item on the call line and you respond Yes that this is a swap.

Call and Call Line Statuses in CAR

Call statuses reflect the position of a call in its life cycle. In Call Activity Recording, you can assign a call status to individual lines on the call, so you have better control over calls with multiple line items.

Example You take a call for four items. One repair proves unnecessary, so you cancel the line without affecting the call status. You finish two repairs and can close those lines to prevent more processing. The last line you leave open while waiting for a part.

You can invoice only complete or closed call lines. Because recording activity is a preparation for invoicing, CAR always attempts to set the call and line status to complete or closed. These statuses are defined in the Complete Status and Closed Status in Call Management Control.

See “Managing Call Status Changes” on page 310.

Complete or Closed?

A complete call or line is ready for invoicing. However, you can modify related data, order service items with an MO, and record new activity by updating a report or opening a new one. Use the complete status to invoice progressively during a lengthy service activity.

For closed calls or lines, you can create invoices, but you cannot order service items or record new activity. You also cannot add more lines to a closed call. To record activity for a closed call or line, you must reopen it by changing its status. When you have completely invoiced a closed call, closing all reports, you can move it to history and archive and delete it.

Note You can apply field security to Call Status.

Use Close on Recording in Call Management Control to indicate whether to set the call or line status to closed or complete. If Close on Recording is Yes, CAR sets the call status to closed if all conditions are met. If it cannot set the status to closed, it tries to set the status to complete. If Close on Recording is No, CAR attempts to set the status to complete.

Call Line Status

If the system can issue all inventory for a line in CAR and encounters no other errors, it sets the line’s status to either complete or closed, depending on the value of Close on Recording. If the system detects errors, the line remains open and CAR displays a message indicating that it could not complete or close one or more lines.

CAR sets a line to complete when it meets two requirements.

- At least one report with item, labor, or expense detail has an invoiceable status.
- All inventory for the invoiceable reports was issued completely.

Set Invoice From Recording in SSM Accounting Control to Yes if you want to create invoices in CAR.

To record more activity for an item before you generate the invoice, prevent invoicing by:

- Changing the line item status to a status other than complete or closed.
- Answering No to the Generate Invoice prompt in the Call Status frame, if it displays.
- Changing the report status to hold so the item has no invoiceable reports.

Call Status

CAR’s final processing step is to determine the call’s status, based on Close on Recording in Call Management Control.

CAR sets the call status to closed only if:

- All lines are complete, closed, or canceled.
- All reports are invoiceable or closed and all transactions for the reports completed successfully. Invoiceable reports must have fully processed detail. If a report exists with no detail, set its status to closed.
- All items ordered on a material order for the call are used or returned.

CAR sets the call status to complete if at least one closed or complete line has an invoiceable report. Open MOs and reports on hold can exist.

If Close on Recording is Yes and conditions prevent CAR from changing the call status to closed, CAR attempts to set the status to complete. If conditions prevent this, CAR does not change the status. In this case, you cannot manually change the status to complete or closed. An error displays, explaining that incomplete lines or an open MO exists.

If you do not want to invoice the call or close it, change the closed or complete status manually. If you specify the hold status, defined in Call Management Control, an invoice cannot be generated in CAR. An error displays if you specify Yes to the Generate Invoice prompt for a call with the hold status.

See “Managing Call Status Changes” on page 310.

Note Use field security on the Call Status field to control status changes.

However, in Call Invoice Recording, a call status of hold produces only a warning. This lets you invoice for service that has already been provided, but prevents you from recording more activity for the call.

Status Errors

The only changes CAR ever makes to the line or call status is to change it to closed or complete. It does not reverse this status change automatically. As a result, incompatible line and call statuses can sometimes occur.

Example You record activity for a call with one line and issue inventory without errors. CAR sets the line and call status to complete. Now you record two more items in the Item Usage frame, but this time when you issue inventory, errors occur. If you simply try to click Next through the Call Status frame, an error displays. Complete is no longer a valid status for the call, because it does not have any invoiceable reports. You must manually enter an appropriate status.

Deleting Call Lines

You can delete a call line if it has no associated reports. You cannot delete lines for which you have recorded activity.

If you have not issued inventory for the line, delete the detail on the open report, then close the report and the line.

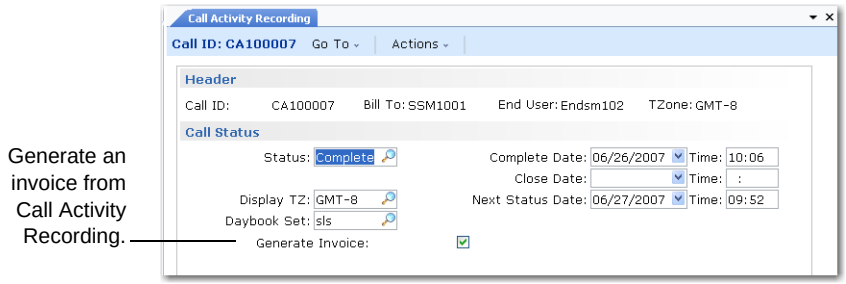
Generating an Invoice

Some businesses choose to have managers handle invoicing, not the engineers or clerks entering data into CAR. Other organizations prefer to complete call recording and invoicing in one process. Call Activity Recording can generate an invoice or simply track costs.

Invoice From Recording in SSM Accounting Control (36.9.10) determines where you create and update invoices. If Invoice From Recording is No, you process invoicing in Call Invoice Recording (11.1.1.15). Use standard system security to restrict access to these functions.

If Invoice From Recording is Yes, a Generate Invoice prompt displays in the Call Status frame of Call Activity Recording as in Figure 14.9.

Fig. 14.9
Invoice From Recording Set to Yes



If you indicate Yes to the Generate Invoice prompt, the system creates a pending invoice for lines with a complete or closed status. If the status for the call is complete or closed, the system invoices all lines.

In CAR, you can generate an invoice for a call with any status except hold. You can generate an invoice for a call on hold in CIR, but a warning displays.

If a pending invoice for a call exists, the Generate Invoice prompt appears only if you make changes in CAR that affect the invoice. These changes include:

- Adding labor, expense, or item usage records
- Editing comments
- Changing invoice-related fields such as PO number, credit terms, language, channel, taxes, or fixed rate

Correcting an Invoice

You can correct an invoice that you have not posted. Modify pricing and covered amount in Call Invoice Recording when you review the invoice. Change inventory amounts or add labor in CAR.

To make changes to a closed call, change the call's status in Call Activity Recording. If the line you want to change is closed, reopen it. Then you can modify or add a report. The system regenerates invoice amounts only for changed call lines.

After you post the invoice, the status of all reports included on the invoice is closed. You can view, but not modify, these reports.

Modifying Lines in CAR with Generated Invoices

After you generate an invoice for a call line, you can add or modify reports in Call Activity Recording. The system regenerates the invoice for changed call lines, either when you exit CAR or when you access the call in CIR.

A warning displays in CAR when you access a call line with an invoice. If you ignore the warning and make changes, the existing invoice is no longer valid. You must regenerate the invoice in CAR—if Invoice From Recording is Yes—or from CIR. Until the invoice is regenerated, the system sets the Ready to Invoice field in Call Invoice Recording to No. Invoice Post and Print ignores the invoice until you regenerate it to reflect the changes you made.

See “Coordinating CAR and CIR” on page 447.

Invoicing by Report

If you use multiple reports to record service activity and want to invoice the reports separately, you have two choices:

- Post the invoice for the first report before creating another. This clears all quantities for the call line.
- Give the second report a status of hold so the system does not include it when you generate the pending invoice.

If you do not use one of these approaches, the system accumulates the charges on the two reports into one invoice amount.

Posting an Invoice

When you post an invoice, the status of all its reports is closed. You can view these reports, but you can change only the comments and fault codes. After posting, the system clears all amounts and the Call Invoice Recording summary frame displays zero amounts to be invoiced.

When viewing closed reports, enter the level of detail you want to review in the CAR header. You cannot change the Detail field at the line level.

Project Codes in CAR

Project code is one component of an account number defined in GL setup functions. You can use projects to track expenses and revenue for distinct activities. Other components of an account number are account, sub-account, and cost center.

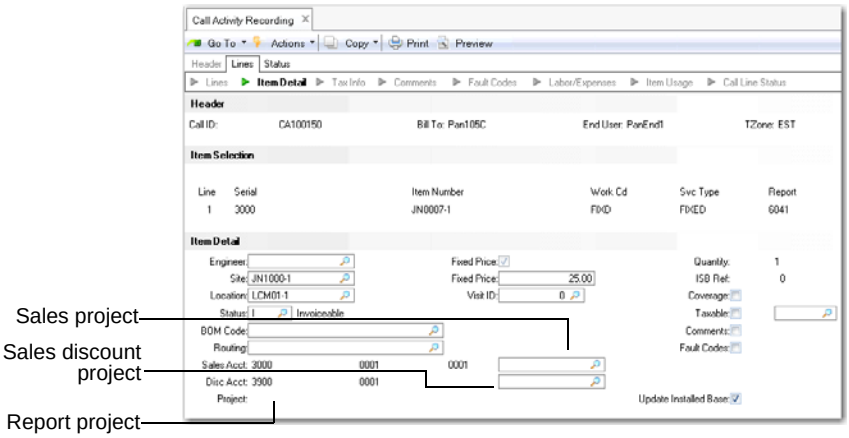
Note Use Project Create (25.3.11.1.1) to define project codes.

Each account component must be valid on its own and in combination with other account number components.

Most orders generate either cost or revenue GL transactions. In work orders, project codes group costs. In sales orders, they group revenue. Call Activity Recording is unique because it tracks both labor, expense, and item costs *and* invoiceable amounts that generate service revenue.

As a result, up to three projects can be specified in Call Activity Recording, illustrated in Figure 14.10.

Fig. 14.10
Projects in Call Activity Recording



- The sales project is associated with the Sales account for tracking call revenue. This project is validated with the other Sales account components that display on the screen.
- The sales discount project is associated with the Sales Discount account. This project is typically the same as the Sales account project. This project is validated with the other Sales Discount account components that display on the screen.
- The report project is associated with call line reports for tracking call costs. This project is not validated with other account components, since the Cost of Goods Sold accounts are not determined until later. However, it is validated during GL transaction post.

Project Code Handling

How projects are used and which project fields can be updated depends on the setting of Project Code Handling in SSM Accounting Control. This field has two values: Single Project per Line (S) and Project per Labor/Expense (P).

Single Project per Line (S)

When this option is active, one sales project and one sales discount project can be associated with each call line. The system sets the report project to the value entered for the sales project and it cannot be changed. The same project is used for both revenue and costs created by labor/expense transactions and material issues and receipts for this line.

Once you have specified a project, it cannot be changed. The sales project defaults to each report and each labor, expense, and item detail record.

When an invoice is created for the call line, either in CAR (if Invoice from Recording is Yes) or CIR, the sales and sales discount projects from CAR default to the call invoice. These values can be modified in CIR, if needed.

Project per Labor/Expense (P)

When this option is active, each labor and expense transaction created for a call line can have a different project associated with it.

- The sales and sales discount project default from the contract line providing coverage and can be modified.
- The report project also defaults from the contract-line sales project and can be modified.

Note Items always use the project on the call report header.

If a contract does not provide coverage or a project is not specified on the contract line, all call-line projects default to blank. Each time a new report is opened for a call line, the same defaulting logic is used.

The report project sets the default for each labor record. For expenses, the project defaults first from the employee (engineer), if one has been defined; otherwise, the report project is used. This is similar to the way work orders handle project codes. You can modify the report project even after other reports exist, and the new project defaults to new labor and expense transactions.

Note Associate a default project with an employee in Employee Create (36.1.7.1).

You can also modify the project on each labor and expense detail. The project associated with item consumption, however, defaults from the report project and cannot be changed.

The report project is used for costs only. When an invoice is generated, the sales and sales discount projects default to the invoice just as when Project Code Handling is set to S. The revenue projects (sales and sales discount) set the default for each line on the call invoice. The only difference in how revenue projects are handled when Project Code Handling is P is that the fields can be modified even after reports exist.

Returns and Exchanges in CAR

You can handle simple returns in the Service/Support module through RMAs. Use RMAs when you do not need to record an engineer's time and material. The customer returns an item, and you ship them a replacement. Or, you repair the item with a repair work order or by creating an RTS (Return to Supplier), and then return it to the customer.

CAR also provides support for returns and exchanges in the context of recording service activity, such as:

- Unused items ordered on an MO
- Exchanges for credit
- Swaps
- Other returns

See Chapter 23, "Return Material Authorizations," on page 593.

You can combine some of these returns. For example, you can swap an item and return the old one for credit. You manage return processing with return statuses.

See "Return Status" on page 78.

You can also correct a mistake if the number of items used is recorded improperly and needs to be decreased. The difference between correcting a mistake and executing a return is that the first action removes the cost of the item from the call. In the second case, the cost of the item issued to the call is retained so that you can track cost variances.

See “Correcting Report Errors” on page 401.

MO Returns

You must account for all items that an engineer orders for a call before closing the call. You can return items directly in CAR if you do not need them. The system executes the return as an inventory transfer, since MO items remain in inventory and do not involve billing.

If the engineer will return MO items later, mark the items in CAR as a pending return. No inventory transactions take place until you complete the pending return in MO Direct/Pending Returns (11.11.8). You cannot close the call until the return is complete.

See “Returning Items on MOs” on page 552.

Note With this kind of a return, the cost of the item issued is still associated with the call. This lets you track variances based on planned usage and actuals.

Exchanges

Engineers frequently replace a faulty or worn part with a new one. Sometimes, you discard the old part. In other cases, the used part has value and the customer receives credit. You can return the used part in CAR as part of an exchange by using a return status with Exchange set to Yes.

When you use an exchange return status, the system searches for an exchange price for the returned item on the service price list specified on the header in CAR. Define exchange prices using the exchange unit of measure in Call Management Control. If an exchange price exists, it displays by default during return processing. The customer is credited this amount when you generate the invoice for the call.

Define items that you normally exchange as repairable in Service Item Maintenance (11.3.7). CAR assumes that when you issue a repairable item, you return one. The Quantity Returned field defaults to the Quantity Used in the Item Usage frame.

See “Automatic Pricing” on page 149 for details.

Swaps

Special processing occurs in Call Activity Recording when the call line item and the item issued to repair it are the same. This type of repair could occur in a number of scenarios, and each has different requirements related to updating the installed base.

Swaps. A swap occurs when you issue a new item to replace an existing one and return the existing one. This is similar to RMA processing. The customer returns a product, such as a defective computer monitor, and you ship them a new one. In this case, the installed base should be updated with the serial number of the new monitor.

Note Use an exchange return status to provide credit for a swapped item, just an any other exchanged item.

Other replacements. In other scenarios, the item issued may be used to repair the existing item, rather than replacing it, or for other reasons you may need to retain the original serial number in the installed base. This might be the case, for example, if the item is on a contract.

When the component you issue is the same as the call line item, CAR issues the following warning:

```
Component issued is same as parent. Continue?
```

If you respond No, the item is not issued. If you respond Yes, a further prompt displays:

```
Is this component being issued as a swap?
```

When you respond Yes to this prompt:

- The system automatically sets the quantity returned to the quantity being issued.
- The serial number and ISB reference of the call line item are replaced with the serial number associated with the issued item.
- The installed base is updated to reflect the new serial number and reference.

When you respond No to this prompt, none of these updates are made. You can manually modify the quantity returned if you want, but the original serial number is not replaced.

Note Normally, you cannot delete an installed base record if the item is referenced on a contract. However, in the case of a swap, this restriction does not apply. If you know the old serial number existed on a contract, you should update the contract with the new serial number, now that the item has been replaced.

Miscellaneous Returns

In addition to MO returns, exchanges, and swaps, you can register other returns in CAR.

Example While repairing a copier, the engineer picks up two empty toner cartridges from the customer. He registers these as an exchange for credit, even though he did not use a toner cartridge on the call.

Ambiguities in Return Processing

If you want to return an item ordered on an MO and the same item exists in the end user's installed base, the system may not be able to distinguish between the two items.

Example You order two of item 44-110 on an MO. This item does not have a serial or lot number. In CAR, you use one item 44-110 and indicate that you want to return one, leaving the installed base reference as 0. If an item exists in the installed base with reference 0, the system cannot tell whether you want to return the one from the MO or return the one from the installed base.

This situation also exists for lot-controlled items if the item on the MO matches the lot of an item in the installed base with a 0 reference number.

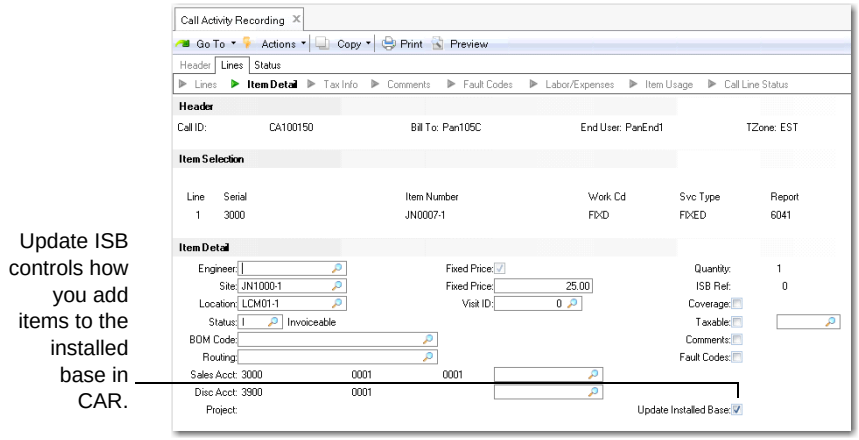
If this situation occurs, the system returns the item from the installed base first. To return the one on the MO, mark the return as pending. The system executes pending returns only for items on an MO.

Updating the Installed Base in CAR

In CAR, you can update the installed base by setting Update ISB to Yes for the call line. This setting lets you:

- Add the call line item to the installed base.
- Add items you issue as components of the call line item.
- Remove items that are returned.

Fig. 14.11
Update ISB Field in CAR



Update ISB defaults to Yes under the following conditions:

- The item is in the installed base. Update ISB defaults to Yes regardless of other settings.
- Installed Base in Service Item Maintenance is Yes for the item *and* Create ISB is Yes for the end user in End User Data Maintenance.
- The item is not in the item master, but Create ISB is Yes for the end user in End User Data Maintenance.

If you do not enter an item number, Update ISB defaults to No. If you enter the item number of a lot/serial controlled item and do not specify a lot/serial number, the system sets Update ISB to No and does not let you change it. Lot/serial-controlled items must be added to the installed base with an appropriate number.

Note If the call item is in the installed base but the quantity specified in CAR does not match the ISB quantity, Update ISB defaults to No and cannot be changed.

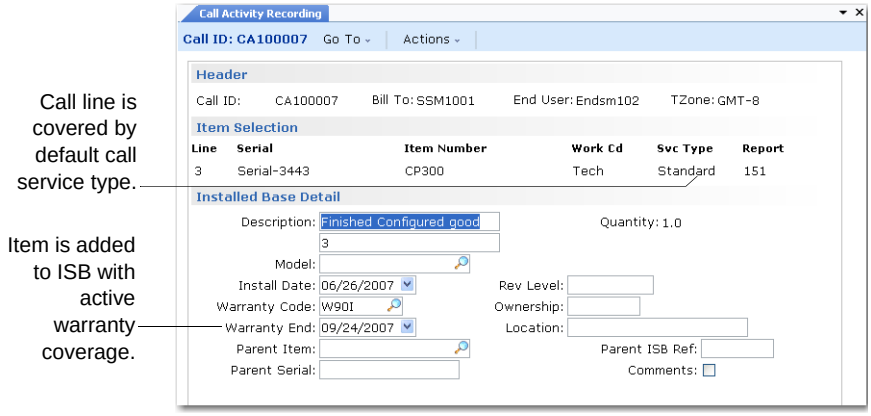
Call Line Item

If the call line item is not in the installed base and Update ISB is Yes, a frame appears in CAR for recording installed base information. The system creates the ISB record immediately, so you can update the installed base when you issue inventory items. To add these records as components of the parent item, the record for the parent item must exist.

If you specify active warranty information for the new ISB item, the system prompts you whether you want to apply the coverage to the item.

Figure 14.12 illustrates the Installed Base Detail frame in Call Activity Recording.

Fig. 14.12
Adding Item to ISB with Warranty Coverage



In this example, the Default Call Service Type in Call Management Control covers the line item. You can add the item to the installed base with warranty coverage if you specify an installation date that is within the warranty date range.

The Installed Base Detail frame displays only when the call line item is not in the installed base and Update ISB is Yes. To modify information for an item in the installed base, use Installed Base Item Maintenance (11.3.1).

Note Special processing occurs in CAR when the component item you issue is the same item number as the call line. Whether the installed base is updated in this case depends on whether the issue is considered a swap. See “Swaps” on page 408 for details.

Repair Items Issued

You can create installed base records for items you issue during inventory transaction processing in CAR. Define the items with Installed Base set to Yes in Service Item Maintenance and set Load Available Structure to Yes in Service Management Control.

If the line item already has a product structure in the installed base, the system adds the items issued in CAR as top-level components.

Returned Items

If Update ISB is Yes for a call item, the system updates the installed base for returned items. For this to work, set Detail to Yes so you can access the Returned Items Detail frame and specify the returned item’s serial number or installed base reference. During the inventory issue, the system deletes the record for the old ISB reference or serial number.

Note This update occurs regardless of the value of Load Available Structure.

If you specify a quantity to return and do not set Detail to Yes, the system displays a warning. To ensure that the installed base is updated correctly, you should supply the serial number or lot number and ISB reference.

Since lot-controlled items can be added to the installed base with a quantity greater than one, returning lot-controlled items can reduce the ISB quantity.

Example One installed base record exists for a quantity of five for a lot-controlled item. You return two of the five lot-controlled items, specifying the appropriate reference numbers. The ISB record now shows three of these items at the end-user site.

Call Activity Recording

This section gives field reference information for Call Activity Recording (11.1.1.13). Executing CAR follows a number of steps. Figure 14.13 illustrates the basic flow of information in CAR.

Fig. 14.13
Call Activity Recording (11.1.1.13)

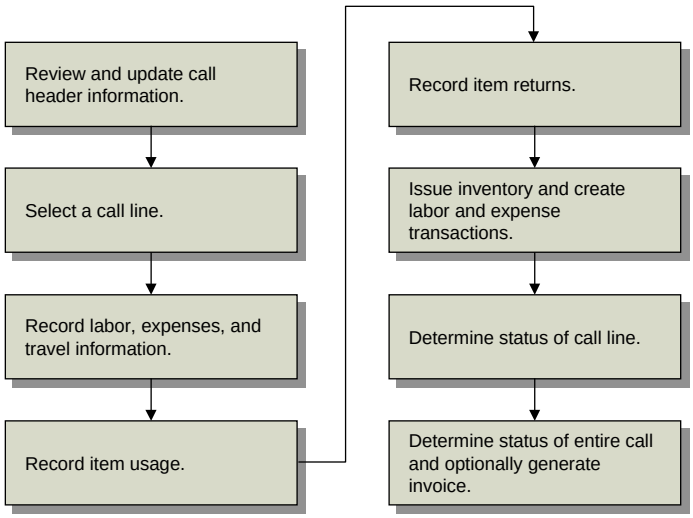


Table 14.1 lists Call Activity Recording frames. Some frames display only when you set certain fields.

Table 14.1
CAR Frames

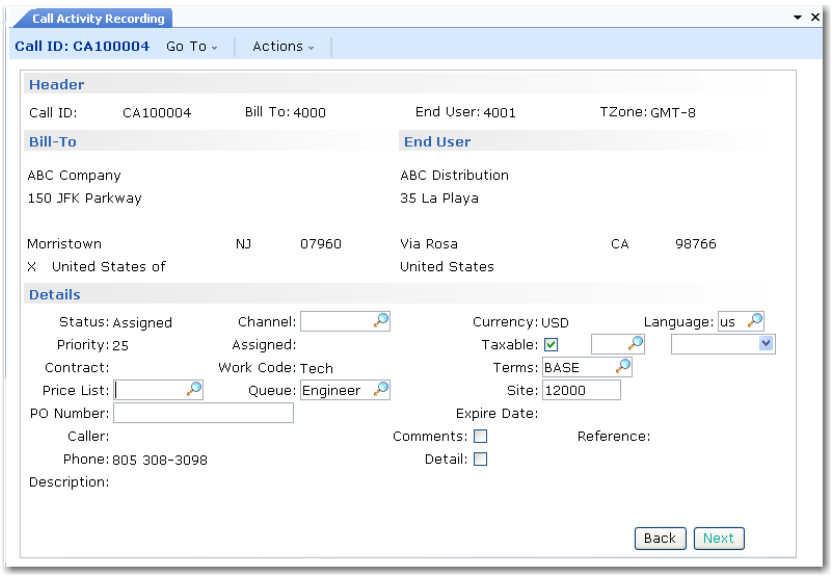
Frame	Req	Purpose
Header	Y	Select call and display-related information.
Exchange Rate	N	If currency is non-base, review and update exchange rate.
Taxes	N	If Taxes is Yes, review header tax defaults.
Comments	N	If Comments is Yes, view or update call header comments.
Item Selection	Y	Select call line.
Item Detail	Y	Display and update call line detail.
Close Visit	N	If the Visit ID field in Item Detail contains a value, the Close Visit pop-up lets you close the visit.
Taxes	N	If Taxes is Yes for this line, review line tax defaults.
Installed Base Detail	N	If Update ISB is Yes and the call line item is not in the ISB, specify ISB parameters and add it to the installed base.
WIP Product Line	Y	When you access a line for the first time, specify the product line for recording work in process.
Coverage Information	N	If Coverage is Yes, view applicable limits.

Frame	Req	Purpose
Comments	N	If Comments is Yes, view or update call line item comments.
Fault Codes	N	If Fault Codes is Yes, enter or review codes for this line item.
Material Order Selection	N	If items ordered on an MO exist for the current call line, select and load them as item usage.
Labor/Expenses	Y	Record operations, labor hours, and expenses for this activity.
Labor/Expenses Detail	N	If Det is Yes, view and update detailed information about this operation.
Comments	N	If Comments is Yes, view or update operation comments.
Item Usage	Y	Record items consumed or exchanged during service activity.
Item Usage Detail	N	If Det is Yes, view and update item details.
Multi	N	If Multi is Yes, change allocation details for each item.
Comments	N	If Comments is Yes, view or update item usage comments.
Returned Items Detail	N	If Qty Ret is not zero, specify data required for returns and exchanges.
Multi	N	If Multi is Yes, change return details for each item.
Fault Codes	N	If Fault Codes is Yes, enter codes for returned items.
Issue Confirmation	Y	Displays all items about to be issued or returned for your confirmation.
Output Device	Y	Specify output device for report.
Call Line Status	Y	Specify call line status.
Item Dates	N	If Dates is Yes, specify dates related to service activity.
Call Status	Y	Specify call status and optionally generate invoice.

Call Activity Recording Header

The Call Activity Recording header frames display when you select option 11.1.1.13 from the main menu.

Fig. 14.14
Call Activity Recording (11.1.1.13)



Call ID. Enter a valid call ID. If the call has a status of complete, a warning displays. If the call has a status of closed or hold, the activity recording frames do not display. The Call Line Status frame displays immediately so you can modify the status of a line you want to change. The Call Status frame displays next so you can modify the call status.

Bill-To. Defaults from the bill-to address for the end user's customer. You can modify the default unless a pending invoice exists for the call. If the end user on the call is associated with the temporary customer and Call Activity with Temp is No, you cannot record activity for the call until you associate the end user with a valid customer.

Note Define the Temporary Customer in Call Management Control.

End User. An output-only field from the call.

Status. The call status and description display. You cannot modify the status here, but you can modify it when you complete CAR processing.

Priority. Output-only field from the priority assigned to the call.

Contract. Output-only field from the call.

Price List. Defaults from the call price list associated with the contract providing coverage for the call, if available. Otherwise, it defaults from the service type on the call. If you change it, specify a type R (repair) price list defined in Service Pricing Maintenance. If you change the price list after recording activity, the system does not recalculate existing records. It uses the new price list only for new activity on the call.

PO (Purchase Order) Number. Purchase order number for the service activity. The purchase order defaults from the call if you recorded a purchase order there. You must enter a value if PO Required is Yes for the end user in End User Data Maintenance. PO Required in End User Data Maintenance defaults from PO Required in Customer Data Maintenance.

Caller. Output-only field from the call.

Phone. Output-only field from the call.

Description. Output-only field from the call, briefly describing the problem.

Channel. Enter an optional code identifying the distribution channel originating this call. Use Channel to determine GL Sales account and Cost of Goods Sold accounts affected by inventory transactions in CAR and CIR. Set up optional sales accounts with Sales Account Maintenance (1.2.17) based on product line, site, customer type, and channel.

Note To standardize entries, set up codes for field so_channel in Generalized Codes Maintenance.

Assigned. Output-only field from the call. In CAR, you cannot change the engineer assigned to the call, but you can assign a different engineer to each call line and detail line.

Work Code. Output-only field from the call.

Queue. Defaults from the call and indicates the queue to which you assigned this call. Set up queues with Call Queue Maintenance (11.1.21.7). You can modify the queue here or by using escalations.

Currency. This field is output only if the system previously set the currency on the call. This occurs when a contract provides coverage for a call item. The contract currency determines the call currency.

If the currency is not already set, it defaults from the currency for the bill-to address. You can change it only before you move to the next frame. Monetary amounts (costs, prices, limits) display in the call currency. If you use a currency other than the base currency, an exchange rate pop-up displays.

Note Currency is a factor in the price list search, so if you record activity in multiple currencies, set up prices for each.

Language. Defaults from the end user's language.You can print comments on an invoice in the receiver's language.

Taxable. Enter Yes if activity for this call is subject to tax; otherwise, enter No. The tax status defaults from the end-user tax data.

Under Global Tax Management (GTM), taxes are based on the transaction tax environment, tax usage, and tax class. The tax environment represents the set of tax types that applies to the item issue site and end-user site and tax class.

See Chapter 7, "Taxes in SSM," on page 165 for more details about taxes.

Tax Class. Enter a tax class previously defined in Tax Class Maintenance (29.1.5). Tax class defaults from the end user. Tax classes group addresses taxed at specific rates or that are tax-exempt. GTM tax classes help determine the default tax environment (set of tax types) for the transaction.

The header tax class is not actually used in any tax calculation. For service detail, tax class for items defaults from Item Master Maintenance and tax class for labor and expenses from Service Category Maintenance.

Effective. Defaults from the system date. The system uses the effective date to determine the tax rate to use. The header value provides the default effective date for each line.

Terms. Defaults from the bill-to address.

Site. For calls you create in Call Maintenance, the site defaults from the site specified for the first line item in the Item Service Structure Detail frame.

The system uses the call header site to determine the default tax environment. You can specify a different site at the item level. The item-level site is where the engineer performs repairs or obtains parts for the call.

Expire Date. An output-only field that applies only to call quotes, which use the same programs as CAR.

Reference. If this call originated from a quote, the quote number displays in this field as a reference.

Comments. Defaults to Yes if comments exist. If Yes, you can enter or review the header comments when you click Next. The system copies comments into Call Invoice Recording. You can print the comments on the invoice.

Detail. Determines whether the Detail field for each line in Labor/Expense and Item Usage frames defaults to Yes or No. Set this field in the header for more control over line-item entry.

When viewing closed reports, determine the level of detail you want to review in the CAR header. You cannot change the Detail field at the line item level.

Note The system closes reports when you post the related invoice.

Exchange Rate Pop-Up

If you enter a non-base currency, the exchange rate pop-up displays. The system uses the foreign currency to calculate prices and costs in Call Activity Recording and Call Invoice Recording.

By default, the system displays both components of the exchange rate relationship for the call open date. You can modify the value if you have access through field security.

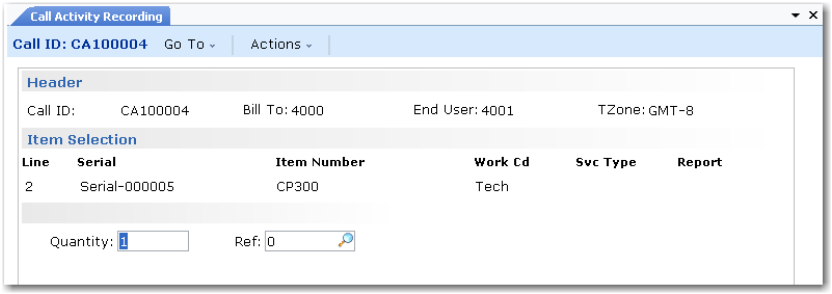
Specify Yes for Fixed Rate to indicate that the exchange rate will not change. If Yes, the system uses the displayed exchange rate when you post the invoice. If No, the system uses the exchange rate effective when you post the invoice.

Item Selection Frame

When you leave the first set of frames, the system determines the number of items in the call record’s detail and displays the last line in the Item Selection frame. Use this frame to update existing lines or to add more lines to the call.

When your cursor passes the Item field, the pop-up window shown in Figure 14.15 displays so you can enter the quantity of the item you are repairing and an optional installed base reference number.

Fig. 14.15
Item Selection Frame



Line. The system increments the line number when you add a new line to the call. When you first access this frame, the last line on the call displays to show how many lines exist.

Serial. Specify the item's lot or serial number, used to identify installed base records. You cannot update this field after you open a report for the item. If you leave this field blank and the item is defined as lot- or serial-number controlled in Item Master Maintenance, a warning displays. You cannot update the installed base without a lot or serial number.

Item Number. Enter the identifier of an item requiring service activity. Two control program settings affect the validation of this field:

- If Items Must Exist in Service Management Control is Yes, the system checks this field against items in the item master.
- If Items in Installed Base is Yes, the item must exist in the installed base before you can take a call for it.

Quantity. This pop-up displays after you click Next from the Item Number field. Quantity defaults from the call record and indicates the quantity of items you are servicing. For installed base items, Quantity defaults from the quantity in the installed base record. If these two are not the same in CAR, a warning displays. If you are working with serialized items and managing the installed base, create separate lines for each item. You cannot update this field after you open a report for the item.

If you are using service BOMs and routings, the system multiplies the quantity required for each item and each operation run time by the quantity in this field.

Ref. The ISB reference number defaults from the line item; otherwise, it is zero. Reference numbers uniquely identify items in the installed base with the same serial/lot number or items without numbers. You cannot update this field after you open a report for the item.

Work Cd. For a new line, work code defaults from the call header. The value here defaults into the Labor/Expenses and Item Usage frames, indicating the type of work you performed for each labor operation, expense, and item you consumed. If you set up contract limits using work code/service category combinations, this work code determines the applicable limit.

If you define the work code with Fixed Price set to Yes in Work Code Maintenance, Fixed Price in Call Activity Recording is Yes and is display only. The system calculates the service price at the fixed rate regardless of the actual service cost. The system searches the call price list for a price with the fixed price unit of measure in Call Management Control.

Note When you use fixed prices, the system requires a charge code with Fixed Billable set to Yes.

Svc Type. Defaults from the service type in Call Maintenance for this line. For a new line, the service type defaults first from a warranty or a contract covering this particular item. If the item has no warranty or contract, this field defaults from Default Call Service Type in Call Management Control.

Service types identify terms and conditions of coverage, including response time, price lists, and days of coverage. They define coverage levels and charge codes for covered or over-limit amounts.

If Coverage is Yes in the Item Detail, a pop-up window displays the coverage limits for this service type and the amount you have already consumed.

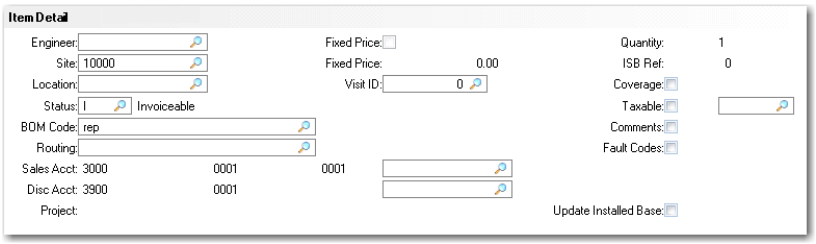
You cannot update this field after you open a report for the item.

Report. To create a report, enter the new number or clear the existing one for the system to supply one. Use Next/Previous to scroll through reports that exist for the line item. The system-generated number defaults from the next work order lot ID.

Item Detail Frame

After you accept the Item Selection frame, the Item Detail frame appears. In this frame, you modify information for the displayed line item. Most fields default either from the call record, the information supplied on the header of Call Activity Recording, or settings in the Call Recording/Invoicing frame of Call Management Control.

Fig. 14.16
Item Detail Frame



Engineer. Engineer defaults from the engineer assigned to the item on this call. For a new line, it defaults from the engineer assigned to the call. When you create the first report for a call line, the engineer information helps determine the line-item site. This site can also affect the BOM and routing that the system suggests.

You must enter a value in this field. If you did not assign an engineer to the call, enter one here. Engineer provides the default for each line of detail, but you can edit it any time during the call. If a call involves multiple engineers, record one engineer's detail, return to the Item Detail frame to change the engineer, and record the second engineer's detail. Alternately, you can open a separate report for each engineer.

Engineer scheduling in Call Maintenance considers only the engineer on the call header when calculating engineer load. If you specify other engineers for some line items or reports, their availability is not affected.

Site. The site code identifies the facility that issues items you use to service the call line. This site code is the default for item usage records. Site defaults from the engineer record if the engineer has a designated site. Otherwise, the system searches for the site of the engineer's assigned area, then the default spares site in Default Site Maintenance, then the item's site in the item master, and finally the call customer site.

The system determines costs by site. After you create a report, you cannot change the site for the line.

See "Determining Site and Location Defaults" on page 397 for details.

Location. Location defaults from the engineer record. If blank, the system searches for the location for the engineer's assigned area, then the default spares location in Default Site Maintenance. Use locations to track inventory for items issued for the line item.

Status. Specify one of three values that indicates the report's status:

I (invoiceable). Indicates that this report is ready for invoicing. Invoiceable is the default status when you create a report. When you release a quote to CAR, the system gives its reports a status of I so that you can immediately invoice activity you record.

H (hold). Does not allow the system to invoice the report. The system sets reports to H if an error occurs during inventory processing. You can enter a status of H to delay invoicing a report.

C (closed). The system sets a report status to C when you post the invoice. You cannot modify closed reports. You can enter a status of C only if the report has no detail.

BOM Code. Use only service BOMs set up with Service Structure Maintenance. This field defaults from the BOM code in Call Maintenance.

When you add items in CAR, the system searches first for BOM codes you defined in Service Item by Site Maintenance (11.3.9). If no BOM exists for the call line site, the system searches for a BOM you defined in Service Item Maintenance. For the PM work code, the system uses the PM BOM code. For the install work code, the system uses the install BOM code. In all other cases, the system uses the repair BOM code.

When you execute this frame, the system enters the detail records for the BOM into the item usage frame for the first operation on the routing that does not have items. After the system generates the line item's BOM, the field becomes output only.

If you do not want usage records created automatically, clear this field before continuing.

Routing. Use only service routings from Service Routing Maintenance. This field defaults from the routing in Call Maintenance.

When you add items in CAR, the system uses the routing for the item's work code in Service Item by Site Maintenance (11.3.9). If no routing exists for the site, the system searches for a routing in Service Item Maintenance. For the PM work code, the system uses the PM routing. For the install work code, the system uses the install routing. In all other cases, the system uses the repair routing.

When you execute this frame, the system enters the routing steps into the Labor/Expenses frames. If BOM codes exist for a routing operation, the system enters these as items used for the operation. After the system generates the line item's routing, the field becomes output only.

If you do not want usage records created automatically, clear this field before continuing.

Sales and Discount Account, Sub-Account, Cost Center. The system displays the Sales and Sales Discount accounts from the revenue product line. You cannot update these fields here. After the invoice is created, update them in CIR as needed.

Sales and Discount Project. Enter an optional code identifying the general ledger (GL) project associated with the sales and sales discount amounts for this call line item. These fields default from the sales and discount projects associated with the contract line providing coverage; otherwise, they are blank. The sales and discount project are typically the same.

The system verifies that the project exists and is active and that it is valid with the other Sales and Sales Discount account components.

Project. Enter an optional code identifying the general ledger (GL) project associated with the cost of labor, expenses, and items for this call line item.

You can update this field only when the value of Project Code Handling in SSM Accounting Control is set to Project per Labor/Expense (P). When Project Code Handling is Single Project per Line (S), the report project defaults from the sales project and cannot be changed.

This project is validated with other Cost of Goods Sold account components during GL transaction post.

See “Project Codes in CAR” on page 405 for details.

Fixed Price. Displays the work code’s Fixed Price field value. You cannot change this field. If Fixed Price is Yes, you can specify a fixed price in the following field. Use fixed price repairs to charge customers a fixed amount for service regardless of the repair cost. When Fixed Price is Yes, use only a charge code with Fixed Price Billable set to Yes.

Fixed Price. If Fixed Price is Yes, the system searches the header’s price list for a price that has the fixed price unit of measure in Call Management Control. If none exists, the default price is zero.

Visit ID. Specify the QAD Field Service Scheduler (FSS) visit ID to record labor activity against. The lookup displays the list of open visits for the current call.

If you select a visit, you can consume labor time for both the travel time for the visit and for the estimated work time (or any combination of the two). This field is optional.

See *User Guide: QAD Field Service Scheduler* for more information on FSS.

Quantity, ISB Ref. Output-only fields showing values you entered in the previous pop-up.

Coverage. Defaults from Coverage Window in Call Management Control. If Coverage is Yes, a frame displays coverage information such as contract number, contract service type, start and end date, active service type, warranty service type, and install and expiration dates.

Coverage limits for the contract or service type also display. For a contract, this includes the contract number and the line number providing coverage. The system also displays the limits you defined by invoice sort or work code/service category, the percentage of coverage, and the coverage amounts for the defined conditions. The engineer servicing the call often examines this coverage information.

Taxable. Defaults from the header Taxable field. You can determine the tax status for each line item. See Chapter 7, “Taxes in SSM,” on page 165 for more details about taxes.

Comments. Defaults to Yes if comments exist. Specify Yes to enter or review call line comments. The system copies comments into Call Invoice Recording. You can print comments on the invoice.

Fault Codes. Defaults from Use Fault Codes in Call Management Control. Set Fault Codes to Yes to enter problem, cause, and resolved codes in a pop-up. Define these codes in Generalized Codes Maintenance. If you entered fault codes in Call Maintenance, those values display so you can adjust or add information.

Update Installed Base. Defaults to Yes when:

- The item is in the installed base, regardless of other settings.
- Installed Base in Service Item Maintenance is Yes for the item *and* Create ISB is Yes for the end user in End User Data Maintenance.
- The item is not in the item master, but Create ISB is Yes for the end user in End User Data Maintenance.

If Yes and the line item is not in the installed base, a pop-up displays so you can specify ISB parameters and add the item to the installed base. If the line item is in the installed base, no additional frames display.

If you do not enter an item number, Update ISB defaults to No. If you enter the item number of a lot/serial-controlled item and do not specify a lot/serial number, the system sets Update ISB to No and does not let you change it. A lot/serial controlled item can only be added to the installed base with a lot or serial number.

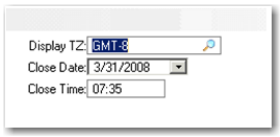
If Update ISB is Yes and Load Available Structure is Yes in Service Management Control, the system adds component items that you used to the installed base. You must mark these items as belonging in the installed base in Service Item Maintenance. The system removes returned items that exist in the installed base regardless of the setting of Load Available Structure.

Close Visit Pop-Up

If you associate a visit with a call in the Item Detail frame, you can optionally close the visit using the Close Visit pop-up.

If you close a visit in CAR, the status of the visit is also updated in FSS. You can also record the visit close date and time.

Fig. 14.17
Close Visit Pop-Up



Display TZ. Specify the time zone in which the visit will be closed. When you close a visit in CAR, the system updates the status of the visit in FSS.

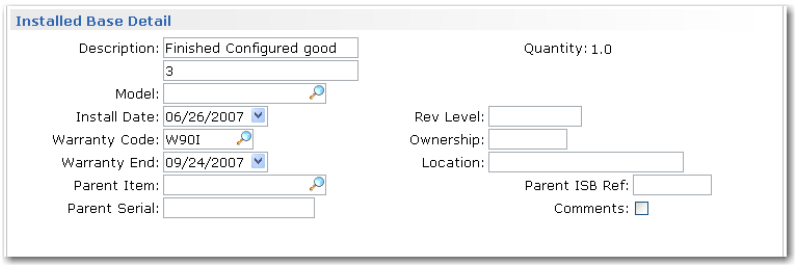
Close Date. Specify the date on which the visit is closed.

Close Time. Specify the time at which the visit is closed.

Installed Base Detail Frame

If Update ISB is Yes and the call line item is not in the installed base, enter information for the ISB record in a pop-up. If the line item is a component—for example, the disk drive of a computer—you can specify a parent item and serial number to update the installed base configuration.

Fig. 14.18
Installed Base Detail Frame



Description. The two-line item description from Item Master Maintenance displays. You can change this description as needed.

Quantity. An output-only field indicating the number of items you are adding to the installed base.

Model. The item's model number, which defaults from the value in Service Item Maintenance.

Install Date. Defaults from the system date and determines when warranty coverage begins.

Warranty Code. Defaults from the item's warranty in Service Item Maintenance. Warranty Code determines the coverage terms and conditions, including response time, price lists, and days of coverage. If you add an item to the installed base and specify a current warranty code, the system prompts whether you want to use this warranty coverage for the call.

Warranty End. Based on the warranty duration and the install date. If you are adding an item to the installed base with a warranty, specify an expiration date. Warranties cannot be open-ended.

Rev Level. Displays the item's revision level in the item master.

Ownership. A reference-only field indicating who possesses the item. If the end-user address code refers to a large company, you can enter the department or individual using the item. Define values for ownership with Generalized Codes Maintenance for field isb_owner.

Location. A reference-only field providing a 24-character description of the location of the installed base item at the end-user site. Location can be a building, suite number, or floor.

Parent Item, Serial, ISB Ref. You can track both products and components in the installed base. Use this especially if you have configured products. If you maintain the configuration in the installed base and the customer returns a component such as a PC disk drive, you can relate the new component you issue to the PC.

Use Parent Item to add the current item to the original purchase. Use the Parent Serial and ISB Reference fields to identify the parent item.

Comments. Defaults to Yes if comments exist. Specify Yes to enter or review ISB comments. The Installed Base Report displays comments.

WIP Product Line Pop-Up

Activity recorded in CAR can affect accounts from multiple product lines. These product lines fall into three categories:

- WIP product line, a holding area for CAR amounts
- Charge product lines, for costs in CAR
- Revenue product line, for service income in Call Invoice Recording

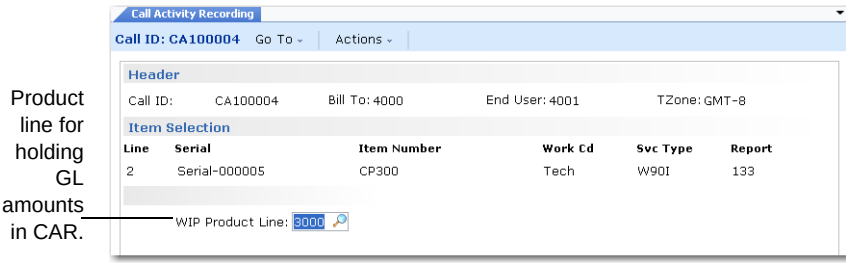
You can use the same product line for all three purposes, depending on how you want to separate accounts for reporting and analysis.

The default for the WIP product line is either the service type's product line or the item's product line, depending on Use Item Prod Line in SSM Accounting Control. You can change this only when you first access a line. All reports you create for the call line use this product line.

See "Detailed Accounting in CIR" on page 463.

Figure 14.19 illustrates the product line pop-up in CAR.

Fig. 14.19
WIP Product Line Pop-Up

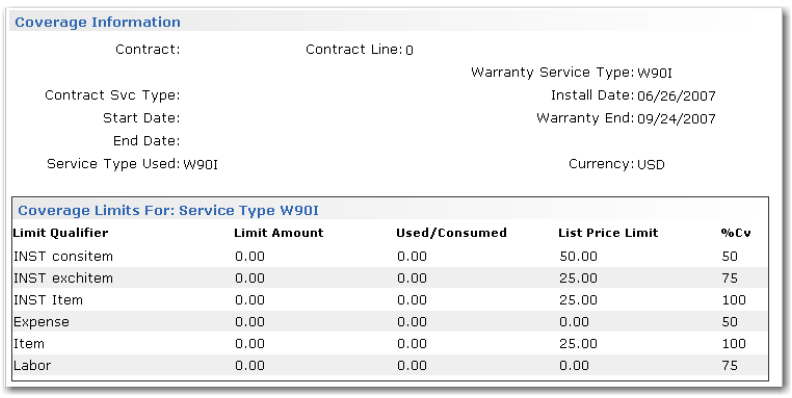


WIP Product Line. Accept the default or enter a product line. The product line determines the WIP account the system uses for activity for this line.

Coverage Information Frame

If Coverage is Yes, the Coverage Information frame displays.

Fig. 14.20
Coverage Information Frame



This frame displays detail about the line item's coverage limits, effective on the call open date. These limits come from a contract, service type, or warranty, as the frame header indicates. If the coverage limits come from a contract, the limits include the amount you have used in CAR and consumed by posting call invoices.

Note When MTZ is active, call open date/time are relative to the end user's time zone.

Limit Qualifier. You can set up limits in one of three ways: as a total record, by invoice sort, or by work/code service category combination. For total records, this column displays Total Limits. Otherwise, it displays the name of the invoice sort or work code/service category. See "Levels and Limits of Service" on page 128 for details on how service limits are defined and applied.

Amount. Displays the limit amount of the service type or contract. If the call does not use base currency, the system converts the amount to the currency displayed in the frame above.

Used/Consumed. This field has a value only for contracts. As you record activity for an item that has a contract, the system accumulates quantity consumed against active limits. The amount in this column combines amounts used on open calls with amounts posted for call invoices. If the call is not using base currency, the system converts the amount to the currency displayed in the frame above.

List Price Limit. Displays the list price limit for the coverage record. When the price of an item recorded for the service activity exceeds this limit, it is not covered even when limits are not exceeded. If the call does not use base currency, the system converts the amount to the currency displayed in the frame above.

% Cv. Displays the level of coverage.

Fault Codes Frame

If Fault Codes is Yes, the same fault code pop-up that appears in Call Maintenance displays. If you entered fault code information for the call line in Call Maintenance, it displays here.

See "Fault Codes Pop-Up" on page 303 for details.

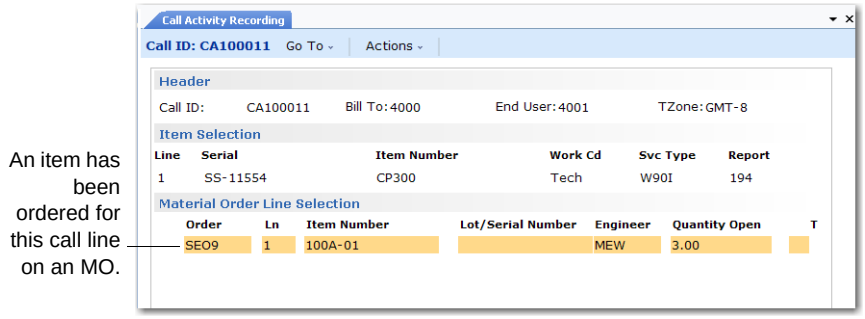
Note Use the Fault Code Analysis operational metric on the Service and Support Operational Metrics page in the Metrics folder to view a snapshot of calls received categorized according to fault codes. This metric allows you to identify the fault codes that occur most frequently and to determine appropriate corrective action, if required. For details on creating or modifying operational metrics refer to *Administration Guide: QAD .NET User Interface*.

Material Order Selection Frame

If you ordered items with an MO for the call line, the Material Order Selection frame displays open MOs for the associated call line. An open MO has a quantity shipped greater than the quantity consumed plus the quantity returned.

See "Loading MO Lines into CAR" on page 550.

Fig. 14.21
Material Order Selection Frame

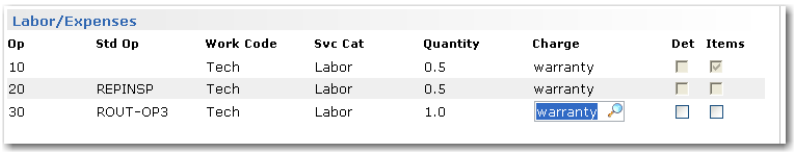


Select or deselect MO lines as needed. Selected lines display an asterisk (*). To exit the scrolling window and continue processing, click Next. After you finish the selection, the system loads the MO items into CAR item usage records. To exit the scrolling window without loading MO items into CAR, click Back.

Labor/Expenses Frame

Use the Labor/Expenses frame, shown in Figure 14.22, to record the operation steps and expenses of servicing the call line item.

Fig. 14.22
Labor/Expenses Frame



The fields in the Item Selection frame are display-only here. Information you record in the Labor/Expenses frame applies to the displayed item.

Op. Use the operation number to track the sequence of tasks for a service, much like a routing sequence. By default, operation numbers start with 10. If a routing is associated with the call line, its operations display for update.

You can record multiple items per operation but only one line of labor or expense. To specify several service categories, associate each with a separate operation number.

Std Op. Define standard operation codes with Service Std Operation Maint (11.19.21). If you enter a service standard operation code, the system displays the default service category and quantity. If the standard operation uses a BOM, the system prompts you to load the items on the BOM for this operation. To calculate labor costs, the system uses the labor rate of the work center for the operation.

After you record a line, you can change the operation only by deleting the line and reentering it.

Note You can also use manufacturing standard operations in CAR.

Work Code. Defaults from the Item Selection frame. The system uses the work code:

- To determine the applicable coverage limits
- To find a charge code

- To search for a price for labor and price and cost for expenses

If you change the work code, the system recalculates the default charge code.

Svc Cat. Enter a service category defined in Service Category Maintenance with one of the following fields set to Yes: Labor, Expense, Travel Labor, or Travel Expense. For standard operations and operations in service routings, the service category defaults from the operation. Otherwise, it defaults from Default Labor Svc Cat in Call Management Control.

The system uses the service category:

- To determine the applicable coverage limits
- To find a charge code
- To search for a price for labor and price and cost for expenses

If you change the service category, the system recalculates the default charge code.

After you save a labor or expense record, you can modify the service category only to one of the same type. You cannot switch a labor or travel labor category to expense or travel expense.

Quantity. Enter the number of units of the service category that you used. For labor, the units are hours. For expenses, the quantity is in units of the service category. If you use a standard operation or generate the operation from a routing, quantity defaults from the operation run time. The system uses quantity to calculate the extended price as follows:

*(Quantity * Price) – Covered Amount*

After labor and expenses have been processed, you can increase the quantity used for an operation but you cannot decrease it. To correct an overissue made by mistake, open a new operation and enter a negative quantity. Processing this new line creates reversing GL transactions.

See “Correcting Report Errors” on page 401.

Charge. The default charge code is based on several factors. If you define the work code as fixed price, the Fixed Billable charge code from Default Charge Code Maintenance (11.21.21.13) displays.

If this is not a fixed repair, the system uses the under- or over-limit charge code for the coverage limits of the contract or service type. The default depends on the operation’s extended price and, for contracts only, the amount you have previously applied to the limit.

If the limits have no associated charge codes, the system selects a default charge code depending on the source of coverage (contract, warranty, or call default service type) and whether the operation is over or under limit.

With some restrictions, you can change the displayed value, but you cannot change between a non-fixed and fixed repair charge code. The system uses the charge code to determine the charge product line and the GL accounts that this service activity affects.

See “Changing Charge Codes” on page 395 for details on changing system defaults.

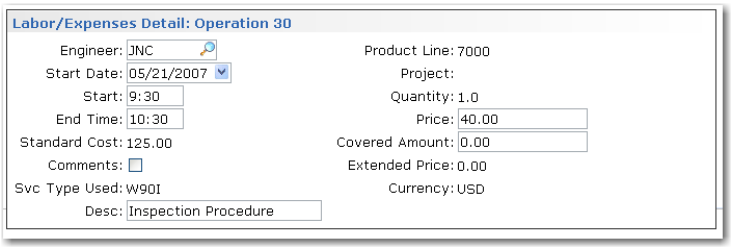
Det. Defaults from the header’s Detail setting. Set Det (Detail) to Yes to display the Detail frame, which shows more labor and expense data.

Items. Defaults to No unless the operation has items—for example, a BOM code for a routing operation. Set Items to Yes to display an Item Usage frame so you can record items you consumed in the operation.

Labor/Expenses Detail Frame

If Detail is Yes in the Labor/Expenses frame, the Labor/Expenses Detail frame appears. The system calculates and displays cost, price, and coverage limit details for the operation. Other fields default from call information or from information in related records.

Fig. 14.23
Labor/Expenses Detail Frame



Engineer. Defaults from the Item Detail frame, which displays the call value. Each operation can have a distinct engineer, if needed.

Start Date. Defaults from the system date, which you can change only the first time through the frame. Start Date is the date when the engineer began the service activity.

Start. Reference field indicating the time of day that the engineer began work.

End Time. Reference field indicating the time when the engineer finished work.

Note When MTZ is active, these dates and times are relative to the end user's time zone.

Standard Cost. If this operation has a labor service category, the standard labor cost for the engineer for one hour displays, and cannot be modified. The system calculates the cost from the operation's work center, either from the service routing or a standard operation. The work center determines the labor rate, labor burden rate, and the labor burden percentage. For labor operations without a work center, the system calculates the cost from the Service Work Center in Call Management Control.

If this operation has an expense service category, the system calculates the cost from the expense cost price list (type E) for the call. The cost of one unit of the service category displays. If no expense cost list exists, expense cost defaults to zero.

Comments. Defaults to Yes if comments exist. Specify Yes to enter or review comments for this operation. The system copies comments into Call Invoice Recording. You can print comments on the invoice.

Svc Type Used. Output-only field displaying the service type that determines this operation's coverage. The service type that the system uses is not necessarily the one that you specified for the line item. The system can change the service type if you change the charge code. See "Changing Charge Codes" on page 395.

Description. Specify a brief (maximum 24 character) description of this operation, which defaults from the standard operation or service routing step. This description prints on the invoice if detail is included.

Product Line. Output-only field showing the charge product line for labor costs.

Project. Enter an optional code identifying the GL project for the labor/expense detail. The system associates the project code with the GL transactions it creates. You can track the call's cost by project.

Whether the field can be updated depends on the setting of Project Code Handling in SSM Accounting Control. If you use a charge code with Project Mandatory set to Yes, you must enter a project code.

See "Project Codes in CAR" on page 405 for details.

Quantity. An output-only field displaying the operation's labor or expense quantity.

Price. The price for one unit of the operation's service category. Defaults from the price list on the call header unless this is a fixed price repair. For fixed price repairs, the system sets detail prices to zero, which you cannot change. If no price is found on the price list, the default is zero. To prevent changes, apply field security to Price.

Covered Amount. Amount of the total price for which you are not billing the customer. The system determines this amount from the coverage limits for the contract or service type. The covered amount defaults to zero when:

- No coverage exists on the contract or service type.
- The item has exceeded the contract's service limits.
- The item has exceeded a list price limit.
- The service is for a fixed price. In this case, covered amount cannot be changed.

Covered amount cannot exceed the price times the quantity.

To prevent changes, apply field security to Covered Amount.

Extended Price. The total price minus the covered amount. For fixed price repairs, this field is zero. The system calculate the extended price as follows:

*(Quantity * Price) – Covered Amount*

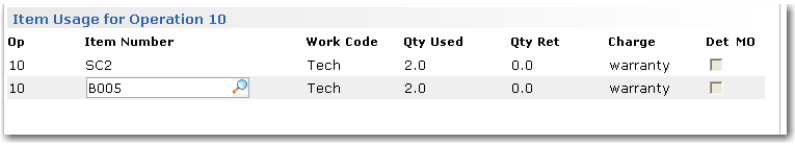
Currency. Output-only field displaying the call currency. Defaults from the call header.

When you finish entering data in this frame and click Next, you return to the Op field. Enter additional data until you record all operations. Click Next to accept the last entries and End to display the Item Usage frame.

Item Usage Frame

In the Item Usage frame, you report the inventory items that you used to repair or service the item in the Item Selection frame. Record items you used for specific operations, or simply add all the items after you complete the Labor/Expenses frame.

Fig. 14.24
CAR Item Usage Frame



Op. Enter the operation number. You can record items for each operation. If you are not using operation steps, record all items on the first operation.

Item Number. Enter the item number of an item defined in Item Master Maintenance that you consumed or returned during the repair. If the call line item has an associated service BOM or its routing operations had associated BOMs, records for these items are already created.

Note Record a non-inventory item as an expense in the Labor/Expenses frame.

If the item you specify in this field is the same as the item on the call line, a warning displays. If you choose to continue, you are prompted to indicate if this component issue is a swap. Your response affects how the installed base is updated.

See “Swaps” on page 408.

Work Code. Defaults from the Item Selection frame, which defaults from the call header. The system uses the work code:

- To determine the applicable coverage limits
- To find a charge code
- To search for an item price on the call price list

Qty Used. Enter the number of item units you consumed. If this record came from a service BOM, Qty Used displays the value of Quantity Per on the BOM. If this line came from a Material Order, the order quantity defaults into this field. The system uses this field to calculate the extended price according to this formula:

*(Qty Used * Price) – Covered Amount*

After inventory has been issued, you can increase the quantity used for an operation but you cannot decrease it. To correct an overissue made by mistake, open a new operation and enter a negative quantity. Processing this line creates reversing GL transactions and increases inventory at the specified site and location.

See “Correcting Report Errors” on page 401.

Note You cannot enter a negative quantity when you are executing a swap. This occurs when the item being issued is the same as the item on the call line and you respond Yes that this is a swap. See“Swaps” on page 408.

Qty Ret. Enter the number of units you are returning. For repairable units, as defined in Service Item Maintenance, Qty Ret defaults to Qty Used. Quantity returned also defaults to quantity used for a swap.

Generally, you return items in CAR for two reasons:

- You exchange a defective or worn item for a new one.
- On an MO, you ordered items for the call that you did not use.

Note Use RMAs for simple returns that do not require an engineer.

If you specify a return quantity, set Det to Yes to display the Returned Items Detail frame. If item information comes from an MO, account for all items on the MO before you close the call. To close a line or call, Qty Used and Qty Ret must equal the MO order quantity.

Charge. The charge code default is based on several factors. For a fixed price work code, the Fixed Billable charge code from Default Charge Code Maintenance (11.21.21.13) displays.

If this is not a fixed repair, the system uses the under- or over-limit charge code for the coverage limits of the contract or service type. The default depends on the item’s extended price and, for contracts only, the amount applied to the limit.

If the limits have no associated charge codes, a charge code defined in Default Charge Code Maintenance displays. The system selects a charge code depending on the source of coverage (contract, warranty, or call default service type) and whether the operation is over or under limit.

With some restrictions, you can change the displayed value, but you cannot change between a non-fixed and fixed repair charge code. The system uses the charge code to determine the charge product line and the GL accounts that this service activity affects.

See “Changing Charge Codes” on page 395 for details on changing system defaults.

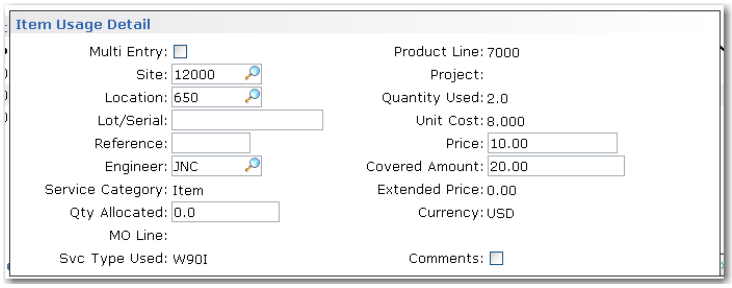
Det. Set Det (Detail) to Yes to display the Detail frame, which shows more data for this line. To update the installed base when you return items, set Det to Yes so you can enter the serial or ISB reference of the returned item.

MO. Output-only. If you ordered the item with an MO, an asterisk (*) initially displays and the Item Detail frame displays the MO number and line. After you issue the item for the call, the system no longer connects it to the MO.

Item Usage Detail Frame

Set Det to Yes in the Item Usage frame to display the Item Usage Detail frame illustrated in Figure 14.25.

Fig. 14.25
Item Usage Detail Frame



Multi Entry. Defaults to No unless the quantity used is greater than one and the issued item has Lot/Serial Control set to S in the item master. If Yes, a detail frame appears so you can enter a site, lot/serial, location, and reference for each item you consumed. You are not performing a detail allocation—you are simply recording detail about items.

Site. Enter the site from which you are issuing the item. This field defaults from the call line item site, unless the item was loaded from a material order. In this case, site, location, lot/serial, and reference default from the MO and cannot be changed.

Location. Enter the inventory location at the site from which you are issuing the item.

Note You cannot update location when an item is loaded from an MO.

Lot/Serial. If the item is lot/serial controlled, enter the lot or serial number. When lot/serial controlled items are loaded from MOs, this field defaults from the MO line and cannot be changed.

If Load Available Structure is Yes in Service Management Control and the item has Installed Base set to Yes in Service Item Maintenance, you must specify a lot/serial number to add the item to the installed base. The lot/serial number is part of the installed base record. If you are exchanging an installed base item, the system replaces the previous lot/serial number with this one.

Reference. Enter the item's lot reference number. Lot reference, site, location, and lot/serial number specifically identify inventory quantities. For lot reference, you can use the production lot of the item or a location reference such as a skid, roll, or pallet number.

Note You cannot update reference when an item is loaded from an MO.

Engineer. Specify the engineer who installed the part. The default is the engineer for the call line item. You can change the value—for example, if more than one engineer responded to the call.

Service Category. Output-only field that defaults from the item's service category in Service Item Maintenance (11.7.3). If none, the system uses the Item Service Category in Call Management Control (11.1.24). The system uses the service category to determine service limits and to search for a default charge code.

Qty Allocated. Specify the quantity of items on this line to allocate. This defaults to zero. Normally, you do not allocate items in Call Activity Recording because you are recording items that you have used. The system issues the inventory immediately in CAR. However, if you are not going to issue the inventory at this time, enter a quantity to allocate. CAR does general allocations only. It does not create detail allocations even if you enter inventory detail.

MO Line. Material order number and line number that corresponds to the call line. MO Line has a value if you have not yet issued the MO item. Otherwise, the field is blank and cannot be updated.

Svc Type Used. Output-only field displaying the service type that determines coverage. The service type the system uses for coverage may not be the same as the one you specified initially. The service type can change when you change the charge code. See "Changing Charge Codes" on page 395.

Product Line. Output-only field showing the charge product line for item costs.

Project. Output-only field showing the GL project code. See "Project Codes in CAR" on page 405 for details.

Unit Cost. Output-only field showing the cost for one unit of the item. The system derives the cost from the site of the item you are repairing—not the site from which you issued the component.

During inventory processing, the system transfers items to the call line item site and issues them from there. The inventory transfer creates a GL transaction for any variance in costs between the sites.

For the system to find a cost, either:

- The site associated with the item in Item Master Maintenance is the same as the call line-item site, or
- Costs for the issued item at the call line-item site are set up using Item-Site Cost Maintenance.

Otherwise, cost defaults to zero. The cost displays in the Item Cost column in Call Invoice Recording. The system uses the cost to calculate the margin for this service activity.

Price. Defaults from the header's price list unless this is a fixed price repair. For fixed price repairs, the system displays a zero for all details, which you cannot change. To prevent changes, apply field security to Price.

Price is the price for one unit. If no price exists on the price list, the system uses the item's list price in the item master. The system calculates Extended Price by subtracting the covered amount from the total price (price * quantity).

Covered Amount. Amount of the total price for which you are not billing the customer. The system determines this amount from the coverage limits for the contract or service type. The covered amount defaults to zero when:

- No coverage exists on the contract or service type.
- The item has exceeded the contract's service limits.
- The item has exceeded a list price limit.
- The service is for a fixed price. In this case, covered amount cannot be changed.

Covered amount cannot exceed the price times the quantity.

To prevent changes, apply field security to Covered Amount.

Extended Price. The total price minus the covered amount. For fixed price repairs, this field is zero.

Currency. Output-only field displaying the call currency. Defaults from the call header.

Comments. Defaults to Yes if comments exist. Specify Yes to enter or review comments for this item. The system copies comments into Call Invoice Recording. You can print comments on the invoice.

Multi-Item Issue Frame

If Multi is Yes, an additional frame displays that enables you to enter detailed information for each item you issued. Detailed allocations do not take place in CAR. However, you can specify the items to issue by site/location, lot/reference, and serial number.

Fig. 14.26
Multi-Item Issue Frame

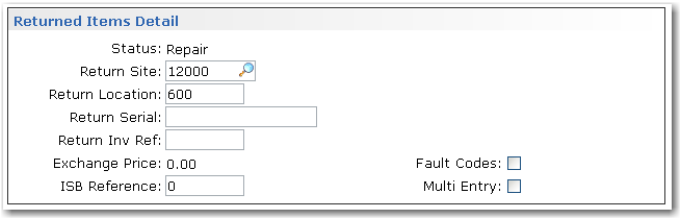
The fields in this pop-up are the same as those on the Item Detail frame. In this frame, you can specify separate detail for each item you are issuing.

Note If items were loaded from a material order, you cannot modify the site, location, lot/serial, or reference number.

Returned Items Detail Frame

If you specify a return quantity and Detail is Yes, the Returned Items Detail frame displays. Specify the return status and inventory return site and location. If you are returning more than one item, you can access a multiline entry frame. The system uses return serial numbers and ISB reference numbers to remove returned items from the installed base.

Fig. 14.27
Returned Items Detail



Status. The return status defaults from either:

- The default return status in Call Management Control if the item is repairable
- The default scrap status in Call Management Control if the item is not repairable

Note Repairable items have Repairable set to Yes in Service Item Maintenance.

You can change the return status to any status defined with Return Status Maintenance (11.21.17). However, you can use a Pending status only for items you ordered on an MO and an Exchange status only for items returned from the customer.

Return Site, Location. Depending on the return status and whether or not the item is repairable, the return site and location default as follows:

- To the return site and location, if the item is repairable and Good is Yes for the return status, or if the item is not repairable and Scrap is No.
- To the scrap site and location, if the item is not repairable and Scrap is Yes for the return status. See “Return Statuses and Default Sites” on page 64 for details.
- To the repair site and location, if the item is repairable and Good is No for the return status.

Note Set up default sites and locations with Default Site Maintenance (11.21.13).

If you are returning an item from an MO line, the location must allow receipts (RCT-TR). If the return is not from an MO line, the location must allow unplanned receipts (RCT-UNP).

The system searches for default sites and locations based on the returned item’s product line, service group, work code, and item number and the area you specified on the call. Enter a site if no default site exists.

Note If the item being returned was ordered on an MO, return site and location default from the MO and cannot be changed.

Return Serial. If the item you are returning is lot/serial controlled, enter the serial number. When you return an unused lot/serial controlled item originally loaded from an MO line, this field defaults from the MO line.

If the serial number is in the installed base and Update ISB is Yes for this call line, the system removes the item with this serial number from the installed base. If you are returning multiple serial-controlled items, set Multi Entry to Yes to access a line item entry frame for multiple returns.

Return Inv Ref. Enter the lot reference number of the item you are returning. Lot reference, site, location, and lot/serial number identify inventory quantities. For lot reference, you can use the production lot of the item or a location reference such as a skid, roll, or pallet number.

Exchange Price. If you are exchanging an item that has no coverage, the system searches the header's repair price list for an exchange price with the exchange unit of measure in Call Management Control. If the exchanged item has coverage, the exchange price defaults to zero.

Note You cannot exchange an item ordered on an MO.

ISB Reference. All items that do not have serial numbers in the installed base need ISB reference numbers. Specify the ISB reference on a return so the system can exactly identify the item to remove from the installed base.

Fault Codes. If Yes, the fault code window displays so you can specify the reason for the return.

Multi Entry. If you are returning more than one item, specify Yes to access a line-item entry frame. You must use this frame to remove multiple items from the installed base.

When you finish entering data in this frame and click Next, you return to the Op field. Enter additional data until you record all item detail. Click Back to exit the item usage frames.

Multi-Item Return Detail Frame

If Multi Entry is Yes in the Returned Items Detail frame, a line-item entry frame displays. Enter information specific to each item returned. You can specify a separate return status and inventory return site and location for each item.

Fig. 14.28
Multi-Item Return Detail

SC2 Returned : 2

Ln	Status	Return Site	Return Location	From Site	From Location	Quantity
	Status					
1	Repair	10000	100			1.0
	Lot/Serial:	S-1	ISB Ref:	0	Inv Ref:	

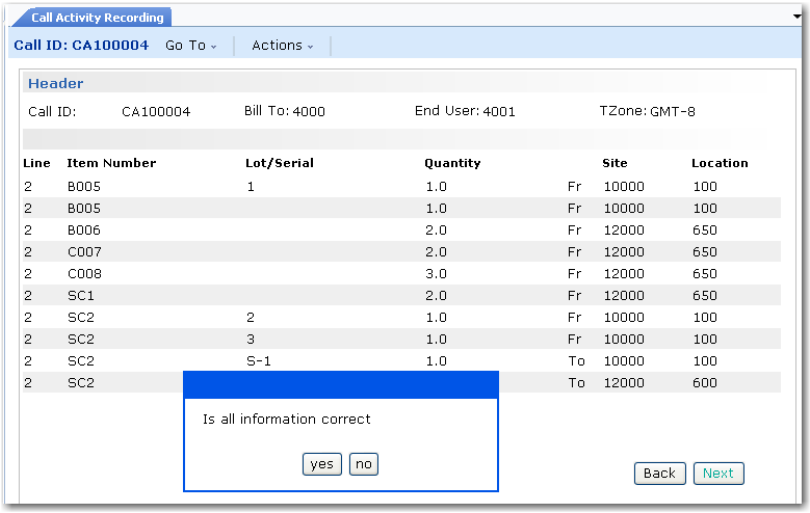
Confirmation Frame

When you exit the labor/expenses and item usage frames, the system prompts you to display inventory about to be processed. If you accept the default of Yes, the system displays a confirmation frame similar to the one illustrated in Figure 14.29, listing the items that it will issue and return on this call.

Important Review the summary information to check the item numbers, inventory sites, and locations. After the system processes the inventory, there is no simple way to correct mistakes.

Items returned with a pending status do not display on the confirmation frame, because no inventory transactions take place for them at this time.

Fig. 14.29
Inventory Confirmation Frame

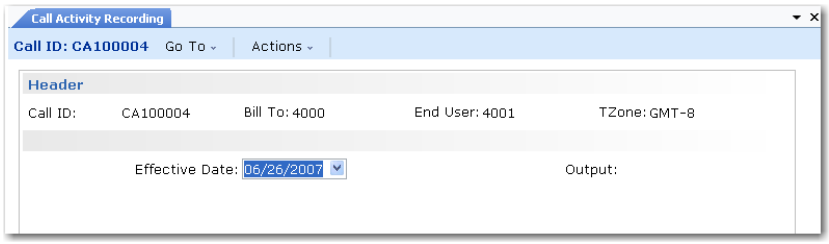


To make changes, respond No to the prompt asking if the information is correct. The Item Selection frame displays so that you can proceed through the detailed usage frames again.

Output Device Frame

If you accept the information in the confirmation frame, the next frame prompts you for an output device.

Fig. 14.30
Output Device Frame



Enter the GL effective date for the transactions and an output device for the report; then click Next to process inventory. The effective date must fall within an open GL calendar period. The system processes inventory and generates a report to the output device.

This report includes:

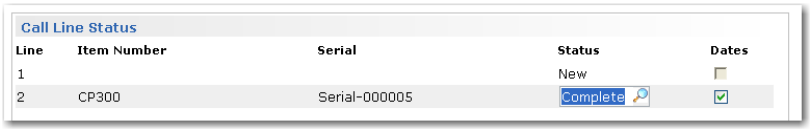
- Items issued or returned
- Labor/expense transactions
- Updates to the installed base
- Inventory errors or warnings the system encountered during execution

Whether you are generating an invoice or not, items that you recorded as consumed are no longer available in inventory. The system issues them immediately or transfers them to the call line site and issues them.

Call Line Status Frame

Figure 14.31 illustrates the Call Line Status frame.

Fig. 14.31
CAR Call Line Status Frame



The line number, item, and serial number display. Use Next/Previous to display the next and previous line numbers.

Status. You can apply field security to this field. The system sets the call line status to complete or closed, depending on the setting of Close on Recording. For a status of complete, inventory issues must complete with no errors. If the system detects errors, the line remains open and the report status is hold rather than invoiceable. You can invoice line items with a complete status. To prevent invoicing, change the line status.

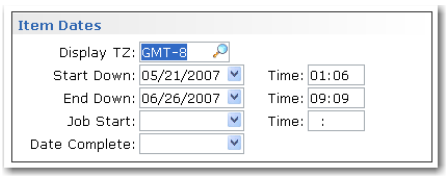
Dates. You can record date information about the handling of this call. Use this if you have contract obligations to repair items within a defined time limit. To track the success of meeting the contract obligations, you can compare when the you received the call to when you resolved the problem.

Item Dates

Specify Yes to the Dates field to display the pop-up window in Figure 14.32. The dates in these fields are reference only.

Note If MTZ is active, a display time zone pop-up appears before the date pop-up. This way, whoever is entering the dates and times—either an engineer or a clerical person—can choose how dates and times are entered. The Date Complete, because it has no time, is an exception. It is entered relative to the end user's time zone, regardless of the display time zone chosen. See Chapter 4, "Multiple Time Zones," for more information.

Fig. 14.32
Setting Dates in Call Line Status Frame



Start Down. This date and time default from the call creation time. They indicate when the item you are servicing became dysfunctional.

End Down. This date and time default from the system date and time and indicate when the item became functional again.

Job Start. This date and time records when you started work on the problem.

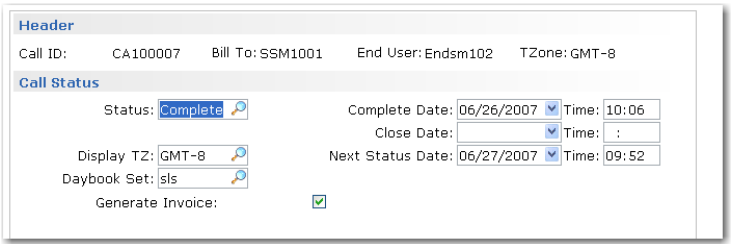
Date Complete. This date defaults to the system date and indicates when you finished work on this line item.

Call Status Frame

When you complete all line items, a final frame enables you to specify a status for the entire call and modify call dates and times.

Note If MTZ is active and you did not edit call line dates, a display time zone pop-up appears before the call status frame. Your selection in the pop-up determines how the system presents dates and times on the call status frame. See Chapter 4, “Multiple Time Zones,” for more information.

Fig. 14.33
Call Status Frame



Status. You can field security to this field. The system attempts to set the call’s status to complete or closed, depending on the setting of Close on Recording. It sets the call’s status to complete if all line items are complete. It sets the status to closed if line items are complete and no open MOs exist. If these conditions are not met, the system does not change the call’s status.

Complete Date, Time. When the system sets the status to complete, it enters the completed date and time.

Close Date, Time. When the system sets the status to closed, it enters the close date and time.

Next Status Date, Time. Displays the value for the call. If you are using call escalations and do not want the next escalation step to affect this call, change the next status date and time.

Daybook Set. Enter the code for the set of daybooks that the system will use during invoice post. This defaults from the customer address. You can change it to a valid value defined in Daybook Set Maintenance (25.8.7) or Daybook Set by Site Maintenance (25.8.10). If daybooks have been set up by site—based on a setting in Sales Order Accounting Control—the system verifies that the specified daybook set matches the call header site. See *User Guide: QAD Financials* for details on daybooks.

Generate Invoice. This field appears only if Invoice From Recording in SSM Accounting Control is Yes and you make a change in CAR that can affect the pending invoice. If Invoice from Recording is No, you must process the invoice in Call Invoice Recording (11.1.1.15). If you set the call status to hold or cancel, you cannot set Generate Invoice to Yes.

If you accept the Yes value for Generate Invoice, the system creates a pending invoice for lines that have a complete or closed status. If the call’s status is complete or closed and Generate Invoice is Yes, the system invoices all lines.

Call Activity Recording in Depot Orders

Depot orders use two programs to record different types of information for service calls:

- Call Labor Recording
- Call Parts Recording

Call Labor Recording for Depot Orders

To record labor activity for inspection and repair against a depot order call, use Call Labor Recording (11.1.1.17). Typically an engineer records labor after evaluating a returned item, and then again when repairs to the item are complete. Labor activity may be recorded by call/call line or effective date.

Labor activity for existing records can be modified as long as the record is not closed. You can modify duration, start time, and end time, but cannot change the date of an existing labor activity record. For example, the duration may need to be modified if it was overestimated and needs correcting. A second line can be entered for the same Operation ID as the first line, using a negative value for the new line in the Duration field; the start time or end time must also be adjusted accordingly.

Note If the call labor record is associated with a call report that has already been invoiced, but the invoice has not yet been posted and printed, the system issues a warning that the invoice has been generated, and prompts you to continue to edit the call record. Responding Yes causes the Ready to Invoice field to be set to No in Call Invoice Recording (11.1.1.15).

Call Labor Recording does not support recording activity for service items. Instead, use Call Activity Recording (11.1.1.13).

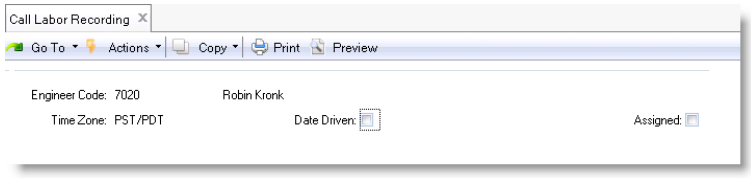
Call Labor Recording is available from the Labor browse in the Depot Order collection and from the application menu.

Use the Call Labor Browse (11.1.1.18) to view existing call labor activity records.

Header Frame

Use the header frame to select the engineer, whether the labor activity recording is date- or call-driven, and the scope of records to display for data entry.

Fig. 14.34
Call Labor Recording (11.1.1.17) - Header Frame



Engineer Code. Enter a valid code for the engineer whose labor is to be recorded.

Time Zone. This read-only field displays the time zone associated with the specified engineer.

Date Driven. If Yes, record labor using an effective date. Date-driven labor recording allows labor for multiple calls and call lines to be entered. Leave this field blank to use the current date. If No, record labor for multiple dates for a single call/call line.

Assigned. Set this field to Yes to view calls/depot orders where the selected engineer is assigned to at least one call line. Set this field to No to view all calls/depot orders. If Call Labor Recording is accessed from within the Labor browse of the Depot Order collection, this field defaults to the currently selected engineer.

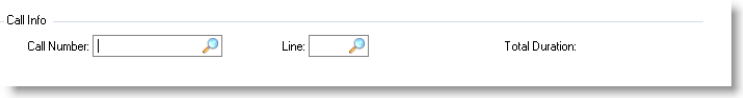
If there is a repair routing associated with the call/visit and if Date Driven is No, the system asks if the routing should be exploded. Responding Yes explodes the routing, and the Standard Operation values and Duration times are populated from the routing values; these values can be updated if required. Responding No causes the routing not to explode.

If there is a BOM associated with the routing, the system issues a message to the effect that the BOM will not be exploded in call labor recording (but will continue to be done so in call activity recording).

Call Info Frame

Use the Call Info frame to select a call and call line for labor recording when the Date Driven field is set to No. Only open calls are available for selection.

Fig. 14.35
Call Info Frame



Call Number. Enter a valid call number to record labor for. The system displays an error if the call number or call line entered is closed, on hold, or cancelled. Complete calls or call lines cause the system to display a warning.

Line. Enter a valid call line to record labor for.

Total Duration. Displays the running total duration of the labor recorded for a call and associated call lines. Total duration is updated when entering the current call line is completed.

Note This field is for reference only—the value it displays is unsuitable for the purposes of timekeeping or payroll verification.

Effective Date Frame

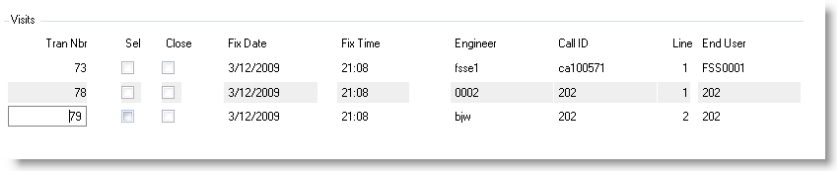
Use the Effective Date to enter a date on which to record call labor activity when the Date Driven field is set to Yes. You can enter labor activity for multiple calls/call lines when using this frame.

Fig. 14.36
Effective Date Frame

Visits Frame

The Visits frame displays all open and unconsumed visits. If there are no visits to consume, this frame does not display.

Fig. 14.37
Visits Frame



Transaction Number. This read-only field displays the transaction number of the open visit and the associated engineer.

Select. Enter Yes to consume the selected visit. Visits selected for consumption are recorded as labor when you respond to the system prompt. Consumed visits are unavailable for selection later. If No, the visit is not consumed and remains available for later consumption.

Close. Enter Yes to close the selected visit. Visits selected for closure are recorded as closed when you respond to the system prompt. Closed visits are unavailable for selection later. If No, the visit is not closed and remains available for later action. This field is enabled when a visit is selected.

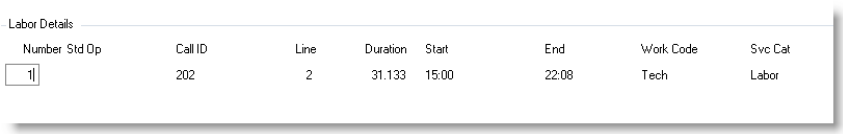
Close Date. Enter the date when the labor was completed. This field is for reference only and appears on selected reports and inquiries.

Close Time. Enter the time when the labor was completed. This field is for reference only and appears on selected reports and inquiries.

Labor Details Frame

The Labor Details frame displays all labor records entered for the specified engineer—or for all engineers—with labor recorded for the selected call, or for all calls on the specified date.

Fig. 14.38
Labor Details Frame



Attempting to enter labor activity for calls that are closed, on hold, or cancelled causes an error to display. Entering labor for calls that are open but invoiced results in a warning; if you choose to continue, the call record is changed from invoiced to uninvoiced. Entering labor for a completed call line also causes a warning.

If entering labor for an effective date, you are prompted for the call and call line.

The Labor Details frame contains several fields that default from other fields:

- Specifying a standard operation causes Duration and Service Category to be defaulted from the specified operation. Otherwise, these fields default from the Service Control Labor Service Category. Travel-related labor is defaulted from the Service Control Travel Service Category.
- Work Code defaults from the call line or, if a call line is not available, from the call. If the call does not have a work code, the work code defaults from the Service Control Technical Work Code.

After recording labor, press End to exit the frame and verify that all information is correct before saving the form.

Number. Auto-generated by the system. Displays the number of the labor transaction.

Standard Operation. Specify a standard operation code set up with Service Standard Operation Maintenance (11.19.21) or Standard Operation Maintenance (14.9). Standard operations represent actions common to the service of several products or applicable to different service routings in different operation sequences. When specified, most remaining fields default from the values for the standard operation.

Call ID. Enter a valid call ID for which labor is being recorded.

Call Line. Enter a valid call line ID for which labor is being recorded.

Duration. Enter a duration in hours and minutes for the labor required to close the call. If you do not enter a value, duration defaults from the standard operation. If a standard operation is not provided, the system calculates the duration by subtracting the start time from the end time.

The duration of labor recorded for an existing record can be modified if required. For example, this may occur if the labor duration was overestimated and needs to be modified later to reflect the true duration. To do this, enter a second line for the same Operation ID as the first line, enter a negative value for that line in the Duration field, and adjust the start time or end time.

Start. Enter a time to indicate when the labor for the call commenced. If a value is not entered, the system calculates the start time by subtracting the duration from the end time. For date-driven activity reporting, the start time entered cannot overlap with the start time of another call/call line.

End. Enter a time to indicate when the labor for the call ended. If a value is not entered, the system calculates the end time by adding the start time and duration. For date-driven activity reporting, the end time entered cannot overlap with the end time of another call/call line.

If labor activity is recorded for a call line that has a visit associated with it, the system prompts you to close the visit. Responding Yes sets the close time of the visit to the end time of the last call line entry. Responding No causes the visit to remain open.

Call Parts Recording

Use Call Parts Recording (11.1.1.19) to issue/consume parts from a parts list, or to return parts that were consumed previously. For example, at the end of a repair call an engineer can use Call Parts Recording to return items previously identified in error as being consumed in Call Activity Recording (CAR). Returning the items reverses the original consumption activity and updates the quantity to return on the associated MO.

Note Call Parts Recording is a subset of the parts recording functionality available in CAR, intended to simplify the process of recording parts issue/consumption. The fields in Call Parts Recording and CAR have identical functions; for field descriptions see “Call Activity Recording” on page 412.

After entering the call ID and call line—these fields are populated automatically if Call Parts Recording is accessed from the Parts List browse—if a BOM is associated with the call line, you are given the option of exploding it. Exploding the BOM populates the item ID and quantity. If the BOM is associated with a labor routing, the system issues a warning that the BOM will not be exploded as part of the Call Parts Recording process (but will continue to be done in CAR).

After selecting the items to process, indicate the items consumed and the quantity to return. Optionally you can record details about the consumed items and the returned items by using the Item Usage Detail and Item Return Detail screens.

On exiting the screens, fault code information can be entered. The system prompts for the effective date and destination for the report output, and then processes the items.

The system handles items to consume like this:

- Selecting a quantity to consume for an item with a material order causes that MO line to be shipped and updates CAR with the consumption of the item.
- Selecting a quantity to consume for an item without an MO updates CAR with the consumption of the item.

The system handles items to return like this:

- Selecting a quantity to return for an item with an MO causes the item to be received back into inventory. CAR is updated to indicate the item is not consumed.
- Selecting a quantity to return for an item without an MO (on the parts list only) returns the item to inventory and updates CAR to indicate it is not consumed.

Chapter 15

Call Invoice Recording

Call Invoice Recording (CIR) is a complementary function to Call Activity Recording. With CIR, you can create and review invoice detail for calls in a summary or detail format. You can also review and modify tax data.

Overview

Call Invoice Recording (CIR) is a complementary function to Call Activity Recording (CAR). It uses the same setup codes and service type information as CAR or any other call management activity.

The Invoice From Recording field in SSM Accounting Control determines where you can create pending invoices. If Yes, you can generate the invoice for call activity from CAR. If No, you generate invoices only in Call Invoice Recording.

Even if you invoice call activity in CAR, the overview of costs in CIR is helpful. Summary frames display costs and invoiceable amounts by invoice sort and charge code type. You can review item details and modify prices. The system updates these prices in CAR when you review the call. In CIR, call activity details display in similar frames to those in CAR.

Using CIR, you can:

- Review high-level summaries of charges and billing amounts.
- Check invoice detail, correct data entry errors, or adjust prices and covered amounts before you print the invoice.
- Review and update sales order trailer information.
- Review tax calculations and edit tax amounts in the trailer.

If you make changes in CIR, the system regenerates the invoice when you exit.

Generating Invoices

If you do not generate an invoice from Call Activity Recording, the system generates a pending invoice when you enter CIR's second frame. The invoice includes amounts for all invoiceable reports for the closed or complete lines on the call. Invoicing by report lets you invoice as often as you need—even daily or hourly.

If you do not want the system to invoice a particular call line, set the line item to a status other than complete or closed. You can also set the report status to hold.

You can modify complete lines. For example, if an engineer submits daily reports on a call line for a lengthy installation, you can create more than one invoice for the line. The first time through CIR, invoice amounts include existing reports. If you create additional reports, regenerate the invoice to add the new reports. When you post the invoice, invoicing starts over.

After you post an invoice, you can continue to add more reports to the call line. You can review the invoiced reports, but you cannot change them.

Once you generate an invoice, post and print it using the standard invoice programs in the Sales Orders/Invoices module. However, you can modify call invoices only in the SSM module. This ensures that the invoice remains synchronized with the call record details.

Managing Invoice Detail

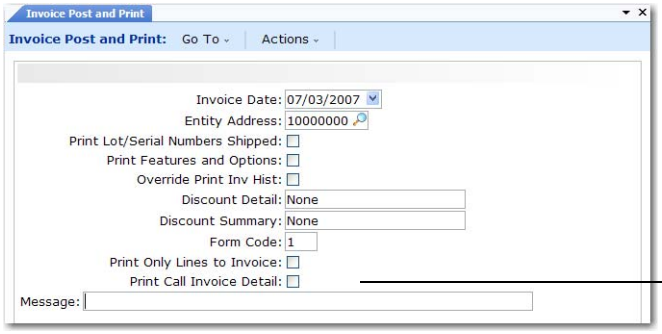
All billing details are available for review in Call Invoice Recording. You do not, however, have to include all the detail on the printed invoice. You can limit the amount of detail printed on the invoice using the Detail field. Define a default level of detail when you set up an invoice sort in Invoice Sort Maintenance (11.21.5). You can also specify a default for an end user in End User Data Maintenance. In CIR, you can modify the defaults to change the level of detail as needed.

Detail determines how billing information is presented on the printed invoice. When Invoice Detail is Yes, you can print billing details for each line recorded in CAR. When Invoice Detail is No for an invoice sort, the system takes the entries for related service categories, totals them into one line item, and displays one line of detail.

Invoice Detail determines how much detail can be printed on the invoice. During invoice print, you use another field to control whether or not to actually print the details.

Figure 15.1 illustrates the option in the second frame of Invoice Post and Print (7.13.4), which displays when Print Invoice is Yes. If you choose to post and print invoices in separate steps, a similar field is available in Invoice Print or Reprint (7.13.12).

Fig. 15.1
Printing Call Invoice Detail Using Invoice Post and Print



If Print Call Invoice Detail is Yes, the system prints either the summarized line or all details you recorded, depending on the setting of Invoice Detail for the invoice sort or for the call line in CIR.

If Print Call Invoice Detail is No, the system prints only the call lines—the items for which service was provided—with associated information and a total invoice amount.

Note When you use fixed pricing, no pricing information prints for the detail since you provide all the service at one price.

Figure 15.2 is a sample invoice generated with Print Call Invoice Detail set to Yes in Invoice Post and Print. The Invoice Detail field for both the Items and Labor invoice sorts is Yes. As a result, each item and operation prints in detail. You can see the number of hours for each operation and the charge code of BILLABLE.

Fig. 15.2
Printed Invoice with Detail

```
   Sales Order: CA147                        Ship Date: 07/10/07
    Order Date: 07/10/07 Purchase Order:

Item Number    UM   Repaired  Backorder Tax    Price Net Price
-------------- -- ---------- ---------- --- -------- ----------
10-10000       EA        1.0            yes             229.00
  OASIS(TM) COOLING SYSTEM
  HOME/INDUST MODEL

      Work Code: Tech        General Call
   Service Type: STANDARD    STANDARD SERVICE CONTRACT

    Line Item Used                  Quantity           Price       Billable
    ---- ------------------------ ---------- --------------- --------------

                            Type: ITEMS

       1 44-1000                         1.0            0.00           0.00
         SENSOR UNIT,              BILLABLE              0.00

       2 44-3000                         1.0           30.00          30.00
         'SMART' POWER CONVERTER   BILLABLE              0.00

       3 44-4000                         1.0           49.00          49.00
         WIRING UNIT               BILLABLE              0.00

                            Type: LABOR
       1 LABOR                           0.5           75.00          37.50
         Routine Inspection        BILLABLE              0.00

       2 LABOR                           1.0           75.00          75.00
         Fix the Problem           BILLABLE              0.00
```

Use the combination of detail fields to customize the appearance of the invoice.

Use the Print on Invoice field to control the printing of call header comments and line item comments when you create or update comments in Call Maintenance, CAR, and CIR. Comments print for items, labor, and expenses if Print on Invoice is Yes for the comments and Print Call Invoice Detail is Yes when you print the invoice.

Modifications in CIR

The information in Call Invoice Recording comes from the activity you record and codes you use in Call Activity Recording. You can make some modifications to prices and covered amounts in CIR. However, you must make most changes in CAR and regenerate the invoice.

Item issues take place in CAR. You cannot change item quantities in CIR, since this would create errors in inventory amounts. Similarly, you cannot change charge codes, work codes, and service categories in CIR—they control the detail that CIR summarizes. For this reason, many fields in CIR are display only.

Prices

You can modify and adjust prices in CIR, including list price, net price, exchange price, and covered amount. CAR reflects any pricing changes you make in CIR. If you change the covered amount and contract limits exist, the system recalculates the remaining contract amount.

Tax Data Elements

If you use taxes, the system sets default tax information in CAR at the call header and line level. In CIR, the tax status and class of activity records defaults from the service category for labor and expenses or the item master for items. You can modify these tax fields as needed in CIR. However, this change does not carry over to CAR.

See Chapter 7, “Taxes in SSM,” on page 165 for details on how the system calculates taxes in call invoices.

Important If you regenerate the invoice for a call line, the tax status and class for activity records revert to the default.

Descriptions

To include a unique description of an operation or item on the invoice, you can modify description fields. Like taxes, these changes are not reflected in Call Activity Recording.

Trailer Information

On the trailer, you can modify information such as the tax data. If you edit tax data in CIR, then make changes in CAR, your changes are overwritten when the invoice is regenerated. This should not be a problem, however, since the old tax amounts are no longer correct if you change a line’s prices and quantities.

Coordinating CAR and CIR

Because the steps of call invoicing build on one another, coordinate these activities carefully:

- Recording activity in CAR
- Generating an invoice
- Reviewing the invoice in CIR
- Posting and printing the invoice

These activities must occur in the proper sequence to prevent unexpected results.

Establish procedures to ensure that you synchronize printing and posting invoices. When you post the invoice, the system clears amounts in CIR. New activity then generates a separate invoice.

The system manages invoicing through the Ready to Invoice field in Call Invoice Recording, which determines if the invoice can be selected for posting and printing.

This field is normally set by the system as you use CAR and CIR. However, you may need to manually set it under special circumstances.

Setting Ready to Invoice Field for New Activity

When Invoice from Recording is Yes in SSM Accounting Control, you are prompted in CAR to generate an invoice for invoiceable activity. If you respond Yes, the invoice is generated and Ready to Invoice is set to Yes so that the invoice can be selected the next time Invoice Post and Print is executed. You do not need to access Call Invoice Recording (CIR) unless you need to review or modify the invoice.

When Invoice from Recording is No in SSM Accounting Control or you respond No to the Generate Invoice field in CAR, Ready to Invoice remains No. You must access CIR to generate the invoice. In this case, CIR sets the Ready to Invoice field to Yes after the invoice is successfully generated.

Setting Ready to Invoice Field for Additional Activity

The invoicing process varies when an invoice for a call already exists and you add more invoiceable activity to it.

Important If you make changes to a line in CAR for which you have generated an invoice, a warning displays. Make changes to this line with caution.

If you ignore the warning that a pending invoice exists and make changes to the call line, you must regenerate the invoice to reflect these changes. If Invoice from Recording is Yes in SSM Accounting Control, the system automatically regenerates the invoice when you complete CAR.

Note When the system regenerates an invoice, it does not delete the old one. It simply replaces changed lines. This approach preserves any adjustments you made in Call Invoice Recording.

If you do not generate invoices in CAR, the system does not regenerate the invoice until you access the call in CIR. To ensure that a new invoice is generated, the system resets the Ready to Invoice from Yes to No. This is because the existing invoice is now invalid; it does not reflect all of the invoiceable activity in the call so it should not be posted. Invoice Post and Print ignores the invoice until you regenerate it.

You must then manually set Ready to Invoice to Yes in CIR in order to view the invoice; otherwise, an error displays.

This situation points out the importance of close coordination and well planned procedures to manage these two activities.

Closing Calls

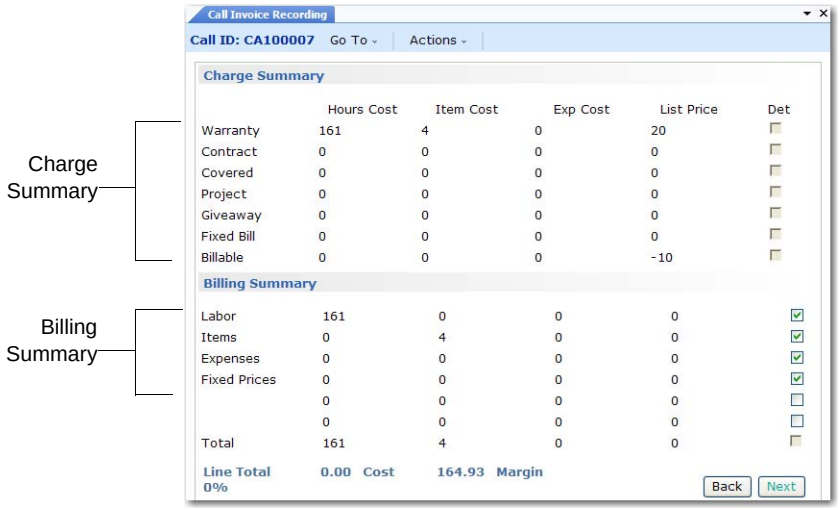
Close on Recording in Call Management Control determines when and how the system closes a call. If Close on Recording is Yes, the system closes calls with complete lines when you exit CAR. If Close on Recording is No, you must close the call as a separate step after it is invoiced. You can move a closed call to history or delete and archive it, reducing the number of calls in the system.

Understanding CIR Summaries

When you enter Call Invoice Recording, a summary frame displays. This summary gives an overview of activity in CAR and the resulting invoice amounts. View the detail frames for more information.

If you did not generate an invoice in Call Activity Recording, the system generates it for you when you enter the summary frame illustrated in Figure 15.3. The invoice includes invoiceable reports for call lines that are complete or closed.

Fig. 15.3
CIR Summary Frames



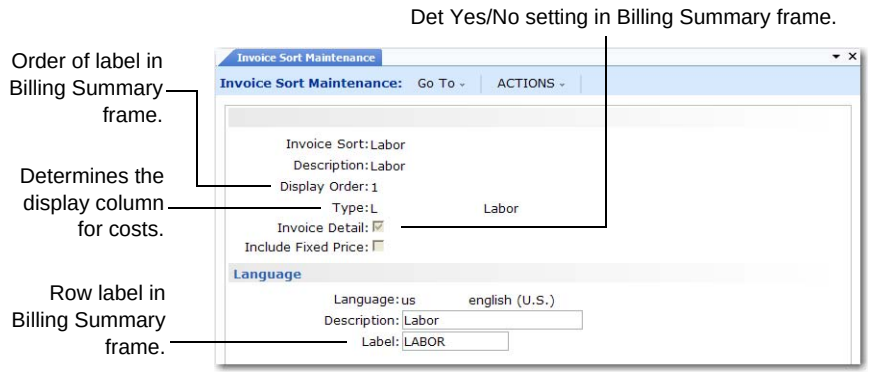
The top half of the frame shows the charge summary. The bottom half is a billing summary.

Note In the summary frames, the system rounds numbers to the nearest integer. Only the amounts at the bottom of the frame represent exact quantities. This can cause some confusion. For example, the system rounds up two quantities of 7.5 to 8. The summary total is 16 and the exact total is 15.

Invoice Sorts Setup

Invoice sort codes determine much of the way the system presents summary information in CIR.

Fig. 15.4
Invoice Sort Maintenance (11.21.5)



In Invoice Sort Maintenance (11.21.5), you define:

- The type of data summarized by the invoice sort code, represented by the three columns in the Charge Summary frame.
- The row labels and their order in the Billing Summary frame.
- The Yes/No setting of the Det column.

Understanding how invoice sorts are defined is helpful in understanding CIR's Charge Summary and Billing Summary frames.

See "Invoice Sort Codes" on page 67.

Display Order. Determines the sequence in which invoice sort codes display in the Billing Summary frame. Define labels for different languages in the Language frame.

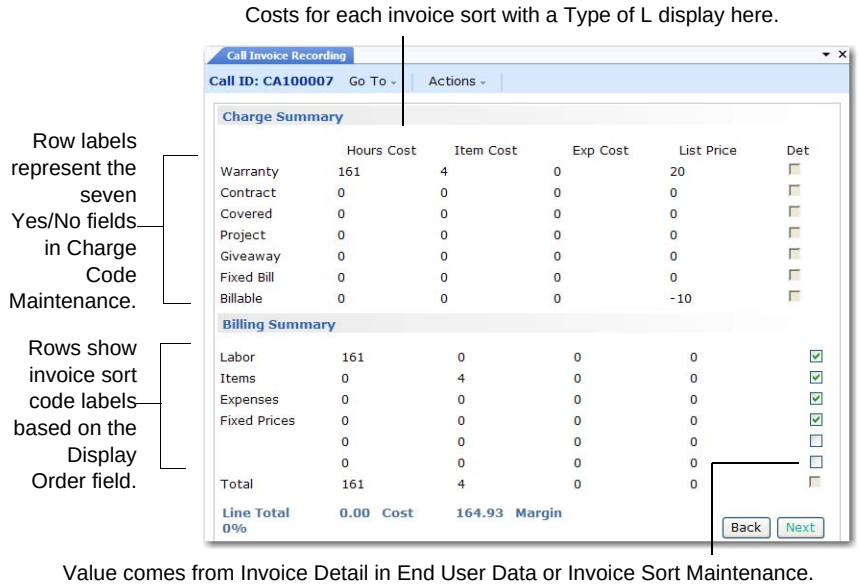
Type. Controls how the system totals costs in the Charge Summary costs. Labor costs display in column 1, item costs in column 2, and expense costs in column 3. Labor is type L, item is type I, and expense is type E.

Invoice Detail. Determines the default in the Det column of the Billing Summary, unless you specify a different invoice format for the end user in End User Data Maintenance.

When Invoice Detail is Yes, you can print detail on the invoice. If Invoice Detail is No, the system totals the entries for a service category into one line item and displays only this total. You can choose Yes or No on each call.

Figure 15.5 shows how the system uses other codes in the design of the CIR summary frames.

Fig. 15.5
Summary Design



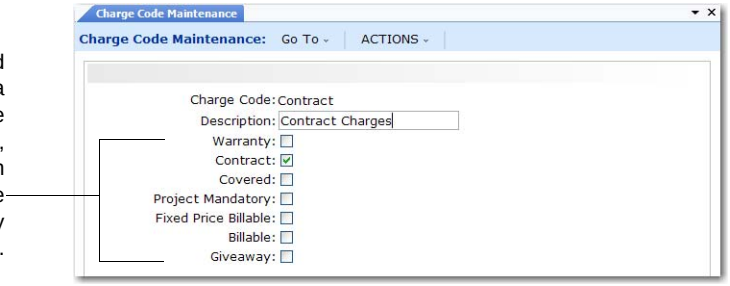
Charge Summary

In the Charge Summary, the columns represent invoice sorts and the rows represent types of charge codes:

- The Hrs Cost column displays labor costs, invoice sort type L.
- The Item Cost column displays item costs, invoice sort type I.
- The Exp Cost column displays expense costs, invoice sort type E.

The system separates costs by type of charge code. The seven options in Charge Code Maintenance (11.21.21.1) correspond to the seven rows in the Charge Summary frame.

Fig. 15.6
Charge Code Maintenance (11.21.21.1)



The List Price column displays the total price for items, labor, and expenses for the service activity related to each charge code. The billable list price is usually the same as the total displayed at the bottom of the Billing Summary frame. This is the amount the end user pays for the service.

Note If you use only fixed pricing, Line Total reflects the Fixed Bill amount. If some call lines use fixed billing and others do not, the fixed billable and billable amounts together represent the line total.

The column labeled Det, Invoice Detail, in the Charge Summary refers to the Yes/No fields in the Billing Summary frame.

Billing Summary

The Billing Summary frame provides another summary view of CAR financial data.

Billing Summary Columns

The Billing Summary frame displays the total cost for each invoice sort. You can see how costs are broken out for items, labor, and expenses. The List Price column shows the total billing amount for each invoice sort.

The Det (Detail) column applies only to the Billing Summary frame. Use this to determine whether detail or only summary amounts can be printed on the invoice. The value of Det defaults first from the invoice format for the end user in End User Data Maintenance. If the end user has no invoice format, Det defaults from Invoice Sort Maintenance.

Billing Summary Rows

The Billing Summary rows display invoice sort labels in the order defined in Invoice Sort Maintenance. Up to six invoice sorts display. Table 15.1 shows how the invoice sorts for the example in Figure 15.5 are defined.

See “Invoice Sort Codes” on page 67.

Table 15.1
Sample Invoice Sorts

Label	Order	Type	Detail
Labor	1	L	No
Expenses	2	E	No

Label	Order	Type	Detail
Items	3	I	No
Fixed	4	E	No

Effect of Exchanges

Because the summary frames display summary information only, some details are not explicitly reflected. One such detail is an exchange credit for items in CAR.

If you return items for credit in CAR, Billable List Price of the Charge Summary reflects the credit amount. The Billing Summary also shows the credit amount, although it is not labeled. Both are decreased by the amount of the credit given.

Total Summary Bar

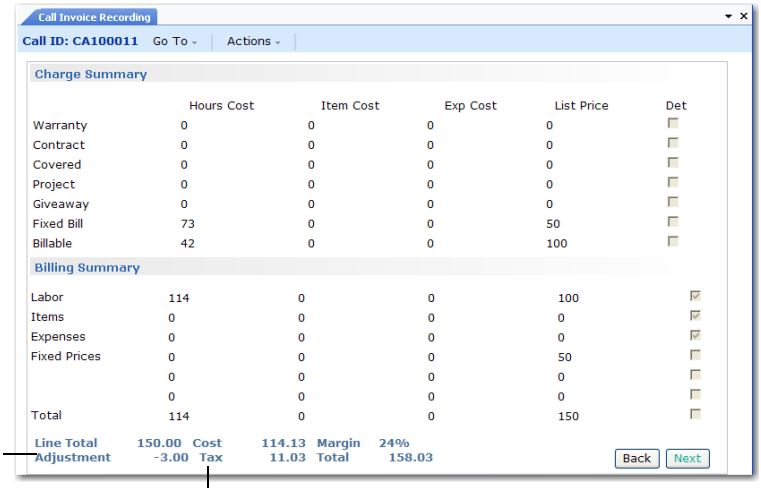
When the Billing Summary frame displays in Call Invoice Recording, a message bar indicates summary totals.

- Line Total represents the invoice amount before adjustments or taxes are added.
- Cost shows the total cost of the service call.
- Margin percentage indicates the call's gross profit or loss, calculated according to this formula:

  Margin = (Price – Cost)/Price

  The system calculates the margin using price and costs before it adds taxes and trailer code amounts.

Fig. 15.7
Summary Frame at Completion of CIR



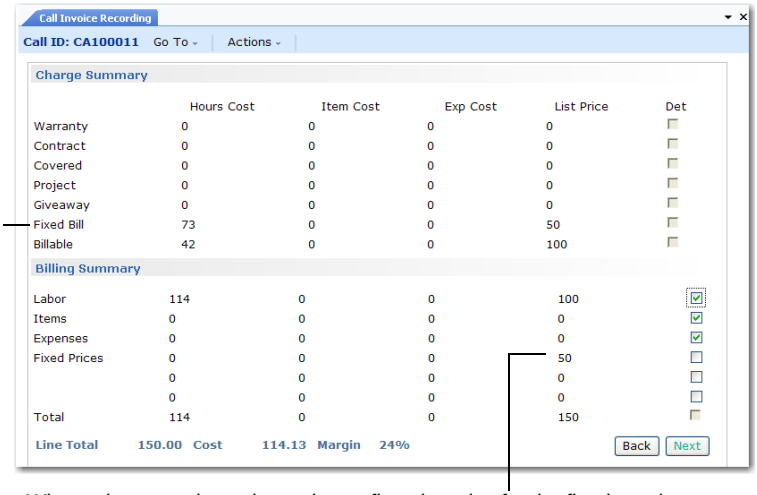
- Adjustment displays discount percent and trailer amounts for the call.
- Tax summarizes the taxable amounts in the trailer.
- Total represents the invoice's billable amount.

Fixed Pricing in CIR

CAR and CIR manage fixed price service differently from other activities. Figure 15.8 illustrates invoice summary frames for fixed pricing.

See “Fixed Pricing in CAR” on page 390.

Fig. 15.8
Fixed Pricing in CIR



In the Charge Summary frame, the system records costs using a charge type with Fixed Billable set to Yes. The list price is the fixed repair price, not the total for individual items recorded.

In the Billing Summary, costs display for invoice sort codes based on the invoice sort’s service categories. The price displays for the Fixed Price invoice sort.

Note You can combine exchange credits with fixed priced service. A negative amount displays in the List Price column for items, and the system reduces the line total by the credit amount.

Call Invoice Recording

This section gives reference information for Call Invoice Recording fields. You progress through this function in several frames. Some frames are optional, depending on field settings.

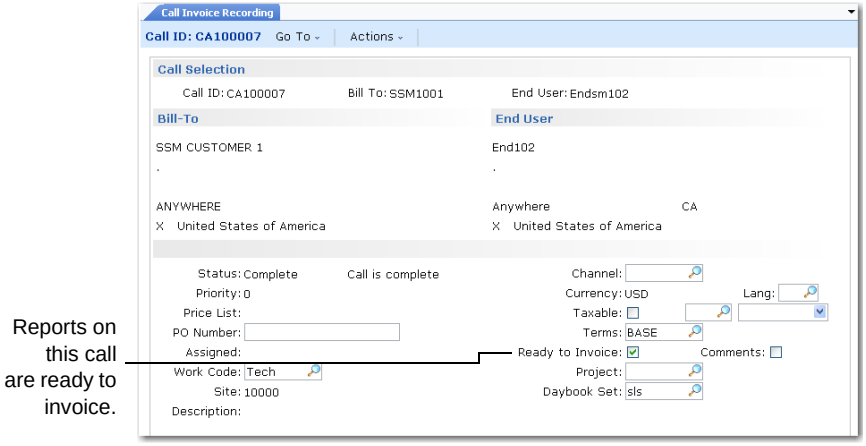
Table 15.2
CIR Frames

Frame	Req	Purpose
Header	Y	Select call and display related information.
Comments	N	If Comments is Yes, view or update call header comments.
Summary Frame	Y	View summary invoice information and set detail fields.
Item Selection	Y	Select the call line item to review.
Comments	N	If Comments is Yes, view or update call item comments.

Frame	Req	Purpose
Labor/Expense Totals	N	Select labor/expense invoice sorts.
Labor/Expenses	N	If you enter an invoice sort, view or update its summary data.
Labor/Expenses Detail	N	If Det is Yes, view or update detailed information for this invoice sort.
Comments	N	If Comments is Yes, view or update operation comments.
Item Totals	Y	Select item invoice sort.
Item Usage	N	If you enter an invoice sort, view or update summary data for the sort.
Item Detail	N	If Det is Yes, view or update detailed information for the invoice sort.
Comments	N	If Comments is Yes, view or update item usage comments.
Trailer	Y	Enter taxable or nontaxable trailer codes and other trailer information.
Summary Frame	Y	View summary invoice information with tax details.

Many CIR frames are similar to CAR and in fact use the same programs. As Figure 15.9 shows, the header frames of Call Invoice Recording (11.1.1.15) are similar to Call Activity Recording (11.1.1.13).

Fig. 15.9
Call Invoice Recording (11.1.1.15)



Header Frame

You can access a call in CIR if it meets one of the following conditions:

- The call status is closed or complete. A warning displays if the call is on hold or canceled.
- The call has at least one line with a complete or closed status and an invoiceable report. Otherwise, the call is not ready for invoicing.

Note You can review a call with a canceled status in CIR, but you cannot generate an invoice for it. You can review a call with a hold status and generate an invoice for any complete or closed lines. In both cases, a warning displays regarding the call status.

Most header fields display information you entered for the call in Call Activity Recording. Display-only fields include End User, Price List, Assigned, Priority, Status, Site, Description, and Currency.

You can update PO Number, Work Code, Channel, Language, Taxable, Terms, Ready to Invoice, Comments, Project and Daybook Set. Except for Ready to Invoice, these fields default either from Call Maintenance or Call Activity Recording.

You can change Bill-To only if you have not generated a pending invoice for the reports on the call.

Ready to Invoice. This field determines whether the invoice for this call can be selected by Invoice Post and Print.

No: This service activity is not ready for invoicing. It is being held for invoicing at some later date.

Yes: This activity is ready for invoicing. If the correct selection criteria are entered in Invoice Post and Print, you can post the invoice for this call and print a copy to be sent to the bill-to address. The program then sets the field to No.

Ready to Invoice is normally set by the system based on different events.

Project. This field has no effect on the call invoice. The sales and sales discount projects specified in CAR default to the invoice when it is generated.

See “Coordinating CAR and CIR” on page 447 for additional information.

Summary Frame

If you did not generate an invoice from Call Activity Recording, the system generates an invoice for invoiceable line items when you enter the summary frame. This frame and its various features was discussed previously.

See “Understanding CIR Summaries” on page 448 for details.

Call Line Detail Frames

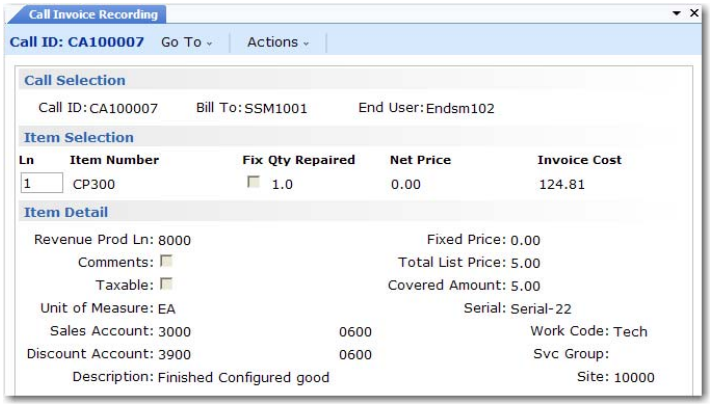
When you leave the Billing Summary frame, you enter a sequence of frames similar to Call Activity Recording. First a line item selection frame displays. After you select a call line to review or update, labor and expense frames display first, then item usage frames. After you make changes and complete the trailer, the system recalculates the invoice and redisplays the summary frame.

The various detail frames let managers or supervisory personnel examine the CAR data and adjust prices before invoicing the customer.

Call Selection Frame

When you leave the Billing Summary frame, the Call Selection frame displays, as shown in Figure 15.10. Call ID, Bill-To, and End User are output only.

Fig. 15.10
Call Selection Frame



Item Selection Frame

In the Item Selection frame, you can select a call line with activity to be invoiced. Other line fields are output only. Use Next/Previous to scroll through call lines. The Item Detail frame displays information related to the selected line. This example displays item detail for line 1.

The Item Selection information defaults from Call Activity Recording and the price and cost on the Billing Summary frame. The system calculates the total fields from the detail information. You cannot modify total fields. Make changes to prices or covered amounts at the detail level.

Ln. Line number refers to the call line in Call Maintenance or Call Activity Recording.

Item Number. Output only. Displays the number of the item being serviced on this call line.

Fix. Output only. Fix indicates whether or not you repaired this item at a fixed price. You enter this value in Call Activity Recording.

Qty Repaired. Output only. Qty Repaired is the total of this item that you repaired in this call. You enter this value in Call Maintenance or Call Activity Recording.

Net Price. Output only. The amount you bill the customer for this call line. Use Net Price to track margins and compare service costs and coverage costs.

Invoice Cost. Output only. The cost of service for this call line. This can be zero, less than, or greater than the net price for the item. Use Invoice Cost to track margins and compare service costs and coverage costs.

Item Detail Frame

Revenue Prod Line. The product line for the income you generate from servicing this line item. The revenue product line and the item product line can be different. The system finds a default revenue product line from product lines you define in Revenue Product Line Maintenance, using the call line's service type and work code, and the item's service group or product line.

If no revenue product line exists, the system uses as a default either the service type's product line or the item's product line, based on Use Item Prod Line in SSM Accounting Control. If Modify Sales Accounts is Yes in SSM Accounting Control, you can modify the sales and sales discount accounts of this product line.

Comments. If Yes, you can review or update the call line's comments. After you select or enter comments, you can specify where you want to print them.

Taxable. Defaults from the value of Taxable in CAR and sets the default for each line of detail. See Chapter 7, "Taxes in SSM," on page 165 for details on how the system calculates taxes in call invoices.

Tax Class. The tax class of the detail records affects tax calculation.

UM. If Fix is No, you can edit this field. It defaults from the item's unit of measure in the item master. For non-inventory items, UM is blank. If Fix is Yes, the fixed price unit of measure in Call Management Control displays.

Sales and Discount Account, Sub-Account, Cost Center. The system displays the Sales and Sales Discount accounts. These accounts default from the revenue product line unless you define alternate accounts in Sales Account Maintenance (1.2.17).

You can modify these account components only if Modify Sales Accounts is Yes in SSM Accounting Control.

When you post an invoice, the system:

- Credits the Sales account with the total sales amount, minus discounts or tax-included amounts. The system records this amount in sales history and uses it to calculate commissions and terms discounts. To distinguish it from other sales activity, the system stores sales history for call activity with a type of R, repair.
- Debits the Sales Discount account for the total sales amount minus the extended list price.

See "Detailed Accounting in CIR" on page 463 for more details about account usage.

Sales and Discount Project. Enter an optional code identifying the general ledger (GL) project associated with the sales and sales discount amounts for this call line item. These fields default from CAR. The sales and discount project are typically the same.

The system verifies that the project exists and is active and that it is valid with the other account components.

See "Project Codes in CAR" on page 405 for more information.

Description. For inventory items, displays the first line of the item's description in Item Master Maintenance.

Note The fields on the right side of the Item Detail frame are output only.

Fixed Price. If you specify a fixed price for this line item on the call's price list, it displays here. The fixed price displays even if Fixed Price is No for this service activity. Use this as reference if you provide fixed price repairs as an alternative to contract and warranty coverage.

Total List Price. For this line item, the total of all list prices for items, expenses, and labor. If any part of this service is covered, Total List Price is more than the net price in the Item Selection frame.

Covered Amount. The amount of service activity covered by the contract, warranty, or service type. The system calculates net price in the Item Selection frame from the total list price minus the covered amount.

Serial. The serial number of the repaired item displays.

Work Code. The work code for the repair, recorded in Call Maintenance or Call Activity Recording.

Service Group. The service group of the item, which you define in Service Item Maintenance.

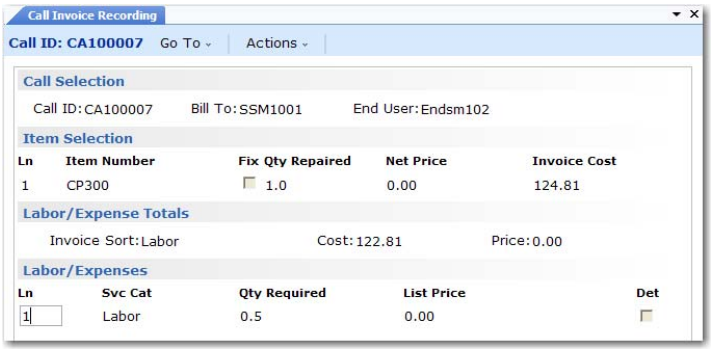
Site. The line item's site in CAR. Site determines the From zone when the system calculates tax data for this line item.

Labor/Expenses Frames

After you click Next to accept and move past the call line frames, the Labor/Expense Totals frame appears. You can review labor and expenses recorded in CAR for each call line. Labor and expense details display by invoice sort.

After you enter an invoice sort, you can review its detail lines in the Labor/Expenses frame.

Fig. 15.11
Labor/Expenses Frames



Invoice Sort. Enter an invoice sort associated with the labor and expense service categories recorded for the line item. When you select an invoice sort and press Enter, the system fills in the cost and price and displays the Labor/Expenses frame.

Cost. Output-only field displaying total labor or expense costs for the invoice sort.

Price. Output-only field displaying the net price of details recorded for this invoice sort. This is the amount you bill the customer.

Ln. Use this field to select the line of detail summarized by this invoice sort that you want to review. Use Next/Previous to scroll through lines.

Svc Cat. Output-only field displaying the line's service category.

Qty Required. Output-only field displaying the number of units of this service category recorded in CAR.

List Price. Output-only field displaying the price of one unit of this service category. To modify the price, set Detail to Yes.

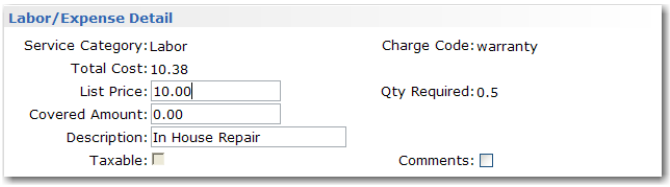
Note Fixed price service uses one price and you cannot modify prices for individual details.

Det. If Yes, the next frame is the Labor/Expense Detail frame.

Labor/Expense Detail

If Det in the Labor/Expenses frame is Yes, the Labor/Expense Detail frame displays when you click Next to accept the labor or expense values. Output-only fields display values updated in Call Activity Recording.

Fig. 15.12
Labor/Expense Detail Frame



Service Category. Output-only field displaying the line's service category.

Charge Code. Output-only field displaying the charge code for this labor or expense line.

Total Cost. Output-only field displaying the total cost for this labor or expense line.

List Price. The price for one unit of this service category. You can modify the price, unless you are providing the service at a fixed price. Fixed price service uses one price and you cannot specify prices for individual details. Changes you make here display in Call Activity Recording, and the system recalculates the invoice's net price.

To control changes, apply field security to this field.

Qty Required. Output-only field displaying the number of units of this service category recorded in CAR.

Covered Amount. Displays the covered amount for this labor or expense line for review or update. Changes you make here display in Call Activity Recording, and the system recalculates the invoice's net price. To control changes, apply field security to this field.

Description. Displays the description of the standard operation or operation step from a routing. For expenses, Description is blank unless you entered a description in CAR. You can modify description, but changes are not reflected in CAR.

Taxable. If Yes, the system calculates taxes for the line. The default depends on the taxable status of the call line and whether the line is a fixed repair.

- If this is not a fixed price service and the taxable status of the call line is No, the taxable status of detail record is No and you cannot change it.
- If this is not a fixed price service and the taxable status of the call line is Yes, the taxable status of the detail record defaults from the value in Service Category Maintenance for the service category.
- If this is a fixed price service, the system calculates tax at the call line level. The taxable status of detail record is the same as the call line's status and you cannot change it.

See Chapter 7, "Taxes in SSM," on page 165 for details on how the system calculates taxes in call invoices.

Tax Class. Enter a tax class previously defined in Tax Class Maintenance (29.1.5). GTM tax classes help determine the tax environment (set of tax types) for the transaction.

Tax Class defaults from Service Category Maintenance. If the current call line is not taxable or is a fixed price service, Tax Class is blank and you cannot change it.

Comments. Yes displays the comments transaction frame, where you can review and update comments entered in Call Activity Recording for labor/expense transactions.

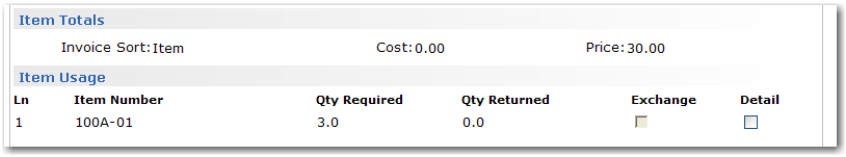
Item Totals and Item Usage Frames

After you review labor and expense invoice sorts, you can review item usage. The two frames are similar.

When you select an item invoice sort in the Item Totals frame and press Enter, the system fills in the cost and price and displays the Item Usage frame. You can review each detail line for an item invoice sort in the Item Usage frame. Output-only fields display information from Call Activity Recording.

In CAR, you can issue, return, and exchange items on the same line of detail. To ensure proper tax detail, CIR displays these actions as separate records.

Fig. 15.13
Item Totals and Usage Frames



Invoice Sort. Enter an invoice sort associated with the items you used to repair the call line item. The invoice sort must be type I, for item. When you select an invoice sort and press Enter, the system fills in the cost and price and displays the Item Usage frame.

Cost. Output-only field that displays the total cost for items in the invoice sort.

Price. Output-only field that displays the total net price for items in the invoice sort. This is the amount you bill the customer. Service coverage can make the net price less than the list price.

Ln. Use this field to select the line of detail summarized by this invoice sort that you want to review. Use the up and down arrows to scroll through lines.

Item Number. Output-only field that displays the inventory item number you used in this service activity.

Qty Required. Output-only field displaying the number of units you used of this item.

Qty Returned. Output-only field displaying the number of units you returned of this item.

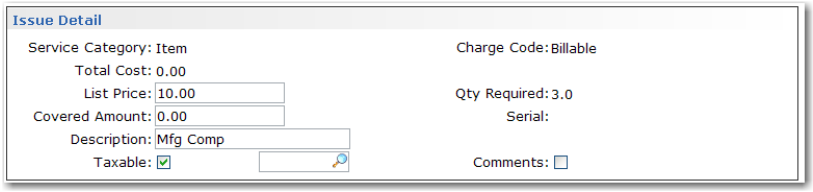
Exchange. Output-only field indicating if you specified an exchange credit for returned items.

Detail. Controls whether or not the Item Detail frame displays next.

Issue Detail Frame

The output-only fields display values you entered in CAR.

Fig. 15.14
Issue Detail Frame



Service Category. Output-only field displaying the item's service category.

Charge Code. Output-only field displaying the charge code for the item issued.

Total Cost. Output-only field displaying the total cost for this issue line. This field is zero for items you return or exchange.

List Price. The price for one unit of this item as you entered it in Call Activity Recording. You can modify the price unless you are providing this service at a fixed price. Fixed price service uses one price for the line and you cannot specify prices for individual details. To control modifications, apply field security to this field. If you make changes, the system displays them in Call Activity Recording, and recalculates the net price for the invoice.

Qty Required. Output-only field displaying the number of units of this item you used in Call Activity Recording.

Covered Amount. Displays the covered amount for the items on this line as you entered it in CAR for review or update. To control modifications, apply field security to this field. If you make changes, the system reflects them in Call Activity Recording, and recalculates the net price for the invoice.

Serial. Output-only field displays the serial number if you issued or returned one serialized item.

Description. Description of the issued item as you entered it in Item Master Maintenance or modified it in CAR. Description can be modified, but changes are not reflected in CAR.

Taxable. Indicate if the system calculates taxes on this line of detail. The default depends on the call line's taxable status and whether or not this is a fixed price repair.

- If this is not a fixed price service and the line's taxable status is No, the system sets the taxable status of all detail records to No and you cannot change it.
- If this is not a fixed price service and the line's taxable status is Yes, the taxable status for items defaults from the value in Item Master Maintenance.
- If this is a fixed price service, the system calculates tax at the call line level. The system sets the Taxable field at the detail level to the value of the call line and you cannot change it.

See Chapter 7, "Taxes in SSM," on page 165 for details on how the system calculates taxes in call invoices.

Tax Class. Enter a tax class previously defined in Tax Class Maintenance (29.1.5). GTM tax classes help determine the tax environment (set of tax types) for the transaction.

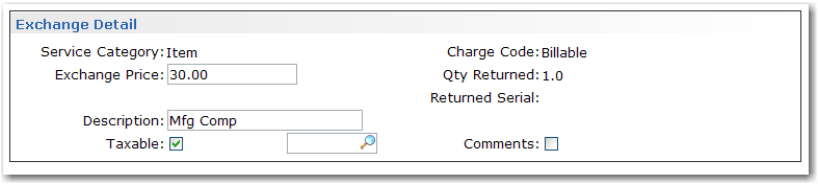
Tax Class defaults from Item Master Maintenance. If the current call line is not taxable or is a fixed price service, Tax Class is blank and you cannot change it.

Comments. If Yes, you can review or update comments you recorded in Call Activity Recording for the service detail.

Exchange Detail

For items that you return for an exchange credit, a frame displays that is slightly different from the Issue Detail frame. This section describes only the fields that are different.

Fig. 15.15
Exchange Detail Frame



Exchange Price. Displays the amount of credit you specified in CAR for this exchange. If you make changes here, the system reflects them in Call Activity Recording and recalculates the net price for the invoice. To prevent price from being modified, apply field security to this field.

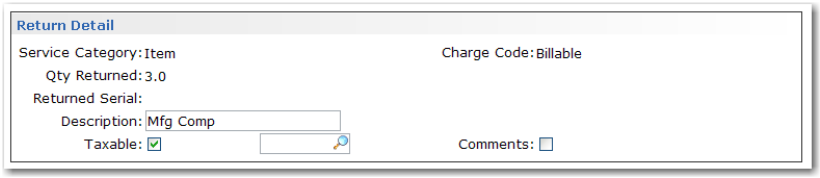
Qty Returned. Output-only field displaying the number of items you are exchanging.

Returned Serial. Output-only field displaying the serial number of the exchange item. This field has a value only when you return one serialized item in CAR.

Return Detail

For items that you return without an exchange credit, the Return Detail frame displays.

Fig. 15.16
Return Detail Frame

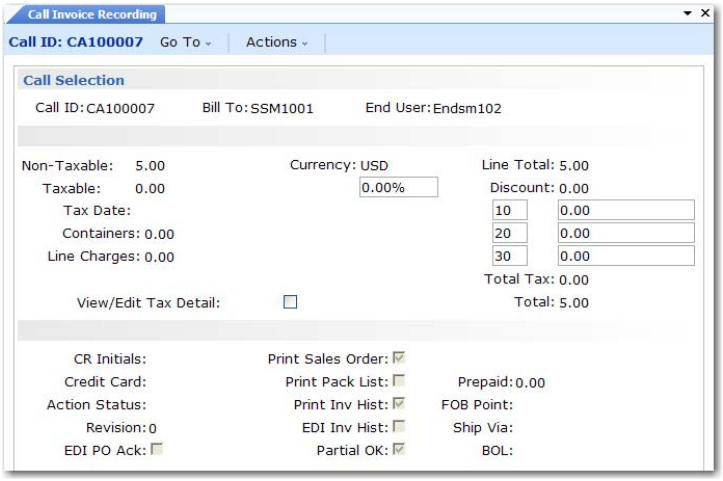


The fields on this frame are the same as on the Exchange Detail frame.

Trailer Frame

After reviewing the invoice detail, the trailer frame displays. This is the same frame that displays for standard sales orders that you create in Sales Order Maintenance (7.1.1).

Fig. 15.17
Call Invoice Recording Trailer Frame



Most trailer fields default from the bill-to address and have the same function as in sales orders. These fields include Discount Percent, CR Initials, Credit Card, Action Status, Partial OK, and Ship Via. By default, CIR uses the taxable and nontaxable trailer codes in SSM Accounting Control.

You can review and edit tax detail in the trailer. Unlike a sales order, multiple lines of detail can exist for each call line.

In Call Invoice Recording, you create the invoice after you consume the items, rather than before they ship as in sales orders. For this reason, some trailer fields are not relevant in CIR, such as Ship Via, FOB Point, and Partial OK.

See Chapter 7, “Taxes in SSM,” on page 165 for details on taxes in CIR.

Detailed Accounting in CIR

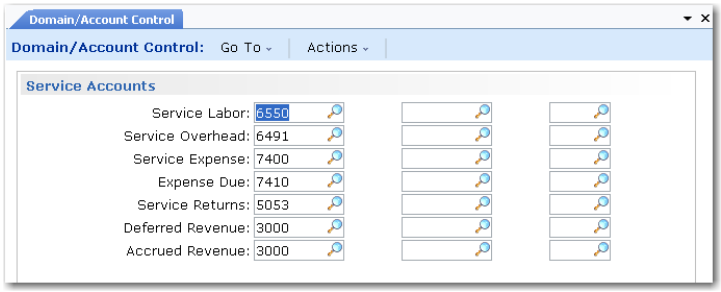
Call Invoice Recording uses standard transaction and accounting procedures as in other modules. This section describes these transactions and the accounts they affect.

Service Accounts

Product lines are the basis for managing accounting. Before you record service activity in CAR, you must set up product lines and the codes that direct how transactions impact these product lines.

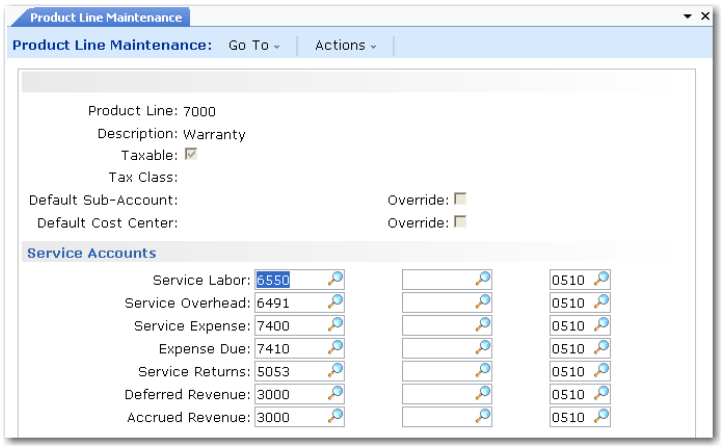
Several service accounts in Domain/Account Control (36.9.24) support service activity. These accounts are all defined with an account type of Standard.

Fig. 15.18
Service Accounts in Domain/Account Control (36.9.24)



The system uses the service accounts in the control program as defaults when you define a new product line in Product Line Maintenance (1.2.1).

Fig. 15.19
Service Accounts in Product Line Maintenance (1.2.1)



The system updates service accounts for GL transactions created in Call Activity Recording and for expensed material orders (MOs).

Service Labor. For labor consumed in CAR, the system credits this account and debits the WIP account.

Service Overhead. The system uses this account and the service labor account to track labor burden for labor consumed in CAR. The system credits this account and debits the WIP account.

The system calculates labor burden using the manufacturing operation formula for burden:

*Hours * (Labor Rate * Work Center Burden % * .01 + Work Center Burden Rate)*

Note In service contexts, machines do not affect the formula.

Service Expense. The system uses the Service Expense account to track expenses in CAR. During CAR transaction processing, the system credits the Service Expense account of the charge product line for expense amounts and debits the WIP account.

The system also uses the Service Expense account when you order MOs with a charge code. The system tracks the expense of the ordered items using the Service Expense account of the product line associated with the charge code.

Expense Due. During invoice post, the system debits the Expense Due account for CAR expense amounts and credits the WIP account.

Service Returns Account. When you return items in CAR, the system credits the Returns account and debits Inventory.

Deferred and Accrued Revenue. These accounts are used during contract billing based on the revenue type associated with a contract. They are always derived from the product line of the contract type associated with the contract. See “Managing Deferred and Accrued Revenue” on page 235.

The accounts updated during the processing of transactions in CAR may come from any of these product lines:

- The item’s product line
- The service type’s product line
- The charge product line
- The revenue product line

The first two product lines are collectively referred to as the WIP product line, since that is the only account updated in CAR.

Note Even though CAR work centers supply information about labor and labor burden, CAR does not use the work center’s department to derive a product line.

CAR Reports and Work Orders

When you receive items from a customer through an RMA, you can process the RMA by releasing it to a work order. This creates a rework work order using the item’s repair routing. You manage and complete the work order in the Work Orders module.

Processing in CAR is similar, although in CAR you are recording work that already took place. However, the work still consists of operations that record labor and the items you issued. Each CAR report you generate is a simple work order. The report creates work order transactions and affects similar accounts.

Reports in CAR have a simpler life cycle than work orders. Work orders follow this sequence:

- Process item issues.
- Process labor and labor burden.
- Receive work order (RCT-WO).
- Close the work order using Work Order Accounting Close (16.21).

Reports in CAR do not go through the last two steps. The system combines item and labor processing when you click Next from CAR’s inventory confirmation frame. The CAR report, or work order, has this life cycle:

- Process item issues, labor, and labor burden.
- Post the invoice, which is similar to work order accounting close.

In general, the system updates accounts in CAR similar to the way it updates accounts for a work order, except that service accounts are updated when appropriate.

Variances in CAR

Another difference exists between accounting for standard work orders and CAR work orders. The system tracks material and labor variances for standard work orders. It does not track them for call activity.

The system calculates work order variances when the work order is closed. Closing a call, however, is not as final as closing a work order. You can open a closed call and record more activity for it. The only time you cannot change a call is when it is moved it to history.

For calls, the system cannot determine if a difference is a variance or the result of a report that you have not yet added to the call.

Product Lines in CAR

You can affect multiple product lines when you record activity in CAR. These product lines can be one of the following: the WIP product line, charge product lines, and the revenue product line.

You can use the same product line for WIP, charges, and revenue. Depending on how you separate accounts, you can set up and implement product lines ranging from simple to complex.

Table 15.3 summarizes the accounts affected by recording activity and posting call invoices.

See “Charge and Revenue Management” on page 80.

WIP Product Line

In CAR, the system uses the WIP account of the call item’s product line for all WIP transactions for the line item. You specify this product line when you select a call item in Call Activity Recording.

The system determines the default product line for the WIP account based on the value of Use Item Prod Line in SSM Accounting Control. If Use Item Prod Line is Yes, the WIP product line defaults from the item’s product line. If No, it defaults from the service type’s product line. You can change the default when you begin recording activity for a call line. After you record activity, you cannot change the WIP product line.

The system uses only the WIP account from this product line, as one general holding area. During CAR processing, the system records amounts to the WIP account. When you post the invoice, the system transfers these amounts from the WIP account to the correct charge and revenue product line accounts.

Since call reports are similar to work orders, you can view financial transactions using two reports in the Work Orders module. Enter the call report number in the Work Order field of the following reports:

- Use Work Order Cost Report (16.3.4) to review costs for a call report.
- Use Work Order WIP Cost Report (16.3.5) to review GL transactions affecting WIP accounts for selected reports.

You cannot add a memo item to a standard work order. You can add memo items to calls unless Items Must Exist is Yes in Service Management Control. For CAR work orders with memo items, the system uses the service site's cost set. If none exists, the system uses the cost method in Inventory Accounting Control to generate a work order cost report.

Charge Product Line

The charge product line determines accounts for the cost of activity and appears on the item, labor, and expense detail frames in Call Activity Recording. You can relate charge codes to charge product lines to direct costs to accounts depending on the type of coverage: warranty, contract, billable.

The service accounts of the charge product line are important in CAR. The cost of goods accounts are also used: COGS-Material, COGS-Labor, COGS-Burden, COGS-Overhead, COGS-Subcontr. To isolate service costs from manufacturing costs, use different Cost of Goods Sold account numbers, or use sub-accounts and cost centers to permit distinct reporting.

During invoice post, the system searches for alternate cost of goods accounts from Inventory Account Maintenance (1.2.13) for the combination of product line, site, and location.

Revenue Product Line

The revenue product line determines the sales and sales discount accounts used for the income from service activity. You specify the revenue product line per line item in Call Invoice Recording.

Product Line Account Search Algorithm

After you enter a charge or revenue product line, the system first looks for alternate sales or inventory accounts. If these are not defined, it uses the accounts defined in Product Line Maintenance.

Inventory Accounts

Call Activity Recording searches for product line accounts the same way the rest of the system does. For an Inventory account, the system searches for GL accounts set up for the combination of product line, site, and location with Inventory Account Maintenance (1.2.13). If accounts for site and location do not exist, the system searches for a match on product line and site with a blank location. If these do not exist either, the system uses the default GL accounts in Product Line Maintenance.

Sales Accounts

You can set up alternate Sales and COGS accounts with Sales Account Maintenance (1.2.17), based on site, customer type, and channel. You normally set these up for sales orders, but the system checks for these alternate accounts when you post the call invoice.

You can define distribution channels in Generalized Codes Maintenance. Channel normally refers to the distribution channel originating the service activity.

Invoice Post and Print searches for accounts based on the revenue product line of the item repaired, the site associated with the call line item, the customer type of the end user's customer, and the channel specified on the header in CIR. The system searches for GL sales accounts in the following order:

- Product line, site, customer type, and channel
- Product line, site, and customer type, with a blank channel
- Product line, and site, with a blank customer type and blank channel
- Default GL accounts in Product Line Maintenance

Table 15.3
Accounting in CAR

	Processing Step	Action	Account	Product Line
Issue in CAR	Item Issue	Credit Debit	Inventory WIP	Item Item
	Item Returns	Credit Debit	Service Returns Inventory	Charge Item
	Labor	Credit Debit Credit Debit	Service Labor WIP Service Overhead WIP	Charge Item Charge Item
	Expense	Credit Debit	Service Expense WIP	Charge Item
Invoice Post and Print	Item Issues	Credit Debit	WIP COGS-Material COGS-Labor COGS-Burden COGS-Overhead COGS-Subcontr	Item Charge
	Item Exchange	Credit Debit	AR Sales	Customer Revenue
	Labor	Credit Debit Credit Debit	WIP COGS-Labor WIP COGS-Burden	Item Charge Item Charge
	Expense	Credit Debit	WIP Expense Due Employee	Item Charge
	Billable Total	Credit Debit	Sales AR	Revenue Customer

Chapter 16

Call Escalation

Call escalation monitors the response times for calls. According to the schedule and impact you define, it increases the visibility and management involvement for calls that you have not serviced. Call escalation helps ensure that calls are serviced in time and by the appropriate personnel.

Using Escalations

Call escalations let you track and correct a call's progress in its life cycle. If you do not resolve a call within a a predefined time period, the system automatically gives it higher visibility.

With the Call Queue Manager, you select calls by attributes such as priority, status, and queue. Using call escalations, you assign calls to specific queues, change their status, and increase their priority.

Since escalations change the attributes of a call according to your design, you must create the design carefully. Set up each escalation step so that it changes the call in a particular way.

See Chapter 11, "Call Management," on page 261.

Note Escalations affect only *open* calls. Deleted or canceled calls are excluded.

Enabling Escalations

You enable call escalations by setting Use Escalation to Yes in Call Management Control (11.1.24).

Important You must also run the Call Escalation Monitor for escalations to have an effect.

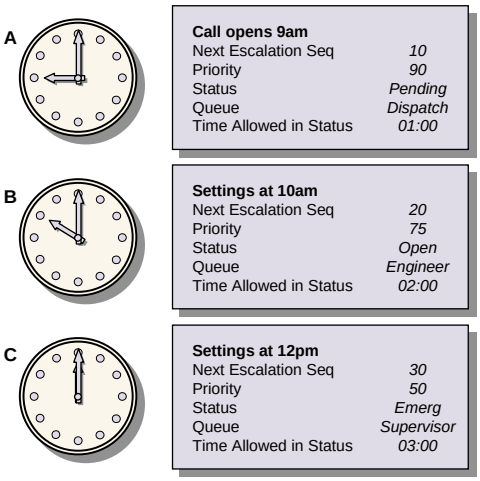
Before you can define other settings that affect escalations in Escalation Control, set Use Escalations to Yes. If this field is No when you access Escalation Control, the system displays a prompt that indicates that call escalation is not active, and asks if you want to enable escalations.

If you answer Yes, the system sets Use Escalation to Yes in Call Management Control, and you can modify Escalation Control. If you answer No, you cannot modify escalation fields.

Sample Escalation

Figure 16.1 illustrates a sample escalation. The Dispatch queue receives a call with a status of Pending. If a dispatcher does not address the call within an hour, the system escalates it to Open status and routes it to the Engineer queue. If no engineer resolves the call within two hours in this queue, the system escalates the call again, this time to Emerg, or emergency status, and routes it to the supervisor's queue for attention.

Fig. 16.1
Sample Call Escalation



Escalation Worksheet

Use a worksheet like the one in Table 16.1 to define the escalation steps for a call.

Table 16.1
Escalation Worksheet

Escalation Code	Esc Seq	Escalate?	Time in Status		Bump Priority	Next Status	Next Queue
			Days	Hrs			

Default Escalations

In Escalation Control, specify a default escalation to use if no other default is available. When creating calls, you can change the escalation for each call. The system searches for an escalation to use on a call as follows:

- The escalation for the end user in End User Data Maintenance
- The escalation for any call defaults in Call Default Maintenance
- The preferences of the end user in Service/Support User Preferences

- The Default Call Escalation field in Escalation Control

Effect of Escalations

You can use escalation sequences in two ways:

- To update certain fields on a call record
- To execute specific tasks external to the Call Maintenance process, such as printing the call, sending an alert message to a manager, or paging the engineer assigned to the call

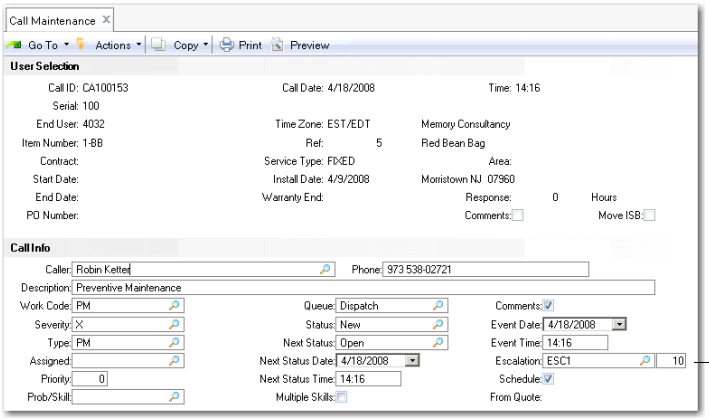
To make these changes, the Escalation Monitor applies the instructions from the current escalation step. When a call is created, Call Maintenance also applies the first step of an escalation. The way these two updates occur is somewhat different.

Creating a Call with an Escalation

When you create a call with an escalation, the system applies the instructions from step 0. If the escalation has no step 0, initial call values do not change.

A call's escalation displays in the Call Info frame of Call Maintenance. A sequence number indicates the *next* escalation step that the Escalation Monitor will apply.

Fig. 16.2
Call with Escalation



Sequence 0 has been applied; 10 is the next sequence to be applied.

Figure 16.2 illustrates a newly created call in Call Maintenance. The Escalation field displays the escalation name and sequence 10. The next step the Escalation Monitor will apply is step 10.

The system has already applied the values of step 0. Even though the service type's response time is 4 hours, the call's Next Status Time is one half hour from the call open time. The reason for this disparity is that the time allowed for step 0 is 30 minutes.

An escalation step can have the following effect when you create a call:

- Increase the call's Priority field by the value of Bump Priority.
- Update the call's Status field to reflect the value of Next Status.
- Update the call's Next Status field to reflect the value of the *next* step's Next Status field.
- Update the call's Queue field to reflect the value of Next Queue.

- Update the call's Next Status Date field and Call Next Time field using Days Allowed in Status and Time Allowed in Status.

When you create a call with an escalation, the system adds Days Allowed in Status and Time Allowed in Status for step 0 to the call's open date and time to determine the call's Next Status Date and Next Status Time.

Note Escalations do not initially affect calls that the system creates, such as installation calls from invoice post and PM calls from contract schedules. The system schedules these calls in advance. Escalations affect these calls only after they reach the default next status date and time.

Using Other Defaults with Escalations

For many call fields, you can set default values in more than one place. When an escalation is applied to a new call in Call Maintenance, values from the escalation step override other defaults. For example, the system uses the escalation sequence to determine call status, next status, and queue, even if you define defaults in Call Default Maintenance.

In the following order, the system finds a default for the call's initial priority from:

- The end-user record, if it is not zero
- The call's contract or warranty
- The Default Call Service Type in Call Management Control

The Bump Priority value for the first escalation step then reduces the initial default priority.

See Table 11.3, "Call Default Precedence Rules," on page 273 for the order in which the system uses defaults.

Example You have a call where the end user's priority is zero and the service type's priority is 100. If the first escalation step specifies a bump priority of 75, the call's initial priority is 25, not 100.

When you do not use escalations, the system calculates the call's Next Status Date and Time using the service type's response time. When an escalation applies to a new call, the system uses the Days Allowed in Status and Time Allowed in Status of step 0 to determine Next Status Date and Next Status Time.

Updating Existing Calls

The Escalation Monitor applies the escalation's next step when the call's Next Status Date and Next Status Time is older than the system date and time. After step 0, the system adds Days Allowed in Status and Time Allowed in Status to Event Date and Event Time to determine Next Status Date and Next Status Time.

Matching Escalations to Calls

Work Code, Call Type, Call Severity, and Call Problem in the top frame of Escalation Maintenance define the escalation key. The system applies the escalation only to calls with values that match the key.

You can leave fields blank to end the key, but you cannot skip fields. For example, to set up escalations based on call severity, you must also enter a call type and work code. When applying an escalation, the Escalation Monitor searches for the most complete match to the call's fields. If no escalation matches the call exactly, it applies a more generic escalation.

Example You create a call with work code Tech, severity 3, problem Elec. No escalation with these exact fields exists, but one does exist with work code Tech and all other fields blank. The system applies this escalation as the closest match.

Default Escalations

When you create escalation sequences to use as defaults, you must carefully consider how the escalation is set. When the escalation is associated with an end user, it may apply to many different kinds of calls.

You create an escalation PREMIUM and a sequence of escalation steps for work code Tech, but not for work code PM. You associate the PREMIUM escalation with end user 1001000.

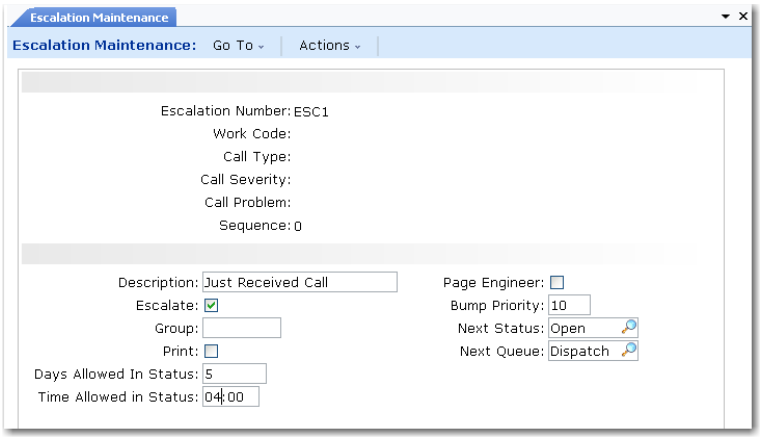
When you create a PM call for end user 1001000, the PREMIUM escalation defaults from the end-user record. When the system looks for the first step to apply, no match exists for work code PM, so the system does not apply the first sequence of the escalation.

As a result, the escalation sequence number that displays in Call Maintenance is zero. The PREMIUM escalation remains associated with the call, but it does not take effect unless you change the call's work code to Tech.

Escalation Maintenance

Use Escalation Maintenance (11.1.13.1) to create and update escalation sequences.

Fig. 16.3
Escalation Maintenance (11.1.13.1)



The work code, type, severity, and problem in the top frame of Escalation Maintenance uniquely define the escalation. The system applies this escalation to calls with values that match these fields. You can leave fields blank to end the key, but you cannot skip fields. For example, to base an escalation on call severity, you must specify a work code and call type.

When applying an escalation, the Escalation Monitor searches for the most complete match to the call's fields. If no escalation matches the call exactly, it applies a more generic escalation. It disregards one field at a time, moving upward from Call Problem until it disregards all key fields.

Escalation. Enter a name for the escalation. If this field is blank, the system creates a number using the prefix and next number in Escalation Control.

Work Code. Enter a value to apply the escalation only to calls with this work code. Define work codes in Work Code Maintenance (11.21.1).The work code indicates the type of work you performed during service activity and affects invoicing and service limits. See "Work Codes" on page 65.

Call Type. Enter a call type defined in Call Types Maintenance (11.1.21.4). If you enter a call type, you must enter a work code also. The escalation applies only to calls with this work code and call type.

Call Severity. Severity indicates the end user's perception of how serious the problem is. If you enter a call severity, you must also enter a work code and call type. The escalation sequence applies only to calls with this work code, call type, and call severity.

Note Define call severities in Generalized Codes Maintenance for field ca_severity.

Call Problem. Define call problems codes in Generalized Codes Maintenance (36.2.13) for field fsskill. This field classifies both the call problem and the skill the engineer needs to handle the call. If you enter a call problem code, you must also enter a work code, type, and severity. The escalation sequence applies only to calls with this work code, call type, call severity, and call problem.

Sequence. Enter a number defining the current step in the escalation. Each escalation must begin with a step 0. The system executes sequences from lowest to highest.

Note Define number sequences in increments of 10 (0, 10, 20, 30), to insert steps more easily later.

Description. Enter a brief description (maximum 24 characters) of the sequence.

Escalate. If Yes, the Escalation Monitor escalates this sequence to the next higher one. Enter No for the last step in the escalation.

Group. Define group codes in Generalized Codes Maintenance (36.2.13) for field fsgroup.

Print. Enter Yes to print calls when the system executes this step. Use this for critical steps or final steps to keep a record of closed calls. Define the printer in Escalation Printer of Escalation Control.

Days Allowed in Status. Determines the number of days a call remains in a step before the Escalation Monitor escalates the call to the next step. Use this field by itself or with Time Allowed in Status.

Note The value of Use Calendar Days in Escalation can affect the calculation of a call's next status date and time.

When you create a call with an escalation, the system applies the values of step 0. It adds the days and time allowed in status to the call's open date and time to determine the call's Next Status Date and Next Status Time.

The Escalation Monitor applies the next step in the sequence when the call's Next Status Date and Next Status Time is earlier than the system date and time. For steps after 0, the system adds Days Allowed in Status and Time Allowed in Status to the call's Event Date and Event Time to determine the Next Status Date and Next Status Time.

Time Allowed in Status. The system uses this value with Days Allowed in Status to determine the next status date and time.

Page Engineer. The default is No. If Yes, the system pages the engineer when the call reaches this escalation sequence. Use this when calls reach a critical or emergency situation.

Bump Priority. Enter the number of points you want the system to subtract from the current call priority when it executes this sequence. Lower numbers indicate higher priority.

Next Status. Determines the call's status when the system executes this escalation step. The system verifies that this status exists in Call Status Code Maintenance.

When you create a call with an escalation, the system applies the values of step 0 to the call. The system updates the call's Status field with step 0's Next Status value. It updates the call's Next Status field with the next step's Next Status value.

When the system escalates a call, the call's Status field reflects the status of the recently executed step and its Next Status field reflects the status of the next step the system will execute.

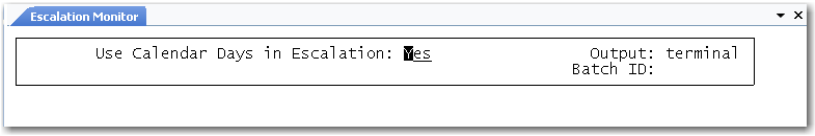
On an escalation, you cannot specify a status of closed, cancel, or complete from Call Management Control.

Next Queue. When the system executes this step, it moves the call to the queue you specify. If Next Queue is blank, the call remains in the current queue.

Escalation Monitor

Escalation steps have an effect only when the Escalation Monitor (11.1.13.13) is running. You can run the monitor as a full-time process on a dedicated terminal or in a window on an X Windows terminal. For correct escalation results, the monitor must run consistently.

Fig. 16.4
Escalation Monitor (11.1.13.13)



The Escalation Monitor examines each call's next event date and time. If these values are earlier than or equal to the system date and time, the system updates the call's priority, status, or queue according to the values in the current escalation step. Then it changes the call's Next Status Date and Next Status Time to reflect the days and time in the current escalation step.

The Escalation Monitor displays call records as it reviews them. It marks calls it updates with a Yes in the Act, or acted on, column.

Escalation Pause Interval

The Escalation Monitor examines calls depending on the frequency in Escalation Manager Pause in Escalation Control (11.1.13.24). This field defines the number of seconds that the Escalation Monitor pauses before rechecking open calls.

The escalation pause interval should be less than the shortest period of time you allow in any escalation. If the shortest time between two sequences is four hours, set Escalation Manager Pause to a value less than four hours.

Use Calendar Days in Escalation

When calculating the next status date and time, the Escalation Monitor uses this formula:

Next Status Date = System Date + Days Allowed in Status

Use Calendar Days in Escalation affects this calculation. Define this field in Escalation Control. It displays in the Escalation Monitor.

Set Use Calendar Days in Escalation to Yes for the system to use calendar days to calculate Days Allowed in Status. The system adds the value of days allowed in status to the system date. After the system determines this date, it examines the service coverage days. If the calculated date is not a covered day—if it is a weekend or holiday, for example—the system changes the date to the next covered day.

Set Use Calendar Days to No for the system to use work days to calculate Days Allowed in Status. The calls's service type defines valid service coverage days and hours. This method can result in a later date, and Escalation Monitor response time can increase due to extra calculations.

Example You take a call on Thursday, March 20. The service type provides coverage from Monday through Friday. The first escalation step specifies that the call can remain in the step for four days. Using calendar days, the next status date is Monday, March 24. Using work days, the next status date is Wednesday, March 26, since the calculation disregards Saturday and Sunday.

Chapter 17

Engineers and Scheduling

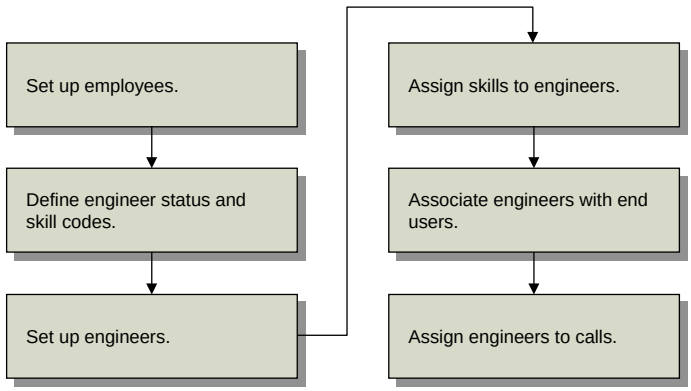
In the Service/Support module, you can define and assign service engineers to calls. SSM provides a rules-based system to help you select engineers for call assignment. This chapter describes how to define engineers and set up engineer scheduling.

Service Engineers

To use the Service/Support Management call tracking functions, you first must identify the individuals who respond to calls.

Setting up engineers involves a number of related tasks, illustrated in Figure 17.1.

Fig. 17.1
Engineer Work Flow



First define employees using Employee Create (36.1.7.1). Define engineer status codes with Engineer Status Maintenance (11.13.4) and skill codes in Generalized Codes Maintenance (36.2.13). Set up engineers with Engineer Maintenance (11.13.1). Assign skills with Engineer Skills Maintenance (11.13.5).

You can associate both primary and secondary engineers with end users. The system uses this association to assign default engineers in Call Maintenance or to rank engineers in engineer scheduling.

Engineer scheduling in Call Maintenance is optional. However, even without scheduling, you must define engineers to record service activity in Call Activity Recording.

Engineers and Multiple Time Zones

If you have end users in more than one time zone, you can use Multiple Time Zones (MTZ) to manage your response. MTZ works with service functions that deal with time-sensitive data, including call management, engineer scheduling, coverage checking, creation of installed base records, and reports and inquiries that display dates and times.

The following list summarizes how MTZ affects engineer scheduling:

- You can associate a time zone with an engineer in Engineer Maintenance.
- You can assign scheduling points in Engineer Schedule Control based on matching time zones, either exactly or within a defined range. You can optionally limit engineers to schedule in Call Maintenance based on time zone.
- The value of Field Engineer in Engineer Maintenance determines how the system interprets schedule times: either relative to the time zone of a call’s end user or relative to the engineer’s time zone.
- You can select a display time zone before generating engineer reports and inquiries.

See Chapter 4, “Multiple Time Zones,” for details on setting up and using MTZ.

Engineer Site and Location

Most engineer attributes affect engineer scheduling. However, the engineer’s site, location, and area are important when you order items with material orders (MOs) and consume items in Call Activity Recording.

Use a consistent engineer site and location so you can manage inventory transactions that occur when you service calls.

Engineer Site/Location on MOs

Engineers can order service inventory with material orders (MOs). When you ship inventory for the MO, the system transfers inventory from the source site and location to the place you need it for the service activity.

The system searches for an engineer site and location defined in Engineer Maintenance. You can define either one or both of these for an engineer. If no site or location exists, the system searches for the engineer’s area site and location. The system transfers the MO items you order to this site and location.

Consider inventory management issues when you define default sites and locations. If engineers obtain repair parts from regional supply centers, let the site default from the engineer’s area and define each engineer as a separate location.

Chapter 20, “Material Orders,” discusses MOs.

Note Significant overhead occurs when you define a site. For example, you allocate costs per site. For this reason, setting up individual engineers with separate sites requires more planning and implementation.

Inventory Consumption in CAR

When you consume MO inventory in Call Activity Recording, the system uses the same logic to determine a site and location for inventory issues as it uses in MO shipments. If you ship the items to a different site than the default, change the values in CAR to process inventory issues.

Establish procedures so the system always references the same site and location for service stock for a particular engineer.

Location Validation

The system validates the engineer location like any other location in the system. For example, the location must exist, unless Automatic Locations is Yes for the site.

The location you specify should not restrict any of the following transactions, which occur during service activities:

- For all MOs, the inventory transfer receipt transaction (RCT-TR)
- For expensed MOs—those with a charge code—the unplanned issue transaction (ISS-UNP)
- To issue items in CAR, the issue to work order transaction (ISS-WO)

Reserving Service Inventory

Other functions that allocate and issue inventory can use items you order on an MO. If service and manufacturing activities are in the same site, service inventory is vulnerable to access by manufacturing functions such as work orders or sales orders.

You can minimize the impact of other processes on service inventory in several ways:

- Use a special naming convention for service locations and establish procedures so that manufacturing functions skip these locations.
- Even if your service operation shares the same physical space as manufacturing, define a separate site for service. Managing service as its own site gives you greater control over inventory. In the service site, naming conventions and procedures can distinguish locations you use for different purposes such as stocking, return, repair, scrap, inspection.
- Give engineer locations an inventory status code with Available set to No. This status prevents the system from using the service inventory for other purposes. The service locations do not display in the picking logic for manufacturing functions.

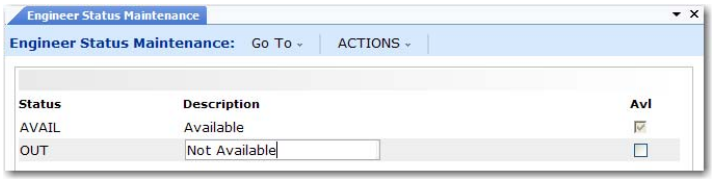
Note When you make a location unavailable, the system does not use it for standard picking. You can still issue inventory from the location in CAR. However, you cannot create detailed, or picked, allocation during Material Order Maintenance.

If the engineer location is not marked as unavailable, the system may allocate the items ordered on an MO, but not yet used, to another MO or sales order.

Setting Up Availability Status Codes

To determine an engineer's availability, define meaningful status codes in Engineer Status Maintenance (11.13.4) and associate them with engineers.

Fig. 17.2
Engineer Status Maintenance (11.13.4)



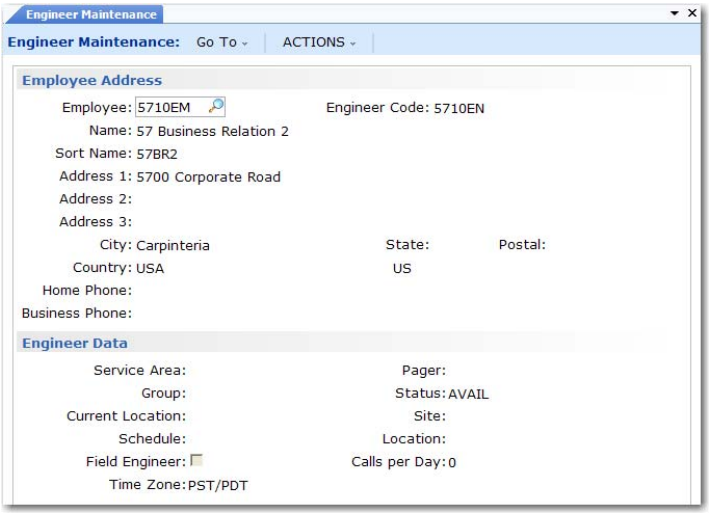
Availability status codes indicate whether or not an engineer is available. Multiple codes exist because there are multiple reasons for being available or unavailable. For example, use status to remove an engineer from consideration who is on extended leave or temporarily assigned to other duties.

Engineer Maintenance

Set up engineer information with Engineer Maintenance (11.13.1), illustrated in Figure 17.3.

Note Before setting up engineer information, define the engineer as an employee in Employee Create (36.1.7.1).

Fig. 17.3
Engineer Maintenance (11.13.1)



Employee Address Frame

To define an employee as an engineer, enter the employee code in the Employee field. The employee must have an active status. This code defaults into the Engineer Code field. You can choose to set up a separate engineer code referring to this employee.

Example Some companies prefer to separate employee codes from engineer codes. An engineer's employee code might be GLB, while the individual is referred to as Eng004 for service engineer functions.

The rest of the Employee Address frame shows employee information in a display-only mode.

Note When you set up engineer information, the system creates an address record for the engineer with an operational address list type of engineer. Address list types distinguish different kinds of addresses. The system retrieves the address when you specify the engineer as a drop-ship address in Material Order Maintenance.

Engineer Data

Define engineer attributes in the Engineer Data frame. Engineer scheduling uses some fields to recommend an engineer for a call. Engineer paging uses other fields. Other fields are for reference. Call Activity Recording and Material Order Maintenance use Engineer Site and Location.

Service Area. Enter a service area defined in Area Maintenance (11.15.1). Engineer scheduling awards points to engineers whose area matches the area of a call end user. Assign the service area for end users in the Service Office Detail frame of End User Data Maintenance (11.9.1). Define the number of points to assign in Engineer Schedule Control.

Group. Use this field to group engineers according to a method significant for your business practices. For example, you can group engineers by level of expertise or experience.

Note Set up generalized codes for field fsgroup.

Current Location. Reference-only. This location is not an inventory location. Use this field if you temporarily assign the engineer to a different service center, or if the engineer is working out of his home rather than his regular office. Define location codes in Generalized Codes Maintenance for the field eng_location. If the engineer has a long-term assignment to a particular call, you can specify the call ID for location even when generalized codes validation is in effect.

Schedule. Enter the engineer's normal work schedule, which defines the hours that the system can assign calls to the engineer. For example, you can set the schedule to assign calls only 8 AM to 5 PM, Monday through Friday. Define schedules in Engineer Master Schedule Maintenance (11.13.15.1) or tailor a schedule for a specific engineer with Engineer Detail Schedule Maintenance (11.13.15.4).

Field Engineer. Indicate where an engineer normally works.

No: The engineer primarily works in-house—for example, providing phone support or at a repair center.

Yes: The engineer usually provides service at an end user's location. Consider setting this field to Yes if you use Paging.

This field affects call scheduling when Multiple Time Zones is active as well as engineer paging as follows:

- When MTZ is active and Field Engineer is Yes, the system interprets schedule times relative to the end user's time zone. When No, the system interprets schedule times relative to the engineer's time zone. See Chapter 4, "Multiple Time Zones," for details.
- If Field Engineer is Yes and Dispatcher is Yes in Call Management Control, the Page field in Call Maintenance defaults to Yes when you create a new call. When Page is Yes, you can initiate paging to contact the engineer.

Note A Time Zone field displays when Multiple Time Zones is active. Each engineer must have an associated time zone. See page 116 for details.

Pager. If you are using the Engineer Paging function, enter the pager number for the engineer.

Status. Enter a status defined in Engineer Status Maintenance (11.13.4). Status is a critical field for engineer scheduling that determines whether the engineer is available or not. If Limit by Availability is Yes in Engineer Schedule Control, call scheduling considers only engineers with an available status.

If you assign an engineer with an unavailable status to a call, a warning displays.

See "Setting Up Availability Status Codes" on page 482.

Site and Location. Enter the site and location where this engineer obtains repair parts. The system uses this site and location as a default in Call Activity Recording and material order functions to specify where to order and consume repair parts. Standard site/location logic applies to these fields.

Set up the engineer's location with an unavailable inventory status so that the system does not allocate items designated for the engineer's use for other purposes such as sales orders.

See "Engineer Site and Location" on page 481.

Calls per Day. Enter a number representing the average number of calls this engineer can complete in one day. The engineer scheduling function considers this number in calculating engineer availability if Display by Calls is Yes in Engineer Schedule Control.

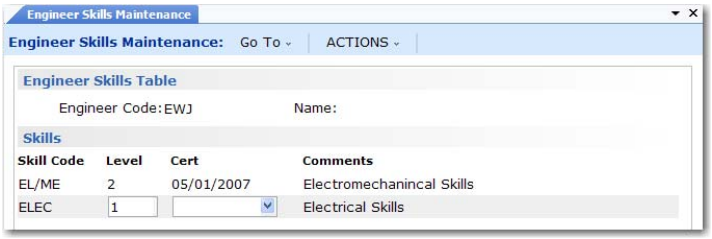
Engineer Skills Maintenance

Assign skills to engineers in Engineer Skills Maintenance (11.13.5). To ensure that you use standard codes, define skill codes with Generalized Code Maintenance (36.2.13) for field fsskill.

Skill codes serve two purposes:

- They represent an engineer's expertise.
- They represent the kinds of problems your end users report.

Fig. 17.4
Engineer Skills Maintenance (11.13.5)

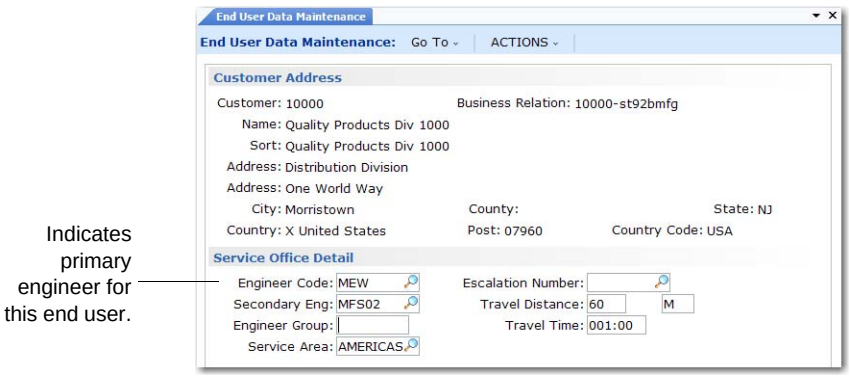


The system matches an engineer's skills to the call when it calculates engineer points. The Level and Certification Date field for the engineer's skill are for reference only. You can use them for internal certification of skills.

Assigning Engineers to End Users

You can associate a primary and secondary engineer with an end user in End User Data Maintenance (11.9.1). In Figure 17.5, the Engineer Code field defines the end user's primary engineer.

Fig. 17.5
Service Office Detail Frame



The primary engineer for an end user is given double points by the scheduling process when calls for this end user are created. Define how many points to assign in Engineer Schedule Control. The system gives the secondary engineer the points without doubling them.

When you associate a primary or secondary engineer with an end user, the system checks settings in Engineer Schedule Control. A warning displays if:

- Limit by Service Area is Yes and the engineer's service area does not match the end user's area.

- Limit by Time Zone is Yes and the engineer's time zone either does not match the end user's or is outside the range in Range of Hours to Consider.

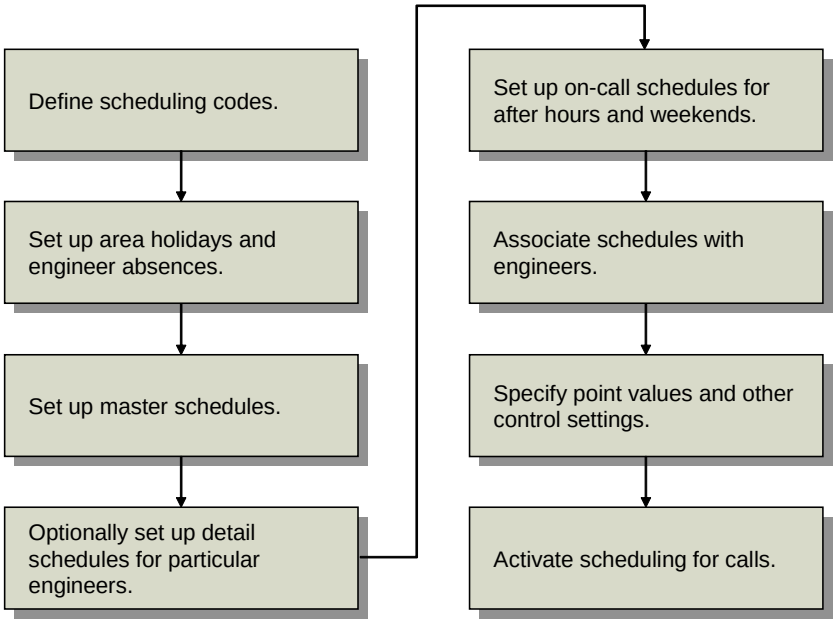
Note The system checks for time zones only if MTZ is active. See Chapter 4, "Multiple Time Zones," for details.

After you associate an engineer with an end user, you cannot delete the engineer in Engineer Maintenance. First change the end user's engineer, then delete the engineer.

Engineer Scheduling Setup

Setting up engineer scheduling involves a number of related tasks, illustrated in Figure 17.6.

Fig. 17.6
Engineer Scheduling Work Flow



After you set up engineers and the codes associated with them, define area and engineer holidays if they are important to scheduling. Then define master schedules and use them as the basis for engineer detail schedules. Master schedules are also used as the basis for an on-call schedule, covering the hours outside normal work hours.

After schedules are defined, you can associate them with engineers. Then set up the control program to express the importance each scheduling factor has in your business environment. Finally, activate call scheduling in Call Management Control (11.1.24).

The system does not require all steps. Perform those you need for your business.

Defining Engineer Absences

Use two functions to define engineer holidays and absences:

- Set up holidays for a geographic region with Area Holiday Maintenance (11.15.9). See Chapter 18, “Area Maintenance,” on page 505.
- Set up scheduled absences for a specific engineer in Engineer Absence Maintenance (11.13.15.17).

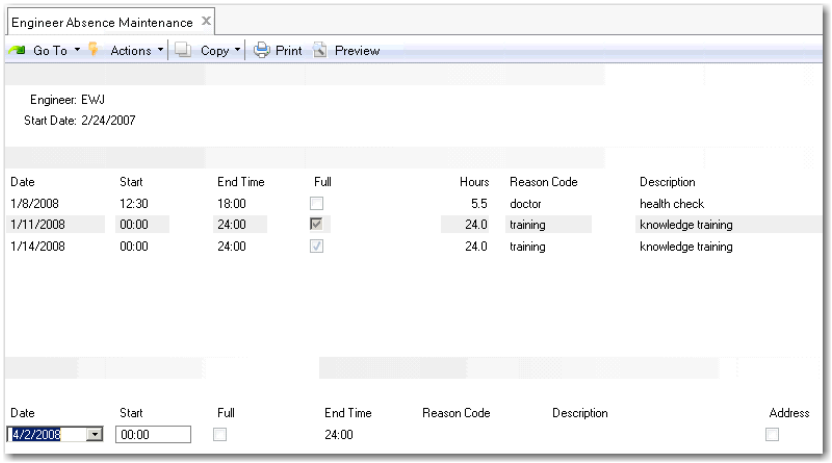
The system uses absences you define for the engineer first. If none exist, the system looks for holidays for the call’s service area.

Engineer Absence Maintenance (11.13.15.17) lets you schedule absences for a specific engineer. You can also schedule full-day absences or shorter absences from one hour’s duration, such as health appointments or half days. This flexible granularity lets you record personal appointments, any unusual working hours, or limited availability.

When identifying non-working time, you have the option to assign an exception or reason code to each entry.

The scheduling sequence in Call Maintenance (11.1.1.1) considers an engineer’s scheduled absences. If the day is a holiday or another type of planned absence for an engineer, the engineer displays with zero availability.

Fig. 17.7
Engineer Absence Maintenance (11.13.15.17)



Engineer. Enter the engineer code for the employee. The schedule applies to this engineer only.

Start Date. Enter the date for which to display absence records. The system will display a maximum of six records whose creation dates are nearest the start date entered.

Date. Enter the date for which you want to schedule an engineer absence. The default is the system date.

Start. Enter the time from which the engineer will be unavailable.

Full. Select this field if the engineer will be absent for the entire working day.

Days. Enter the number of days that the engineer will be absent. This field is only available if you select the Full (Days) field.

End Time. If the engineer will be absent for only a portion of the working day, for example, for a doctor's visit, enter the time at which he or she will return to work.

Reason Code. Specify a reason for the engineer's absence from a list of predefined values. This field is validated against values defined in Reason Code Maintenance (36.2.17).

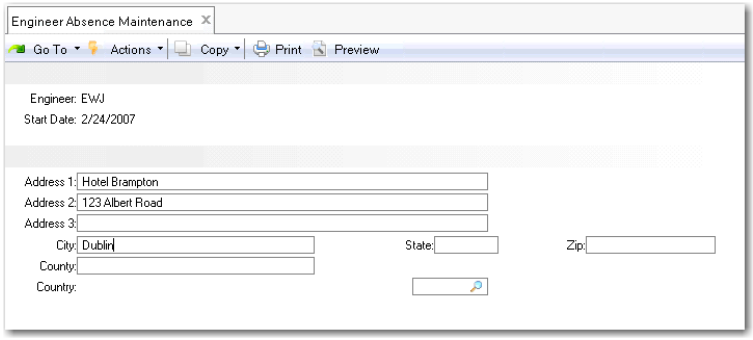
Description. Enter a description of the reason code.

Address. Select the field if you want to associate an address with the engineer's absence. Use this field to identify the engineer's current location when available for work again.

If an engineer is out in the field and must stay the night in order to complete a call, you can define the absence and record the location of the hotel the engineer is staying at. When QAD Field Service Scheduler (FSS) schedules the next end user call the following day, it will know the starting point, or current location, of the engineer. When you select the Address field and click Next, the system displays the Absence Address frame.

See *User Guide: QAD Field Service Scheduler* for more information on FSS.

Fig. 17.8
Absence Address Frame



Address. Enter up to three lines of address details (maximum 36 characters).

City. Enter the city (maximum 20 characters) for the address.

State. Select a valid state or province code for the address.

County. Select a valid county code that identifies the county for this address.

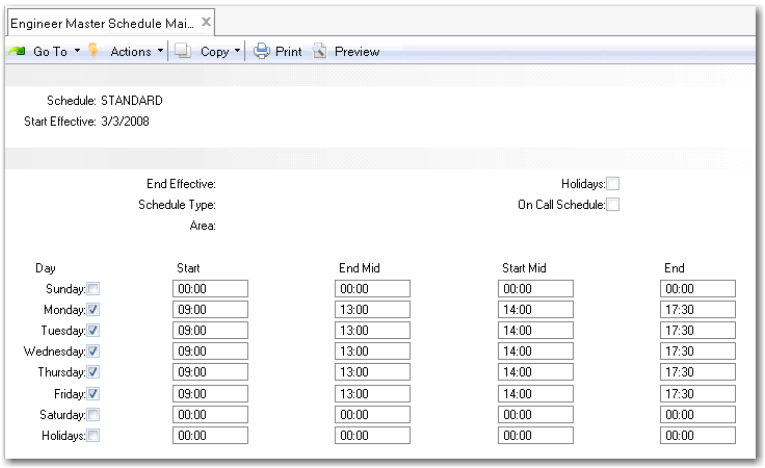
Zip. Enter the postal code or US zip code (maximum 10 characters) for the address.

Country. Specify the country of the address. This field is mandatory.

Defining a Master Schedule

Set up service schedules in Engineer Master Schedule Maintenance (11.13.15.1). You can define a schedule to use as a company-wide basic schedule. You can also use master schedules as the basis for engineer detail schedules and on-call schedules.

Fig. 17.9
Engineer Master Schedule Maintenance (11.13.15.1)



Schedule. Enter the eight-character code that identifies this schedule.

Start Effective and End Effective. When setting up service schedules, you can fill in a start and end effective date. When you specify a schedule, the system uses it only if the system date is within the effective period. If these fields are blank, the schedule is always effective. To set up a schedule for use in On-Call Maintenance, the effective dates must be blank.

Schedule Type. An optional field for grouping schedules. Define schedule type codes in Generalized Codes Maintenance for the field esh_sched_type.

Area. Enter the geographic region to which this schedule applies. Define areas in Area Maintenance. You also associate areas with end users and engineers. This field is for reference only.

Holidays. Indicate whether this schedule applies to holidays. The system uses this field with the Holidays field on the scheduled days and times to determine what hours, if any, an engineer works on a holiday.

- If this Holiday field is Yes, an engineer is available to work on a holiday. The system determines hours of availability by the day of the week on which the holiday falls. For example, if December 25 is a holiday and it falls on a Thursday, the engineer works the hours normally scheduled for Thursdays.
- If this field is No and the lower Holidays field is also No, engineers are not available to work on a holiday.
- If this field is No and the lower Holidays field is Yes, an engineer is available to work on a holiday. The hours of availability come from the hours you associate with the lower Holidays field, regardless of the day of the week of the holiday.
- If both fields are Yes, the first Holidays field takes precedence in determining the hours of availability.

Scheduling for holidays has an effect only if you set up holidays with Area Holiday Maintenance (11.15.9) or Engineer Absence Maintenance (11.13.15.17). If you define holidays for the engineer, the system uses them first, then holidays for the area.

Typically, you create on-call schedules to cover holidays, because most employees do not work during them.

On Call Schedule. This field is display only. When you assign engineers to a schedule using On-Call Maintenance (11.13.9), the system sets this field to Yes.

After you enter information in these fields, indicate the days the schedule covers and the work hours for engineers assigned to the schedule. You can also use the End Mid and Start Mid columns to define a single break in the engineer's hours for the day, such as for a lunch period. The time between the End Mid and Start Mid columns is considered as non-working time. If no time is entered for a break, the system checks the Lunch Duration field in Engineer Schedule Control (11.13.15.24). If the Lunch Duration field contains a value, the system deducts this value from the total daily time available for scheduling calls. If the Lunch Duration field is also blank, the engineer will be available for the entire working day.

Assign a schedule to an engineer in Engineer Maintenance (11.13.1).

See "Engineer Maintenance" on page 482.

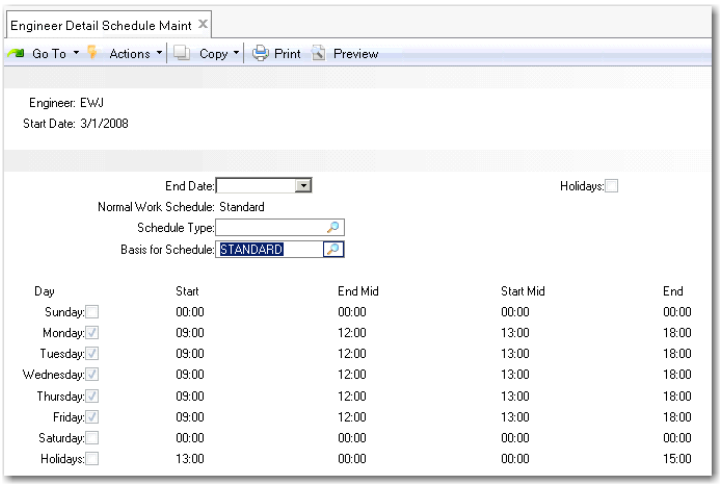
Engineer Detail Schedules

The engineer scheduling sequence in Call Maintenance uses more than master schedules when calculating engineer availability. It also considers the service coverage of the service type, on-call schedules, and the engineer's work schedule.

Create individual schedules for an engineer with Engineer Detail Schedule Maintenance (11.13.15.4), illustrated in Figure 17.10. These schedules are useful for contract or part-time personnel or engineers whose schedules do not follow the typical master schedule. Set up alternate schedules for specific periods of time by specifying a start and end effective date.

You can also use an engineer detail schedule to indicate that an engineer is unavailable for a period of time.

Fig. 17.10
Engineer Detail Schedule Maintenance (11.13.15.4)



This function is similar to setting up a master schedule.

Engineer. Enter the engineer code for the employee. The schedule applies to this engineer only.

Start Date/End Date. When setting up service schedules, you can fill in a start and end effective date. The system uses this schedule only if the system date is within the effective period. If these fields are blank, the schedule is always effective.

Normal Work Schedule. The schedule assigned to the engineer in Engineer Maintenance displays in this field. If you leave Basis for Schedule blank, the days and hours from the normal work schedule display as the starting point for creating the detail schedule.

Schedule Type. An optional field for grouping schedules. Define schedule type codes in Generalized Codes Maintenance for the field egd_sched_type.

Basis for Schedule. When you create the detail schedule, you can specify a schedule other than the normal work schedule as the starting point for creating the detail schedule. If you enter a schedule here, its days and hours display in the detail schedule fields.

Holidays. This field displays the value for the Holiday field of the schedule you are using as a basis for this detail schedule.

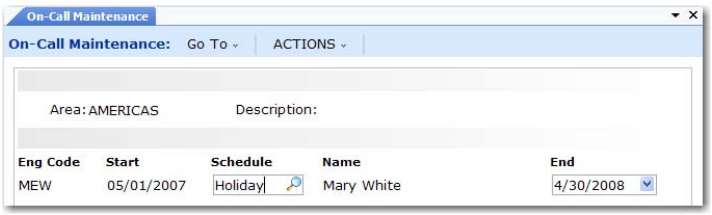
On-Call Scheduling

To provide service coverage for the periods that fall outside your normal schedule, follow these steps:

1. For the hours that your standard schedule does not cover, create schedules with Master Schedule Maintenance. If you have different engineers covering nights, weekends, or holidays, create more than one schedule. To use master schedules as on-call schedules, set them up without effective dates.
2. Use On-Call Maintenance to specify engineers available to take calls during these time periods. When you link an engineer to a schedule in On-Call Maintenance, the system sets On Call to Yes for the schedule.
3. When you create a call with a next status date and time outside your normal schedule, only engineers that you designated as on call receive availability points.

Figure 17.11 illustrates On-Call Maintenance (11.13.9).

Fig. 17.11
On-Call Maintenance (11.13.9)



Area and Description. The on-call schedule applies to a particular area, which you define in Area Maintenance. When you specify an area, its description displays beside it. When you take a call after normal business hours for an end user in this area, the system uses the on-call schedule for the area to determine who can respond to the call.

Eng Code and Name. Enter the code identifying an engineer. The employee name for the engineer displays in the Name field.

Start and End. If the engineer is on call only for a specific period of time, enter the beginning and end points defining this period. Leaving these fields blank puts an engineer on permanent on-call status.

Schedule. Enter the name of a schedule that specifies the on-call days and hours. Define these schedules in Engineer Master Schedule Maintenance without a start or end effective date. This prevents confusion in matching the engineer on-call periods with the on-call schedule.

On-Call Hours

Engineer scheduling determines when to schedule a call based on the call's next status date and time. It searches for a schedule that covers this date and time. If detailed, regular, and on-call schedules exist, all engineers with these schedules display in the Availability window.

To distinguish engineers available for on-call scheduling from others, the system displays two plus signs (++) rather than the number of hours or calls.

Defining Scheduling Rules

Engineer scheduling executes as part of Call Maintenance when you set up all required information. To use engineer scheduling in normal call processing, set Schedule New Calls to Yes in Call Management Control. This, in turn, sets the default in the Schedule field of Call Maintenance. Schedule must be Yes in Call Maintenance for scheduling to execute.

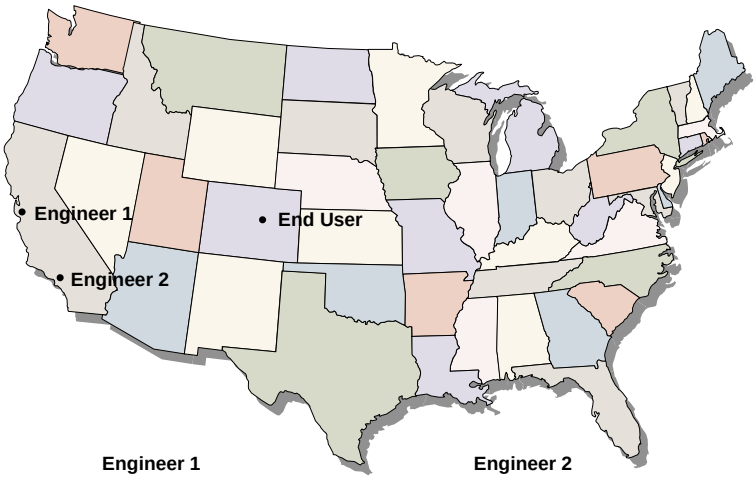
The system ranks engineers to assign to a call based on criteria that you design in a control program. You can accept the engineer with the highest rank, or choose another, according to your business practices.

Engineer scheduling considers the following factors:

- *Area.* Is the engineer located in the end user's area?
- *Primary or Secondary Engineer.* Does the engineer have a special relationship with this end user?
- *Availability.* Is the engineer available during the time the call should be scheduled and how many hours or calls does the engineer have available?
- *Skill.* Do the engineer's skills match those required for the reported problem?
- *Time Zone (if Multiple Time Zones is active).* Is the engineer located in the end user's time zone, or within a defined range of time zones?

You give these criteria weighted values. Using these values, the system calculates a point total for each engineer for the call. The system then prioritizes the engineers by total points for assignment to the call.

Fig. 17.12
Engineer Scheduling



Engineer 1		Engineer 2	
Area	5	Area	5
Relationship	10	Relationship	5
Availability	10	Availability	15
Skill	15	Skill	10
Time Zone	10	Time Zone	10
Total	50	*Total*	45

The system calculates engineer availability whenever it schedules calls. If you have many engineers or complex schedules, these calculations can impact performance. To increase the calculation's efficiency, specify in the control program which engineers to consider during scheduling.

You can limit engineers to consider for scheduling to:

- Those with available hours or calls on the call day.
- Those with a skill that matches the call problem.
- Those who reside in the same area as the call's end user.
- If Multiple Time Zones is active, you can also limit scheduling to engineers with the same time zone as the call's end user, or who have a time zone within a matching offset range. See Chapter 4, "Multiple Time Zones," for details regarding MTZ.

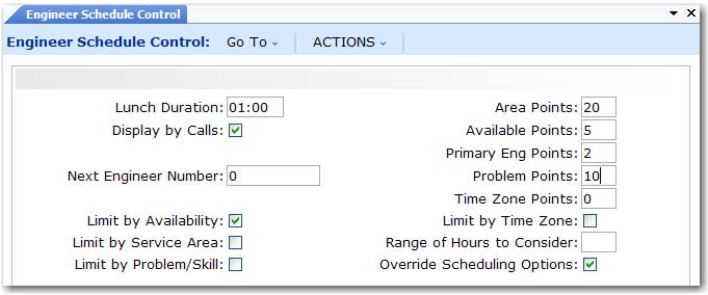
Consider how to use these options relative to your business requirements. If you have many engineers, reduce the number that the system considers at one time by applying control program limits. To occasionally alter the policy expressed in the control program, you can let users update the limiting rules in Call Maintenance before scheduling occurs.

Limiting scheduling by service area or time zone also affects End User Data Maintenance. The system checks these fields when it assigns an engineer to an end user as the primary or secondary engineer. If either field is Yes, a warning displays if the engineer's area or time zone area does not match the end user's.

Engineer Point Calculation

Engineer Schedule Control (11.13.15.24) contains settings that form the basis for rules-based scheduling, as well as determining other aspects of the scheduling process.

Fig. 17.13
Engineer Schedule Control (11.13.15.24)



The system subtracts the value you specify in Lunch Duration from the number of hours you scheduled the engineer to work. Display by Calls determines whether the system calculates availability in terms of hours or calls.

See “Viewing Engineer Availability by Hour or Call” on page 495 for details.

Engineer ranking depends on the priorities expressed by the values you define in the control program. Changing these values affects the engineer point calculation and results in different recommendations from the system.

Area Points. If the area you assign to the engineer with Engineer Maintenance (11.13.1) matches the call’s area, which defaults from the end user, the system adds these points to the calculation.

Available Points. The system determines engineer availability by the status you assign in Engineer Maintenance. If this status indicates availability, the system multiplies the availability point value by either the number of hours an engineer is available or the number of calls the engineer can take.

Primary Eng Points. If the engineer is the end user’s primary engineer, the system doubles these points and adds them to the calculation. The system gives the secondary engineer these points without doubling them.

Problem Points. If the code in the Prob/Skill field of Call Maintenance exists in the engineer’s skill table (set up with 11.13.5), the system adds these points to the calculation.

Time Zone Points. The system uses this field with Range of Hours to Consider. If the engineer’s time zone matches or is within the specified range relative to the end user’s time zone, the system adds these points to the calculation. You can update this field only when Multiple Time Zones is active.

The system uses the following formula to calculate points for an engineer:

*Area Points + (Available Points * available hours) + Available Points +*
*(Y * Primary Eng Points) + Problem Points + Time Zone Points*

In the formula, Y is 2 for the end user’s primary engineer, 1 for the secondary engineer, and 0 for all other engineers.

The formula weights availability heavily. Also, the end user’s primary engineer gets twice the points from the control program.

Note The maximum number of points the system displays for an engineer in Call Maintenance is 999. If the scheduling sequence determines a greater value, only 999 displays. Consider this limitation when you assign control program weighting values. If your engineers can take 100 calls a day and you give them 10 points for being available, an engineer without any assigned calls starts with 1010 available points, already beyond the maximum display value.

Viewing Engineer Availability by Hour or Call

You can view availability in two ways:

- Based on hours
- Based on call volume (calls per day)

Display by Calls in Engineer Schedule Control determines whether the system calculates availability by hours or by calls assigned per day. Depending on how you set up the control program, the scheduling pop-up window in Call Maintenance shows the number of calls the system can still assign an engineer or the number of hours available.

In both views, negative numbers are possible. If you assign an engineer more calls than you allow in the Calls per Day field or more hours than you allow on the assigned schedule, availability displays a negative number.

Note Use the Engineer Availability Inquiry (11.13.15.11) to review the same information that displays in Call Maintenance.

Calculating Availability by Calls

You can base availability on the number of calls that the system can still assign to an engineer during a day rather than the available hours that remain. Use this option when calls do not vary much in duration.

Note Use Display by Calls if most calls take the same amount of time to complete.

If you set Display by Calls to Yes, specify in Engineer Maintenance (11.13.1) the number of calls per day the system can assign an engineer. The system calculates availability by subtracting the number of calls already scheduled from the value of Calls per Day.

Table 17.1 shows how the system calculates points in engineer scheduling based on calls. The standard formula for calculating availability points applies, but calls are used instead of hours.

Table 17.1
Sample Point Determination Using Calls

Engineer Calls per Day	Calls Assigned	Available Today	Avail Points	Value Used in Calculation
10	0	10	10	(10 * 10) + 10 = 110
10	8	2	10	(2 * 10) + 10 = 30

In this example, the system can assign the first engineer 10 calls, although it currently has assigned none. The weighting value in the control program is 10, resulting in an availability of 110.

The second engineer also has a maximum 10 calls per day, but the system has currently assigned 8 calls. Engineer scheduling multiplies the 2 remaining calls by the value in the control program, to arrive at a point calculation of 30. If other factors are the same, the system recommends the first engineer over the second for the next call.

Calculating Availability by Hours

If Display by Calls is No, the system calculates engineer availability in hours. Call scheduling calculates an engineer's work load by examining the estimated hours for calls already assigned to the engineer.

You can affect an engineer's work load in hours in two ways:

- Record an estimated time for an engineer in the Call Engineer Schedule Maintenance pop-up that displays in Call Maintenance when you enable engineer scheduling. The estimated time defaults from the Travel and Estimated Time pop-up. These estimated times default either from Call Default Maintenance, if you have defined defaults, or Call Management Control for the work code. See "Availability Frame" on page 296.
- The engineer reviews the call and records an estimated time in Engineer Assignment Maintenance (11.13.15.8). This function is almost identical to the pop-up window in Call Maintenance.

Important Use Engineer Assignment Maintenance for scheduling, not as an engineer time-keeping device. While an engineer can record time spent on a call, this has no effect on call scheduling. Call scheduling considers only future dates and times.

Based on the number of hours the engineer is scheduled to work, the system determines how many hours remain to be scheduled.

Table 17.2 shows how the system calculates availability based on hours unconsumed. The first engineer has 8 available hours. The control program setting is 10 points for each available hour, so the resulting value is 90. The second engineer has 7 hours consumed with 1 remaining available hour. The resulting value for the second engineer is 20.

Table 17.2
Sample Point Determination (Hours)

Engineer Hours per Day	Hours Used	Available Hours	Avail Points in Control Program	Value Used in Calculation
8	0	8	10	(8 * 10) + 10 = 90
8	7	1	10	(1 * 10) + 10 = 20

Travel Time

Travel time is for reference only and does not affect the estimated hours available for an engineer. To consider travel time in engineer availability, include this time in the hours you estimate for the call.

You can specify typical travel time based on the end user. If you specify this value, it displays by default in the Travel Time field of the Travel and Estimated Time frame of Call Maintenance (11.1.1.1).

Use travel time as a reference for estimating the total time for a call. The total call time consists of travel time plus the time for solving the problem. To adjust for travel time, you need to override the default call duration since the system does not automatically add it to the duration. In many situations, the total time can vary—for example, depending on alternate routes to the end user's site.

Calculating Availability for Holidays

The system considers holidays during engineer scheduling in Call Maintenance. As you create schedules in Engineer Master Schedule Maintenance, you can mark them as covering or not covering holidays. Or you can create on-call schedules with On-Call Maintenance instead of covering holidays on standard schedules. Normally, fewer engineers are available on a holiday.

During engineer scheduling, the system examines the call's next status date and time. Then it determines if this date is a holiday for the call's area, from the area associated with the end user. Then it searches for a schedule with Holiday set to Yes. First, it searches engineer detail schedules, then master schedules, and finally an on-call schedule that matches the call area.

The display in the engineer scheduling pop-up window in Call Maintenance is affected by which schedules exist.

- If a schedule covering the holiday is not found, engineers display without availability, indicated by an asterisk (*).
- If standard coverage exists, the engineers covering the holiday show hours or calls available.
- If an on-call schedule exists that covers holidays, engineers available on the holiday display with a ++.

The scheduling sequence also takes into account an engineer's personal holidays defined with Engineer Holiday Maintenance. If the day is a personal holiday, the engineer displays as unavailable.

Note When you assign an engineer to an on-call schedule, the system assumes that the engineer is available during the specified time period even if engineer or area holidays exist. A warning displays in On-Call Maintenance indicating that the on-call schedule overrides holidays.

Engineer Transactions

The system creates transactions to keep track of engineer scheduling information. It creates an engineer transaction record when an engineer is assigned to a call in Call Maintenance, regardless of whether or not you are using engineer scheduling. The main impact of these transactions is in calculating engineer availability when Display by Calls is No.

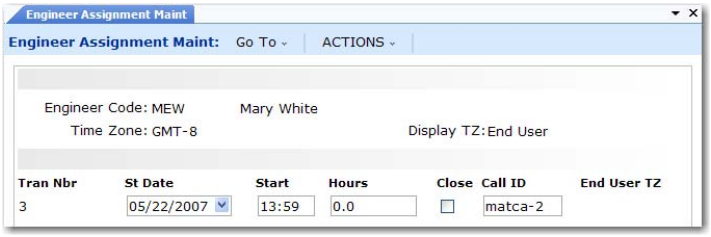
Engineer Assignment Maintenance

You can create and maintain engineer transactions in Call Maintenance when Schedule is Yes on the header. You can also edit them in Engineer Assignment Maintenance (11.13.15.8). In this program, engineers can access calls quickly and simply to update details for the call transaction.

You can close the call from this program when you finish work for the call if the call has only a single transaction. Close calls with multiple transactions in Call Activity Recording, Call Maintenance, or the Call Queue Manager. To close a call and all its lines, select the Close check box.

Important Engineer Assignment Maintenance is *not* for engineers to record time spent on a call. It is a planning function that helps engineer scheduling determine the best candidate for taking a call on a future day and time.

Fig. 17.14
Engineer Assignment Maintenance (11.13.15.8)



Normally, you assign engineers to a call in Call Maintenance. However, modifications you make in Engineer Assignment Maintenance can also affect call assignment in the following ways:

- If no engineer is assigned to a call and a transaction is created, the system assigns the transaction's engineer to the call. A message displays indicating this change.
- If you delete all transactions for the engineer assigned to a call and no other engineers have transactions for the call, the system sets the Assigned field on the call to blank.
- If you delete all transactions for the engineer assigned to a call and another engineer has transactions for the call, the system assigns that engineer. A message displays indicating this change.

If only one transaction is associated with a call, the system reflects changes you make to the transaction in Engineer Assignment Maintenance in Call Maintenance. When saving the transaction, the system prompts you to allow the transaction's Start Date and Start Time to update the call's Next Status Date and Time. The transaction's hours update the call's Duration field. You can update the Travel Time field if required.

A call can have more than one transaction. This occurs when the call resolution involves more than one engineer or the same engineer makes several visits to a site. The system enters Start Date, Start Time, and Hours per transaction.

Note If MTZ is active, select a display time zone before accessing call scheduling transactions. The system replaces the call area field with the end user's time zone. See Chapter 4, "Multiple Time Zones," for details on MTZ.

Rebuild Engineer Schedules

Engineer schedules link calls, engineers, and end users. Occasionally, these records can become unsynchronized. Use Rebuild Engineer Schedules (11.25.6) to ensure that calls and schedules have valid values for various fields.

To execute the utility, specify a default status. The system uses this for engineer records with a blank or invalid status. You can also specify a default on-call schedule. The system assigns this schedule to on-call records that have blank master schedules.

The utility also performs the following actions:

- Resets On Call to No if a master schedule is marked as an on-call schedule but has no associated on-call engineers.
- Deletes detail schedules for engineers who no longer exist.
- Closes calls for end users who do not exist.
- Automatically creates a visit or scheduling transaction if the Auto Create Visit field is set to Yes on Engineer Schedule Control (11.13.15.24).
- Verifies that an engineer scheduling transaction record exists for the engineer assigned to a call.
- If a call has no assigned engineer but engineer transaction records exist, assigns the first engineer as the call engineer.
- Deletes engineer transactions that refer to nonexistent calls or engineers.

Note Most of these situations do not occur in normal usage of the system.

The utility generates a report documenting records it changed, added, or deleted.

Run Rebuild Engineer Schedules as part of general maintenance and when you upgrade to a new release.

Scheduling Example

The following example illustrates how engineer scheduling works. In this example, Multiple Time Zones is not active.

A company sets up the following values in Engineer Schedule Control:

Area Points	20
Available Points	2
Primary Eng Points	10
Problem Points	5

Two engineers exist in the western region: Bill Smith, who has electrical skills, and Sam Jones, whose skill is preventive maintenance.

Note An engineer can have multiple skills, but in this example each engineer has only one.

An end user in this region reports an electrical problem. The system uses the following formula to calculate points:

*Area + [(Availability * Hours) + Availability] + (2 * Primary) + Problem*

How does the system apply the formula to engineers Bill Smith and Sam Jones?

- Both engineers are in the end user’s area, so they each receive 20 points.

- Each engineer receives two points for working that day. Bill Smith is available eight hours, while Sam Jones is available four. The system multiplies these hours by two and adds them to the total, giving Bill 16 more points and Sam 8.
- Sam Jones is the primary engineer for the end user, so he receives 10 points multiplied by two. Bill Smith receives none.
- Bill Smith's skills match the call's problem, so he receives five points. Sam receives no points because his skills do not match the problem.

The expanded formula looks like this for each engineer:

Bill Smith:
*Area +[(Avail * Hours) + Avail] + (0 * Primary) + Prob*
*20 + [(2 * 8) + 2] + (0 * 10) + 5 = 43*

Sam Jones:
*Area + [(Avail * Hours) + Avail] + (2 * Primary) + Prob*
*20 + [(2 * 4) + 2] + (2 * 10) + 0 = 50*

Sam Jones has top priority for this call because he has 50 total points to Bill Smith's 43.

Changing Weighting Values

The engineer point calculation depends on the priorities expressed by the weighting values you define to indicate your company's needs. Changing these values in the control program affects the engineer point calculation and results in different recommendations from the system.

Area Points	20
Available Points	7
Primary Eng Points	10
Problem Points	5

The change in this example places a higher priority on the engineer's availability and de-emphasizes the other criteria. Now the final point calculation looks like this:

Bill Smith:
*Area + [(Avail * Hours) + Avail] + (0 * Primary) + Prob*
*20 + [(7 * 8) + 7] + (0 * 10) + 5 = 88*

Sam Jones:
*Area + [(Avail * Hours) + Avail] + (2 * Primary) + Prob*
*20 + [(7 * 4)] + 7 + (2 * 10) + 0 = 75*

Using this set of weighting values, Bill Smith is the engineer to assign to the call.

Consider this formula carefully when establishing weighting values in Engineer Schedule Control. Pay particular attention to available hours and the primary engineer points as these become *multiples* of the weighted value in the engineer point calculation. Changes to them easily outweigh the impact of other criteria.

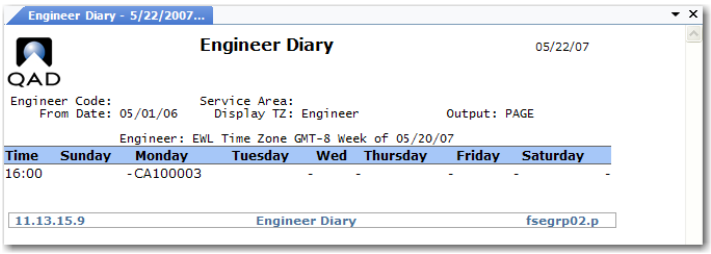
Scheduling Reports

Several reports give different views of scheduling information.

Engineer Diary

The Engineer Diary (11.13.15.9) displays the transactions created for engineers in Call Maintenance or in Engineer Assignment Maintenance. This report provides an engineer with an overview of the week's call assignments.

Fig. 17.15
Engineer Diary (11.13.15.9)



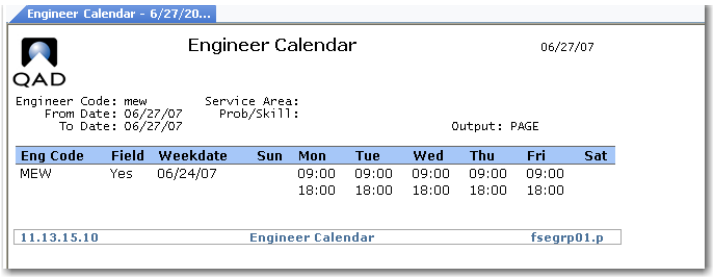
When Multiple Time Zones is active, you must select a time zone for display.

See "Time Zones and Service Contracts" on page 115 for details.

Engineer Calendar

Engineer Calendar (11.13.15.10) displays the hours an engineer is scheduled for work during a week regardless of call assignment. If you maintain multiple schedules, including engineers on call and those with custom schedules, use this report to view who is working when.

Fig. 17.16
Engineer Calendar (11.13.15.10)



The pound sign (#) displays next to scheduled times that occur on holidays. If a day's only schedule is an on-call schedule, a plus sign (+) follows the scheduled times.

When Multiple Time Zones is active, the system interprets scheduled times as relative to the engineer or a call's end user, depending on the setting of Field Engineer for the engineer. This setting displays in the column labeled Field.

Note Because on-call schedules are set up by area, only on-call schedules that match the area report criteria display. If Service Area is blank, the system uses the engineer's area to find an applicable on-call schedule. If an engineer is on call for more than one area, the other schedule information does not appear on this report.

Engineer Availability Inquiry

Use Engineer Availability Inquiry (11.13.15.11) to view information similar to that in the Engineer Availability pop-up in Call Maintenance. In Call Maintenance, the system considers five factors to evaluate availability:

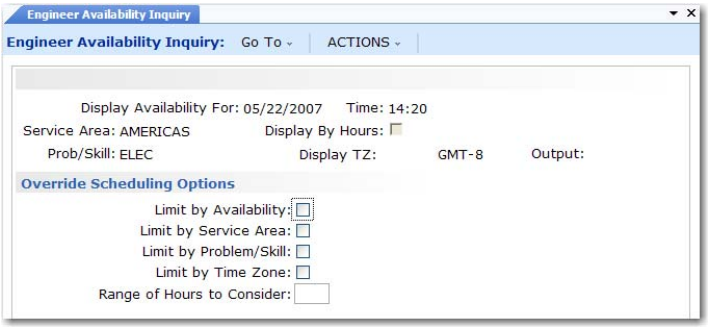
- Engineer skill matching the call problem
- Availability on the call's next event date and time
- Engineer area matching the call area
- Engineer being the primary or secondary engineer assigned to the call's end user
- Engineer time zone matching the defined range around the end user time zone, when MTZ is active

You must supply the same call information the system uses to calculate availability: area, date and time, problem, and time zone. The only factor the system does not consider in the simulation is the points awarded for the primary or secondary engineer, since this information is specific to an end user.

Like Call Maintenance, this inquiry considers the scheduling limits you define in Engineer Schedule Control. If Override Scheduling Options is Yes in the control program, the same pop-up displays as in Call Maintenance. Here you can limit the set of engineers to consider. Otherwise, the system applies limiting factors that you defined in Engineer Schedule Control.

Note When MTZ is active, additional scheduling options display.

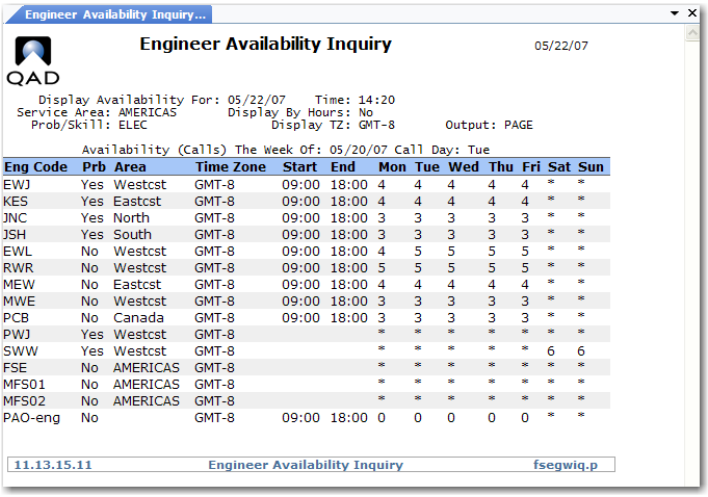
Fig. 17.17
Engineer Availability Inquiry (11.13.15.11)



Important If Limit by Service Area is Yes and you do not specify an area, the system considers only engineers without a defined area. If Limit by Problem/Skill is Yes and you do not specify a problem or skill code, no engineers display.

The report output is identical to the output in the Engineer Availability scrolling window in Call Maintenance, except that the report does not show point totals.

Fig. 17.18
Engineer Availability Inquiry (11.13.15.11)



Engineer Availability Inquiry...

QAD

Engineer Availability Inquiry 05/22/07

Display Availability For: 05/22/07 Time: 14:20
Service Area: AMERICAS Display By Hours: No
Prob/Skill: ELEC Display TZ: GMT-8 Output: PAGE

Availability (Calls) The Week Of: 05/20/07 Call Day: Tue

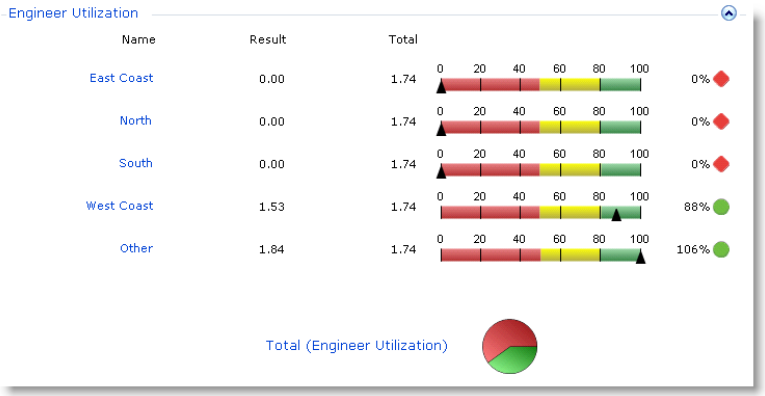
Eng Code	Prb	Area	Time Zone	Start	End	Mon	Tue	Wed	Thu	Fri	Sat	Sun
EWJ	Yes	Westcst	GMT-8	09:00	18:00	4	4	4	4	4	*	*
KES	Yes	Eastcst	GMT-8	09:00	18:00	4	4	4	4	4	*	*
JNC	Yes	North	GMT-8	09:00	18:00	3	3	3	3	3	*	*
JSH	Yes	South	GMT-8	09:00	18:00	3	3	3	3	3	*	*
EWL	No	Westcst	GMT-8	09:00	18:00	4	5	5	5	5	*	*
RWR	No	Westcst	GMT-8	09:00	18:00	5	5	5	5	5	*	*
MEW	No	Eastcst	GMT-8	09:00	18:00	4	4	4	4	4	*	*
MWE	No	Westcst	GMT-8	09:00	18:00	3	3	3	3	3	*	*
PCB	No	Canada	GMT-8	09:00	18:00	3	3	3	3	3	*	*
PWJ	Yes	Westcst	GMT-8			*	*	*	*	*	*	*
SWW	Yes	Westcst	GMT-8			*	*	*	*	*	6	6
FSE	No	AMERICAS	GMT-8			*	*	*	*	*	*	*
MFS01	No	AMERICAS	GMT-8			*	*	*	*	*	*	*
MFS02	No	AMERICAS	GMT-8			*	*	*	*	*	*	*
PAO-eng	No		GMT-8	09:00	18:00	0	0	0	0	0	*	*

11.13.15.11 Engineer Availability Inquiry fsegwiq.p

Engineer Utilization Operational Metric

Use the Engineer Utilization operational metric on the Service and Support Operational Metrics page in the Metrics folder to view a snapshot of the average engineer utilization percentage among engineers operating in a particular service area.

Fig. 17.19
Engineer Utilization Operational Metric



The average utilization for a service area equals the total engineer utilization for the service area divided by the number of engineers in that service area.

The total equals the total engineer utilization across all service areas divided by the total number of engineers across all service areas.

Click a service area to view a list of calls for that particular service area.

For details on creating or modifying operational metrics refer to *Administration Guide: QAD .NET User Interface*.

Chapter 18

Area Maintenance

This chapter describes the functions related to service areas in the Service/Support Management module.

Overview

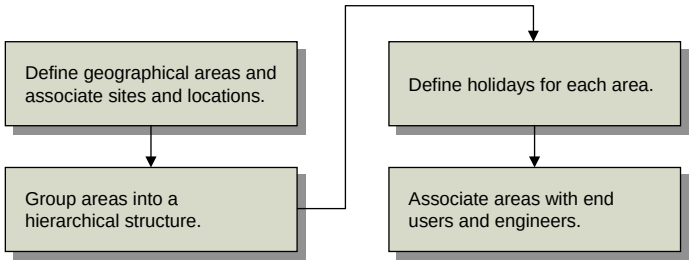
The activity of service organizations can be divided in a number of different ways:

- Geographically by physical location
- By product line or item group
- By type of service, such as telephone or on-site

When geographical regions are important, one or more service facilities may provide inventory to engineers. Use Area Maintenance and Area Structure Maintenance to record these relationships.

Figure 18.1 illustrates a typical workflow for setting up and using areas.

Fig. 18.1
Area Work Flow



You can set up each facility and area office with a code in Area Maintenance (11.15.1). Use Area Structure Maintenance (11.15.5) to group and organize these facilities and offices. For example, group Los Angeles, San Francisco, and Seattle service facilities under the Western Region, which you in turn group under the U.S. region. This grouping has no effect in service processing; it is for reference only.

If you are using engineer scheduling, define holidays for areas so that engineers are not scheduled on nonwork days in Area Holiday Maintenance (11.15.9).

Once you define areas, associate them with service engineers and end users. Engineer scheduling uses these relationships to assign engineers in the appropriate area to calls. To facilitate dispatching the appropriate engineer, you can sort calls by area in the Call Queue Manager.

Area Site/Location

The area site and location represent the source of repair parts for calls serviced in the area. This site can be the repair center, or the place where that area’s service organization normally gets its inventory. You can then use three or four areas relating to a particular site for controlling remote inventory.

Area site functionality lets you manage a variety of business scenarios related to site, location, work center, area, engineer scheduling and supply, and inventory control for remote locations.

The site and location for an area provide inventory issue defaults in Call Activity Recording and Material Order Maintenance if you do not define a site and location for an engineer.

You can use engineer and area sites and locations in combinations. For example, you can associate a different location with each engineer and leave the engineer Site field blank. When the engineer records activity for a call, the site for inventory issues defaults from the area but the location defaults from the one defined in Engineer Maintenance. Use this setup to track inventory issues to individual engineers.

In Default Site Maintenance, you can set up return sites based on area to manage defective or worn material returned as part of call processing. This setup is especially useful when you return items to a different site or location than you issue them from.

See “Default Sites and Locations” on page 74 for details.

Area Holidays

Since areas often represent geographic regions and holidays vary from region to region, you can specify holidays for each area. You can also associate on-call schedules with areas. Define holidays for each area so the scheduling function does not schedule engineers for those days, unless the schedule covers holidays.

See Chapter 17, “Engineers and Scheduling,” on page 479.

Area Functions

The three main area functions, in addition to reports and inquiries, are:

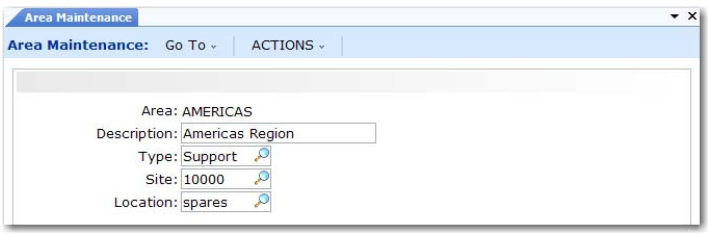
- Area Maintenance
- Area Structure Maintenance
- Area Holiday Maintenance

The following sections describe these functions.

Area Maintenance

Use Area Maintenance (11.15.1), illustrated in Figure 18.2, to create, maintain, and delete areas. Before deleting an area, the system verifies that the area is not referenced by an area structure, engineer, on-call schedule, holiday, call, default site, call quote, or end user.

Fig. 18.2
Area Maintenance (11.15.1)



Area. Enter an eight-character code to identify the area. You can use any format.

Description. Enter a brief description (maximum 24 characters) of the area. This description appears in the Areas lookup to help identify the area.

Type. Use this field to classify areas into types. You can use one type of area to designate work centers—for example, CENTER—and another to designate areas for assigning engineers—ENG—if these do not coincide. For example, a work center can handle repairs and returns for Western Canada, while you can assign engineers to a single city or district.

Note Set up area types with Generalized Codes Maintenance for the field reg_type.

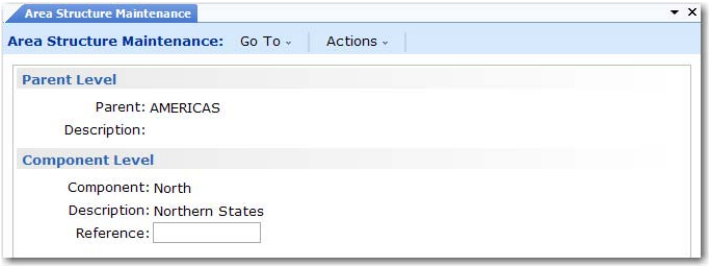
Site. Enter the site representing the place where you obtain repair parts for this area. If the engineer does not have a site and location defined, this site provides inventory issue defaults in Call Activity Recording and Material Order Maintenance.

Location. Beneath the site is location. Using standard location logic, you can maintain specific inventory locations for an area. If the engineer does not have a site and location defined, this location provides inventory issue defaults in Call Activity Recording and Material Order Maintenance.

Area Structure Maintenance

Define relationships between areas using Area Structure Maintenance (11.15.5), illustrated in Figure 18.3. In Area Structure Maintenance, you group subregions under a parent. This function is for reference only.

Fig. 18.3
Area Structure Maintenance (11.15.5)

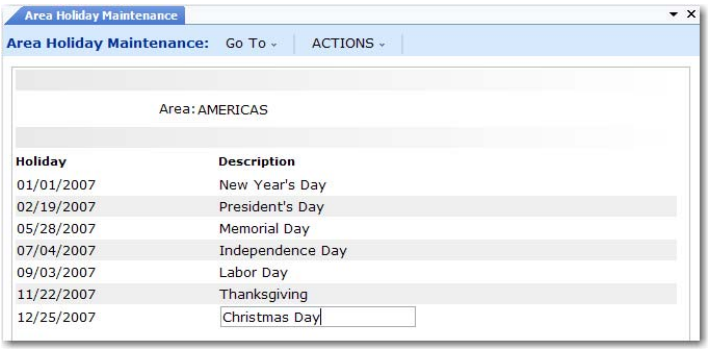


To use this function, first define areas in Area Maintenance.

Area Holiday Maintenance

Define holidays for an area using Area Holiday Maintenance (11.15.9), illustrated in Figure 18.4.

Fig. 18.4
Area Holiday Maintenance (11.15.9)



After you set up holidays, you can use the Holiday settings in Engineer Master Schedule Maintenance (11.13.15.1) to indicate whether or not the schedule covers them.

Chapter 19

Service Requests

This chapter describes Service Requests (SRs). Service Requests provide a mechanism for the service organization, customers, and field personnel to get product information back to the rest of the company and track user requests throughout the enterprise.

Business Considerations

In day-to-day business operations, calls come in on topics ranging from requests for marketing or sales material to questions regarding how your equipment works to complaints about equipment breakdown and failure. Service requests let you manage internal responses to problems relayed from field activities or calls.

Managing service requests can help you detect the causes of problems and prevent future support costs. You can consolidate several calls reporting the same failure into one service request. If a design or engineering change is necessary, you can create an Engineering Change Notice (ECN) to address the required changes.

Example A copier company runs an aggressive service organization that performs repairs and preventive maintenance for its own products and for competitors' products. After all, those who maintain a product often learn more about it than those who create it. In an industry that is driven by technological innovation, technology transfer can be a strategic ingredient.

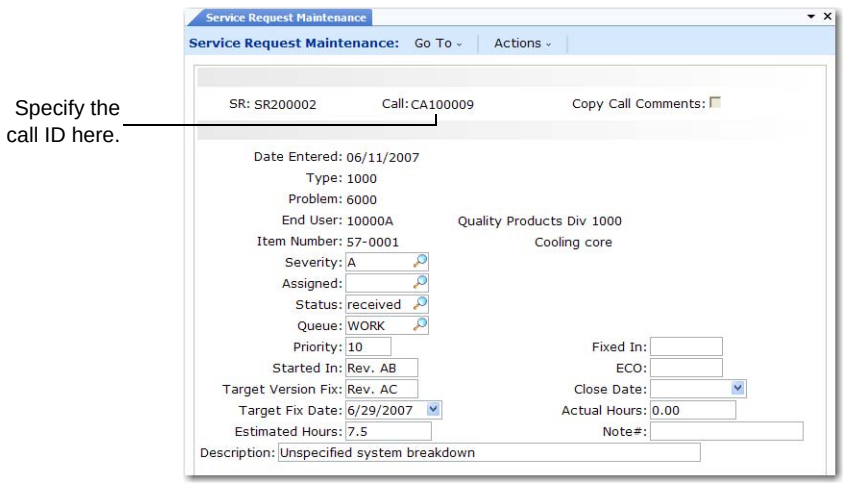
The service engineers gain insight into the design, use, and maintainability of the leading copiers. The company wants to leverage the experience and insights of the service engineers into improvements in their copier line. To accomplish this goal, the company implements a service request system where service engineers can feed suggestions back to manufacturing.

Linking Service Requests to Calls

The service request links call activity to your internal response for engineering problems: a service request is a response to a call. In this sense, only *one* call generates the SR. Each service request references only one call. Many calls can reference the same service request.

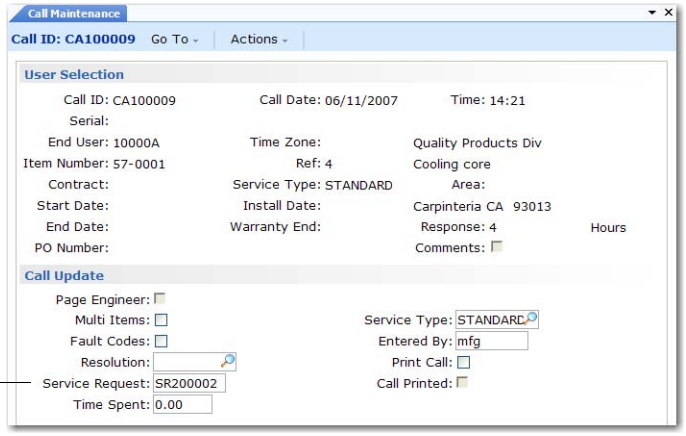
Example Call number CA198 details a pump failure. The problems recorded for the pump are significant enough to request a change in design and notify the engineering department that these failures are occurring. A service request is created that references CA198.

Fig. 19.1
Service Request Maintenance (11.1.15.1)



The system updates the Service Request field in the Call Update frame to reflect the SR created for this call. You can view this update in Call Maintenance.

Fig. 19.2
SR Displays in Call Maintenance



Later, you receive more calls concerning this same problem. You can select the appropriate SR number for the new calls as you receive them. In this way, you do not have to keep issuing new service requests for the same problem and can be sure engineering is already looking at the problem.

As a result, you assign only one call to a service request, but a service request can be assigned to many calls.

This process works best when there is a one-to-one correspondence between service requests and problems. Many calls with the *same problem* reference the service request addressing this problem. However, each problem requiring engineering changes should have its own service request.

Service Request Setup

Before using the SR functions, follow these steps:

1. Define SR Status Codes and specify open and close statuses in the control program.
2. Define SR queues.
3. Optionally define generalized codes.

SR Status Codes

Each service request has a status. These status codes are defined in SR Status Code Maintenance (11.1.15.7). The SR status is similar to the call status code, but must be managed manually.

You can define two statuses in SR Control (11.1.15.24).

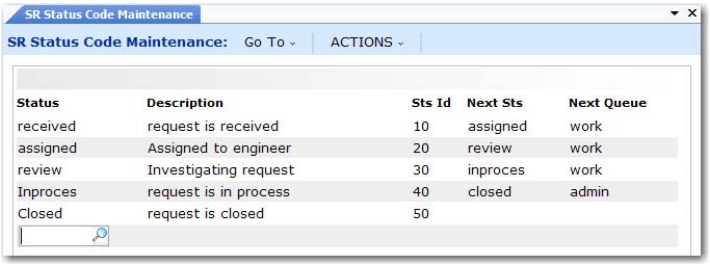
SR Open Status. This is the general status for an open SR and the initial status for any new SR.

SR Close Status. The closed status is the final status of an SR and indicates all service activity for it is finished. You can delete and archive closed SRs.

SR Status Code Maintenance

Figure 19.3 illustrates SR Status Code Maintenance, which is similar to Call Status Code Maintenance.

Fig. 19.3
SR Status Code Maintenance (11.1.15.7)



Status. Enter a unique name or code for this SR status. Making the name recognizable can help users identify its purpose more easily.

Description. Enter a brief description (maximum 24 characters) of this status. This description appears on the lookup you use to select statuses.

Sts ID. Use this field to indicate the order in which statuses occur in the life cycle of an SR. The lookup that displays SR statuses displays them in numeric order by the status ID, rather than alphabetically.

Next Status. Specify the status that normally follows this status in the SR life cycle. This field is for reference only.

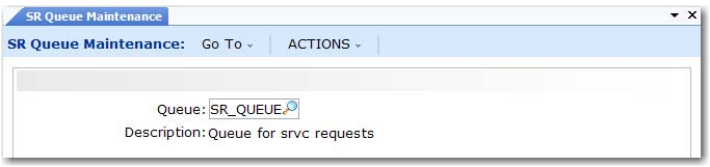
Next Queue. Specify the queue to which SRs with the next status should be routed. This field is for reference only.

SR Queues

You can place each service request in a queue when you create it. The queue is a user-defined holding area for managing and directing SRs.

Define SR queues in SR Queue Maintenance (11.1.15.10).

Fig. 19.4
SR Queue Maintenance (11.1.15.10)



When you define a queue, you specify a queue name and a description.

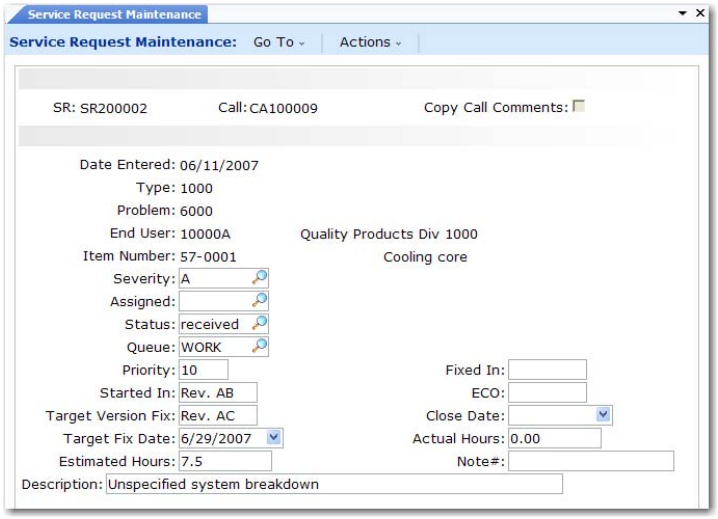
Queue. Enter an 8-character code identifying this queue.

Description. Enter a brief description (maximum 24 characters) of the queue to help users in understanding its purpose.

Service Request Maintenance

Create service requests with Service Request Maintenance (11.1.15.1), illustrated in Figure 19.5.

Fig. 19.5
Service Request Maintenance (11.1.15.1)



SR. When you create a new SR, you can leave this field blank to have the system supply a number based on Service Request Prefix and SR Number in Service Request Control.

Call. If a call initiates the creation of this service request, enter the call ID in this field. When you enter a call, a number of fields default from it, including End User, Item Number, and Description.

Copy Call Comments. When you specify a call, you can copy the call's comments into the SR as the submitter comments. These comments can provide a description of the problem the SR addresses.

Date Entered. The default is the system date. This field is for reference only and appears on some reports and inquiries. You can also use it to prioritize work.

Type. Specify a user-defined code that can group service requests by type. For example, you can use SR type to assign the SR to the appropriate engineer. Update this field here or from the Service Request Queue Manager. Set up values with Generalized Codes Maintenance for the field srr_type.

Problem. Specify a user-defined code describing the type of problem addressed by this SR. If you set up SR problem codes to match the engineer skills, you can easily assign appropriate engineers. Update this field here or from the Service Request Queue Manager. Set up values with Generalized Codes Maintenance for the field srr_problem.

End User. You must first define end users in End User Create and End User Data Maintenance. Enter the user reporting the problem addressed by this SR. End User defaults from the call if you specify one.

Item Number. Specify the product with a problem addressed by this SR. Validation depends on the setting of Items Must Exist in Service Management Control. If Yes, you must have defined the item with Item Master Maintenance. If No, you can enter any item number. Item defaults from the call if you specify one.

Severity. Specify a code indicating the user's perception of the severity of the problem reported on this service request. This field is for reference only and appears on selected reports and inquiries. Set up values with Generalized Codes Maintenance for the field srr_severity.

Assigned. Specify the individual assigned to address the problem reported on this SR. Define engineers first in Engineer Maintenance. You can view service requests by assigned engineer in the Service Request Queue Manager.

Status. Specify the position of this service request relative to the SR life cycle. Define status codes first with SR Status Code Maintenance. For a new SR, status defaults from the SR Open Status in Service Request Control. Update this field here or from the Service Request Queue Manager.

Queue. Specify the queue to which to assign the service request. Set up SR queues with SR Queue Maintenance.

Priority. Indicate how important this service request is. Lower numbers indicate higher priority. Update this field here or from the Service Request Queue Manager.

Started In. Enter an optional code that identifies the version of the product that this problem started in. This field is for reference only and appears on selected reports and inquiries. When servicing software, this code can identify the program revision or software release number that the problem was found in. In other industries, this code identifies the product version or drawing that has the problem.

Target Version Fix. Enter an optional code that identifies when or how the correction is to be issued. This field is for reference only and appears on selected reports and inquiries. For software corrections, this code can identify the patch number or software release number expected to include the fix for this problem. In other situations, this code identifies the engineering drawing or revision that includes the correction.

Target Fix Date. Enter the date when this service request is to be completed. This field is for reference only and appears on selected reports and inquiries. Usually, you estimate the number of hours the service request will take and then use this to arrive at a target fix date. This is the date that you promise the customer.

Note Compare target date and estimated hours with the close date and hours entered on the service request when evaluating service performance.

Estimated Hours. Enter the estimated number of hours it will take to complete this service request. This field is for reference only and appears on selected reports and inquiries.

Fixed In. Enter an optional code identifying when or how you issued the correction. This field is for reference only and appears on selected reports and inquiries. For software corrections, this code identifies the patch number or software release number that included the fix for this problem. In other situations, this code identifies the engineering drawing or revision that includes the correction.

ECO. Enter an optional code identifying the Engineer Change Order (ECO) or Engineer Change Notice (ECN) number associated with the correction for this service request. This field is for reference only and appears on selected reports and inquiries. Many organizations have a numbering schema for keeping track of changes such as ECO or ECN systems. You can use this field for tracking any other numbered document that is associated with the changes made to correct the problems reported on this service request.

Close Date. Enter the date this service request was closed by setting the status to the SR Close Status in Service Request Control. You can delete or archive closed service requests with Service Request Delete/Archive.

Actual Hours. Specify the number of hours it took to complete this service request. This field is for reference only and appears on selected reports and inquiries. You can compare this number to the estimated hours when evaluating service performance.

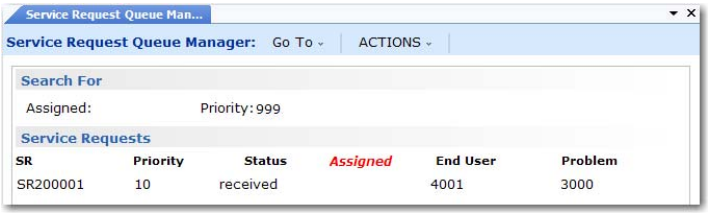
Note #. Enter an optional code or number referencing engineer notes pertinent to this service request.

Description. Enter a brief description of this service request. Defaults from the call if you specified one. You can include longer descriptions in the submitter comments.

Service Request Queue Manager

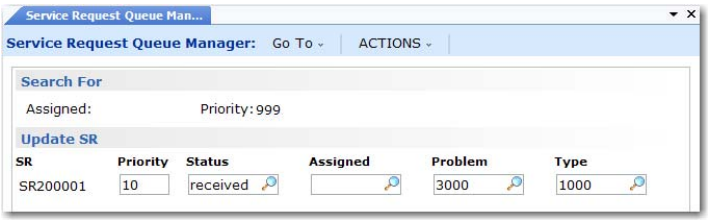
Use the Service Request Queue Manager (11.1.15.13) to view and manipulate service requests. You can sort SRs by the service engineer assigned to them or by priority.

Fig. 19.6
Service Request Queue Manager (11.1.15.13)



You can edit service requests from the queue manager. Select the line you want to edit and the Update SR frame, similar to the one in Figure 19.7, displays.

Fig. 19.7
Updating SRs in the Queue Manager



From this frame, you can change the SR priority, status, assigned engineer, problem code, and type. Managers can use this to re-prioritize SRs and assign them to appropriate engineers.

Service Request Delete/Archive

Use Service Request Delete/Archive (11.1.15.23) to delete and archive closed service requests from the system when you no longer need them.

Fig. 19.8
Service Request Delete/Archive (11.1.15.23)

Chapter 20

Material Orders

Use material orders (MOs) to manage inventory in a service environment. This chapter defines the types of MOs and their basic maintenance. Following this is a discussion of how MOs are shipped and the other functions you use in conjunction with shipping. Finally, this chapter describes the consumption of MOs in Call Activity Recording and returning items ordered on MOs.

Business Considerations

MOs provide a flexible mechanism for managing inventories in the service environment. With MOs, service personnel, whether in the field or repair center, can order repair parts for specific calls or to replenish their inventory. The MO can interact with call tracking, enabling you to track back orders and manage the relationship between service inventory and call closure.

Use MOs to:

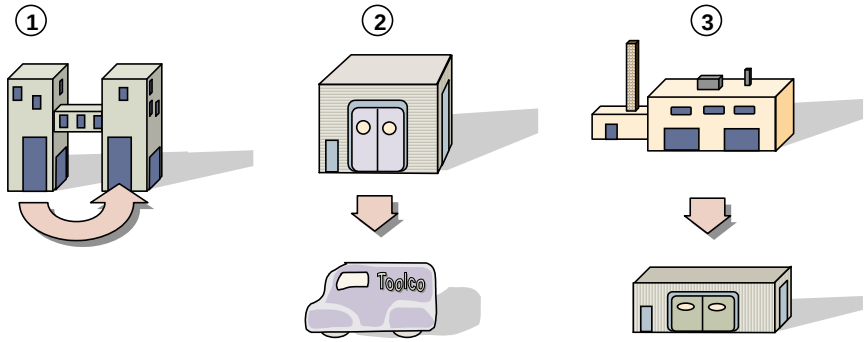
- Issue items that you do not track individually, similar to manufacturing floor stock. These are items that you typically issue in bulk, such as screws or washers, without any detailed usage tracking. This type of MO is an *expensed* MO.
- Manage inventory moving between a supply center and service locations. The supply center can be a central supply center or one dedicated to service activity. Locations are typically remote locations such as engineers in the field carrying truck stock, or a remote service center. You can also issue the items to a service location within a manufacturing site.

The MO process is not limited by geography. MOs can manage inventory moving between any kind of service entity, mobile or stationary, large or small. The following list indicates three scenarios managed with MOs:

1. Inventory moving between a warehouse and a service department located at the same site or to a service desk in the same building
2. Inventory moving between a home supply depot and a fleet of service trucks
3. Inventory moving between a central warehouse and a repair center or refurbishment shop

These scenarios are illustrated in Figure 20.1.

Fig. 20.1
MO Inventory Management



If the engineer works at a repair center and you issue items to the call directly from the repair center site, you may not need to use MOs.

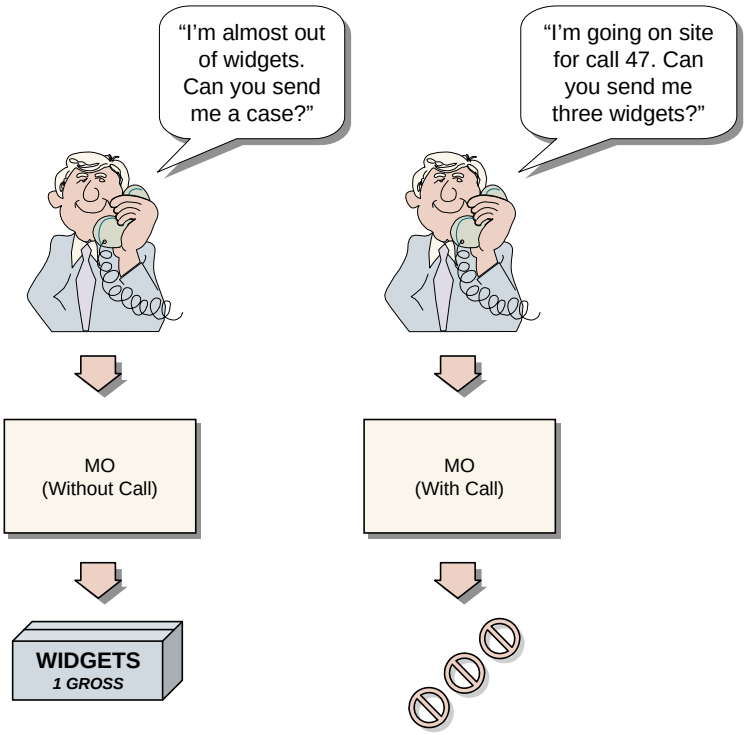
MOs are most useful when the engineer works remotely, such as out of a repair truck or van. In this case, you need an additional inventory transaction to move inventory from the site or location where repair parts are stocked to the engineer's site or location where you can issue and consume the inventory on the call.

MOs that transfer inventory are divided into two types:

- Items you order to replenish general service stock

- Items you order to meet the requirements of a particular call

Fig. 20.2
MO Tracks Inventory for a Call



Based on the structure of your supply chain and your supplier relationships, you might consider using Enterprise Material Transfer (EMT) for some MO items. EMT lets you automatically generate a purchase order from an MO.

See *User Guide: QAD Sales* for details on EMT.

Material Order Life Cycle

MOs have a life cycle similar to a standard sales order, except that no billing occurs. The internal movement of goods in MOs mirrors the standard shipping and distribution process. Whenever possible, standard programs are used. This facilitates learning MO functions for the experienced user, since they are based on familiar processes.

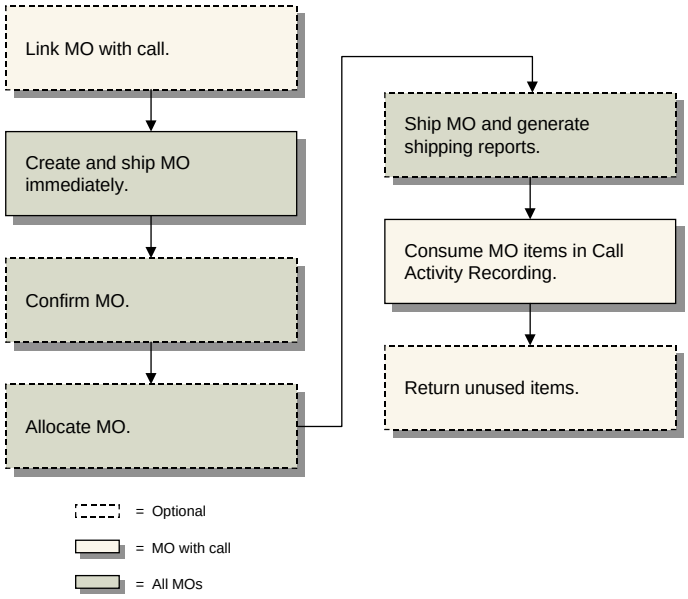
MOs transfer inventory from one site and location to another. They do not support the invoicing features of sales orders. Even though you can drop ship MO items to a customer location, invoicing and taxing only occur as part of the MO consumption in Call Activity Recording.

If you are using advanced shipping features including inventory movement codes and shipping groups, you can generate shipping documents for material orders when the addresses associated with the transfer-from and transfer-to sites or locations belong to a valid shipping group and the inventory movement codes associated with applicable shipping group allow transaction type ISS-TR.

If you are ordering EMT items on MOs, your supplier provides you with the items at the end of the EMT cycle. You then transfer them to the engineer's location using Material Order Shipments (11.11.6) just as you would with any other item.

See the Shipping chapter in *User Guide: QAD Sales* for details.

Fig. 20.3
Material Order Life Cycle



You create MOs in Material Order Maintenance and either link them with a call, for the engineer's inventory, or expense them. You can ship the ordered items when you create the MO if you allocate and confirm the order.

Otherwise, you can execute separate allocation, confirmation, and shipment functions using Material Order Confirmation (11.11.2), MO Manual Allocations (11.11.4), MO Automatic Allocations (11.11.5), and Material Order Shipments (11.11.6). These functions are similar to their counterparts in the Sales Orders/Invoices module. You can generate a packing list for an MO with Sales Order Packing List (7.9.13). A delivery note is also created as part of shipment.

When ATP Enforcement is Yes in Sales Order Control (7.1.24) and ATP Enforce in the item or item-site record is Warning or Error, the system determines whether inventory will be available to promise (ATP) on the due date. When you enter a confirmed order line and ATP is not sufficient, the system displays a frame with ATP information and options. When you use Material Order Confirmation, you can decide before confirming the MOs whether the system should change order-line due dates to meet ATP requirements.

See *User Guide: QAD Sales* for information on ATP.

If you are using EMT, MO line items that were marked as EMT type transhippment are allocated automatically to the MO when they are received from the supplier. You cannot use MO Manual Allocations or MO Automatic Allocations for these items.

The system deletes expensed MOs and MOs for the engineer's own consumption when the orders ship completely. You must consume MOs associated with a call for that call in Call Activity Recording or return unused inventory either in CAR or with MO Direct/Pending Returns (11.11.8). When you have consumed or deleted all items on the MO with a call, the system deletes the MO.

The system provides alternate ways of viewing information about open MOs, those that have shipped, those with items on back order, and those that have items marked as pending return. You can also track the status of EMT purchase orders that have been automatically generated from MOs.

MOs for EMT Items

The Enterprise Material Transfer (EMT) module lets you automatically translate sales orders and material orders into purchase orders. You use EDI ECommerce to exchange purchase orders, change documents, and shipping documents in electronic data interchange (EDI) format with your suppliers.

Much EMT processing is automatic. For example, when you change the order quantity of an MO item, the system automatically updates the purchase order and generates an EDI document to inform the supplier. When a supplier picks or ships the items, the supplier's system automatically generates a status change message indicating that you can no longer make changes to the MO line.

See *User Guide: QAD Sales* for more information on EMT.

EMT Shipment Type for MOs

Most of the features of EMT are the same regardless of whether you are using sales orders or material orders. However, there is one important difference. Sales orders for EMT items let you specify two shipment types:

- Transshipment. The supplier sends the items to you, and you then ship them to the final customer.
- Direct shipment. The supplier is authorized to send the items directly to the final customer.

EMT MOs offer only one shipping option: transshipment. The supplier ships the EMT items to the ordering site. It is then your responsibility to transfer them to their final destination.

Direct Allocations

Depending on your relationship with an EMT supplier, you can reserve inventory in the supplier's database to fill your MO. This is called *direct allocation*. For this feature to work, you must meet a number of conditions:

- You must be able to connect with the supplier's application database.
- Several master table records must be set up in both your database and your supplier's. These include site and supplier records to represent the connected database.
- The feature must be enabled in Sales Order Control.

To directly allocate an MO line item, change the default item site to the site established for the connected database. The system then creates a special, preliminary allocation in the supplier's application database. When you export the EMT purchase order and your supplier imports it as a confirmed sales order, the supplier's system automatically converts the preliminary allocation to a general allocation for the secondary sales order.

See *User Guide: QAD Sales* for information on setting up direct allocations.

MOs and Intrastat

The Intrastat module captures information needed to generate customs reports for shipments among members of the European Union. If you are using Intrastat, data is generated for the shipment of material orders similarly to the way data is generated for sales orders. The Import/Export field on the MO header controls whether an additional frame displays for Intrastat defaults.

See *User Guide: QAD Intrastat* for details on Intrastat.

Note If you use Intrastat, you should manage inventory movement with MOs. In CAR, Intrastat data is generated only for items ordered on MOs. Other items are not tracked.

However, because the requirements of a service environment differ from those for standard orders, some aspects of Intrastat processing for MOs are different than for sales orders. In addition, different types of MOs are processed somewhat differently.

For standard sales orders, Intrastat data is moved to a history table when the invoice for the order is posted. Unlike sales orders, invoices are not generated for MOs. The items on the MO are invoiced directly or indirectly when they are used for a service call and the call is invoiced. For this reason, Intrastat history is not created for MOs at invoice post, but when they are shipped or consumed, depending on the type of MO.

- MOs with a Call. When an MO is associated with a call, Intrastat data is created in MO Maintenance, as appropriate. The MO is then loaded in Call Activity Recording as item usage. When all of the items on an MO line are either issued or returned, the line is deleted and the Intrastat data is moved to the history table.
- MOs without a Call. Two kinds of MOs are not associated with calls: expensed MOs and MOs for inventory replenishment. For these types of MOs, Intrastat history is created when the MO line ships completely. This may occur in MO Maintenance, if Ship Immediate is Yes, or later in Material Order Shipments.

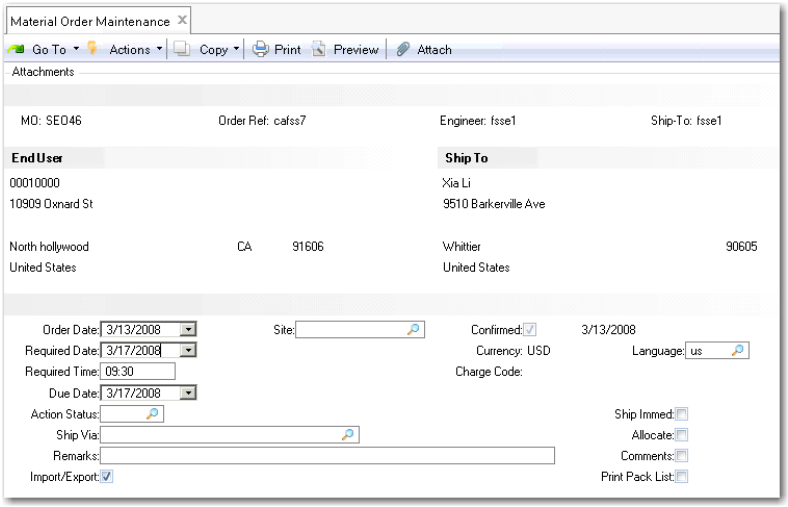
Two types of Intrastat history records can be created for MOs: one when items are issued and one when items are returned.

Creating Material Orders

Creating an MO is similar to creating a sales order. You create MOs in Material Order Maintenance (11.11.1), shown in Figure 20.4. Follow these steps:

1. Define MO header data.
2. Create MO line items.
3. Optionally initiate shipment.

Fig. 20.4
Material Order Maintenance (11.11.1)



You order items on an MO as you do sales order line items.

Except for fields added to accommodate the call relationship, the MO fields act like the equivalent sales order fields. However, you define default values for MO fields in Material Order Control, including allocate lines due in days, detail allocations, line format, shipping lead time, header and line comments, and keep booking history. These fields operate in the same way as the equivalent Sales Order Control fields.

If you are using EMT, additional fields display on the MO line for the supplier and EMT type—just as on a sales order.

See “Material Order Control” on page 661.

Note The login country for the user determines the numeric and date formats.

Specifying the Type of MO

Three basic types of MOs each play a slightly different role in a service organization:

- MOs with a call
- MOs for inventory replenishment
- Expensed MOs

How you fill out the MO header determines the type of MO you create. Header information differs for each type. After you create the MO, you cannot change its type. For example, if you create an MO without a call, you cannot go back later and add one.

Note If you are using the Project Realization Module, you can create MOs for project activity orders (PAOs). You can specify either a PAO or a call in the Order Ref field of the MO header. When you specify a PAO, different frames display in Material Order Maintenance.

MO With Call

When using MOs with a call, you open a call and order material specifically for the call. Linking the MO to the call has the advantage of making all the tools inside Call Activity Recording available for managing the MO.

In some business situations, legal or contractual reasons require this explicit connection between service inventory allotments and call history. For example, the government can require military contractors to supply this kind of data as part of the maintenance record.

In other cases, the business simply prefers this method, or it is the easiest, most economical way to supply engineers and account for service costs. You can use this method when you bill a customer directly for parts consumed on a call.

For MOs with a call, you use Call Activity Recording to coordinate the whole supply, reporting, and return of inventory generated by service activity. You can track costs and activity per call, customer, end user, or problem.

Relationship Between Call and MO

MOs can only be created for open calls. The call status cannot be closed, canceled, or hold. If you enter a call with a status of complete, the system displays a warning. The engineer and ship-to values on the MO default from the call. The MO also uses other defaults associated with the customer of the call's end user, including ship via, remarks, and currency.

Ship-to addresses for MOs with a call default from the value of Ship To in Material Order Control (11.11.24). If this is end user, the Ship-To defaults from the call's end user. If it is engineer, it defaults from the address of the engineer assigned to the call.

You can also create drop-ship addresses. Suppose the engineer wants a replacement item shipped to a local airport so he can pick it up on the way to the customer site. Material Order Maintenance enables you to create a Ship-To address for this particular material order. If the address does not exist, you are prompted to create it.

Each MO line references a particular call line. When you select the call line later in Call Activity Recording, the system displays related MO lines. You can then choose to load the MO items into CAR item detail records.

See "Loading MO Lines into CAR" on page 550 for details.

Note When an MO is associated with a call, all items ordered must be consumed by the call or returned before the call can be closed. When this happens, the system removes the MO.

Using MOs or BOMs to Load CAR Item Usage

The system provides three ways to streamline data entry in the Call Activity Recording Item Usage frames:

- Ordering the items needed with an MO and loading the MO lines in CAR.
- Attaching a BOM to the item being repaired and allowing CAR to list all BOM items as item usage in CAR.
- Creating a parts list and loading the parts list items in CAR.

These methods are alternatives to one another—you cannot use them together. Decide which method is best for your business practices and establish procedures to ensure that the method you use is consistent across your enterprise.

If you order the items required for a call with an MO, you must load and consume these items in CAR. If you attach a BOM to the item and the system lists the BOM items for the call, the same items can be loaded again, resulting in twice as many items appearing in the usage frame as are required.

A warning displays when you create an MO for a call line item and you have assigned a BOM to the item, or when you have already created reports with item usage. The system does not generate an error. If you need to order additional items beyond the standard BOM, this may not be an erroneous situation.

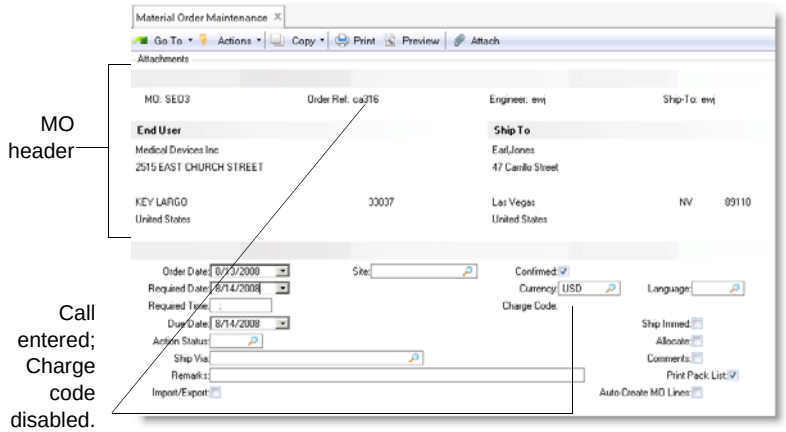
You can have CAR and Material Order Maintenance autocreate lines from a parts list or a BOM. If you create a parts list, the parts list takes precedence and you cannot explode the BOM. If a parts list does not exist, CAR can autocreate lines from MO lines. Using a parts list also means that changes to the MO are reflected in the parts list, and vice versa. In order to ensure the accuracy of CAR item usage, QAD recommends the use of a parts list. For details, see “Creating a Parts List” on page 317.

Filling Out the MO Header

For MOs with a call, you must enter an open call in the Order Ref field. If you enter a call, you cannot specify a charge code.

See “Generating Usage Records Automatically” on page 388 for details.

Fig. 20.5
Header for MO with a Call



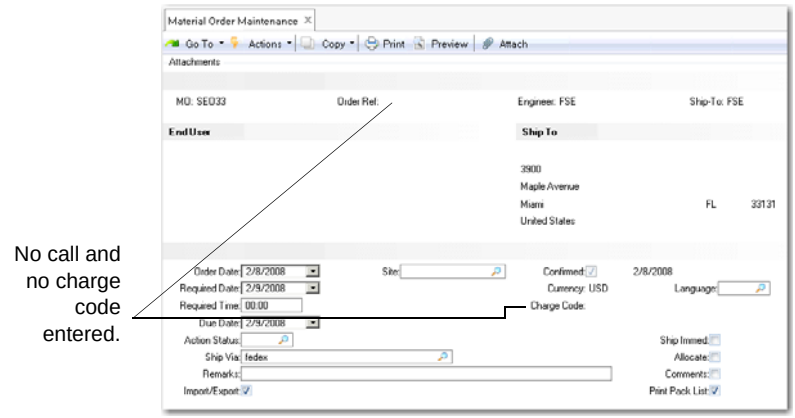
MO Without a Call

You do not have to attach an MO to a call. The system considers inventory transferred by an MO without a call as general replenishment inventory for the engineer’s service stock. Use this method when it is not reasonable to track against particular calls, but you still need to track individual items.

Once all items ordered on the MO ship completely, the system deletes the MO. Transaction history includes details about the transactions processed.

When you create an MO without a call, do not enter a call or charge code. The ordered items are put in the engineer location at shipment time, but not issued. MOs without a call basically execute an inventory transfer from one site and location to another.

Fig. 20.6
MO Without a Call for Transferring Inventory



Expensed MOs

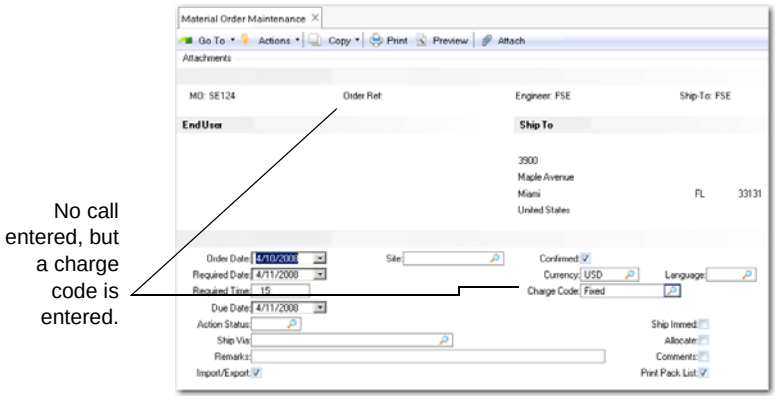
Expensed MOs are also not attached to a call. Use this method when tracking items expensed as part of the general service activity—usually items you order in lots and store at the workbench or truck. The service engineers do not track any inventory piece by piece. They expense the items once and use them as necessary. A reorder point method typically controls reordering. Also, use this method for items ordered in bulk such as nuts, bolts, screws, washers, lubricants, cleaners, disposable tips, and wipes.

Expensed MOs require a charge code. The system uses the charge code to find a charge product line set up in Charge Product Line Maintenance (11.21.21.5) for this charge code. The system charges the Service Expense account of this product line for the cost of the items.

When you ship an expensed MO, the system transfers inventory to the destination site and location where you issue and consume the items. If this process completes successfully, the system deletes the MO upon completion of shipment. You can review transaction history for transaction details.

When you create an expensed MO, you do not enter a call in the Order Ref field, but you do specify a charge code as shown in Figure 20.7.

Fig. 20.7
MO Without a Call for Restocking Expensed Supplies



Summary of MO Types

Table 20.1 summarizes the interaction between the Order Ref and Charge Code fields in identifying the type of MO.

Table 20.1
Defining MO Types

MO Type	Order Ref Field	Charge Code Field
With call	Enter a call number	Field not accessible
Without a call	Blank	Blank
Expensed	Blank	Enter a charge code

Credit Implications of MOs

MOs are a type of sales order and follow most of the rules of sales orders. If the customer bill-to on an MO with a call is on credit hold or over their credit limit, MO processing is determined by the setting of Credit Hold Option in SSM Accounting Control. This field can have one of three values:

0 (zero): You can create MOs regardless of the customer's credit status.

1: You can create MOs, but a warning displays and the action status of the MO is set to hold.

2: You cannot create MOs for customers who are on credit hold. An error message displays, and you cannot create the MO until the customer Credit Hold field is reset to No. With this setting, if the customer is over the specified credit limit but not yet on hold, you can create the MO. However, a warning displays and the action status of the MO is set to hold.

Note You can remove credit holds using Sales Order Credit Maintenance (7.1.13) or Sales Order Auto Credit Approval (7.1.17).

If you are using EMT, the system applies the same logic as with EMT sales orders to determine how credit information is transmitted to the supplier. If the Action Status field on the header of an MO associated with a call is changed to HD (Hold), EMT creates a PO change document for the supplier under these conditions:

- The PO has been transmitted to the supplier.

- The supplier has not transmitted a status change indicating that the item has been picked or shipped.
- The customer associated with the call is authorized to have hold orders processed by a supplier (EMT Credit Flow is Yes for the customer).
- The supplier is authorized to receive orders placed on hold (Send Credit Held SO is Yes for the supplier).

Material Order Maintenance

This section includes a detailed field-by-field reference of Material Order Maintenance (11.11.1). It takes several steps to create an MO, some of which are optional, depending on various settings.

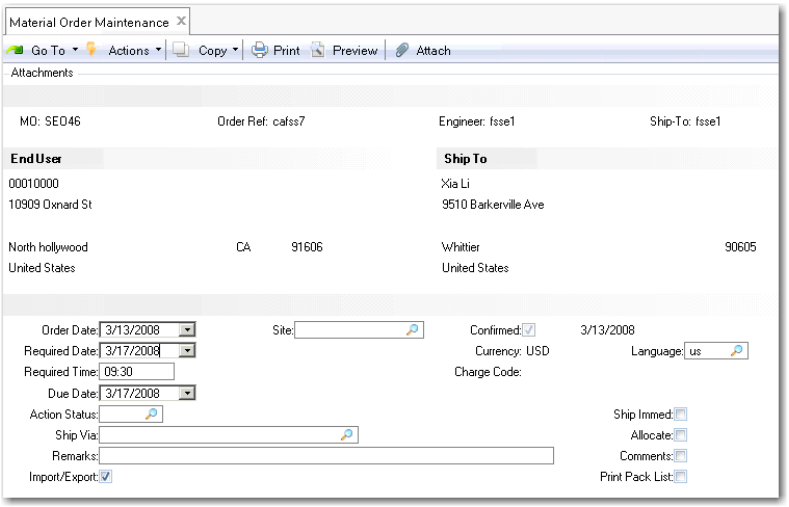
Table 20.2
Material Order Maintenance Frames

Frame	Req	Purpose
Header	Y	Define the kind of MO and defaults for line item entry.
Allocation Pop-Up	N	If Allocations is Yes, define allocation parameters for line-item entry.
Comments	N	If the header Comments field is Yes, specify comments for entire MO.
Auto-Create MO Lines	N	If Auto Create MO Lines is Yes, use the Materials List to record details of MO lines and create new BOM
Line-Item Entry	Y	Enter item number and allocation information.
Allocation Detail	N	If Detail Alloc is Yes, enter detailed allocation data.
Comments	N	If the line-item Comments field is Yes, specify comments for this line.
Material Order Shipments	N	If Ship Immed is Yes, begin shipment process (see “Material Order Shipments” on page 542).

The material order does not have a trailer for pricing and taxing information. This differs from similar ordering functions because items on MOs are not sold like other items. MOs transfer inventory from one site and location to another site and location within the same enterprise.

Material Order Header

Fig. 20.8
Material Order Maintenance (11.11.1)



MO. Enter the MO number. Use a unique prefix to distinguish MOs from standard sales orders. If you leave this field blank, the system supplies a number based on the Material Order Prefix and Next Material Order fields in Material Order Control (11.11.24). You can select an existing MO from a drill-down list.

Order Ref. Entering a call in this field establishes the MO type. When you enter a call ID, the system fills in the Engineer and Ship-To fields based on the call. You cannot enter a call with a status of closed, canceled, or hold. If you enter a call with a status of complete, the system displays a warning.

Engineer. If you specify a call, the engineer assigned to the call displays, but you can change this value. If the call has no assigned engineer or you have not specified a call, you must select a valid engineer to receive this order.

Note The employee represented by the engineer code must have an active employee record; that is, Active must be Yes in Employee Create or Employee Modify.

The engineer for the MO normally determines the site and location to which items are transferred during MO shipments. If the engineer has a site and location in Engineer Maintenance, the system uses these as defaults. Otherwise, the site and location associated with the engineer's area are used. Maintaining consistent defaults is important in streamlining the consumption and return of items ordered on MOs for a call in Call Activity Recording and MO Direct/Pending Returns.

Note After you have processed shipments for an MO, you cannot modify the Engineer field.

Ship-To. For MOs without a call, the Ship-To is the engineer's address and you cannot change the value. If you entered a call, the value for Ship-To depends on the Ship To value in Material Order Control (11.11.24), either end user or engineer. You can also enter a drop-ship address, for special orders. Tailor the default ship-to for your business practices by using the Ship To setting in Material Order Control.

Note Regardless of the Ship-To value, items are transferred to the site and location for the MO line. The Ship-To address prints on the Material Delivery Note.

Lower Frame

Order Date. Order Date defaults from the system date. You can change this value. For example, if you take an order over the phone and do not enter the order into the system until three days later, you can change the date to reflect the day you took the order.

Required Date. The required date is calculated by the system based on the order date plus the Shipping Lead Time in Material Order Control (11.11.24).

If you modify the required deliver-by date at the header level for an existing MO, the system prompts you to update the required date for each line item.

If you respond Yes, the required date for each line item is updated to match the updated required date on the MO header as long as EMT is not being used and the line has not been shipped in full. If a line item cannot be updated due to EMT restrictions, an alert displays. If one or more line items cannot be updated, a prompt displays asking whether you want to continue to update the line items that can be updated, or if you want to cancel the update. If you cancel the update, the line items remain unchanged, but you can still update line items manually if required. When the update is complete, the system displays a message to this effect.

If you respond No, none of the MO line items are updated. You can, however, update the required date on line items manually if required.

Due Date. The due date is calculated by the system based on the order date plus the Shipping Lead Time in Material Order Control (11.11.24).

If you modify the required ship-by due date at the header level for an existing MO, the system prompts you to update the due date for each line item.

If you respond Yes, the due date for each line item is updated to match the updated due date on the MO header as long as EMT is not being used and the line has not been shipped in full. If a line item cannot be updated due to EMT restrictions, an alert displays. If one or more line items cannot be updated, a prompt displays asking whether you want to continue to update the line items that can be updated, or if you want to cancel the update. If you cancel the update, the line items remain unchanged, but you can still update line items manually if required. When the update is complete, the system displays a message to this effect.

If you respond No, none of the MO line items are updated. You can, however, update the due date on line items manually if required.

Required Time. Enter the time at which the material order is required. This is most useful if the materials are needed on the same day as they are ordered.

When you create new material order lines, the system will use the time defined in this field as the default time.

Action Status. If the customer associated with the call specified on the MO is on credit hold, HD displays in the Action Status field. The effect of this status depends on the value of Credit Hold Option in SSM Accounting Control. See “Credit Implications of MOs” on page 529.

Ship Via. MOs transfer material. When you associate the MO with a call, this field defaults from the customer Ship Via for the end user initiating the call. You can enter any valid shipper in this field. The Ship Via information prints on the Material Delivery Note. Set up values for Ship Via with Generalized Codes Maintenance for the field so_shipvia.

Remarks. You can enter brief remarks concerning MO handling here. If you specify a call on the MO, remarks default from the end user's customer.

Import/Export. Defaults from Imp/Exp Default in Intrastat Control and displays if Use Intrastat is Yes in the same control program. Set this field to Yes to enter or maintain import and export data for the order used to create Intrastat History Reports. If Yes, the standard Intrastat frames displays for input of appropriate data. See "MOs and Intrastat" on page 524.

Site. Enter the site where the items to ship are located. This site is used as a default during line-item entry. You can change this value on a per line-item basis. This field defaults from the spares site set up with Default Site Maintenance (11.21.13) for a blank key. See "Default Sites and Locations" on page 74 for details.

Confirmed. This field is similar to the same field in sales orders, and defaults from the value for Confirmed Orders in Material Order Control. Yes means that the MO is confirmed and available for shipping when your entry is complete. You can modify this field only when you first create an MO. If the MO is not confirmed when you create it, you must execute Material Order Confirmation (11.11.2).

If you are using EMT and enter an EMT transshipment item, the system only creates a purchase order for the supplier when the line is confirmed. If you create the line as unconfirmed, the PO is automatically generated when you run Material Order Confirmation.

Currency. If you specify a call, this field defaults from the currency associated with the call's customer. Otherwise, it defaults from the currency associated with the internal customer specified in Material Order Control. You can enter a different currency for this material order when you create the order. You cannot change the currency for an existing order. You can apply field security to this field.

If you enter a non-base currency, an exchange rate pop-up displays the current exchange rate relationship. You can modify this, if needed, and optionally specify the rate as fixed.

Language. Enter the language to use on material order documents. Language defaults from the call end user or the end user's customer.

Charge Code. You can update this field only when you first create an MO and do not specify a call. If this is an expensed MO, enter a valid charge code defined in Charge Code Maintenance (11.21.21.1). The system uses the charge code to determine a charge product line. The expense is debited to the Service Expense account associated with this product line. If you enter a charge code, the system expenses everything on the MO to this charge code.

Ship Immediately. The value for this field defaults from Material Order Control.

Yes: The shipment frames display after you complete your MO entry. Completing the MO shipment entry then starts all the inventory transfer functions.

No: You must execute shipment as a separate function later, using Material Order Shipments (11.11.6).

Allocations. If this field is Yes, a pop-up window displays so that you can modify the allocation parameters set by default in the control program. These parameters include consume forecast, allocate days in future, and detail allocations.

Comments. The value for this field defaults from the MO Header Comments field in Material Order Control. If Yes, a standard transaction comment frame displays for entry of header comments. You can print header comments on MO documents such as the Material Delivery Note by setting Print on Packing List to Yes.

Print Pack List. If this field is Yes (the default), you can print a packing list for this MO with Sales Order Packing List (7.9.13). A separate MO packing list print function does not exist. However, material order shipments produce a Material Delivery Note, which you can use as a packing list. If detail allocations were not made in Material Order Maintenance, printing a packing list performs the allocations.

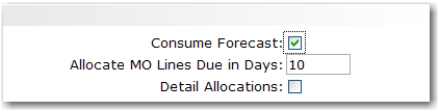
Auto-Create MO Lines. If this field is No (the default), you can manually enter MO lines. Set this field to Yes to use the Materials List to record details of MO lines and create a new BOM structure. (This field is read-only if the MO already exists.)

Allocations Pop-Up

If you enter Yes in the Allocate field, the pop-up window illustrated in Figure 20.9 displays. The values in these three fields default from corresponding fields in Material Order Control. You manage other aspects of allocations through Sales Order Control settings.

See “Allocating Material Orders” on page 541 for more information.

Fig. 20.9
Allocations Pop-Up Window (11.11.1)



Consume Forecast. Defaults from the Consume Forecast field in Material Order Control. If Yes, MOs consume forecast in the same way as sales orders. When you enter an MO, the system decreases available quantity in the sales forecast for the item by the MO quantity.

Allocate MO Lines Due in Days. Defaults from the same field in Material Order Control. Specifies the number of days into the future to allocate MOs.

Use allocations to control shipments, especially in shortage situations. When you enter an MO, the system compares the order quantity to the quantity available to allocate. If there is a shortage, the order cannot be filled. The system tries to allocate available inventory only to line items due within the number of days specified here, giving you more control over the process.

Detail Allocations. The value for this field defaults from the Detail Allocations field in Material Order Control. Yes indicates that detail allocations are normally made during MO line entry. Enter No if detail allocations are not normally entered on the MO. The value specified on the header sets the default value on each MO line item. You can change it item by item.

Note Even if this field is Yes on the MO header, it automatically changes to No for EMT line items. You cannot change it manually. The system automatically allocates EMT items to the MO when they are received from the supplier.

Autocreation of MO Lines

If you set the Auto-Create MO Lines field to Yes, you can use the Materials List to record details of MO lines and create a new BOM structure.

The Call and End User details default from the MO header. After entering the number of the call line, either accept the default repair BOM code (defaulted from the call line), or enter a new BOM code. The BOM structure displays listing the description, quantity, and UM of each component.

Note If the BOM has previously been exploded in CAR or a parts list exists from Parts List Maintenance (11.1.10), the items on the BOM will not display; for details about Parts List Maintenance, see “Creating a Parts List” on page 317. If a parts list exists, those items on the list that have not been added to a MO will display and can be added to the MO being created.

You can add or delete components, or modify component quantities, as required. Any components added to the BOM must be valid (that is, there can be no memo items for any of the components).

After making any modifications, you are given the option of saving your changes as a new service BOM. Click Yes to save the updated service BOM in Service Structure Maintenance using the BOM code you entered. Otherwise, click No to disregard your changes.

Complete any remaining MO header details. Once complete, the Material Order Line frame displays, showing a line for each of the components created in your new BOM structure. Edit these lines as required, then complete your MO.

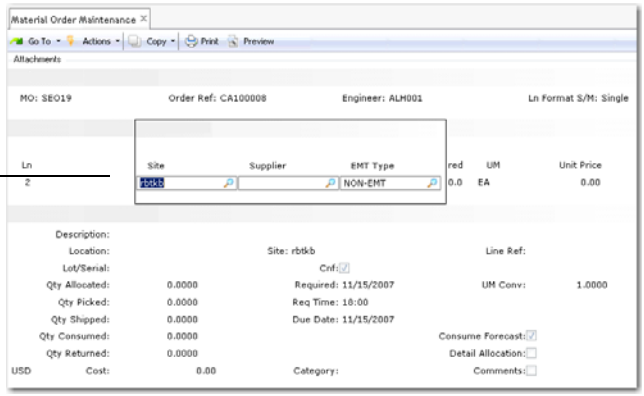
Line-Item Entry

After you complete MO header entries, the line-item entry frame displays. The MO line-item frame works like other line-item entry functions in the system. It has two modes of display: single-line mode and multiline mode. Set the default mode in the Line Format field in Material Order Control.

To order several items, use the multiline entry format to streamline data entry. The multiline entry format asks only for the line number, the related call line, the item number, and quantity.

Figure 20.10 illustrates the single-line format.

Fig. 20.10
MO Line-Item Entry (11.11.1)



Important If you are entering an MO for an EMT transshipment item, you must use single-line mode. Otherwise, EMT Type defaults to non-EMT and the system does not automatically generate a PO for the supplier.

Ln. The current line number displays. If you are updating an MO with multiple lines, the last line of the MO displays so that you know how many lines exist.

Order Ref Line. When you attach an MO to a call, specify which line on the call is related to this line of the MO. You can ignore the Order Ref field for MO types without a call. It is crucial that you build the relationship between MO line and call line correctly because it is used later in Call Activity Recording. CAR does not assume that the line items on the MO are in the same order as those on the call; you must specify the relationship explicitly.

CAR needs to know two elements: first, that an MO exists for the call and second, how the MO lines match the call line. This ensures that the system uses the information from the call for the right item. The system also checks the status of the call line, just like the call status. To order items for a call line, the line cannot be closed, canceled, or on hold. The system displays a warning if the call line is complete.

When you start creating the line item, even though a call is not attached to the MO, a default call line number 1 appears. This is a required field that you cannot change.

Item Number. Enter the item number you are ordering from the supply center or inventory source. Remember, this is an internal, or captive, order process—you are not ordering from a vendor or outside supplier. The item must be defined in the item master.

For an EMT transshipment item, you can enter your supplier's code for the item, as long as you set up a cross-reference to your item number in Supplier Item Maintenance (1.19).

Note You cannot order configured items or family planning items on an MO. These items have a Pur/Mfg code of C and F.

If the item you enter has replacement types defined for it and the entry is on or past the item replacement's effective date, the system either prompts you to confirm the item replacement or displays pop-up frames to select other types of item replacements.

See *User Guide: QAD Master Data.*

Site. After you enter the item number, a pop-up window displays so that you can specify the inventory site of the item. This site defaults from the site on the MO header, unless the item does not exist there. In this case, the system suggests the site associated with the item in Item Master Maintenance.

Standard inventory rules for sites apply to the MO site. For example, if there is no inventory on hand for the item and the inventory status is defined with overissue set to No, the system displays an error.

If this is an EMT transshipment item and you are using direct allocations to reserve inventory in your supplier's application database, you can change the default site to the one associated with the supplier's connected database.

See "Direct Allocations" on page 523.

Supplier. Enter the supplier associated with this item. This field displays only if Use Enterprise Material Transfer is Yes in Sales Order Control. For EMT transshipment items, the field defaults from the supplier defined for the item in Item Master Maintenance.

EMT Type. Indicate whether this is a non-EMT or transshipment item. This field displays only if Use Enterprise Material Transfer is Yes in Sales Order Control. A default EMT shipment type can be defined for customers, items, items/sites, and in Sales Order Control. The EMT Sequence field in Sales Order Control determines the order the system uses to search these records for a default.

Quantity Ordered. Enter the quantity of this item you want to order. Negative quantities are not allowed. If this MO is associated with a call, the quantity ordered displays in the Qty Used field in the Item Usage frame of Call Activity Recording.

Unit of Measure. You can update this field only when the Order Ref field is blank. Call Activity Recording (11.1.1.13) requires items to be issued in the inventory unit of measure.

Unit of measure defaults from the unit of measure for the item in Item Master Maintenance. You can change the value, unless an order reference has been specified. If you select an alternate unit of measure that you defined in Unit of Measure Maintenance (1.13), the system accesses the appropriate conversion factor.

Example An item is held in inventory in the unit of measure EA but sold or purchased in a case of 25. If you enter the unit of measure CS, the system displays a UM conversion of 25. The system adjusts the cost and inventory quantity when this item is shipped or received. If you have not defined the alternate unit of measure in Unit of Measure Maintenance, a warning displays and no conversion takes place.

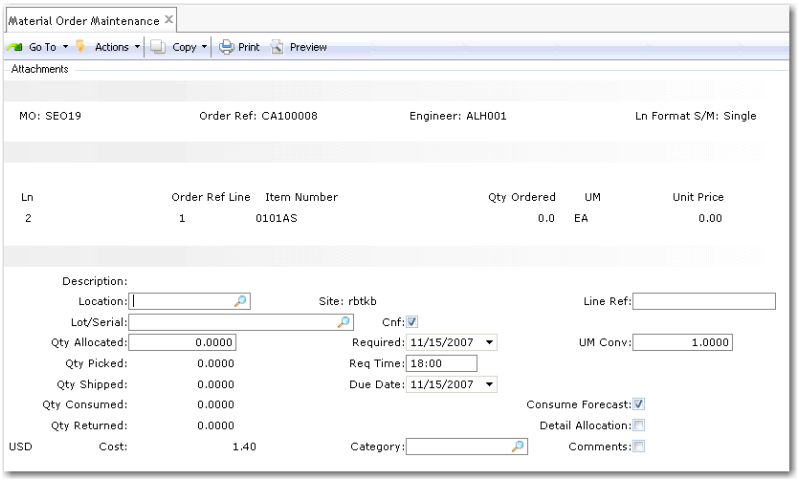
For a serial-controlled EMT transshipment item, the MO line-item unit of measure must match the stock unit of measure. Otherwise, the system displays an error.

List Price. This is an output-only field that shows the extended price for the item based on the list price in Item Master Maintenance multiplied by the quantity ordered.

Lower Line Detail Frame

This frame displays information such as the item's description. You can specify a lot or serial number here if the item is a serialized or lot-controlled item.

Fig. 20.11
MO Line-Item Detail



Description. Output-only field that displays the inventory description of the item.

Location. This field indicates the location at the associated site where inventory items exist.

Lot/Serial. For lot/serial controlled items, you can specify the particular number for this line item. If you are ordering multiple items on one line, set Detail Alloc to Yes. This displays a pop-up window where you can specify a lot/serial number for each item you order.

Qty Allocated. The total of quantity allocated, plus quantity shipped, plus quantity picked cannot be greater than quantity open on the line item. You can apply field security to this field. Confirmed must be Yes before you can enter a quantity to allocate. For confirmed orders, the system calculates a default based on several fields.

- The Quantity Available to Allocate calculation method in Sales Order Control.
- The value for Limit Allocations to Avail to Allocate in Sales Order Control.
- The setting of Allocate MO Lines Due in Days in the MO header determines the allocation window for orders.

If Allocate MO Lines Due in Days is zero or the due date is beyond the allocation horizon, Qty Allocated defaults to zero. You can use MO Manual or Automatic Allocations to allocate inventory to an MO line due outside the allocation window or when sufficient inventory becomes available.

See “Allocating Material Orders” on page 541 for more information.

Confirmed. This field defaults from the Confirmed field on the header. Yes or No in this field indicates whether or not the item is ready to ship. If Confirmed is No, you must execute a separate confirmation step before items can be allocated and shipped.

Required Date and Due Date. The required and due dates default from the header. You can modify either date for each line.

Req Time. Enter the time at which the material order is required. When you create new lines, the default value is the time defined in the material order header.

The required date and time can also indicate when the ordered items will arrive at the customer’s site. Therefore, the scheduler will know at what time to plan an engineer on-site visit to a customer, using the ordered spare parts for repairs or service.

Note When ATP Enforcement is Yes in Sales Order Control (7.1.24) and ATP Enforce in the item or item-site record is Warning or Error, the system determines whether inventory will be available to promise (ATP) on the due date. If it is not, the system displays a frame with ATP information and options. See *User Guide: QAD Sales* for information on ATP.

Category. This field can be used to assign optional categories to material order line items. For example, you can generate some reports based on categories in the Shipment Performance module.

Entries are validated against values defined in Generalized Codes Maintenance (36.2.13) for field line_category.

See *User Guide: QAD Sales* for information on Shipment Performance.

Line Ref. This field can be used for custom programming as a reference for customized reports giving line-by-line information. Use this field to insert an eight-character label or reference that is later displayed by the report.

UM Conversion. Displays appropriate unit of measure conversion based on the unit of measure for the item.

Consume Forecast. Defaults from the Consume Forecast field in the MO header. If Yes, the quantity on this line consumes forecast in the same way as sales orders. When you enter the MO line, the system decreases available quantity in the sales forecast for the item by the MO quantity.

Detail Allocation. Defaults from the Detail Allocation field on the MO header, which in turn defaulted from Material Order Control. You can modify this for each line item. If you specify a quantity to allocate and the order is confirmed, Yes displays a pop-up window so that you can specify the information required for detail allocation, including lot/serial, location, and lot reference.

Allocations for EMT transship items are performed automatically when the items are received from the supplier. You cannot detail allocate these items in Material Order Maintenance.

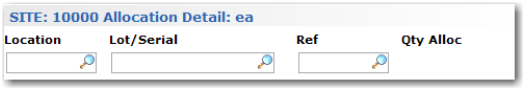
Comments. Specify Yes or No to enter comments for this specific MO line item. Defaults from the MO Line Comments setting in Material Order Control. Include line comments on MO documents such as the Material Delivery Note when Print on Packing List is Yes.

After you enter a line, the system returns to the beginning of line entry to start another line item. To order more material, continue and repeat the same line entry process. When you finish, click Back to initiate shipment, if Ship Immed is Yes, or to return to the menu.

Detail Allocation Pop-Up

This pop-up enables you to enter specific allocation information for the items you are ordering. To perform detailed allocation, enter the order as confirmed.

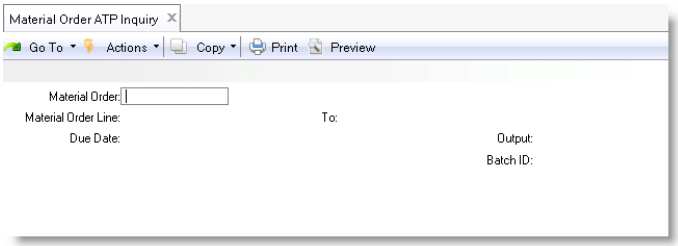
Fig. 20.12
MO Detail Allocation Pop-Up



Material Order ATP Inquiry

Use Material Order ATP Inquiry (11.11.7) to view ATP information associated with a specific material order and lines. Right-clicking a record in the Material Order browse causes the inquiry to run using the currently selected record.

Fig. 20.13
Material Order ATP Inquiry (11.11.7)



Specifying a material order displays all unconfirmed material order lines whose due date is less than or equal to the date specified. If a material order line is not specified, all MO lines display. MO lines may be skipped if:

- No due date is specified for the MO line.
- Site security does not allow the current user to view the line.
- The line is an EMT part, a configured part, or ATP enforcement for the line is None.

The system generates a report similar to the one in Figure 20.14 to the output device you specify.

Fig. 20.14
Material Order ATP Inquiry Report

Line	Item Number	Earliest Due Date	ATP Qty On Hand	ATP Horizon Date	Due Date	Qty to Ship	Order Qty
1	do-001	03/03/09	0.00 EA	03/08/09	01/09/09	5.00 EA	5.00 EA

Shipping Material Orders

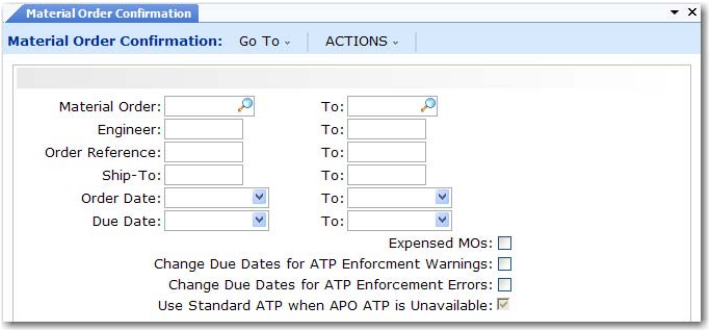
You can approach shipping MOs in two ways:

- Ship items in Material Order Maintenance by entering the MO as confirmed and allocated.
- Follow the more traditional approach taken with sales orders where you execute separate confirmation, allocation, and shipment functions. In addition, you can print a packing list using Sales Order Packing List.

Confirming Material Orders

MOs must be confirmed before they can be allocated or shipped. You can do this in a separate step with Material Order Confirmation (11.11.2).

Fig. 20.15
Material Order Confirmation (11.11.2)



Enter appropriate criteria to select MOs for confirmation, then execute the function. The system processes MOs in the specified range. If Expensed MOs is No, the system processes only MOs without a charge code. If Yes, the system includes expensed orders.

When ATP Enforcement Enabled is Yes in Sales Order Control (7.1.24), you can optionally have the system automatically change the due dates before confirming MOs when the available to promise (ATP) quantity is insufficient to fill the order. Based on the ATP enforcement level associated with the item, the system adjusts the due dates for MO lines that produce ATP warnings or errors to dates when the required quantities are available.

See *User Guide: QAD Sales* for information on ATP.

The system generates a report similar to the one in Figure 20.16 to the output device you specify.

Fig. 20.16
Material Order Confirmation Report

Order	Order Ref	Engineer	Ship-To	Ord Date	Required Due		Confirmed St
62	CA157	pkh	00000005	07/11/08	07/14/08	07/14/08	07/11/08

Allocating Material Orders

Allocations reserve inventory so it is not allocated to other sales orders, RMA issue lines, intersite requests, calls, or work orders. Use allocations to control the shipment of items, especially in situations when a sufficient quantity of an item does not exist to fill all orders.

Note You cannot allocate EMT items to an MO. The system allocates these items when they are received from the supplier. See “MOs for EMT Items” on page 523.

Control allocations in MOs with settings in Sales Order Control and Material Order Control.

- The Quantity Available to Allocate calculation method in Sales Order Control controls how the system determines the number of items available to allocate. The calculation is the same for all items and sites.
- The value for Limit Allocations to Avail to Allocate in Sales Order Control determines how the system handles shortage situations. If this field is No, Quantity Allocated defaults from Quantity Ordered even if a sufficient quantity to allocate does not exist. If this is Yes, Quantity Allocated never exceeds the quantity available. If there is no quantity available to allocate, Quantity Allocated defaults to 0.
- The setting of Allocate MO Lines Due in Days in Material Order Control determines the value for the same field in Material Order Maintenance, MO Manual Allocations, and MO Auto Allocations. The system only attempts to allocate MO lines with a due date within the range defined by this field. For MOs due outside the range, Quantity Allocated defaults to 0 regardless of available quantity.
- The Detail Allocations field in Material Order Control sets the default for the similar field in Material Order Maintenance. If this is Yes for an MO line, an inventory allocation pop-up window displays so you can specify site/locations and lot/serial/reference numbers.

You can even ship items in Material Order Maintenance without creating allocations by specifying a quantity to ship. If you make allocations, you can set Ship Allocated to Yes, and the system sets up default ship quantities for you.

MO items are picked when you print a packing list for an MO with the Sales Order Packing List (7.9.13) function. To do this, if it is not already, set Print Pack List to Yes for the MO in Material Order Maintenance.

If you use packing lists to communicate shipping priorities, you can set Pick Only Allocated Lines to Yes in Sales Order Control. In this case, only allocated quantities print from the Sales Order Packing List function, telling the shipping department what to ship.

You can allocate inventory at several stages of an MO’s life cycle:

- Material Order Maintenance does general allocations for all orders due within the number of days you specified in Material Order Control. You can also enter detail allocations.

- Execute MO Automatic Allocations (11.11.5) regularly to perform general allocations for any orders due within a certain number of days. Use this function to allocate for MOs beyond the allocation limit you specified in the control program during order entry.
- You can use MO Manual Allocations (11.11.4) to override general or detailed allocations.

Material Order Shipments

Use Material Order Shipments to enter the selection data for shipping MOs. Unlike shipment for standard sales orders, Material Order Shipment executes an inventory transfer and receipt, and an additional unplanned issue, depending on the kind of MO:

- *MO with a Call.* Transfers items from their current location to the place where they will be consumed on a call.
- *MO without a Call.* Transfers items from their current location to replenish engineer stock.
- *Expensed MO.* Transfers the items, then issues them as service expense.

A transfer reduces inventory quantity for an item at the From Site and From Location, and increases it at the Engineer Site and Engineer Location. When the function completes, it prints delivery documents.

Note If you are using shipping groups and inventory movement codes, you can enter shipment information and generate shippers during MO shipment. See the Shipping chapter in *User Guide: QAD Sales* for details.

During the material order shipment process, you perform the following steps:

- Enter shipment data.
- Modify line-item quantities.
- Confirm shipments.
- Enter trailer data.
- Print Material Delivery Note and Back Order Advice.

You can execute Material Order Shipments as a separate function or initiate shipments in Material Order Maintenance if you enter confirmed orders. To initiate shipments from Material Order Maintenance, set Ship Immed on the MO header to Yes.

Engineer Site and Location

A consistent engineer site and location are critical to managing MOs. During shipment, the destination fields default from the site and location associated with the engineer in Engineer Maintenance. If these are not available, the system uses the default site and location defined for the engineer’s area.

See “Engineer Site and Location” on page 481 for more details.

When inventory ordered on an MO is consumed in Call Activity Recording, the system uses the same logic to derive the site and location for inventory issues. So, if you ship the items somewhere else, change the defaults in CAR for inventory issues to occur correctly.

Establish procedures so that the system references the same site and location when looking for stock for a particular engineer.

The system performs normal location validation. This includes verifying whether the location exists, based on the setting of Automatic Locations, and verifying the actions allowed at the location based on restricted transactions.

- For all MOs, the inventory receipt transaction (RCT-TR) must be allowed.
- For expensed MOs, the unplanned issue transaction (ISS-UNP) must also be allowed.

Material Order Shipments Field Reference

If you do not choose to ship immediately from Material Order Maintenance, you can ship MOs later, using Material Order Shipments (11.11.6), illustrated in Figure 20.17. To ship an MO involves several steps, some of which are optional.

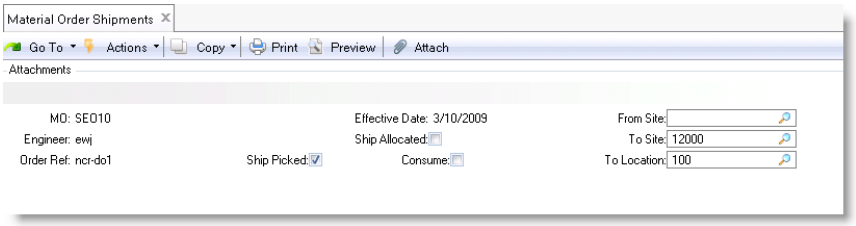
Note The login country for the user determines the numeric and date formats.

Table 20.3
MO Frames

Frame	Req	Purpose
Header	Y	Specify MO to be shipped and shipment defaults.
MO Line Items	Y	Review and modify allocations and quantities.
Issue Detail	N	If Multi Entry is Yes, change details for multiple quantities.
Confirmation	Y	Confirm items to be shipped.
Trailer	Y	Generate delivery note.

Material Order Shipments Header

Fig. 20.17
Material Order Shipments Header (11.11.6)



MO. Enter the number of a valid MO you created with Material Order Maintenance. The MO number must exist. If the MO is not confirmed or has no lines, a warning displays. When this function is executed from Material Order Maintenance, the system fills in the number and does not let you change it.

Engineer and Order Ref. These fields are output only and default from the MO.

Effective Date. Enter the GL effective date for the shipment transaction. The default is the current date. The system verifies that the date is within an open fiscal period.

The effective date determines when this transaction affects GL balances.

Ship Allocated. The default is No. If Yes, the quantity allocated on each item line displays in the To Ship column in the MO line-item detail section of Material Order Shipments. If you have not printed a packing list—for example, if you are shipping from Material Order Maintenance—none of the items are picked. In this case, use Ship Allocated to set up default shipping information.

Note Use Ship Allocated to set up default shipping information if you are shipping directly from Material Order Maintenance.

Ship Picked. Specify Yes (the default) to include all items in the To Ship column that were picked when the packing list was printed. Otherwise, they display in the Backorder column, and you must specify the order quantity for each line.

Consume. By default this field is set to Yes to indicate that the selected items should be consumed automatically when shipped. This defaults from the setting of the Material Order Control file.

Override Partial OK. Specify whether to allow partial shipments for this material order.

Yes: Allow partial shipments.

No: Check the Partial OK field in Customer Data Maintenance to determine whether partial shipments are allowed.

Note This setting has no effect on MOs without a call.

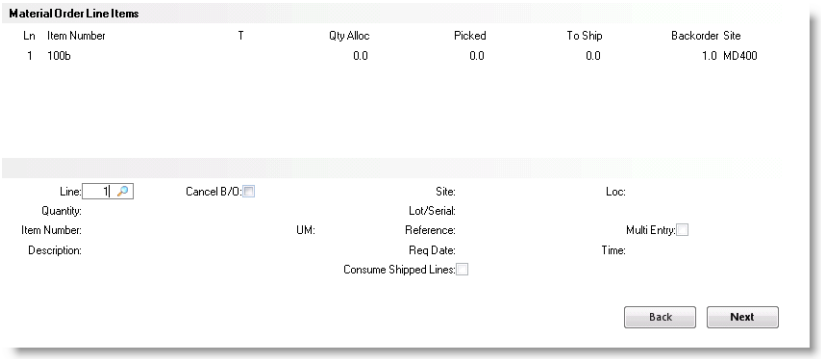
From Site. Inventory site where items are located. You can leave this field blank unless the MO spans multiple databases. If you specify the site, it must be valid.

To Site and Location. These fields default from the site and location associated with the engineer. If these values are blank, the system uses the site and location defined for the engineer's area.

Material Order Line Items

After you complete the header, the Material Order Line Items frame displays. Each item ordered on the MO displays. You can change each line before it is transferred. You can also overrule the system allocation and enter another location from which to transfer the item.

Fig. 20.18
Material Order Shipments Line Items



Line. Enter a line number to display or modify associated data.

Cancel B/O. The default is No. Yes indicates that any item under the Backorder column should be removed from the order. No indicates that items on backorder should be retained for later shipment.

Quantity. The quantity to be shipped for this line displays. You can modify it. If Ship Allocated and Ship Picked are Yes, the quantity is the total of the Allocated and Picked columns. You can enter a new quantity. For example, an engineer may have ordered five items and now wants only three.

Item Number, Description, and UM. These are output-only fields referring to the line-item number and its inventory description and unit of measure.

Site and Location. Defaults from the inventory site and location associated with the item in the item master. You can modify these fields.

Lot/Serial and Reference. The serial number and inventory reference of the first item picked for this line.

Required Date, Time. Enter the date and time at which the material order is required. These values indicate when the ordered items will arrive at the customer's site.

Consume Shipped. •This field defaults from the Consume field on the header. Enter Yes to cause this line to be consumed.

Multi Entry. The system sets this field to Yes when a line has multiple items and it cannot be changed. If Yes, an Item Issue Detail frame displays so that you can modify the serial number of each item picked.

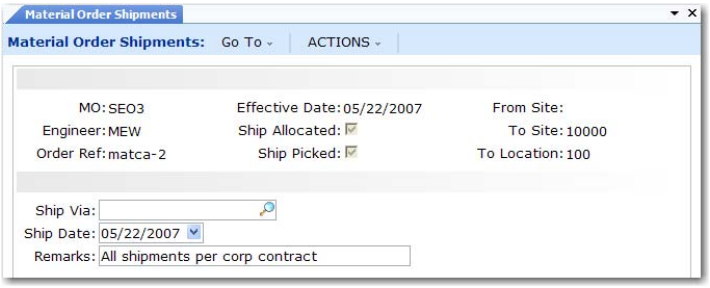
When you accept the shipping information, you are prompted to confirm the items being shipped. The default reply is Yes. Accepting Yes displays the line item, item being shipped, what site and location it is shipping from, lot and serial numbers, quantity, and unit of measure.

You are prompted again to confirm that all information is correct. If you accept Yes, the shipment trailer displays. If you enter No, you can change information.

Material Order Shipment Trailer

The trailer entry is analogous to standard sales order shipment. After accepting the data, the system processes the items entered.

Fig. 20.19
Material Order Shipments Trailer



Ship Via. When the MO is associated with a call, this field defaults from the Ship Via associated with the end user's customer. Set up codes with Generalized Codes Maintenance for field so_shipvia.

Ship Date. Defaults from the system date, but can be modified.

Remarks. You can enter brief remarks concerning MO handling. If you specified a call on this MO, remarks default from the remarks associated with the end user's customer.

Output. Enter an output device for reports that print when the shipment function executes.

Printed Output

The system creates two documents during the shipment process:

- *Material Delivery Note.* This document always prints and includes the shipping address, quantities, pricing, extended price, shipped from location, and shipped date. It is a packing slip to use with your freight service. The title, Material Delivery Note, prints at the top of the output.
- *Back Order Advice.* This document prints only if items on the MO remain on back order. It shows items, quantities, and sales price information.

Material Delivery Note

Each Material Delivery Note has a control number. The system uses this number to track transactions related to this MO. Use the control number when partial shipments are made or items remain on back order and are shipped later. In this case, the system tracks the quantity shipped on each document. Set the value for this number in the Next Delivery Note field of Material Order Control.

The material delivery note lists items on the MO that are transferred to the engineer location. This includes all picking information and price information based on the price of the item in Item Master Maintenance. These prices are suggestions only and can differ from the invoice pricing determined during Call Activity Recording.

Fig. 20.20
Material Delivery Note (132-column print format)

```
MATERIAL DELIVERY NOTE      Doc : 00000004      Page:   1   Date : 07/11/07

Ship to:   Lake Refrigerator Co.    Order Ref: CA157
           321 South Lake St.       Eng: PKH
           Building 47              MO: 62
           Los Angeles, CA 93122    Charge:
           USA

                         Qty                                    Qty Unit     Tot
 Ln Item Number Rep  Ordered Site   Location Lot/Serial  Delivered Price UM Pri
--- ----------- --- -------- ------ -------- ----------- --------- ----- -- ---
  1 44-1000     No      1.00                               2.00      10.00 EA 20.
    Sensor Unit              10000  stock                2.00
-------------------------------------------------------------------------------
                                                                              2
```

Back Order Advice

Back Order Advice lists all MO items on back order, their quantity, and sales price information. Each Back Order Advice has a control number. Set the value for this number in the Next Back Order Advice field of Material Order Control.

Fig. 20.21
Back Order Advice (132-column print format)

```
ITEMS DUE TO BE DELIVERED TO: Doc  : 00000003  Page:   1  Date : 07/11/07

  Harvey, Phillip                      Order Ref:
  1900 Acacia Drive                     Eng: PKH
                                        MO: 63
  San Marcos, CA 92069                 Charge:
  USA

                                  Qty       Qty     Unit
 Ln Item Number Description   Ordered Backorder  UM Price
--- ----------- ------------- ------- ---------- -- -------
  1 44-100      Sensor Unit   10.00   5.00       EA  0.00
-------------------------------------------------------------------------


Remarks:
-------------------------------------------------------------------------
```

Inventory and GL Transactions

Shipping an MO generates issue (ISS-TR) and receipt (RCT-TR) inventory transactions. If the transfer is a site-to-site transfer, the system creates GL account transactions and bookings with standard inventory transfer routines.

You can review the transactions created using Unposted Transaction Inquiry (25.13.13). The GL reference begins with IC and does the following:

- Debits the Inventory account defined in Inventory Account Maintenance for the product line at the To site and location
- Credits the Inventory account defined in Inventory Account Maintenance for the product line at the From site and location

When inventory transactions affect more than one site, costs may differ between the two sites. Cost variances are posted to the Transfer Variance account defined for the item product line and site in Inventory Account Maintenance, if available. Otherwise, the account defined for the site in Site Maintenance is used. The system automatically generates the appropriate balancing transactions in the GL for each site.

- When the two sites are in different entities, a balancing entry is posted to the appropriate Cross-Company Inventory Control account defined for the domain referencing the intercompany codes associated with the entities.
- When the two sites are in the same entity, a balancing debit or credit is posted to the Transfer Clearing account defined in Inventory Accounting Control.

Expensed MOs

In case of an expensed MO with a charge code, the items ordered are transferred to the engineer site and location entered in Material Order Shipments and then consumed. The system handles this action as an unplanned issue (ISS-UNP).

The debit account for the costs is the Service Expense account from the product line for the charge code. Costs are credited against the Inventory account of the consumed item’s product line.

MOs With and Without a Call

While expensed MOs are issued immediately, items transferred with other MOs remain in inventory. Items ordered for a call are issued out of inventory only when they are consumed for the call in Call Activity Recording. To maintain the relationship between the items and the call, the system marks the items in the To site as allocated to the call or line. This allocation prints on standard reports like the Allocated Inventory.

Items ordered for the engineer's inventory replenishment remain in inventory until consumed in some way, probably in Call Activity Recording.

Material Order Reports

Review information associated with MOs and shipments in three reports:

- Open Material Order Report (11.11.11)
- Material Order Backlog Report (11.11.12)
- Material Order Shipment Report (11.11.13)

If you are using EMT and your MO includes a line for an EMT transshipment item, you can view the transmission and shipment status of the EMT purchase order using EMT Tracking Report (7.15.11).

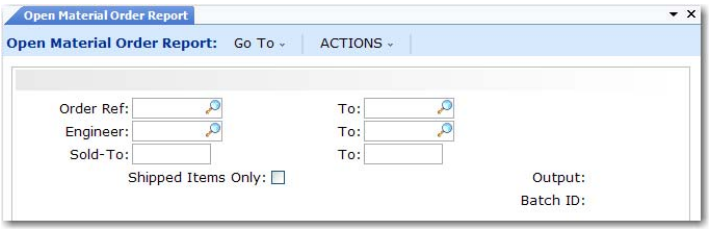
See *User Guide: QAD Sales*.

Open Material Order Report

Use the Open Material Order Report (11.11.11) to review line-item detail on MOs. You can restrict the report to include only MO lines that have a quantity shipped, or display information for all items on open MOs regardless of whether any quantity has shipped.

This report is generated based on information maintained in the MO master table. When an MO without a call has fully shipped, the system deletes it. When all items on an MO for a call are consumed or returned, the system also deletes it. Use the Material Order Shipment Report to generate a report based on transaction history for MOs that are no longer available in the MO master table.

Fig. 20.22
Open Material Order Report (11.11.11)



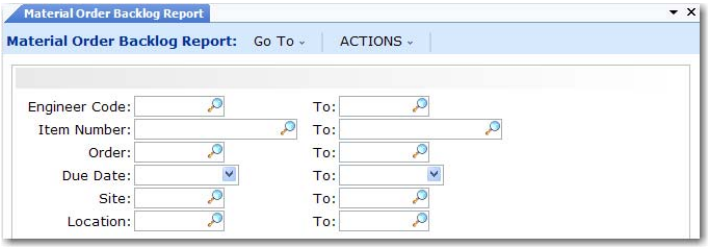
Select MO lines to report by call ID (order ref), engineer, and sold-to address. The system prints any item on order on any open MO line in the specified range. Line items within the selection print in order of due date.

Material Order Backlog Report

Use the Material Order Backlog Report (11.11.12) to display open MO lines waiting to be shipped. The system lists MO lines by item number, order, due date, site, or any combination. The system lists each item's availability by site and line items by due date.

Inventory quantities are the same as those in the Stock Availability Inquiry (3.17).

Fig. 20.23
Material Order Backlog Report (11.11.12)



The system prints back-ordered items on an MO line with a due date and site in the specified range. Each line item within the selection prints in order of due date.

Fig. 20.24
Backlog Report (132-column print format)

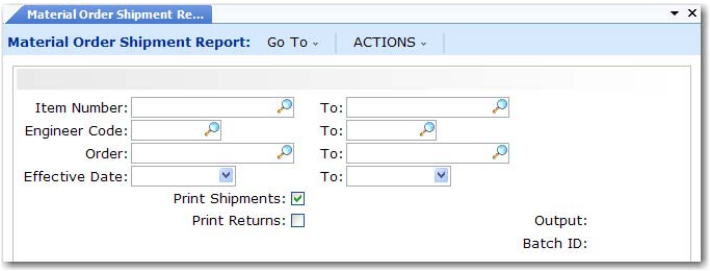
```
fseodl.p b+      11.11.12 Material Order Backlog Report       Date: 08/19/07
Page:    1                Quality Products, Inc.              Time: 11:37:54

 Order/Ln Site    Item Number Description    Due Date Qty Ordered  Qty Alloc.
 -------- ------- ----------- -------------  -------- ------------ ------------

 50       PKH      Harvey, Phillip              Order Ref: CA127
       1 10000    10-15000    COOLING SYSTEM 07/25/07         10.0       10.0
       2 10000    44-2000     CONTROL UNIT   07/25/07         10.0        0.0

 MO123-B  glb      Bellicose, George            Order Ref: CA123
       1 10000    55-100      EVAPORATOR     07/30/07          2.0        0.0
```

Material Order Shipment Report

Use the Material Order Shipment Report (11.11.13) to print a report based on the transaction history created whenever an MO is shipped. Use this to view transactions for MOs that have fully shipped and been deleted by the system. If an MO line has partially shipped, the open quantity on the MO line displays.

The report includes the call number for MOs that have not been consumed completely in CAR. Since the system does not maintain the call number in transaction history, it is not available after the MO is consumed and deleted.

Fig. 20.25
Material Order Shipment Report (11.11.13)



Only MO lines with a quantity shipped appear on the report. You can restrict the report to only items shipped or optionally include information for items returned.

Select MO lines to include by item number, engineer code, MO number, and ship date. Except for engineer, the selection criteria determine the way the system sorts and presents information on the report. The report is sorted by item number, effective date, or MO number, depending on the range you specify, then by the transaction history number. If you specify only the engineer, the system sorts the report by transaction history number.

Important Generating a report with blank selection criteria or using only the engineer code can impact program performance. Also, because the report searches all transaction history records, a large amount of history can degrade performance.

Loading MO Lines into CAR

When you associate an MO with a call, you must associate each line item with a particular call line. When you access the call line in Call Activity Recording, the system displays a list of MO line items ordered for it. The engineer can select some or all of these items, which the system loads into the Item Usage frame of CAR.

Loading MO lines simplifies the recording of consumed and exchanged items ordered with MOs. Once items are loaded, you can modify the usage records like any other records in CAR.

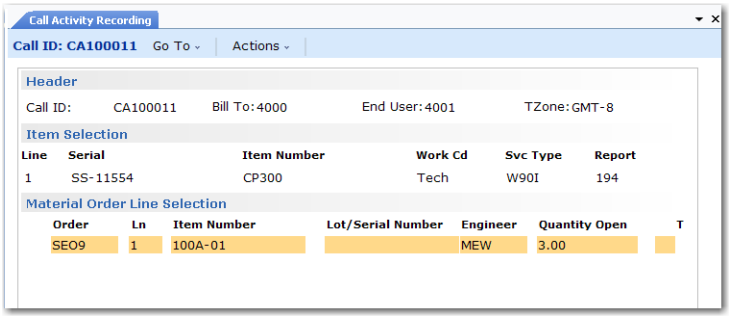
If you select an MO line but do not issue the inventory, the system removes it from the usage detail and lets you reload it. The system keeps track of items consumed on the MO and continues to present the Material Order Selection frame until you have consumed or returned all MO items.

Material Order Selection Frame

When you select a call line item in CAR that has one or more open MOs, the Material Order Selection frame displays.

Fig. 20.26
Loading MO Lines in Call Activity Recording (11.1.1.13)

Items have been ordered for the call line.



The selection frame displays all open MO lines for the call line. An MO line is open when the quantity shipped on the MO is greater than the quantity consumed plus the quantity returned.

Select or deselect MO lines as needed. An asterisk (*) indicates selection. To leave the scrolling window and continue processing, click Next. After you finish the selection, the system loads the items ordered on the MO into item usage records in CAR. Click Back while in the scrolling window to return to Call Activity Recording without loading any MO lines.

A user in CAR can select an item ordered on an MO for this call by a different engineer; however, the system displays a warning. The system validates each loaded line and displays standard CAR warnings and errors.

For each MO line you select, the system creates one item usage record. Internally, each item usage record remains linked to the MO line so it is recognized later when you update quantities. As a result, if items on an MO are not yet accounted for, the MO remains on the list of open MOs that you can select the next time you process this call item.

Item Usage Record

The system determines default information for the various fields in the item usage record as follows:

Quantity Used. The quantity used defaults from the open quantity of the MO line.

Quantity Returned. The quantity returned defaults from the quantity used if you have defined the item being consumed as repairable.

Note Set Repairable to Yes in Service Item Maintenance (11.3.7).

Operation Number. If item usage records exist, the system loads the MO into the first operation without them. If all operations have items, the system loads the MO into an operation numbered 10 more than the last one. If there is currently no item usage, the system loads the MO into the first operation.

Item Number. Same as the MO item number.

Inventory Details. The site, location, lot/serial, and reference associated with the MO line are loaded into the item usage detail and cannot be changed. Since detail allocations have been made to the call during MO shipment, you must consume the item that was shipped on the MO.

Inventory Transactions

When you accept the information in the item usage frame, several actions can occur:

- An inventory transaction for the consumed items takes place (ISS-WO).
- The system updates the quantity open on the MO based on the quantity consumed.
- After inventory processing and quantity updating, the system deletes the MO line if the quantity shipped equals the quantity ordered, the open quantity on the line is zero, and the pending quantity is zero.
- When the system deletes the last line of an MO, it also deletes the MO header.

Returning Items on MOs

An engineer may need to return items ordered on an MO when:

- Items ordered for a call are not used. Return these items in Call Activity Recording or in MO Direct/Pending Returns (11.11.8).
- Items ordered for engineer stock on an MO without a call are no longer needed. Return these items in MO Direct/Pending Returns (11.11.8), as long as the system has not deleted the MO.
- Items returned in Call Activity Recording are given a pending status. This means that the items are registered as returned, but remain in the engineer stock. You must physically return them to general stock in MO Direct/Pending Returns.

Return Setup

The return process in CAR and MO Direct/Pending Returns depends on two important setup activities, discussed in Chapter 3:

- “Return Status” on page 78
- “Default Sites and Locations” on page 74

Make sure you understand these concepts before continuing with this section.

MO Returns in CAR

You can return items ordered on an MO in Call Activity Recording. The system executes these returns as inventory transfers, since the MO items are in standard stock. The return status you specify indicates the type of return in CAR. The system restricts the return statuses used with MO items as follows:

- Pending can be Yes or No. If Yes, Good must be Yes and Scrap No. If Pending is Yes, the return is registered against the call, but the items are not physically returned. Complete the return later using MO Direct/Pending Returns (11.19.13.8).
- Exchange must be No. You cannot return items ordered on an MO for credit. Exchange processing is reserved for items returned from a customer.

When returning items in CAR, always set Detail to Yes so that you can review the return status and default site and location for the return. When Detail is Yes, the Returned Items Detail pop-up displays. This frame enables you to specify the return status and inventory return site and location. If you are returning more than one item, you can access a multiline entry frame.

See “Returned Items Detail Frame” on page 433.

Updating Inventory

When you return items loaded from an MO line in CAR, the system moves them from one inventory site/location to another, using an inventory transfer transaction. If the return status has pending set to Yes, no inventory is moved at this time. However, the allocation to the call is removed.

The system keeps track of the open quantities on the MO. Returning items updates the quantity returned. A pending return updates both quantity returned and quantity pending.

Deleting MO Lines

After processing inventory and updating quantities, the system deletes the MO line if the quantity shipped equals the quantity ordered, the open quantity on the line is zero, and the pending quantity is zero. When the system deletes the last line of an MO, it also deletes the MO header.

MO Direct/Pending Returns

Use MO Direct/Pending Returns (11.11.8) for MOs associated with a call to:

- Return items ordered for a call but not used.
- Complete the return of items ordered on an MO for a call and marked with a pending return status in Call Activity Recording.

It is possible to return items ordered for engineer stock—MOs without a call—that you no longer need. However, when all items ship successfully on an MO without a call, the system deletes it. When this occurs and it is necessary to return items, you must use standard inventory management functions to transfer the items.

Note You cannot return items ordered with an expensed MO. If you specify an MO that has a charge code, the system displays an error.

Return Status

Use the return status in MO Direct/Pending Returns in two ways, depending on whether you are doing a direct return or completing a pending return.

You cannot use MO Direct/Pending Returns to mark items as pending, only to complete a pending return started in Call Activity Recording. This means you can specify a pending return status only if some items are marked as pending in CAR. Otherwise, the system displays an error.

Pending returns are assumed to be good, since they are items you ordered on an MO and did not use. They are returned to the default return site and location set up in Default Site Maintenance.

For direct returns, the system uses the return status to determine the default site and location for the returned items. You cannot specify a return status marked with exchange, since the items being returned do not come from a customer.

Because completing a pending return and directly returning items are processed differently, you cannot execute both types of returns at once.

Example You want to return four items left on an MO. Two were marked as pending return in CAR. You must execute this function once with a pending status and the quantity pending, then again with another valid return status and the quantity unconsumed.

Return Quantities

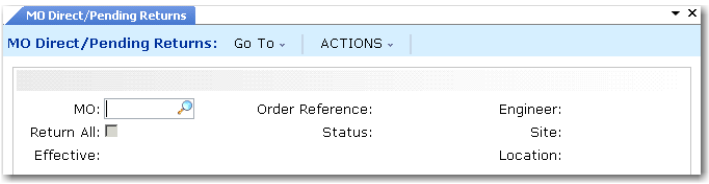
The system keeps track of various quantities on the MO. Any kind of return, both direct and pending, updates the quantity returned. A pending return also updates the quantity pending. For this reason, when these quantities display in MO Direct/Pending Returns, the quantity shipped may not equal the quantity returned, plus the quantity consumed, plus the quantity pending.

If both an open quantity and a quantity marked pending exists, the system defaults the value into the quantity field based on the return status.

MO Direct/Pending Returns Header

Figure 20.27 illustrates the header frame of MO Direct/Pending Returns.

Fig. 20.27
MO Direct/Pending Returns (11.11.8)



MO. Enter a valid MO with items to be returned. The MO cannot have a charge code.

Order Reference and Engineer. These are output-only fields that default from the MO.

Return All. Specifying Yes sets up all open quantities on the MO to be returned. If No, you must enter each line on the MO and select quantities to be returned before they are processed. Specify Yes to streamline data entry.

Status. Status defaults from the Return Status in Call Management Control. The definition of the return status determines what kind of return you are performing and the default return site and location.

Enter any valid return status defined with Return Status Maintenance (11.21.17) except an exchange status. Pending returns have a Qty Pending value greater than zero. If a pending status is specified, some items must be marked as a pending return in Call Activity Recording or an error displays.

Site and Location. Site and location default first from the engineer site and location, then from the engineer's area. You can change these values if the items reside in a different site and location. These values provide the default for each line with quantities to be returned.

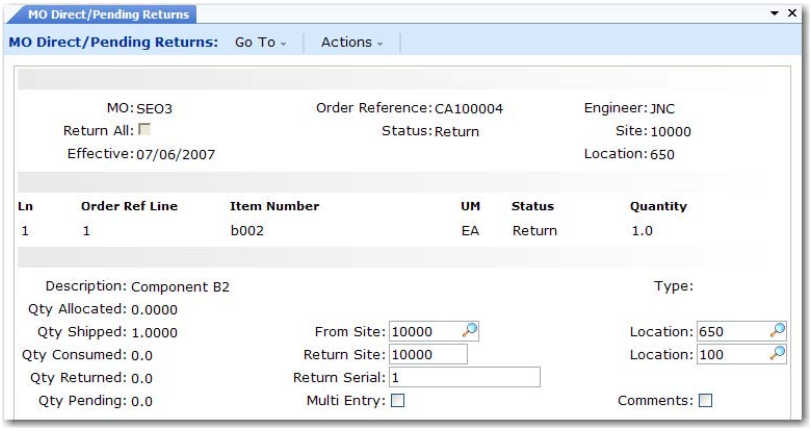
Effective. Enter the GL effective date for the return transaction. The default is the current date. The system verifies that the date is within an open fiscal period.

The effective date determines when this transaction affects GL balances.

Selecting Items to Return

Once you complete the header, the line-item selection frames display.

Fig. 20.28
MO Direct/ Pending Returns (11.11.8)



The Ln, Order Ref Line, Item Number, and UM fields are output only and reflect values from the MO line.

Status. Defaults from the header's status and has the same restrictions and effect.

Quantity. If a pending status is specified, the Qty Pending displays by default. For a direct return, the open quantity on the MO line displays. Enter the number of these items you want to return. If you specify more than the open or pending quantity, an error displays. The open quantity is the Qty Shipped minus the Qty Consumed minus Qty Returned.

Description, Type, Qty Allocated, Qty Shipped, Qty Consumed, Qty Returned, and Qty Pending are output-only fields.

From Site and Location. Site and location default from the header. The system transfers inventory from this site and location to the return site and location.

Return Site and Location. The system searches for a default return site and location based on the attributes of the return status. Define return sites with Default Site Maintenance (11.21.13) for combinations of product line, service group, work code, item, and area. The return location must allow receipts (RCT-TR).

The system searches for a return site using the product line and service group of the item being returned. The system derives the area from the engineer. Work code is not used in this function.

Return Serial. If the item being returned is lot/serial controlled, enter the correct number in this field.

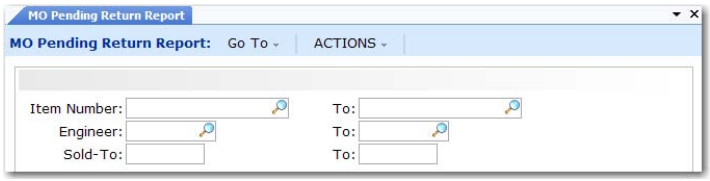
Multi Entry. Enter Yes if you are returning multiple items and need to specify detail information for each one. If Yes, a Return Detail frame displays so that you can specify the lot/serial of each item returned.

Comments. If Comments is Yes, you can add or modify comments for the return.

Pending Return Report

The MO Pending Return Report (11.11.9) displays MO lines with at least one item that has a pending return status. Review this report on a regular basis to make sure that engineers return the items they said they did not use.

Fig. 20.29
MO Pending Return Report (11.11.9)



Since you cannot close a call until you return or consume all items ordered on an MO, ensure that pending returns are completed in a timely fashion.

Chapter 21

Service Structures and Routings

Service structures and routings address the need of service organizations to manage repairing, installing, and maintaining items. This chapter discusses BOMs and routings in the service environment and provides details about setting up service BOMs, routings, standard operations, and work centers.

Overview

Service structures and routings address the need of service organizations to manage repairing, installing, and maintaining items. These needs fall into three general categories:

- Service engineers need to identify the parts used to maintain an item, fix or install it, and the steps to follow during the service activity.
- Items returned from the customer for repair often require overhaul and refurbishing. A way is needed to assign the repair to a work center and manage it.
- Service activities may require labor and shop floor reporting similar to standard manufacturing control functions.

The functions on the Service Structures/Routings Menu (11.19), listed in Table 21.1, address these needs.

Table 21.1
Service Structures/Routings Menu (11.19)

Menu No.	Menu Title	Program
11.19.1	Service BOM Code Maintenance	fsbommt.p
11.19.2	Service BOM Code Inquiry	sbomiq.p
11.19.3	Service BOM Code Report	fsbomrp.p
11.19.5	Service Structure Maintenance	fspsmt.p
11.19.6	Service Structure Inquiry	fspsiq.p
11.19.7	Service Structure Report	fspsrp.p
11.19.9	Service Structure Copy	fspscp.p
11.19.13	Service Work Center Maintenance	fswcmt.p
11.19.14	Service Work Center Inquiry	fswciq.p
11.19.15	Service Work Center Report	fswcrp.p
11.19.17	Service Routing Maintenance	fsromt.p
11.19.18	Service Routing Inquiry	fsroiq.p
11.19.19	Service Routing Report	fsrorp.p
11.19.20	Service Routing Copy	fsrocp.p
11.19.21	Service Std Operation Maint	fsopmmt.p
11.19.22	Standard Operation Browse	rwbr002.p
11.19.23	Service Std Operation Report	fsopmrp.p

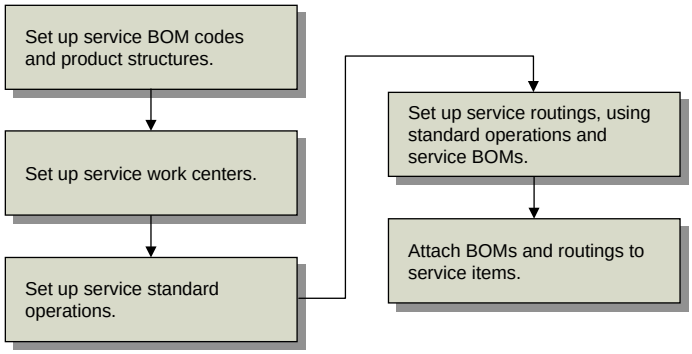
This chapter discusses each of these functions in more detail:

- Service BOM Code Maintenance (11.19.1) defines the codes identifying a set of items used in service activity.
- Service Structure Maintenance (11.19.5) is used to create the list of items consumed during a predefined service activity.
- Service Work Center Maintenance (11.19.13) enables you to set up service work centers. You can also use standard work centers for service activities.
- Service Routing Maintenance (11.19.17) enables you to define a set of operations detailing the steps taken in a service activity.

- Service Standard Operation Maintenance (11.19.21) enables you to define operations common to the service of several products or applicable to different service routings in different operation sequences.

Figure 21.1 illustrates a typical workflow for setting up and using service structures and routings.

Fig. 21.1
Service Structure/Routing Workflow



BOMs/Routings in Service Environments

The terms *BOM* and *routing* are familiar terms to users of standard manufacturing functions. In manufacturing, a BOM defines the raw materials, components, or subassemblies that make up an item. A routing is a set of steps for manufacturing an item.

In the manufacturing environment, the BOM and routing associated with an item are typically standard: the item is generally made in the same way. While alternates and substitutions can exist, this one-to-one relationship is illustrated by the fact that the BOM and routing associated with an inventory item typically have the same number code as the item. Manufactured item 10-400 uses BOM 10-400 and routing 10-400.

In Service/Support Management, you use BOMs and routings in a slightly different fashion, reflecting the requirements of the service environment. From a service perspective, a *BOM* may be a list of replacement parts for repairing or maintaining an item, or a set of items needed to perform an installation. A *routing* is a set of steps detailing the procedure to be followed in repairing, installing, or maintaining an item.

Special Characteristics of Service BOMs/Routings

Because of the requirements of the service environment, service BOMs and routings have characteristics that distinguish them from standard manufacturing BOMs and routings.

Multiple BOMs and Routings

The major difference between manufacturing and service is that the service environment does not usually have a single way of doing things. Installation, repair, and maintenance reflect three service scenarios where different procedures requiring different item usage occur. But there can be other scenarios. A service organization can have several standard repair routings, not just one, reflecting typical problems encountered in the field.

You can associate three service BOMs and routings with a service item:

- *Repair.* Each type of repair typically has its own repair routing for procedures and repair BOM for items replaced during repair. Though repair steps can vary, the goal is to specify general repair steps that are always performed.
- *PM.* As with repairs, preventive maintenance (PM) visits also have a routing and bill of material. PM visits are different from repair situations. The PM routing defines standard procedures that need to be performed for a preventive maintenance visit. The PM BOM defines the items that you always replace or consume during a preventive maintenance visit.
- *Installation.* The operational steps and items used during an installation represent a third kind of standard BOM and routing that is different from repairs and preventive maintenance.

Note Use Service Item Maintenance (11.3.7) to associate BOMs and routings with an item.

BOMs Associated with Operations

This proliferation of related BOMs and routings leads to a second distinction in the service environment. In manufacturing, the BOM is often set up so that you use parts of the BOM at various operation steps. This is facilitated by the one-to-one relationship between a BOM and a routing.

In the service environment, since there can be several routings, the operation that uses an item may not be numbered the same in each. To accommodate this difference, the system links service BOMs to operations rather than linking operations to BOMs. You can create shorter BOMs listing the items used during a standard operations or routing step. You can then specify these BOM codes in the appropriate step on the routing.

Unique Codes

You typically identify manufacturing BOMs and routings with the same code as the associated item. You must identify service BOMs and routings with unique codes. You cannot use inventory item numbers.

Relationship of Service and Non-Service Codes

The programs you use to maintain service BOMs, product structures, routings, work centers, and standard operations are similar to those in the manufacturing modules. However, the system does make a distinction about where you can edit codes:

- You can maintain service and manufacturing BOM codes interchangeably in Service BOM Code Maintenance (11.19.10) and Product Structure Code Maintenance (13.1). However, a warning displays if you do not maintain the code in the program that created it.
- You cannot maintain manufacturing product structures using Service Structure Maintenance (11.19.5). Conversely, you cannot maintain service product structures with Product Structure Maintenance (13.5).
- You cannot maintain manufacturing routings using Service Routing Maintenance (11.19.17), since many of the fields required in manufacturing are not used in service. Similarly, you cannot maintain service routings with Routing Maintenance (14.13.1).

- You can edit a manufacturing work center with Service Work Center Maintenance (11.19.13), but a warning displays. You can maintain a service work center in Work Center Maintenance (14.5), but a warning displays.
- You can edit a service standard operation with Standard Operation Maintenance (14.9), but a warning displays. Similarly, you can maintain a manufacturing standard operation with Service Standard Operation Maintenance (11.19.21), but a warning displays.

You can use standard operations and work centers set up in the Routings/Work Centers module in service activities. For example, if an item is refurbished using a manufacturing work center, you can specify it on a service routing. You can also use manufacturing operations with service routings, although defaults for some data elements unique to service are not available.

You can associate a service routing with an item in Item Master Maintenance, although this is not recommended.

Important If you do cost rollups in a manufacturing environment, do not associate a service routing with an item in Item Master Maintenance. The roll-up process does not consider BOMs that are attached to routing steps. This can lead to an inaccurate cost rollup.

The only place that you can use a manufacturing BOM in service is as the list of items associated with a routing step or standard operation. You cannot associate manufacturing BOMs and routings with service items. However, you can use them in the service copy functions as source for service BOMs and routings.

Attaching BOMs/Routings to Service Items

After you create the appropriate service routings and bills of materials, you can attach them to items using Service Item Maintenance (11.3.7). You can specify three BOMs and routings that relate to three fields in Service Item Maintenance:

- A repair BOM and routing are normally attached to an item when Repairable is Yes.
- An installation BOM and routing are normally attached to an item when Installation Call is Yes. You can have variations on a standard PM BOM and routing depending on how often you service the covered item. See “Using BOM Type” on page 256 for details on BOM type codes.
- A PM BOM and routing are normally attached to the item when PM Days is nonzero.

If your company handles service activities differently at different sites, you can define service BOMs and routings for each site with Service Item by Site Maintenance (11.3.9).

See “Service Item Maintenance” on page 35 for details.

BOM Codes for Non-Inventory Items

During preventive maintenance and repairs, you can use non-inventory items. To track these supplies, create BOM codes for them in Service BOM Code Maintenance (11.19.1).

Then attach the BOM code to the routing at the appropriate operation. The items are listed as part of the items needed when a call is printed. However, they are not included as item usage in Call Activity Recording, since the system loads only inventory items as item usage in CAR.

Using Service BOMs and Routings

The system uses service BOMs and routings in a number of places:

- Call creation and printing
- Call Quote Maintenance
- Call Activity Recording
- RMA Release to Work Order (repair routing only)
- Attachment of BOMs to standard operations and service routings

Call Creation

One of the three BOMs and routings associated with a service item is used during call creation, depending on the work code you specify.

- The PM BOM and routing are used by default for calls with the PM work code. The system can generate these calls from a preventive maintenance schedule associated with a service contract, or you can generate them by using the Call Generator or by specifying the PM work code in Call Maintenance.
- The Installation BOM and routing are used by default for calls with the Install work code. The system creates these calls during invoice post for items requiring an installation, or you can create them by using the Call Generator or by specifying the Install work code in Call Maintenance.
- The repair BOM and routing are used by default for calls with any other work code.

Note Define the Install and PM work codes in Call Management Control.

You can modify defaults in Call Maintenance if Call Structure Window is Yes in Call Management Control. This field controls the display of the repair detail window in Call Maintenance. You can change defaults later in Call Activity Recording, if they have not been loaded as usage and activity recorded against them.

You can include service BOMs and routings when you print a call to provide the engineer with a detailed set of instructions for the service activity.

Call Quote Maintenance and Call Activity Recording

When you create a call quote, the work code determines the appropriate service BOM and routing, just as in Call Maintenance. For both quotes and calls, the service BOM and routing can be used to populate the detail records for labor and items. The system loads each routing operation in the Labor/Expenses detail. The system loads all BOM items in the Item Usage frame for the first operation without items.

This streamlines data entry for standard repair sequences. You can modify the sequence for this particular quote. When you release the quote to a call, the same detail records display in Call Activity Recording. You can make minor adjustments to reflect the work performed.

RMA Release to Work Order

You can process items received on an RMA through a work order by releasing an RMA receipt line to a work order with RMA Release to Work Order (11.7.1.5). The system transfers the repair routing to the work order, defining the operations that must be performed to complete the item rework. The repair BOM is not used. The item being repaired is considered the BOM on the repair work order.

Standard Operations and Service Routings

You can associate service BOMs with service items in Service Item Maintenance, as described previously. You can also associate a BOM code with a standard operation or with a step on a routing.

Use this for more precise control over how the system loads items in Call Activity Recording and Call Quote Maintenance. When you associate a BOM with a service item, the system loads the BOM items into the first routing step without items. This may not be the step where you use them.

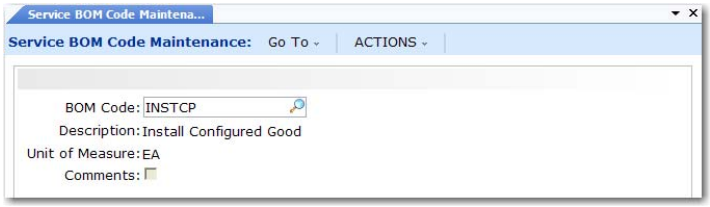
To avoid this, divide the list of components required for the entire service activity into lists of the items used at each step. Then create service BOMs to represent the item subsets. Finally, associate each shorter BOM with the appropriate operation.

When routings set up this way are exploded in CAR, the system loads the set of items needed for each step as item usage for the step.

Service BOM Code Maintenance

Define service BOM codes in Service BOM Code Maintenance (11.19.1).

Fig. 21.2
Service BOM Code Maintenance (11.19.1)



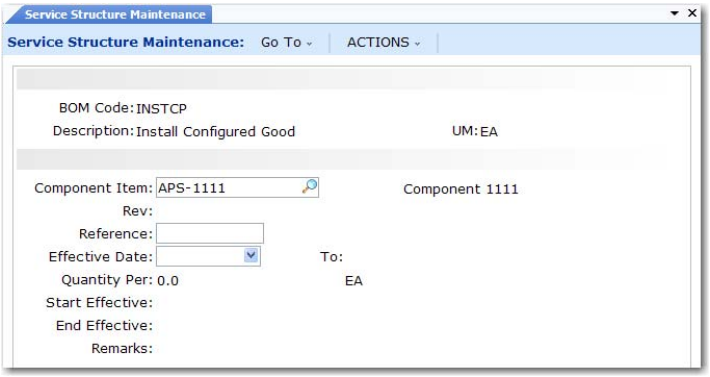
This function is optional. You can also create BOM codes in Service Structure Maintenance. However, you can define the codes here, then define the components with Service Structure Maintenance. If you do not use this function, comments are blank.

The BOM code cannot be an item number defined in the item master. If you specify a manufacturing BOM, a warning displays.

Service Structure Maintenance

Specify the details for service BOM codes in Service Structure Maintenance (11.19.5). This program uses only a subset of the fields displayed in Product Structure Maintenance. These two functions are similar. However, there is an important difference. The parent item of a service structure must be a service BOM code; it cannot be an item defined in the item master. You can create the service BOM code here or with Service BOM Code Maintenance (11.19.1).

Fig. 21.3
Service Structure Maintenance (11.19.5)



BOM Code. If the BOM code does not exist, the system prompts you to create it. Specify an 18-character code identifying a service product structure, or BOM. Parts or components used in the service of an item are grouped under a BOM code. The parent item cannot be an item defined in the item master or a manufacturing BOM code, but must be a service BOM created here or in Service BOM Code Maintenance. To maintain the relationship with the item being repaired, you can use a prefix or suffix naming convention.

Description. Enter a brief description (maximum 24 characters) of this service structure. This description displays when you reference the structure.

The next four fields—component item, revision, reference, and effective dates—comprise a key for the last four fields.

Component Item. You can specify any item defined in the item master as a part of this service structure, except configured items. You can also use another service or manufacturing BOM. You can use a formula item defined in the item master. You cannot specify a formula BOM.

Rev. If you select an item master item as a component, its current revision number displays.

Reference. Use a reference number to specify the same component more than once in a service structure. The reference number defines this item's position when the BOM is exploded.

Effective Date. Starting and ending effective dates are inclusive and cannot overlap. The default is blank. This field indicates the first day this parent/component relationship is to be effective, and is part of the key in searching for a quantity to use.

Quantity Per. The quantity of the component item needed during the service activity. When you print a repair work order, call quote, or call report, the system lists each component item and the quantity required to perform the work. The system loads Quantity Per into the Item Usage frames in Call Quote Maintenance and Call Activity Recording as Qty Used.

Start Effective and End Effective. Starting and ending effective dates are inclusive and cannot overlap. You can leave one or both dates blank, which is the default. They indicate the first and last day this parent/component relationship is to be effective. Effective dates phase in engineering changes and maintain product structure history.

Remarks. Enter a brief comment describing this component's use.

Service Routing Maintenance

Specify the details for service routings in Service Routing Maintenance (11.19.17), illustrated in Figure 21.4. A service routing is the sequence of steps involved in a service operation. This sequence can include any number of standard operations, or can use operations defined for this service routing only.

Note Standard routings cannot be updated with Service Routing Maintenance.

Service routing codes must follow the same rules as service BOMs:

- The routing code must be unique to Service/Support Management.
- It cannot be an existing item number in the item master.

Standard Operations

Standard operations streamline data entry by providing defaults for all but the effective dates (Start Date and End Date). The comments you enter for each step print on the call so that the engineer can see how to service the item. You can use both manufacturing standard operations, which you define in the Routings/Work Center module, and service standard operations on a service routing. If you use manufacturing standard operations, defaults for service-only attributes are not available.

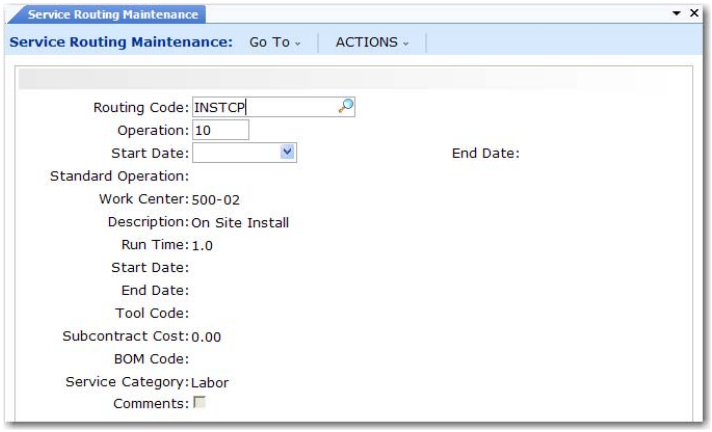
Work Centers

When you set up a service routing, you can use standard work centers that are part of your regular manufacturing operations. Or you can use service work centers that you create in Service Work Center Maintenance (11.19.13). The kind of work centers you use depends on your business procedures.

Note Work centers are important in Call Activity Recording because the system derives the standard cost of labor from the work center.

The work center is a required field even if you do not use work centers in the traditional manufacturing sense. If you dispatch engineers to do preventive maintenance or repair on site, you can set up a service work center named FIELD, or designate each engineer as a work center.

Fig. 21.4
Service Routing Maintenance (11.19.17)



Routing Code. An 18-character code that identifies the service routing. This cannot be a routing code defined in the Routings/Work Center module or an item number defined in the item master.

Operation. This number identifies where this step occurs in the routing sequence. Operations are usually initially defined in increments of 10, such as 10, 20, 30. This lets you easily insert steps.

Start and End Date. Starting and ending effective dates are inclusive and cannot overlap. You can leave one or both dates blank, which is the default. They indicate the first and last day this operation step is to be effective. Use effective dates to phase in engineering changes.

Standard Operation. You can specify a standard operation code set up with Service Standard Operation Maintenance (11.19.21) or Standard Operation Maintenance (14.9). Standard operations represent actions common to the service of several products or applicable to different service routings in different operation sequences. When specified, most remaining fields default from the values for the standard operation.

Work Center. Defaults from the standard operation, if specified. You can use either service work centers or manufacturing work centers. The work center is important in Call Activity Recording because the system derives the standard cost of labor from it.

Description. Enter a brief description (maximum 24 characters) of the operation. Description defaults from the standard operation, if specified.

Run Time. The approximate number of hours required to perform this step. This field defines the quantity in the Labor/Expenses frame of CAR. Run Time defaults from the standard operation, if specified.

Start and End Date. Starting and ending effective dates are inclusive and cannot overlap. You can leave one or both dates blank, which is the default. They indicate the first and last day this operation step is to be effective. Use effective dates to phase in engineering changes.

Tool Code. The tool associated with this step. Tool Code defaults from the standard operation, if defined. Set up tool codes in Generalized Codes Maintenance for field ro_tool.

Subcontract Cost. Defaults from the standard operation, if specified. Indicate the cost of subcontracting this step. If you specify a run time, leave this field blank. The system does not consider subcontract costs when it generates a call invoice.

BOM Code. Defaults from the standard operation, if specified. BOM Code indicates the list of items to use at this routing step. This code must be a service or manufacturing BOM code. These items are loaded as usage for this step in Call Activity Recording. By default, the system loads all items in the BOM associated with a service item into the first routing step without items.

Note For more control over how items are loaded in CAR, create service BOMs that include only items used at an operation, then associate the BOM with the correct routing step.

Service Category. Defaults from the standard operation, if specified. The service category for the labor used during this operation. Use the service category to control the financial flow of service activity into GL accounts. Select a labor or expense service category.

Comments. If Yes, enter comments to print on the call. You can use them as detailed instructions for servicing an item.

Service Work Center Maintenance

In a service context, work centers represent a facility used for repairing items. If you use service routings, you must attach work centers to each operation in the routing, just as in manufacturing. You can use either service work centers or manufacturing work centers, set up with Work Center Maintenance (14.5), interchangeably.

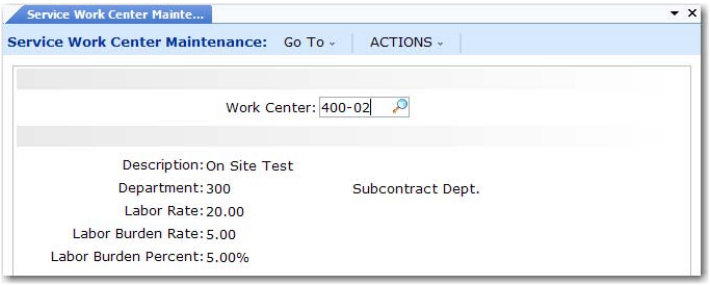
Note If the reengineering of an article requires the same equipment as original production, service it in the same work center that created it.

In Call Activity Recording, the system uses the work center to derive the standard cost of labor. If operations do not have a work center, the system uses the Service Work Center value in Call Management Control to derive the cost of labor.

To use the standard cost feature, set up work centers even if you do not use them as defined in the manufacturing environment. For example, if you employ field engineers who perform their labor at the customer site, create a work center for each engineer or a generic work center named FIELD.

You define only a subset of the planning attributes of a standard work center for service work centers. For example, you do not specify setup time, run/setup crew, and machine burden rate.

Fig. 21.5
Service Work Center Maintenance (11.19.13)



Work Center. Enter an 8-character code to identify this service work center.

Description. Enter a brief description (maximum 24 characters) of this work center to help identify its function.

Department. The department to which this work center belongs. Department codes identify groupings of manufacturing work centers, in your own facility or at outside suppliers. This field is for reference only.

In the manufacturing environment, you assign work centers to a department primarily for planning and accounting. This feature is not used with service work centers. When labor is reported in Call Activity Recording, the accounts associated with the charge product line are always used.

Labor Rate. Specify the average labor rate paid per labor hour to run this work center. The system uses this value in Call Activity Recording to calculate and post labor cost and display margin in Call Invoice Recording.

Labor Burden Rate. Specify the labor burden rate per hour applicable to both setup and run time at this work center.

Labor Burden Percentage. Specify the labor burden percentage applicable to the total labor cost at this work center.

Service Standard Operation Maintenance

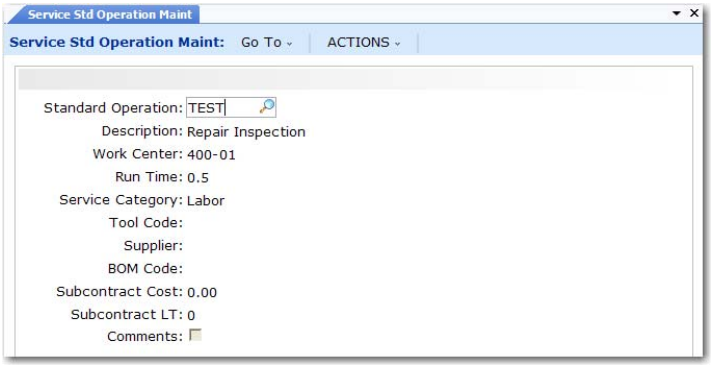
A standard operation represents a process or operation common to the service of several products or applicable to different service routings in different operation sequences.

Standard operations supply defaults for service routings when you define them with Service Routing Maintenance. You can also access them from the Labor/Expenses frame in Call Activity Recording. For example, when you reference a standard operation, the system supplies information about the service category and the amount required to complete the operation by default.

Service Standard Operation Maintenance (11.19.21) is similar to Standard Operation Maintenance (14.9). Only a subset of the fields used in manufacturing operations is used in service. You can modify non-service standard operations with this function, but a warning appears.

Note You can use both service and manufacturing standard operations in service routings or in CAR.

Fig. 21.6
Service Standard Operation Maintenance (11.19.21)



Standard Operation. Enter a code identifying an operation common to the service of several products or applicable to different service routings in different operation sequences.

Description. Enter a brief description (maximum 24 characters) of this operation. Description defaults into the Description field when you use this operation on a routing step. Include more detailed information in the comments.

Work Center. Can be either a manufacturing work center defined in the Routings/Work Center module or a service work center defined with Service Work Center Maintenance. Work Center defaults into the Work Center field when you use this operation on a routing step. The work center provides costing information for labor reported in Call Activity Recording.

Run Time. Approximate number of hours required to perform this operation. The run time defaults into the Run Time field when you use this operation on a routing step. It also defines the quantity used in the Labor/Expenses frame of CAR when you reference this operation.

Service Category. The service category for the labor used during this operation. Use the service category to control the financial flow of service activity into GL accounts. Select a labor or expense service category. If not defined, the system uses the Default Labor Service Category value in Call Management Control.

Tool Code. The tool associated with this operation. Defaults into the Tool Code field when you use this operation on a routing step. Set up tool codes in Generalized Codes Maintenance for field ro_tool.

Supplier. The address code of the normal, or preferred, supplier for this subcontract operation.

BOM Code. The product structure defining components to be used during this operation. A warning displays if this is not a service product structure. This BOM is loaded as item usage for the operation when specified on a routing. The BOM associated with a service item is loaded into the first operation without items of its own.

Note If you want more control over how items are loaded in CAR, create service BOMs that include only the items used at an operation, then associate the BOM with the correct routing step.

Subcontract Cost. Indicate the cost of subcontracting this operation step. Defaults into the Subcontract Cost field when you use this operation on a routing step. If you specify a subcontract cost, leave run time blank. This field is not used for service routings.

Subcontract LT. The average number of shop calendar days it takes a subcontractor to perform this operation. This field is not used for service routings.

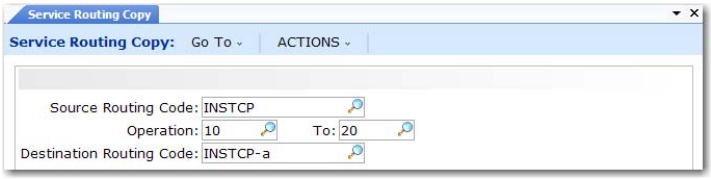
Comments. If Yes, enter comments. These default into the routing when this standard operation is referenced and print on the call to give the engineer detailed instructions for servicing an item.

Copying Service Structures and Routings

To facilitate the definition of new routings, use Service Routing Copy to copy all or a range of steps from one routing to another. You can start with a standard routing as the source. If the destination routing does not exist, the system creates it as a service routing.

If the destination routing already has operations, the operations of the source routing are added to it, unless operation numbers overlap. In this case, the destination operation is not changed.

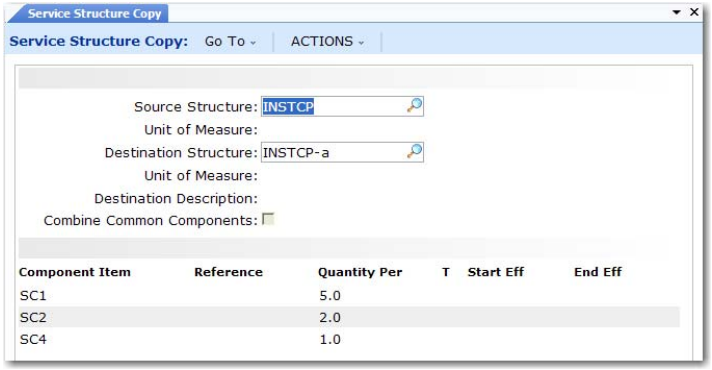
Fig. 21.7
Service Routing Copy (11.19.20)



Copy service structures in a similar fashion with Service Structure Copy (11.19.9).

If the destination structure already has components, the system displays a warning and prompts you to continue. Using the Combine Common Components field, you can choose to either combine or overwrite the existing item/quantity components being transferred from the source to the destination structure.

Fig. 21.8
Service Structure Copy (11.19.9)



Use these functions to streamline data entry when setting up multiple service structures and routings.

Chapter 22

Depot Orders

Depot order functions allow the creation, processing, and monitoring of depot orders performed within the repair/service unit of an organization. This chapter describes depot order functions.

Overview

Typically a *depot order* is defined as activity that occurs in-house at the site of the manufacturer or distributor, rather than at the site of the end user. Repair activities that take place at the customer site are usually defined as constituting *field service repair.*

A depot order may require a replacement part to be sent to the customer before the damaged part is received in-house. A depot order also requires the defective part to be tracked when received in-house for repair from the customer.

As with any repair, the repaired items may or may not be covered by a warranty contract. Chargeable labor, material, and miscellaneous expenses may be incurred during evaluation and repair processes. Changes to installed base records must be recorded timely and accurately.

Note Where a customer wants to return a recently purchased item, RMAs should be used. Using an RMA instead of processing a negative sales order allows the item to be properly inspected before it is returned to inventory. Where a user has returned a defective item, QAD recommends that a depot order be used rather than an RMA since this allows the replace/repair process to be tracked more effectively. Note, however, that depot orders do not provide RTS capability.

Depot Order Collection

In the QAD .NET UI, you can use the Depot Order collection to access programs that let you create, process, and monitor depot orders. Typically the collection is used by employees who have a shop floor role, and by customer service representatives when handling calls from customers.

The Depot Order collection consists of the following browses:

- Depot Order browse - Lists customer-returned items for repair or replacement. The browse displays the call ID, item number, end user, status, receipt date, shipment date, and so on. This browse drives the records displayed in the other browses listed below.
- Parts List browse - Displays parts list records for the related call selected in the Depot Order browse, including item number, description, and quantity.
- Material Order browse - Displays material order-related information, including sold-to and order date information.
- Call Labor Recording browse - Displays labor activity-related information, including start and end time, engineer, work code, and service category.
- Depot Inventory Tracking browse - Displays inventory tracking information for the item, including unit of measure, lot/serial information, site, and transaction type (repair or replacement, receipt or shipment).

Functionally related programs are available by right-clicking entries in the browses. For example, right-clicking an entry in the Material Order browse allows you to launch the Material Order ATP Inquiry (11.11.7) using the currently selected record as the default. Depot order-related programs also display in the application menu.

You can define other collections of related browse and maintenance programs within the QAD .NET UI that let you browse and maintain related item, parts, and material order data that you can then save under Favorites. Use Browse Collection Maintenance to do this. For details, see *Administration Guide: QAD .NET User Interface*.

System Security

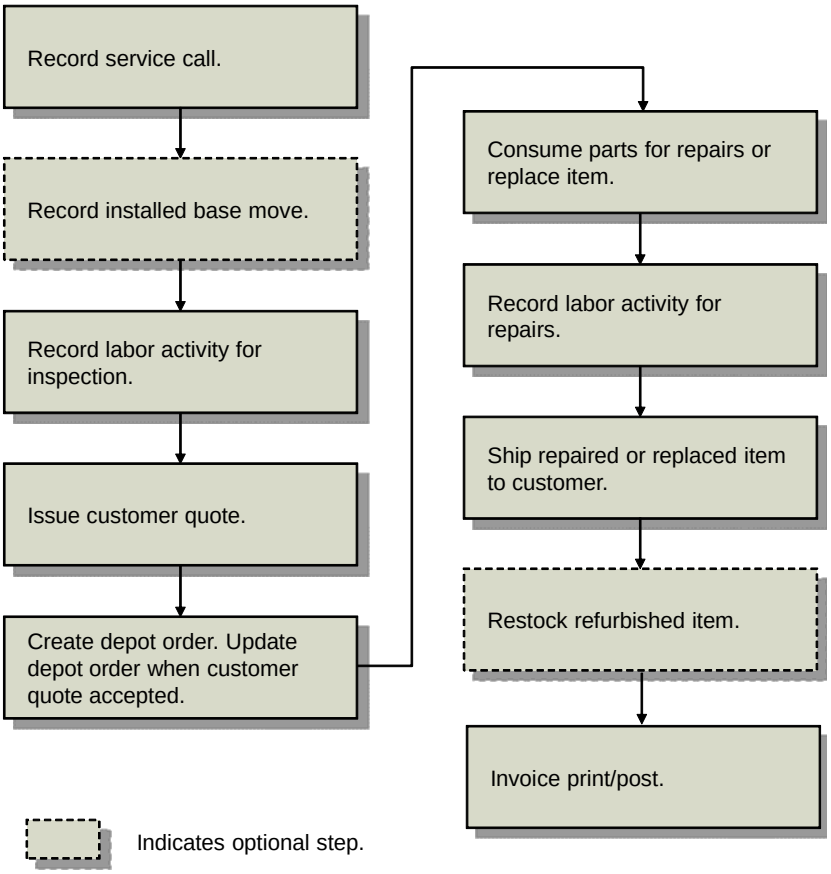
System security can be set for any program or browse that has a menu entry. If you do not have access to either a program or the menu within which the program resides, you cannot access the program in the Depot Order Collection.

Example If you do not have access to Parts List Maintenance in the Call Management Menu (11.1), the program is not available to you in Depot Order collection.

Depot Order Process Flow

Figure 22.1 illustrates an overview of the typical depot order process flow. Use this process flow and the accompanying description to help you process depot orders in your organization.

Fig. 22.1
Business Process Flow



The first step involves the service call being logged using Call Maintenance (11.1.1.1). Optionally, at this point, if the depot order item now belongs to another end user, this can be recorded by using the Installed Base Move frame of Call Maintenance.

Next, the item is received from the customer and inspected to determine whether the item should be replaced or repaired, and associated repair/replacement costs are determined.

Note The receipt is recorded using Depot Order Maintenance (11.1.2.1) by setting the Receive field to Yes. For details, see page 585.

Labor activity for the inspection is recorded using Call Labor Recording (11.1.1.17). The resulting quote is communicated to the customer. The depot order is created using Depot Order Maintenance (11.1.2.1), though the depot order record is not yet confirmed.

Next, if the customer accepts the quote, the status of the depot order in Depot Order Maintenance is manually updated to indicate the customer has confirmed the order.

If the item is being replaced, the item is entered on the depot order as an additional call line and sales order line. The system automatically creates a material order for the item to be shipped and consumed against the call to remove the replacement from inventory.

If the item is being repaired, material for the repair is planned on a parts list and/or a material order. Parts can be preloaded from a BOM and saved as a new BOM for future use.

Next, an engineer records labor activity for repairs by using Call Labor Recording. Any additional items consumed or any items returned (not needed) are recorded as part of the repair in Call Parts Recording (11.1.1.19).

Next, the CSR verifies that the repair work has been completed and updates the depot order to enable invoicing. Optionally at this point the service type may be changed by using the Repair Data frame in Depot Order Maintenance to redirect service costs to different GL accounts based on the work performed and the coverage entitled to the customer. GL transactions are reversed and reposted.

The repaired item is either shipped back to the customer or restocked. If the item is returned to inventory, this is recorded using Depot Item Restock (11.1.2.4). Restocked items are removed from the customer installed base.

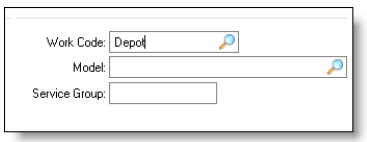
Invoicing occurs on the sales order line (which acts as a pending invoice for calls); this may be a zero invoice if a replacement item was sent with pricing attached to its shipment.

Recording Service Calls

In depot orders, service calls are logged using Call Maintenance (11.1.1.1). For details, see Chapter 11, “Call Management,” on page 261.

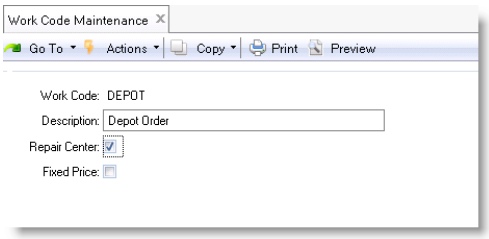
In order for the service call to be regarded as a depot order, when the Work Code pop-up window displays in Call Maintenance, you must enter a work code that has Repair Center set to Yes in Work Code Maintenance (11.21.1).

Fig. 22.2
Work Code Pop-Up in Call Maintenance



Only service calls that are associated with the appropriate work code are available for selection in Depot Order Maintenance and the Depot Order browse.

Fig. 22.3
Work Code Maintenance (11.21.1)



For details on creating work codes, see “Work Codes” in Chapter 3, “Service Setup,” on page 63.

Call Labor Recording

To record labor activity for inspection and repair against a depot order call, use Call Labor Recording (11.1.1.17). Typically an engineer records labor after evaluating a returned item, and then again when repairs to the item are complete. Labor activity may be recorded by call/call line or effective date.

Labor activity for existing records can be modified as long as the record is not closed. You can modify duration, start time, and end time, but cannot change the date of an existing labor activity record. For example, the duration may need to be modified if it was overestimated and needs correcting. A second line can be entered for the same Operation ID as the first line, using a negative value for the new line in the Duration field; the start time or end time must also be adjusted accordingly.

Note If the call labor record is associated with a call report that has already been invoiced, but the invoice has not yet been posted and printed, the system issues a warning that the invoice has been generated, and prompts you to continue to edit the call record. Responding Yes causes the Ready to Invoice field to be set to No in Call Invoice Recording (11.1.1.15).

Call Labor Recording does not support recording activity for service items. Instead, use Call Activity Recording (11.1.1.13).

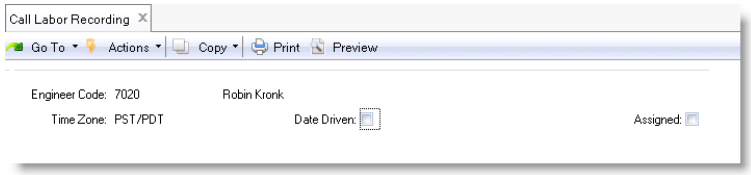
Call Labor Recording is available from the Labor browse in the Depot Order collection and from the application menu.

Use Call Labor Browse (11.1.1.18) to view existing call labor activity records.

Header Frame

Use the header frame to select the engineer, whether the labor activity recording is date- or call-driven, and the scope of records to display for data entry.

Fig. 22.4
Call Labor Recording (11.1.1.17) - Header Frame



Engineer Code. Enter a valid code for the engineer whose labor is to be recorded.

Time Zone. This read-only field displays the time zone associated with the specified engineer.

Date Driven. If Yes, record labor using an effective date. Date-driven labor recording allows labor for multiple calls and call lines to be entered. Leave this field blank to use the current date. If No, record labor for multiple dates for a single call/call line.

Assigned. Set this field to Yes to view calls/depot orders where the selected engineer is assigned to at least one call line. Set this field to No to view all calls/depot orders. If Call Labor Recording is accessed from within the Labor browse of the Depot Order collection, this field defaults to the currently selected engineer.

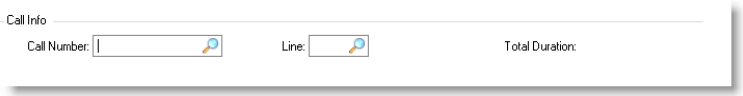
If there is a repair routing associated with the call/visit and if Date Driven is No, the system asks if the routing should be exploded. Responding Yes explodes the routing, and the Standard Operation values and Duration times are populated from the routing values; these values can be updated if required. Responding No causes the routing not to explode.

If there is a BOM associated with the routing, the system issues a message to the effect that the BOM will not be exploded in call labor recording (but will continue to be done so in call activity recording).

Call Info Frame

Use this frame to select a call and call line for labor recording when the Date Driven field is set to No. Only open calls are available for selection.

Fig. 22.5
Call Info Frame



Call Number. Enter a valid call number to record labor for. The system displays an error if the call number or call line entered is closed, on hold, or cancelled. Complete calls or call lines cause the system to display a warning.

Line. Enter a valid call line to record labor for.

Total Duration. Displays the running total duration of the labor recorded for a call and associated call lines. Total duration is updated when entering the current call line is completed.

Note This field is for reference only—the value it displays is unsuitable for the purposes of timekeeping or payroll verification.

Effective Date Frame

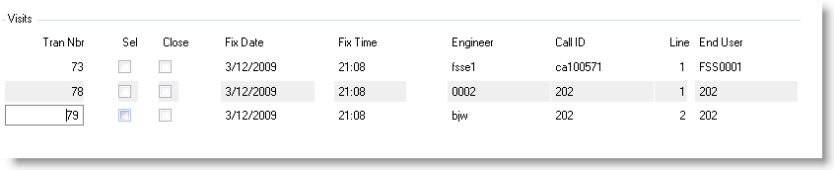
Use this frame to enter a date on which to record call labor activity when the Date Driven field is set to Yes. You can enter labor activity for multiple calls/call lines when using this frame.

Fig. 22.6
Effective Date Frame

Visits Frame

This frame displays all open and unconsumed visits. If there are no visits to consume, this frame does not display.

Fig. 22.7
Visits Frame



Transaction Number. This read-only field displays the transaction number of the open visit and the associated engineer.

Select. Enter Yes to consume the selected visit. Visits selected for consumption are recorded as labor when you respond to the system prompt. Consumed visits are unavailable for selection later. If No, the visit is not consumed and remains available for later consumption.

Close. Enter Yes to close the selected visit. Visits selected for closure are recorded as closed when you respond to the system prompt. Closed visits are unavailable for selection later. If No, the visit is not closed and remains available for later action. This field is enabled when a visit is selected.

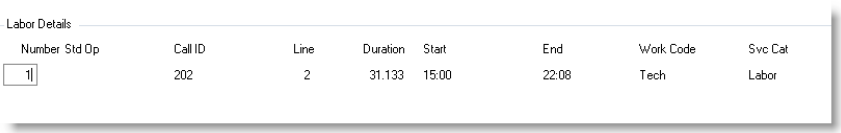
Close Date. Enter the date when the labor was completed. This field is for reference only and appears on selected reports and inquiries.

Close Time. Enter the time when the labor was completed. This field is for reference only and appears on selected reports and inquiries.

Labor Details Frame

This frame displays all labor records entered for the specified engineer—or for all engineers—with labor recorded for the selected call, or for all calls on the specified date.

Fig. 22.8
Labor Details Frame



Attempting to enter labor activity for calls that are closed, on hold, or cancelled causes an error to display. Entering labor for calls that are open but invoiced results in a warning; if you choose to continue, the call record is changed from invoiced to uninvoiced. Entering labor for a completed call line also causes a warning.

If entering labor for an effective date, you are prompted for the call and call line.

The Labor Details frame contains several fields that default from other fields:

- Specifying a standard operation causes Duration and Service Category to be defaulted from the specified operation. Otherwise, these fields default from the Service Control Labor Service Category. Travel-related labor is defaulted from the Service Control Travel Service Category.
- Work Code defaults from the call line or, if a call line is not available, from the call. If the call does not have a work code, the work code defaults from the Service Control Technical Work Code.

After recording labor, press End to exit the frame and verify that all information is correct before saving the form.

Number. Auto-generated by the system. Displays the number of the labor transaction.

Standard Operation. Specify a standard operation code set up with Service Standard Operation Maintenance (11.19.21) or Standard Operation Maintenance (14.9). Standard operations represent actions common to the service of several products or applicable to different service routings in different operation sequences. When specified, most remaining fields default from the values for the standard operation.

Call ID. Enter a valid call ID for which labor is being recorded.

Call Line. Enter a valid call line ID for which labor is being recorded.

Duration. Enter a duration in hours and minutes for the labor required to close the call. If you do not enter a value, duration defaults from the standard operation. If a standard operation is not provided, the system calculates the duration by subtracting the start time from the end time.

The duration of labor recorded for an existing record can be modified if required. For example, this may occur if the labor duration was overestimated and needs to be modified later to reflect the true duration. To do this, enter a second line for the same Operation ID as the first line, enter a negative value for that line in the Duration field, and adjust the start time or end time.

Start. Enter a time to indicate when the labor for the call commenced. If a value is not entered, the system calculates the start time by subtracting the duration from the end time. For date-driven activity reporting, the start time entered cannot overlap with the start time of another call/call line.

End. Enter a time to indicate when the labor for the call ended. If a value is not entered, the system calculates the end time by adding the start time and duration. For date-driven activity reporting, the end time entered cannot overlap with the end time of another call/call line.

If labor activity is recorded for a call line that has a visit associated with it, the system prompts you to close the visit. Responding Yes sets the close time of the visit to the end time of the last call line entry. Responding No causes the visit to remain open.

Depot Order Maintenance

Use Depot Order Maintenance (11.1.2.1) to manage depot orders. Depot orders cannot be created manually: a depot order is a service call that is associated with a work code that has Repair Center set to Yes.

The header frames of Depot Order Maintenance contain fields that display information defaulted from the call: call ID, sold-to, bill-to, name and address, and ship-to information. Other fields are used to record receipt and delivery data. The Confirmed field defaults to Yes; it can be set to No to indicate that customer authorization for the repair has not yet been received. Other fields on the headers contain tax environment, salesperson, and freight-related information.

When entering information about a specific line item, you indicate the repair type for the item: Repair or Replace. If Replace is selected, the system automatically generates a second depot order line with a repair type of Replacement.

You use the Item Repair Data frame to record information about the item repair; for example, if the repair type is Replacement, you can specify an alternate item ID. The alternate item ID would then be used by the system when a repaired end-item is returned to inventory (that is, restocked) rather than sent back to the customer. Restocked items often use an alternate item ID to indicate they are restocked, as opposed to new, items.

You also can use the Item Repair Data frame to record BOM code, routing, service type information, and pricing information. You can use either fixed pricing or time and materials pricing types.

Use the Item Receipt frame to record receipt information for the returned item: receipt date, quantity, site, and so on. An Item Receipt Shipment Data frame displays shipment information, such as the actual date of shipment; this frame is updated when the repair or replacement item is shipped out using sales order shipments or the workbench.

If a depot order line is identified as being a replacement repair type, an MO is created automatically for this line using the alternate item ID if one has been specified on the depot order; otherwise the MO uses the item ID. The remainder of the information required to create the MO defaults from the depot order/call. The system uses the existing credit checking functionality to ensure that the order does not exceed authorized credit limits.

Use the Depot Order browse (11.1.2.2) to view information about current depot order records, such as status of the call/call line, receipt, and shipment dates.

Depot Order Maintenance Flow

Depot order maintenance occurs in the following order:

1. Fill out the Depot Order Maintenance header, including customer, end user, and call, and coverage information specific to depot order processing. This sets up default values for line item issues and receipts.
2. Specify items to be shipped to the customer.
3. Specify items to be received from the customer for repair or replacement.
4. Enter trailer information, including trailer codes, tax, and standard credit information.

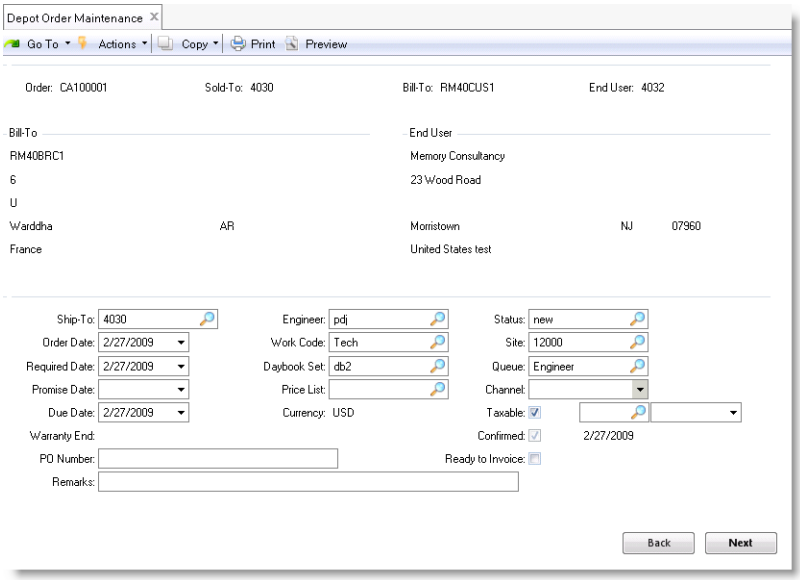
5 Complete the trailer that totals billing amounts and trailer codes.

6 Optionally ship or receive directly from Depot Order Maintenance. You can also use the separate ship and receive functions.

Header Frame

Figure 22.9 illustrates the header frame that displays basic identifying information about the depot order. Many field values are defaulted from the call information.

Fig. 22.9
Depot Order Maintenance (11.1.2.1), Header Frame



Order. Enter a valid depot order number. Valid order numbers are those for service calls that are associated with a work code that has Repair Center set to Yes.

Sold-To. This read-only field displays the customer associated with the call's end user.

Bill-To. This read-only field defaults from the Sold-To value unless you define the sold-to address with a different bill-to.

End User. Defaults from the bill-to address.

Ship-To. Defaults from the End User ID. If you update it, the value must be a valid ship-to assigned to the sold-to.

Order Date. Displays the call date of the associated call. Order Date defaults from the system date. You can change this value. For example, if you take an order over the phone and do not enter the order into the system until three days later, you can change the date to reflect the day you took the order.

Required Date. Enter the date on which the customer requires the item to be delivered. If left blank, this field defaults to the due date.

Promise Date. Indicate the date the customer was promised delivery. The promise date can be different than the due date. Promise dates include delivery transit time, while due date is the date the items must be ready for shipment.

Due Date. Enter a date on which the repaired item is due to be shipped.

Warranty End. This read-only field displays the warranty end date based on the warranty duration and install date.

PO Number. Specify a purchase order number for the item associated with this call. This field is required if the end user reporting the problem has been defined in End User Data Maintenance as requiring a purchase order.

Remarks. Any remarks specified for the sold-to customer display by default. You can change these to make them specific to this depot order. Remarks display on printed documents.

Engineer. The code identifying the engineer assigned to the call displays by default. The employee name of this engineer displays next to the code.

Work Code. Defaults from the call. Work codes designate what type of work is performed during service activity. You can enter another work code that has Repair Center set to Yes, if required.

Daybook Set. Enter the daybook set that will be used when this order is invoiced. This value defaults from Customer Data Maintenance. At Invoice Post and Print, the system assigns an invoice number based on one of the daybooks in the specified set.

Price List. This read-only field displays the price list used to calculate the line item price. For a replace line, this value will always be 0.

Currency. Defaults from the currency of the customer bill-to record associated with this call. The first time through, you can select any currency, but after you move to the next frame, you cannot change the currency.

Status. Enter an 8-character code identifying the call status. Calls that have been recorded but have not yet been acted upon are typically given a New status. Once the associated item has been inspected and the customer has accepted the service quote, the status must be updated to indicate the depot order/call can be acted upon.

Site. Indicate the inventory site where repair parts for the item being serviced reside. Depot Order Maintenance uses the site when parts are issued in the repair of this item.

Queue. Defaults from the call and indicates the queue to which you assigned this call. Set up queues with Call Queue Maintenance (11.1.21.7).

Channel. Specify an optional code identifying the distribution channel through which this depot order originated. Channel can be used to determine GL sales and COGs accounts affected by inventory transactions. This field is validated against Generalized Codes Maintenance (36.2.13).

Taxable. Enter Yes if activity for this call is subject to tax; otherwise, enter No. The tax status defaults from the end-user tax data.

Confirm. The default is Yes. You can set this field to No to indicate that customer authorization for the repair process has not yet been received. This field must be set to Yes in order to ship items against this order.

Ready to Invoice. This field is initially set to No. After you have shipped or received items, the system sets it to Yes. Invoice Post and Print examines this field. It must be Yes before you can post the invoice. You can change the field to prevent invoicing. If you ship more items later, the system sets Ready to Invoice to Yes so the depot order can be selected the next time invoices are posted.

Ready to Invoice cannot be set to Yes if an open MO exists. In addition, for a repair or replacement line, at least one shipment line must have been shipped. For a replace line, the line must be completed.

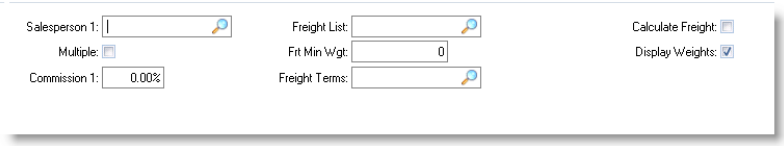
When you click Next, the tax environment pop-up window displays fields related to the tax usage, tax environment, and so on. These fields default from the depot order header. For details about these fields, refer to *User Guide: QAD Financials*.

When you click Next, the pop-up window exits and the second header frame of Depot Order Maintenance displays.

Second Depot Order Header

For depot order lines that are not replace lines, a second header frame displays when you click Next on the first header frame.

Fig. 22.10
Second Depot Order Maintenance Header Frame



Salesperson 1. Defaults from the sales person for the sold-to address. Identifies the salesperson to receive commission and quota credit for this depot order. The salesperson information on each line item defaults from the salesperson and commission rate on the header. You can change it on each line item. To change the salesperson on a line item, set Multiple to Yes.

Multiple. Indicate whether more than one salesperson is responsible for this depot order. If this field is Yes, a pop-up window prompts you to enter up to four salesperson codes.

Commission 1. Specifies the commission percentage this salesperson is to receive. Besides the normal commission rate for the salesperson, you can enter commission rates for sales to specific customers or sales of specific product lines.

Freight List. Defaults from the freight list for the sold-to address. Freight list codes identify a set of shipping rates for different zones and shipping weights or units. The freight list on the header sets the default for each line item.

Freight Minimum Weight. Defaults from the freight minimum weight for the sold-to address. This field is the minimum weight on which to base the shipping charge if the freight list type is bulk. This field does not apply to freight lists of type unit. For bulk freight lists, shipments that weigh less than this amount are charged based on a minimum weight charge, not the shipment weight.

Freight Terms. Defaults from the freight terms for the sold-to address. The freight terms determine how the system applies freight charges. They can be added to the order trailer, added to the unit cost for each ordered item, displayed as a freight allowance, or not calculated.

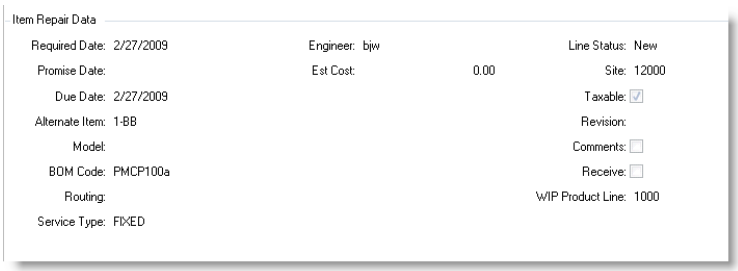
Calculate Freight. Defaults to Yes for a new order; otherwise, defaults to No. If Yes, the system calculates site- and currency-specific freight charges on RMAs. Charges can be calculated for the line item's shipping weight for unit price lists or for the order's total shipping weight for bulk price lists. Calculated freight charges appear on the trailer.

Display Weights. Specifies whether to display the Freight window for each line item, which enables you to enter or modify data in the Freight Class and Freight Ship Weight fields. For inventory items, these fields default from the item master. For memo items, you must specify them. The Freight window also shows information the system uses to calculate freight for the line item, so you can review freight amounts easily.

Line Frame (Repair Data)

When you click Next on the second depot order header frame and select the item, the Item Repair Data frame displays. This frame allows you to record information about repair dates, pricing details, alternate item ID, and so on.

Fig. 22.11
Item Repair Data Frame



Item Number. Specify the number of the item requiring service. If the end user supplied an installed base serial number, the system fills in this field. If this item is in the installed base, it must belong to the end user entered previously.

Quantity. By default, this field displays the quantity of the item from the ISB. For a repair line, if the work code is not fixed, this field can only contain a value of 1.

Unit of Measure. This field defaults from Item Master Maintenance.

Lot/Serial. This field defaults from the call line item.

Repair Type. Indicates the type of the repair being performed to the returned item. You can modify this field when the value is Repair.

Required Date. Enter the date on which the customer requires the item to be delivered. If left blank, this field defaults to the due date.

Promise Date. Indicate the date the customer was promised delivery. The promise date can be different than the due date. Promise dates include delivery transit time, while due date is the date the items must be ready for shipment.

Due Date. Enter a date on which the repaired item is due to be shipped.

Alternate Item. If entering a replacement line, you can enter an alternate item number for the depot order line. This value is used only for internal tracking by the system.

This field is used when a repaired end-item is to be returned to inventory (restocked) rather than returned to the customer. Restocked items often use a different item number to indicate they are repaired items, not new items.

The Alternate Item is the item ID for inventory issued out of the stockroom on an MO, consumed against the depot order, and then shipped to the customer. The item number, not the alternate item number, is invoiced.

This field can be left blank even if the order line is for a replacement item. In this case, you may want to retrieve from inventory and ship to the customer a new item as opposed to a rotable/restocked item.

Model. Enter the model number associated with this item. Many organizations service products by model.

BOM Code. Enter a valid service BOM for the part set up with Service Structure Maintenance.

Routing. Enter a valid routing code for the part set up with Service Structure Maintenance.

Service Type. This field defaults from the call. If necessary, you can modify this value. Enter a service type defined in Contract or Warranty Type Maintenance.

This value can be updated only if no activity has been posted against the order/call, or if the status of the order/call is complete and it is ready to be invoiced. No changes can be made to the service type if the line has been either partially or fully invoiced.

The service type for a replacement line cannot be changed and is read-only. This constraint ensures that the service type of the replacement line matches the service type of the corresponding replace line.

Engineer. The code identifying the engineer assigned to the order/call displays by default. The employee name of this engineer displays next to the code.

Estimated Cost. Enter an estimated cost if using fixed pricing; the system calculates charges using the value entered. If time and materials is used, the field defaults to blank.

Note When setting a repair type line to complete, the value in the Estimated Cost field is updated according to the actual price logged in Call Activity Recording.

Line Status. Defaults from the call line. Before a replacement (or a returned) item can be shipped back to the customer, the line status must be complete.

Site. Defaults from the previous instance of this field in the first header frame.

Taxable. Enter Yes if activity for this call is subject to tax; otherwise, enter No. The tax status defaults from the end-user tax data.

Revision. Revision is used to track the revision level of the part that requires service, which may differ from the current revision level of the item in the Item Master. This value defaults from the Item Master but can be updated if required.

Comments. Defaults to Yes if comments exist; otherwise defaults to No. If Yes, the standard comments frame displays when you click Next, so you can enter or review comments associated with this item.

Receive. Controls whether the system displays a warning message for items that have already been received.

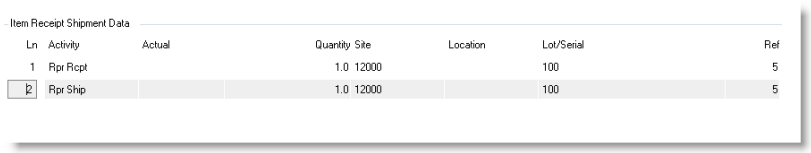
Yes. The system displays a message if the item has already been received. You have the option to continue or to cancel. The system will display the Item Receipt frame.

No. The system will not display a message if the item has already been received. The Item Receipt frame will not be displayed.

Line Frame (Receipt/Shipment Data)

Use this frame to review shipment data, such as activity (repair receipt, repair shipment), actual date of activity completion, and so on; these fields are read-only. The data on this frame updates when the repair or replacement item is shipped using sales order shipments or the workbench.

Fig. 22.12
Receipt/Shipment Data Frame



Reference. This field defaults from the call line item. Lot reference, site, location, and lot/serial number specifically identify inventory quantities.

Transaction Type. Indicates the type of the transaction. Possible values are Repair Receipt, Repair Shipment, or Replacement Shipment.

Quantity. By default, this field displays the quantity of the item from the ISB.

Estimated Date. Displays the estimated date for completion of this transaction type.

Actual Date. Displays the actual date for completion of this transaction type.

Site. Defaults from the depot order header or from the customer site.

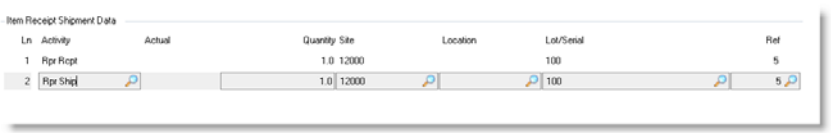
Location. Displays the inventory location at the site from which the items are being issued.

Item Receipt Shipment Data Frame

Use this frame to record receipt details of the depot order item. Several fields on this frame—Item Number, Description, and Item Type, Unit of Measure, and End User—default from the depot order header or the call/call line.

Note This frame displays when the Receive field is set to Yes on the Repair Data frame.

Fig. 22.13
Item Receipt Frame



Item Number. This field defaults to 1.

Description. Enter a brief description (maximum 24 characters) of the code identifying its use and purpose.

Item Type. Defaults from the call/call line and validated against generalized codes. The value can be SW (software), S (system), or O (other). You can add codes in Generalized Codes Maintenance.

Lot/Serial. This field defaults from the call line item.

Quantity. By default, this field displays the quantity of the item from the ISB.

Unit of Measure. This field defaults from Item Master Maintenance.

Receipt Date. This field displays the value entered in the Actual Date field in the Receipt/Shipment Data frame.

Site. Defaults from the previous instance of this field in the Receipt/Shipment Data frame.

Location. Defaults from the previous instance of this field in the Receipt/Shipment Data frame.

End User. Displays the end user that the item is currently associated with.

Trailer Frame

The trailer is the same as that for a sales order and displays charges, credits, and information for shipping and invoicing. Most trailer fields—including include CR Initials, Credit Card, Action Status, Partial OK, and Ship Via—default from the bill-to address.

Call Parts Recording

Use Call Parts Recording (11.1.1.19) to issue/consume parts from a parts list, or to return parts that were consumed previously. For example, at the end of a repair call an engineer can use Call Parts Recording to return items previously identified in error as being consumed in Call Activity Recording (CAR). Returning the items reverses the original consumption activity and updates the quantity to return on the associated MO.

After entering the call ID and call line—these fields are populated automatically if Call Parts Recording is accessed from the Parts List browse—if a BOM is associated with the call line, you are given the option of exploding it. Exploding the BOM populates the item ID and quantity. If the BOM is associated with a labor routing, the system issues a warning that the BOM will not be exploded as part of the Call Parts Recording process (but will continue to be done in CAR).

After selecting the items to process, indicate the items consumed and the quantity to return. Optionally you can record details about the consumed items and the returned items by using the Item Usage Detail and Item Return Detail screens.

On exiting the screens, fault code information can be entered. The system prompts for the effective date and destination for the report output, and then processes the items.

The system handles items to consume like this:

- Selecting a quantity to consume for an item with a material order causes that MO line to be shipped and updates CAR with the consumption of the item.

- Selecting a quantity to consume for an item without an MO updates CAR with the consumption of the item.

The system handles items to return like this:

- Selecting a quantity to return for an item with an MO causes the item to be received back into inventory. CAR is updated to indicate the item is not consumed.
- Selecting a quantity to return for an item without an MO (on the parts list only) returns the item to inventory and updates CAR to indicate it is not consumed.

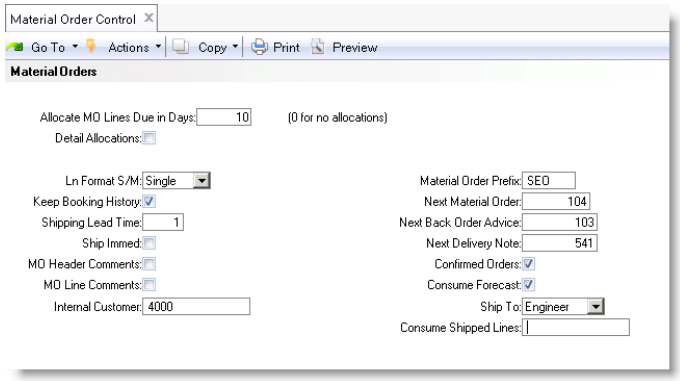
Note Call Parts Recording is a subset of the parts recording functionality available in CAR, intended to simplify the process of recording parts issue/consumption. The fields in Call Parts Recording and CAR have identical functions; for field descriptions see “Call Activity Recording” on page 412.

Material Order Control

Use Material Order Control (11.11.24) to enable the automatic consumption of items that are to be shipped using Material Order Shipments (11.11.6).

For details on shipping MOs for depot orders, see “Material Order Shipments” on page 587.

Fig. 22.14
Material Order Control (11.11.24)



Consume Shipped Lines. Set this field to control the consumption of items.

Yes. Enables the automatic MO shipment/CAR consumption for all material orders.

Only DOM. Enables the automatic MO shipment/CAR consumption for depot material orders only (that is, for orders associated with calls that have a work code with the Repair Center check box set to Yes.)

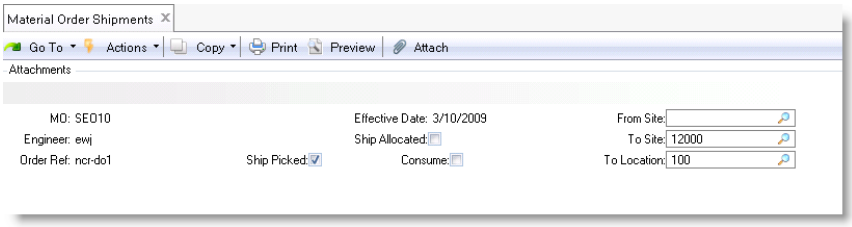
No. Do not auto-consume items; instead, use the standard MO shipment/CAR consumption.

Material Order Shipments

Use Material Order Shipments (11.11.6) to enable the optional automatic consumption of items that are shipped. This ability means that you do not have to explicitly consume MO parts in CAR. Consumption takes place against open calls only; if the call is complete or closed, no consumption will occur, even though the MO can be created and shipped.

Note Before using Material Order Shipment to consume items automatically, you must enable auto-consumption in Material Order Control. For details, see “Material Order Control” on page 587.

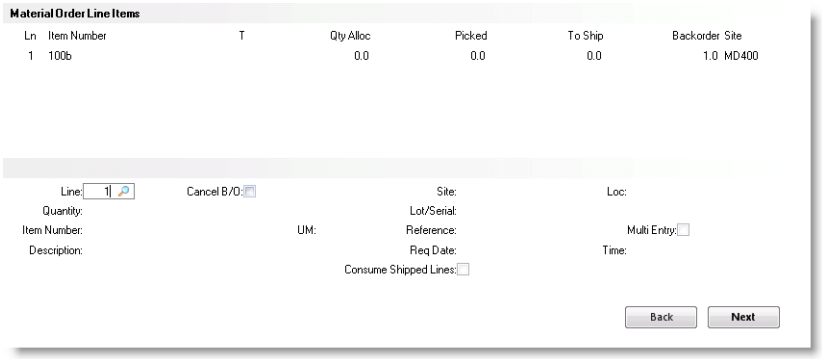
Fig. 22.15
Material Order Shipments Header Frame (11.11.6)



Consume. By default this field is set to Yes to indicate that the selected items should be consumed automatically when shipped. This defaults from the setting of Material Order Control.

Click Next to display the line detail frame to control the consumption of line items.

Fig. 22.16
Line Detail Frame



Consume Shipped. This field defaults from the Consume field on the header. Enter Yes to cause this line to be consumed.

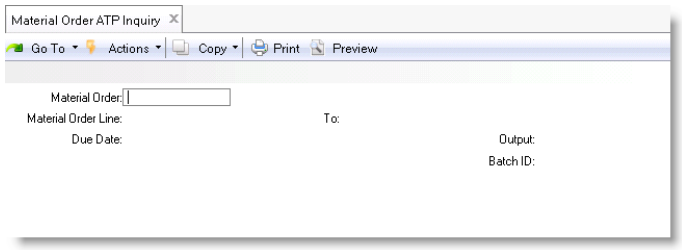
Consumption Report Output. This field lets you specify the output option for the Consumption report.

The MO consumption report displays the details of the items consumed and any errors encountered during the consumption process. Any lines that remain unconsumed due to errors must be corrected and consumed within CAR. Transaction history is created for consumed lines.

Material Order ATP Inquiry

Use Material Order ATP Inquiry (11.11.7) to view ATP information associated with a specific material order and lines. Right-clicking a record in the Material Order browse causes the inquiry to run using the currently selected record.

Fig. 22.17
Material Order ATP Inquiry (11.11.7)

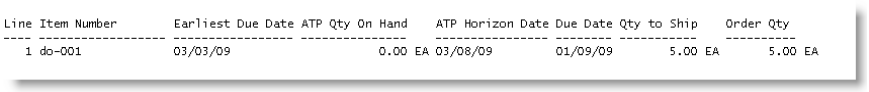


Specifying a material order displays all unconfirmed material order lines whose due date is less than or equal to the date specified. If a material order line is not specified, all MO lines display. MO lines may be skipped if:

- No due date is specified for the MO line.
- Site security does not allow the current user to view the line.
- The line is an EMT part, a configured part, or ATP enforcement for the line is None.

The system generates a report similar to the one in Figure 22.18 to the output device you specify.

Fig. 22.18
Material Order ATP Inquiry Output



Line	Item Number	Earliest Due Date	ATP Qty On Hand	ATP Horizon Date	Due Date	Qty to Ship	Order Qty
1	do-001	03/03/09	0.00 EA	03/08/09	01/09/09	5.00 EA	5.00 EA

Depot Item Restocking

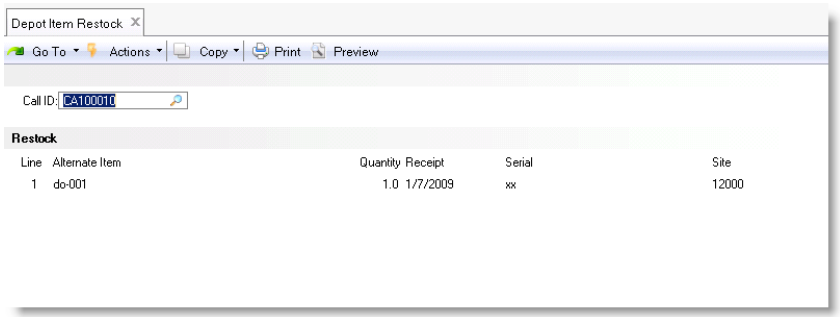
Use Depot Item Restock (11.1.2.4) to restock inventory with items that were originally returned by customers, repaired in-house, and then restocked in refurbished inventory.

Note This program is available from the Depot Order browse as well as the menu.

Restocked items may have a different item number to indicate that the item is a refurbished—as opposed to new—unit. You can give an item that will be restocked a different item number by entering a value in the Alternate Item Number field in Depot Order Maintenance.

Depot items must be received before they can be restocked. If required, site information may be updated.

Fig. 22.19
Depot Item Restock (11.1.2.4)



Only depot order lines that have a complete status can be restocked. The line selected is passed to the Receipts–Return to Stock (3.11) program. The installed base is updated to reflect that the item was restocked into inventory and removed from the customer's installed base.

Call ID. Enter a valid call ID. The call must be a replace type of depot order line and have a status of complete in order for the item to be restocked. If the call has a status of closed or hold, the restock frame does not display.

Line. Enter a number identifying a detail line. Only one line at a time can be entered for restocking.

Depot Order Shipment

After the item is repaired and ready to ship, the existing sales order shipment and pre-shipper workbench screens are used to ship the item to the customer.

Shipment of the item is prevented if:

- The Confirmed field is set to No to indicate that the order has not been accepted by the customer.
- The shipment is on credit hold.
- The depot order line status is not complete.

  Note The depot order status may be set to complete if there is an open MO; the status cannot be set to closed unless the MO is for a replacement line.

The actual date of shipment records is updated. After the item ships, the invoice ISB is updated while printing and posting occurs.

Note To print a picklist for the depot order, use either Picklist /Pre-Shipper - Automatic (7.9.1) or Sales Order Packing List (7.9.13). Use the lookup on the Sales Order field to find the depot order you want to create the picklist for.

Use the Depot Inventory Tracking browse (11.1.2.3) to review depot order, item ID and description, quantity and unit of measure, lot/serial number, end user ID, site (receipt or shipment, depending on the activity), location (receipt or shipment, depending on the activity), transaction type, and transaction date.

Depot Order Invoicing

A depot order line can be invoiced when the line status is complete and Ready to Invoice is set to Yes. Ready to Invoice cannot be set to Yes if any of the following apply:

- Open MOs are associated with the depot order (with the exception of MOs for a line that has had, or will have, a replacement part shipped out against it).
- An outstanding item receipt quantity is due from the customer for that depot order line (for example, a replacement unit was sent and the customer never returned their broken unit for repair, which was part of the agreement).

Customers must manually update the status of the depot order/order line to Closed.

Service Type Change

As part of depot order invoicing, you can update the service type on the depot order line if no activity has been posted against the order/call, or if the order/call status is complete and is ready to invoice. The service type cannot be changed if the line has been either partially or fully invoiced.

The service type for a replacement item cannot be updated: it is read-only. This ensures that the service type of the replacement item matches the service type of its associated replace item.

If you change the service type, the system checks to see if the inventory, work order, and service GL accounts associated with the new service type product line are different than those GL accounts associated with the old service type product line. If they are the same, no further processing is required. But if the GL accounts are different, the system:

- Reverses any associated WO or IC transactions already created for the call/call line.
- Creates new WO/IC transactions that use the product line inventory, WIP, and GL accounts associated with the updated service type.

  This ensures that the inventory history and GL transaction activity are synchronized and posted to the correct product line accounts.
- Reverses any other labor, item, or other expenses posted against the call in CAR that require reversing.

All transactions created after the service type is changed post to the GL accounts associated with the product line of the new service type.

The GL effective date for these reversing/correcting transactions defaults to the effective date for the original GL transaction; this date can be modified if required (or if the original GL posting period has been closed). The effective date for the reversing transaction defaults from the old effective date if the GL period is open; otherwise it defaults to the system date.

Chapter 23

Return Material Authorizations

Use return material authorizations (RMAs) to manage simple returns from your end users. You can receive a returned item and issue a replacement item with an RMA. This chapter discusses how to set up and use RMAs, and provides a detailed description of RMA Maintenance.

RMA Life Cycle

Use RMAs for managing simple returns. In general, RMAs perform three activities:

- Receive returned items for repair or replacement.
- Issue replacement items.
- Create invoices for this activity.

RMAs are limited to the receipt and issue of items. Track activities that require an engineer's intervention with Call Activity Recording (CAR). CAR also supports the exchange of items. However, in CAR, this exchange is part of an engineer's activity in responding to a call for repair or preventive maintenance.

The following two features distinguish RMA returns from returns in CAR:

- You can generate RMAs independently of call tracking functions.
- RMAs do not require the intervention of a service engineer.

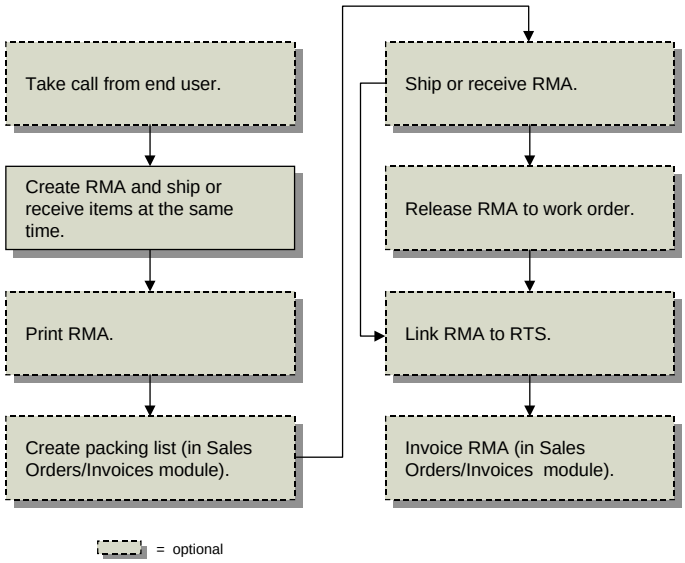
You can view RMAs as a type of sales order with special features to accommodate the requirements of a service environment. RMAs use all sales order features, such as freight processing and best pricing. Best pricing determines applicable prices using codes and rules you defined in the SO/SQ/RMA Issues Pricing Menu (1.10.1).

Note Best pricing applies only to RMA issues. Define price lists for RMA receipts by setting up credit price lists in the PO/Sched/RMA Rcpt Price Menu (1.10.2).

Since RMAs are similar to sales orders, you use the Sales Orders/Invoices module to manage the invoicing and credit functions. Use Pending Invoice Maintenance to correct pricing information on an RMA invoice just like a sales order invoice.

Note If you are using shipping groups and inventory movement codes, you can enter shipment information and generate shippers during RMA shipments just like sales order shipments. See the Shipping chapter in *User Guide: QAD Sales* for details.

Fig. 23.1
RMA Workflow



Create RMAs with RMA Maintenance (11.7.1.1). Shipments and receipts on an RMA can take place when you create the RMA, or later in RMA Shipments (11.7.1.16) and RMA Receipts (11.7.1.13). If you create the RMA as unconfirmed, confirm it before shipment using RMA Confirmation (11.7.1.6).

Use RMA Print (11.7.1.3) to print the RMA and use the standard Sales Order Packing List (7.9.13) to create a packing list for an RMA.

Note In RMA Print, the country for the sold-to customer determines the numeric and date formats. See Chapter 24, “Returns to Suppliers,” on page 629 for details on RTS features.

If you are going to refurbish the item received on an RMA, release it to a work order using RMA Release to Work Order (11.7.1.5). To send the item to a supplier for repair, associate an RMA with an RTS in RTS Maintenance (11.7.3.1).

RMA billing takes place in the Sales Orders/Invoices module using standard Invoice Post and Print (7.13.4). As with a sales order, you use Pending Invoice Maintenance (7.13.1) to change prices, tax status, and salesperson commission.

Manage credit issues in the Sales Orders/Invoices module. If an RMA is on hold because of a credit problem, you can clear it using Sales Order Auto Credit Approval (7.1.17).

Once fully invoiced, the system deletes RMAs, just like sales orders. To prevent obsolete RMAs from being left in the system, post invoices for an RMA even if monetary amounts are zero.

Effects of Optional Modules

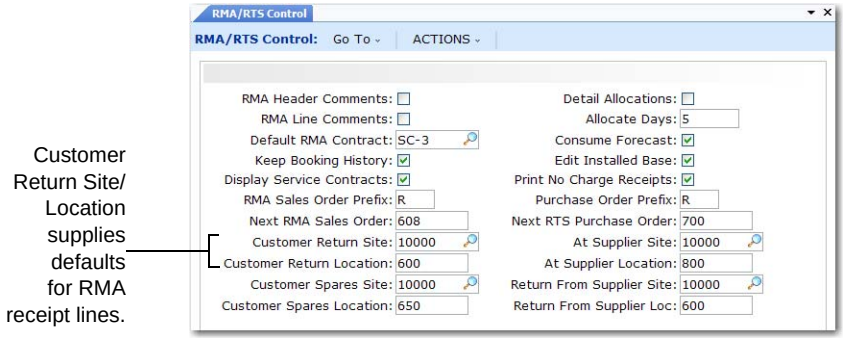
A number of optional features and modules affect the processing of RMAs. Many of these options add additional pop-up windows that display during header or line-item entry. This chapter describes standard RMA processing. If you are using optional features, the following list indicates where you can find additional information when:

- You are using available-to-promise (ATP) features and the system determines that insufficient inventory will be available on the due date for a confirmed RMA issue line. The system displays a frame with ATP information and options. When you use RMA Confirmation, you can decide before confirming the RMAs whether the system should change order-line due dates to meet ATP requirements. See *User Guide: QAD Sales* for information on ATP.
- You are entering a sales order for a configured item. These pop-ups are described in *User Guide: QAD Sales*.
- You are using the optional Logistics Accounting module. The effect of this module is described in *User Guide: QAD Master Data.*

RMA/RTS Control Settings

RMA/RTS Control (11.7.24) sets defaults for handling both RMA and RTS (return to supplier) functions. Some fields apply to both RMAs and RTSs. Others are used exclusively by one or the other.

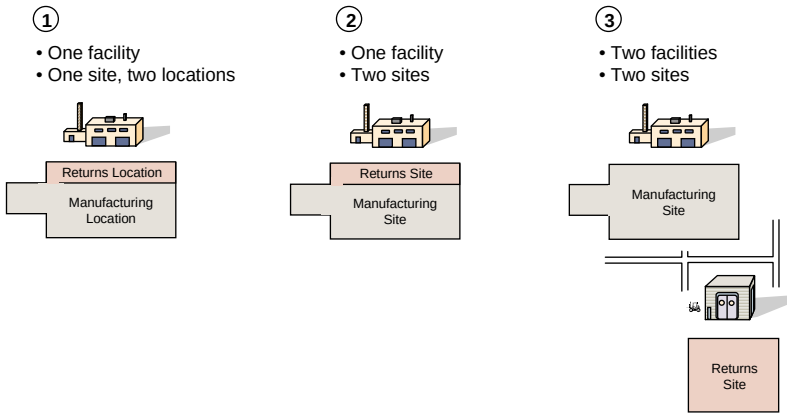
Fig. 23.2
RMA/RTS Control (11.7.24)



Customer Return Site in the control program is the default for RMA receipts. If you perform repairs at a manufacturing site, specify that site as the customer return site. If your return and repair operations are separate from manufacturing, use the repair site as your customer return site.

Figure 23.3 represents three different scenarios for setting up return sites and locations.

Fig. 23.3
Return and Spares Sites and Locations



Setting Up Return Locations

Along with a customer return site, you can set a customer return location default for RMA receipts. If you use a special location for receiving RMA goods, this location probably has special characteristics. Use inventory status codes to define those characteristics.

Generally, until you inspect a returned item, you do not want it to be available for sales orders or work orders. Use a nonavailable location status to prevent other functions from allocating returned inventory.

Use the Nettable inventory status field to determine whether returned inventory is considered on-hand by MRP and planning functions. If you can put most returns into usable stock with little or no repair, set the status of this inventory location to be nettable. If you scrap most returns, set the status to be non-nettable, so MRP does not count the inventory as being on hand.

The RMA receipt function performs a negative sales order shipment to process the return. The return location should not restrict the ISS-SO transaction.

Setting Up Customer Spares

Another important control program setting for RMAs is Customer Spares Site. In this field, specify the site you want as the default for issue of replacement items on RMAs.

Business Issues for RMA Implementation

Several implementation issues determine how you set other values in RMA/RTS Control.

Forecasting Replacement Parts

If you are forecasting your replacement parts, set Consume Forecast to Yes. Forecast is then consumed when an RMA is issued.

Inventory Allocations

Allocations reserve inventory so it is not allocated to other sales orders, material orders, RMA issue lines, intersite requests, calls, or work orders. Allocations help control the shipment of items, especially when a sufficient quantity of an item does not exist to fill all orders.

Control RMA allocations with settings in Sales Order Control and RMA/RTS Control.

- The Quantity Available to Allocate calculation method in Sales Order Control controls how the system determines the number of items available to allocate. The calculation is the same for all items and sites.
- The value for Limit Allocations to Avail to Allocate in Sales Order Control determines how the system handles shortage situations. If this field is No, Quantity Allocated defaults from Quantity Ordered even if a sufficient quantity to allocate does not exist. If this is Yes, Quantity Allocated never exceeds the quantity available. If there is no quantity available to allocate, Quantity Allocated defaults to 0.
- The setting of Allocate Days in RMA/RTS Control determines the value for the same field in RMA Maintenance. The system attempts to allocate only RMAs with a due date within the range that this field defines. For RMAs due outside the range, Quantity Allocated defaults to 0 regardless of available quantity.
- The Detail Allocations field in RMA/RTS Control sets the default for the similar field in RMA Maintenance. If this is Yes for an RMA issue line, an inventory allocation pop-up window displays for specification of site and locations and lot/serial/reference numbers.

You can ship items from RMA Maintenance, without allocations, by specifying a quantity to ship. If you use packing lists to communicate shipping priorities, you can set Pick Only Allocated Lines to Yes in Sales Order Control. In this case, only allocated quantities print from the Sales Order Packing List function, telling the shipping department what to ship.

Transaction History

To keep an audit history of updates and changes to RMAs, set Keep Booking History to Yes. The system maintains transaction history records, identified as type ORD-SO. Each record includes the item, order quantity, price, cost, date, user ID, and other information. You can review this information using booking inquiries and reports.

Updating the Installed Base

You can modify installed base information within an RMA. For instance, to specify an alternate end user for one line item that is different from the end user on the header, you can change the end user for the line. Set Edit Installed Base to Yes in the control program to modify installed base information within the RMA using a pop-up window.

Default RMA Contract

The service type in the control program determines the default in RMA Maintenance (11.7.1.1) if an RMA does not reference a call or contract. All items on the RMA receive coverage as defined by this service type.

See Chapter 25, “Control Programs,” on page 641 for a description of all control program settings.

Sales Order Control

RMA/RTS Control contains settings that enable you to make business decisions concerning the aspects of RMAs that are unique to a service environment. However, RMAs are also a special kind of sales order.

Many business decisions that you make in Sales Order Control (7.1.24) affect aspects of RMA processing. For example, the following settings in Sales Order Control (in addition to others) are considered by RMAs as well as sales orders:

- Allocation method, Limit Allocation to Avail to Alloc, and Print Only Lines Allocated. See “Inventory Allocations” on page 597 for details related to allocations.
- ATP Enforcement
- Calculate Promise Date
- Shipping Lead Time—RMA due date for issues is the system date plus shipping lead time
- Line Format (S/M)
- Minimum Ship Amount
- Consume forecast forward or backward
- FOB Point

Settings in Sales Order Accounting Control (36.9.6) also have an effect on RMA processing:

- Price Table Required
- Vary Pricing Date by SO Line

RMA Coverage

When handling returns, you address many coverage issues. Is repair covered? Is repair feasible in terms of the amount of coverage? Is this item critical to the account, and should the RMA costs be shifted to goodwill? How can coverage be adjusted for one item or special case?

Pricing is another coverage issue for RMA items. A returned item is usually not new and may not be in good condition. How much credit do you give for the return if you issue a new item and credit the customer for the return?

Coverage issues for RMAs are handled through service types, charge types, and RMA credit price lists:

- Service types determine credit pricing and coverage levels for the RMA as a whole.
- Charge types enable you to change the service type for a particular item on an RMA.
- RMA credit price lists manage the cost of returns.

Note Only the percent of coverage defined for the service type or contract is used in RMA Maintenance. Limit consumption on contracts takes place only in Call Activity Recording.

RMA Service Types

The service type associated with an RMA determines credit pricing and coverage levels, as well as other coverage details. By default, an RMA uses the service type from one of three sources:

- The service type of the call associated with the RMA
- The service type of a contract selected to cover the RMA
- The default service type in RMA/RTS Control (11.7.24), if no call or contract are associated with the RMA

Service types determine the financial impact of RMA processing. They provide default credit price lists for RMA receipts, default restocking charges, and also determine the percentage of coverage. In addition, the service type determines whether you can ship a replacement item before you receive the defective item, and can determine the default product line.

See Chapter 5, “Contract and Warranty Types,” on page 123 for details on setting up service types.

Credit Price List

During returns, an RMA credit price list must exist before the system can calculate the credit price. If no credit price list exists, the system sets the line item price of a receipt to zero. Define RMA credit price lists in the PO/Sched/RMA Rcpt Pricing Menu (1.10.2).

Product Line

RMA Maintenance supports an expanded use of product lines to determine accounting impacts. Support organizations use this to distinguish the financial impacts of service provided under different kinds of coverage: warranty, contract, giveaway, billable.

The default product line for RMAs depends on the setting of Use Item Prod Line in SSM Accounting Control. If this is Yes, the item’s product line is the default. If No, the product line of the service type is the default. The product line determines which GL accounts are affected by an RMA.

The system uses the product line for the RMA line to determine sales-related accounts in the same way as sales orders. In RMAs, the system determines COGS accounts in the same manner. The system first looks for accounts set up with Sales Account Maintenance (1.2.17), using the product line associated with the RMA line item, the RMA header’s site and channel, and the customer type of the sold-to address. If no matching records exist, the system uses the accounts in Product Line Maintenance.

Note Inventory accounts for RMA transactions are based on the product line associated with the item being issued or returned in Item Master Maintenance. This is essential to inventory control implementation, since the same source for GL account numbers must be used for issuing and receiving items to reconcile inventory value with GL account balances.

Issue Line Percentage of Coverage

For RMA issue lines, line item discount reflects the level of coverage of the service type in effect for the RMA. The system supplies a default for this field in the following manner:

1. First, the system determines the service category associated with the line item. You can specify this with Service Item Maintenance (11.3.7). Otherwise, the system uses the item service category from Call Management Control.
2. If a contract is associated with the RMA, the system searches the contract header limits for a coverage percentage in the following order.
   - Search for a coverage percent defined for the invoice sort related to the item's service category.
   - Search for a coverage percent defined for the contract total limit.
3. If contract or contract header limits are not found, search the service type specified on the RMA in the same order: first by invoice sort, then total.
4. Add the service coverage percent to any discount calculated by the best pricing algorithms and display the results in the line item Discount field.

Note The system uses the order-line due date when it searches for effective coverage level records.

The system displays the amount of discount that results from service coverage and the amount that results from a price list discount.

Coverage Examples

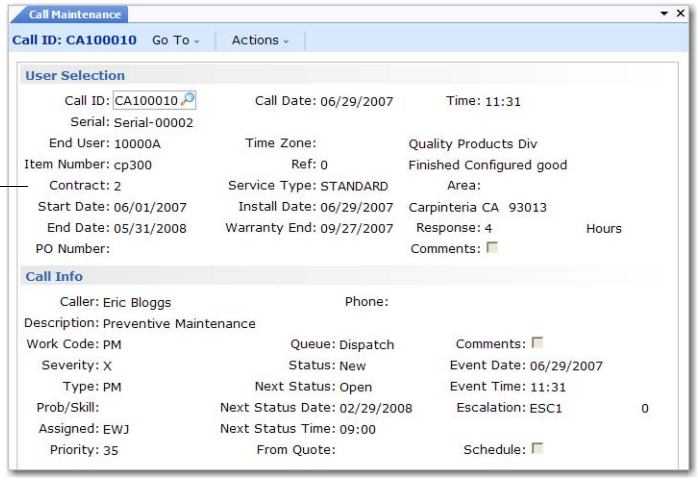
An RMA obtains coverage in three ways: from a call, a contract, or the control program. The following examples illustrate each method of coverage.

RMAs with a Call

When an RMA references a call, the system uses the call's coverage. In Figure 23.4, a call is taken for an item covered under contract 2.

Fig. 23.4
Call Maintenance (11.1.1.1)

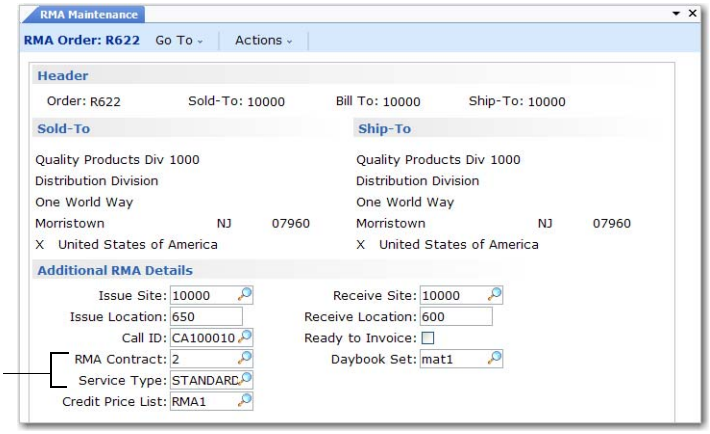
Item cp300, serial number Serial-00002 is covered by contract 2.



If you create an RMA referencing this call, the system uses the contract and service type from the call for the RMA.

Fig. 23.5
RMA Maintenance (11.7.1.1)

When call CA100010 is referenced on an RMA, its contract and contract type are used for coverage.

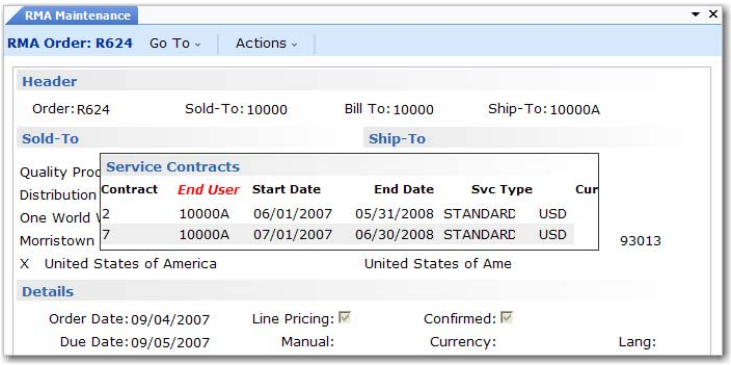


In this example, call CA100010 was taken for a contract item. Figure 23.4 shows that Call Maintenance determines the contract (2) as well as the service type associated with that contract (Standard). When call CA100010 is specified in the RMA Maintenance, the system uses contract 2 and service type Standard as defaults to determine the level of coverage.

RMAs with a Contract

Since RMAs do not have to refer to a call, the system has other ways to determine coverage levels. One of these is by selecting from a list of active contracts for the end user. The system displays the Service Contract pop-up window depending on the Display Service Contracts setting in RMA/RTS Control. If this field is Yes, a pop-up window showing all valid or open contracts for the end user displays after you complete the upper frame of RMA Maintenance.

Fig. 23.6
Coverage for an RMA Without a Call



RMAs Without Call or Contract

If an RMA does not reference a call and no contracts exist for the end user or a contract is not selected, the system uses the service type for the Default RMA Contract field in RMA/RTS Control. All items added to the RMA receive the level of coverage of this service type, unless you use the charge type feature.

RMA Charge Types

The RMA charge type addresses an issue arising daily for many service organizations: How can coverage be adjusted for one call or special case?

When this need occurs, you want the ongoing contractual or warranted relationship with the customer to remain unchanged. You need only a one-time adjustment. For example, the service engineer can make a special charge for an unusual repair. Or, for various reasons, you waive normal charges for this RMA. Using a charge type, you can adjust coverage for this special case without changing the coverage relationship with the customer.

Example You issue replacement items normally covered 100% by a warranty. However, one item is broken due to misuse by the customer and therefore is not covered under the warranty terms. You need to charge full price for this part. Change the charge type for this item issue to reference a service type that has 0% coverage.

Defining Charge Type/Service Type Relationships

Define RMA charge types in the Default Charge Information frame of RMA/RTS Control (11.7.24), illustrated in Figure 23.7. The system supports four charge types. You can associate each with a separate service type. The system defines the warranty (W) and contract (S) charge type codes and you cannot change them. Select any other code for the billable and giveaway charge types.

Fig. 23.7
RMA Charge Type Control Settings

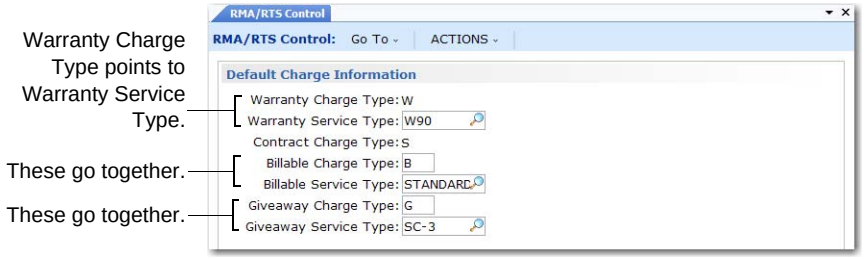


Figure 23.7 shows three groups of charge/service type relationships:

- Warranty Charge Type and Warranty Service Type
- Billable Charge Type and Billable Service Type
- Giveaway Charge Type and Giveaway Service Type

In Figure 23.7, a W charge type, which you cannot change, references a warranty service type named W-1. The billable charge type is B and references the billable service type STANDARD. The giveaway charge type is G and associated with the giveaway service type SC-3.

A fourth relationship is not as obvious. The contract charge type, which you cannot change from S, references the Default RMA Contract in the first frame of RMA/RTS Control. When you specify a charge type of S as an override, the system applies the terms of the default RMA contract type.

Charge Type Defaults in RMA Maintenance

When you create an RMA, the header's service type is either a warranty code or a service contract type. The system uses the terms of the header service type by default for each line item. If the type is a warranty, the charge type for each line item defaults to W (warranty). If the header's service type is a contract type, the charge type on line items defaults to S (service contract).

Overriding Charge Type Defaults

The default charge type displays during RMA line item entry. You can change it to reference another charge type defined in the control program. Changing the charge type changes the level of coverage for the line item.

If the default charge type for a line item is W, you can change it to reference one of three other service types:

- Specify S to use the default RMA contract type from RMA/RTS Control.
- Specify the billable charge type you defined to bring in the level of coverage of the billable service type from the control program.
- Specify the giveaway charge type you defined to bring in the level of coverage of the giveaway service type from the control program.

In the same way, you can change an S default to W or to the billable or giveaway charge types that you can define.

Changing Charge Types

When you edit an RMA line, you can modify the charge type only if Reprice is Yes in the RMA header or for the line. The level of coverage associated with the service type referenced by a charge type affects pricing for the RMA issue line. If Reprice is No, the charge type pop-up does not display when you modify a line.

Note Even if Reprice is Yes, you cannot change the charge type if you have shipped a quantity on the line.

Changing the charge type on an RMA line always causes it to reference the service type in the control program.

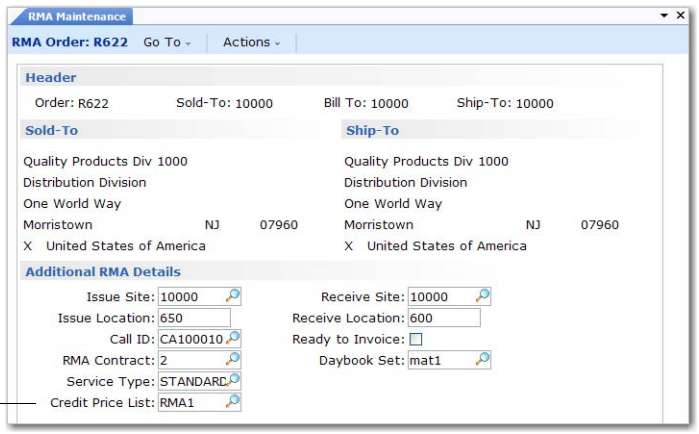
Example You specify a contract service type on an RMA header. For the first line, the charge type defaults to S, but you change it to G. The system applies the coverage level of the giveaway charge type to this line item. You edit the item a second time, changing the G to S. The system applies the level of coverage of the default RMA contract type in the control program, not the one on the RMA header.

Coverage and Pricing for RMA Receipts

RMA issues use the price lists, analysis codes, and relationships you define in the SO/SQ/RMA Issues Pricing Menu (1.10.1). The system determines the issue price, without specifying a price list.

RMA receipts, however, require that you define a specific credit price list in the PO/Sched/RMA Rcpt Price Menu (1.10.2). The credit price list defaults from the service type, but you can modify this when you create an RMA.

Fig. 23.8
Additional RMA Details Pop-Up



The RMA Credit Price List defaults from service type Standard.

In Figure 23.8, use the pop-up window in the RMA Maintenance header to specify a credit price list for RMA receipts. The credit price list on the header defaults to each RMA receipt line item. If no credit price list exists, the price for that line item is zero. The RMA receipt looks only at the Credit Price List, not the full item price.

The service type on the RMA header also defines any restocking charge for a receipt line. If you change the service type on RMA header, the new restocking charge takes effect for existing lines only if Reprice is Yes or if you modify the list or net price fields for the receipt line.

The same is true if you change the price list on the RMA header. The change affects existing lines only if Reprice is Yes or if you modify the list or net price fields for the receipt line.

Pricing for RMA Issue Line Items

Pricing for RMA issue lines follows the sales order pricing algorithms. With this system, you do not specify a price list during RMA processing. The system determines the price list according to a best pricing algorithm using the codes and rules set up for pricing items on sales orders.

This section gives an overview of how pricing for RMA issues works and highlights considerations for RMAs. For a complete discussion of sales order pricing, refer to *User Guide: QAD Master Data*.

Determining a Price

During processing in RMA Maintenance for line item issues, the system determines which price lists apply, based on the pricing customer, then determines the price using several processing steps.

Pricing Customer

The system uses the ship-to customer in the price list search if the address code is defined as a customer. Otherwise, the system uses the sold-to address. In RMAs, the ship-to defaults from the end user. If the end user is not defined as a customer, the system uses the customer associated with the end user in the price list search.

Price List Candidates

The system next determines applicable price lists by comparing the customer number and item number on the RMA issue line with the customer code and item code on the price list. A match exists when all of the following conditions are true.

- Customer/Analysis Code on the price list is blank or matches either the customer on the RMA an analysis code associated with this customer.
- Item/Analysis Code on the price list is blank or matches either the item number on the RMA or any analysis code associated with the item number.
- The order currency and price list currency match.
- The start and end dates are effective.

Note Blank indicates the price list applies to all customers or items.

Determining Line Item Prices

After the system has found the qualifying price lists, it determines the combinations that result in the best price. The rules for combining price lists come from the Comb Type field in sales order Price List Maintenance.

When the system determines line item prices, it basically follows the same steps as for sales order pricing. Step 4 is unique to RMA pricing.

1. *Build the Best List Price.* The system evaluates each applicable list price type price list. If more than one exists, the system uses the lowest price. If no list price list exists, the system uses the Price field value from the item master. This price displays in the List Price field of the RMA issue line.
2. *Build the Best Net Price.* The system accesses each applicable discount %, discount amount, markup, and net price list. It then determines the combinations that yield the lowest price. The rules for combining price lists come from the Combination Type field in Price List Maintenance (1.10.1.1).
3. *Modify Price for Minimum or Maximum.* List price type price lists can include the definition of a minimum and maximum price. If the best price comes from a price list with minimum and maximum prices, the system verifies that the calculated net price on the RMA issue line is below the maximum price or above the minimum. If not, it adjusts net price.
4. *Apply Coverage Percent*. This step is unique to RMAs. The system determines the applicable coverage percent based on the service type, warranty, or contract providing coverage. It adds this percent to the discount previously calculated (100% maximum), and recalculates the net price. It displays Discount and Net Price on the RMA issue line.
5. *Manual Override of Calculated Prices*. You can change the calculated list price, discount, and net price on RMA issue lines if you have access to these fields. When you do, the system records a manual discount, which is the difference between the system-generated price and the price you entered.

Special RMA Pricing Considerations

In the case of RMAs, the system treats the discount applied as a result of service coverage like a manual discount. It displays this way in the price list inquiry functions. You cannot distinguish it from other overrides that you specify. The system marks the discount as coming from a service type and lets you reprice the issue line.

Minimum Prices

If you specify a minimum price on the applicable price list, the system uses it in calculating the price *before* it applies the service coverage discount. However, when the system applies the service coverage percent, it allows the net price for an item to fall below the minimum list price. For minimum prices the rules and agreements of the service coverage can override the rules set up in sales order pricing.

Minimum Price Examples

You issue item 116 on an RMA using a service contract that provides 50% coverage. The system determines that price list A gives the best price for item 116. This price list specifies a price of $6.00 with a minimum price of $5.00 and maximum of $7.00. The system finds no applicable price discounts when it calculates prices. If no coverage is provided on the RMA, the net price equals the list price of $6.00.

Now the system applies the coverage percent to the price, resulting in a net price of $3.00. Even though this net price is below the $5.00 minimum, the system does not generate an error. The adjustment is a result of service coverage and remains even if the issue line is repriced.

Using the same data, consider what happens if the system finds applicable price discounts that lower the net price below the minimum *before* service coverage is applied.

The initial list price of $6.00 is discounted 20% yielding a net price of $4.80. The system raises this to the minimum ($5.00) and then applies the service coverage (50%) for a net price of $2.50. A message indicates that the price has been adjusted because the net price is lower than the minimum.

Repricing RMA Issue Lines

You reprice sales orders in Sales Order Repricing (7.1.11) and can include RMA issue lines in this function. To reprice an RMA issue line, create it with Fixed Price set to No. Repricing does not affect RMA receipt lines, since the system determines prices for RMA receipts differently from RMA issues.

Note If you have changed the price on an RMA issue line, the system does *not* reprice it. This is the same as with sales orders. The system only recalculates prices that it generated.

When the system reprices RMA issue lines, it recalculates list price and applicable discounts and adjusts for minimum/maximum list price as described previously. It then reapplies the coverage percent and any manual discount you specified.

Accrual for Price Breaks

Items issued on RMAs are like sales order lines in terms of price breaks and accrual.

Other Pricing Functions

RMAs follow the same rules as sales orders in calculating prices for configured products.

Use Sales Order Price Inquiry (1.10.1.17) for RMAs to display information about the price lists and discounts applied in calculating prices for line item issues. The service coverage amount displays as a manual discount. You can also use Sales Order Pricing Report (7.15.7).

Effect of Control Settings on RMA Pricing

Define settings that affect pricing in Sales Order Accounting Control and Pricing Control. These settings affect RMAs just like sales orders, with the exception of Pricing Date.

Pricing Control

In Pricing Control, the setting of Price SO by Line determines the default for the Line Pricing field in the RMA header. SO Factor Rounding and Display SO Discounts also determine how the system displays discounts in the Discount field of the RMA line item issue frame.

In sales orders, the date the system uses to search for an effective price list is determined by Default SO Pricing Date in Pricing Control. This can have one of five values: order date, required date, promise date, due date, and performance date.

For RMAs, the system uses the order date to search for effective prices, regardless of the setting in Pricing Control.

Sales Order Accounting Control

In Sales Order Accounting Control, Price Table Required and Vary Pricing Date by SO Line can affect RMA processing.

- If Price Table Required is Yes, a price list in the item unit of measure must exist.
- If Vary Pricing Date by SO Line is Yes, you can edit Pricing Date and Credit Terms Int in the pricing pop-up window during RMA issue line item entry. Otherwise, the system uses the header value for each line and you cannot change it on individual lines. When you update the header, the system automatically updates the corresponding values on the lines.

RMA Issues and Receipts

Create RMAs with RMA Maintenance (11.7.1.1). This function is similar to Sales Order Maintenance (7.1.1), with the addition of several pop-up windows for supplying information unique to RMAs.

An RMA tracks items leaving from or arriving at your site or warehouse. This includes items shipped to and returned from customers. After you receive or issue items, the installed base can be updated when you post the RMA invoice. Again, the system can record items issued to your end users and remove items received from them.

The system creates an invoice when you ship or receive items on the RMA. The Ready to Invoice field can be set in RMA Maintenance.

RMA Issues

In the classical flow for returned items, you receive a returned item and then either issue a replacement or fix the returned item and ship it back. In this scenario, you process the RMA receipt before the RMA issue.

However, in modern service organizations, an RMA issue often occurs immediately upon receipt of a return, or even before the end user returns the item. The issue is processed first.

This more aggressive approach to RMA issues tries to ensure that the customer does not go without use of the item. This has always been an important part of servicing mission-critical items, since customer down time can be costly. The trend in service is to be proactive and replace an item, even a noncritical item, as soon as possible. Dealing with the returned item comes second.

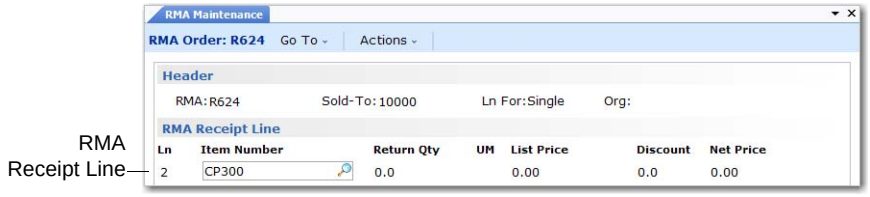
Note Use the Ship Before Return setting on the service type to control whether items on linked RMA lines can be shipped before defective ones are returned.

RMA Receipts

The third section of RMA Maintenance enables you to process the receipt of items returned from your customers. These items might be damaged or broken, or perhaps are being returned for a different or upgraded model.

Figure 23.9 shows the RMA Receipt Line frame of RMA Maintenance. With the exception of a few fields, the layout of this frame is the same as the RMA Issue Line frame.

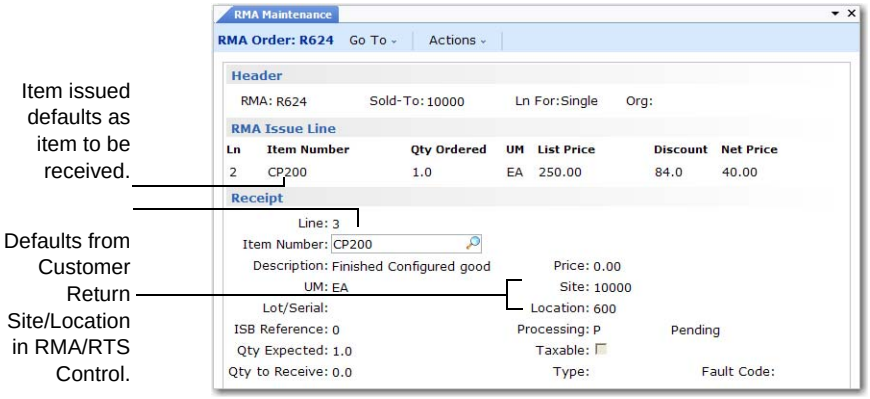
Fig. 23.9
RMA Receipt Lines



Linking Receipts to Issues

The Issue Line Detail frame in RMA Maintenance contains a logical Rec (receipt) field. Set this field to Yes to display a pop-up window where you can create a receipt corresponding to an issue. The item on the current RMA issue line is the default receipt line item, and the system links the two lines. Use this feature for one-to-one part replacement.

Fig. 23.10
Linking RMA Issues and Receipts



In this example, an RMA issue line item is created for an item cp200. If the Rec field is Yes, the item number cp200, unit of measure, quantity, and ship type default from the issue line.

Note The item number on a linked receipt does not have to be the same as the issue line item. You can change it only when you first create the line. If you do change it, the system prompts you to confirm the change before it saves the line.

The default site is the customer return site in RMA/RTS Control. This link works only if you are both shipping and receiving in real time—that is, right away.

When you create a receipt line for an issue line by setting Rec to Yes, the system links the two lines. The system checks the value of Ship Before Return on the service type only when lines are linked.

RMA Billing

You can invoice RMA issues and receipts together. RMA issues can create an invoice charged to the bill-to address. RMA receipts can create a credit, as well as a billable amount if a restocking charge exists. When an RMA includes both issues and receipts, the system charges the net amount.

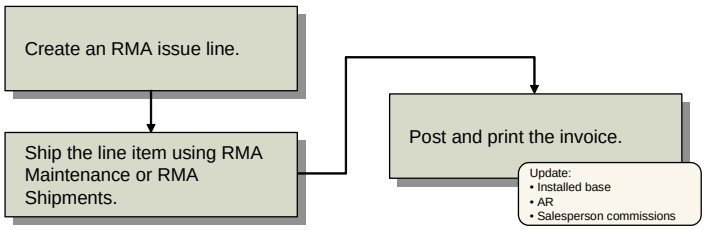
Example An RMA issue is charged $500 and a receipt credited $400. When you invoice this RMA, it shows a $500 charge for line item one and a credit price of $400 for line item two, with a net price of $100.

You can also process the issue and receipt separately. This creates two postings to Accounts Receivable, one for $500 and a credit for $400. The net result is an invoice for $100.

RMA Billing Flow

An RMA issue typically follows the steps shown in Figure 23.11.

Fig. 23.11
RMA Issues Billing Flow



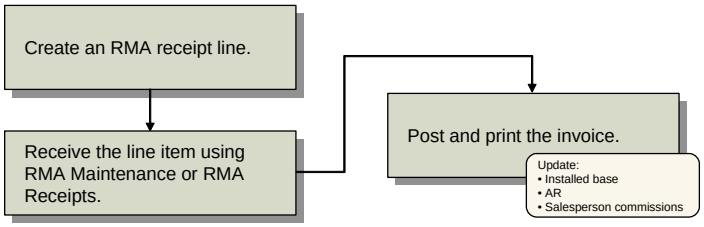
Posting the invoice updates the installed base, accounts receivable, and salesperson commissions.

Once an amount to invoice exists on an RMA, through shipment or receipts, you cannot modify pricing data in RMA Maintenance. Use Pending Invoice Maintenance (7.13.1) to change prices. You can also use Pending Invoice Maintenance to change tax status and salesperson commission.

RMA Credit Flow

An RMA receipt typically follows the steps shown in Figure 23.12.

Fig. 23.12
RMA Receipts Credit Flow



After you receive the item on an RMA receipt line, you can post and print the invoice. Posting the invoice updates the installed base, accounts receivable, and salesperson commissions.

General Ledger Impacts

When you ship items on an RMA, the system debits the five cost of goods sold (COGS) accounts and credits inventory. An RMA receipt does the opposite: debits inventory and credits cost of goods sold. These accounts are accessed from Inventory Account Maintenance and Sales Account Maintenance based on the product line associated with the RMA.

When you post the RMA invoice, the system debits accounts receivable and sales discount accounts and credits taxes, freight, trailer charges, and sales accounts.

See page 599 for a discussion of product lines in RMAs.

Customer Credit Status

RMAs are a type of sales order and follow most sales order rules. However, for RMAs, the value of Credit Hold Option in SSM Accounting Control determines RMA processing rather than the value of Hold Orders over Credit Limit in Sales Order Accounting Control.

If the customer bill-to on an RMA is on credit hold or over the credit limit, RMA processing is determined by the setting of Credit Hold Option, which can have one of three values:

0 (zero): You can create RMAs regardless of the customer's credit status.

1: You can create RMAs, but a warning displays and the action status of the RMA is set to hold.

2: You cannot create RMAs for customers who are on credit hold or over their credit limit. An error message displays. Reset the customer Credit Hold field to No to create the RMA.

With this setting, when the RMA line being entered puts the customer balance over the credit limit, the system does not prevent you from completing the request. This is because the credit limit is not actually exceeded until the order line is complete. Instead, the system accepts the RMA, displays a warning message, and places the resulting document on credit hold.

Remove credit holds from existing RMAs using Sales Order Credit Maintenance (7.1.13) or Sales Order Auto Credit Approval (7.1.17). You cannot release an RMA to a work order if the action status is nonblank.

RMA Invoices

An invoice for an RMA looks similar to a sales order invoice. However, the system handles some aspects of the invoice differently for an RMA.

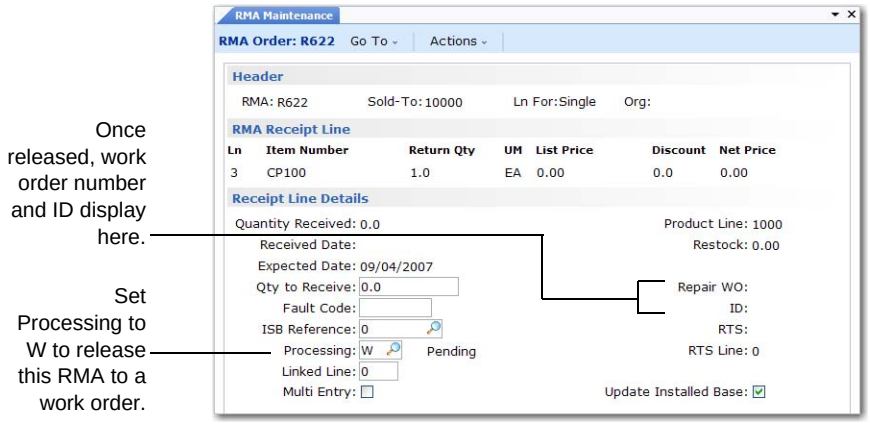
- If the RMA is associated with a call, call comments that print on the invoice print on the RMA invoice.
- If the RMA is associated with a call, the call number prints on the invoice header.
- The service contract providing coverage on the RMA displays beneath each invoice line, for both issues and receipts.

Invoice reprint for an RMA creates an invoice that looks like the original with one exception. If you have deleted and archived the call associated with the RMA, call comments are not available for printing.

Releasing RMAs to Work Orders

Some service organizations use standard manufacturing operations to refurbish items received from customers on an RMA. To do this, specify W (work order) as the processing option on the RMA receipt line item.

Fig. 23.13
Processing Option

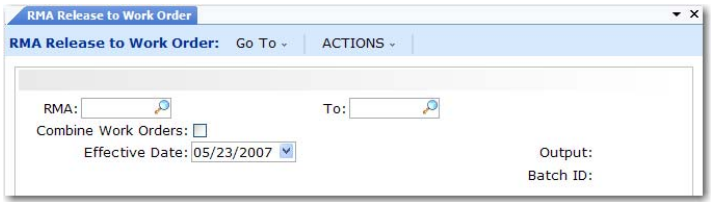


The default processing option is P for pending. You can change this to W at any time.

Example When you create the RMA receipt line, you do not know if a work order is needed, so you set Processing to P. When the item is actually received and inspected, you determine a work order is required. At this point, you can go into RMA Maintenance and enter W in the Processing field.

Use RMA Release to Work Order to create rework orders for all RMA receipt lines with a quantity already received and a W processing option. Rework orders have a Type R.

Fig. 23.14
Releasing RMA to Work Order



You can choose to combine work orders. In this case, you can summarize RMAs for a single item and site, unless it is serial-number controlled, on one repair work order. Otherwise, one work order is created for each RMA.

The system always creates individual work orders for serial-number controlled items by using a unique ID, so the components used in the repair can be identified.

The system creates the work order number by taking the RMA number and appending the receipt line number, using a period as a separator. For example, for RMA9 and receipt line 3, the work order number is RMA9.3. The system stores this number and the work order ID on the RMA. View it in RMA Maintenance in the Receipt Line Details frame.

Note When Combine Work Orders is Yes, the RMA number used for the work order number is the first RMA with a line released.

If the item being repaired has an associated repair routing in Service Item Maintenance, the system uses the repair routing to determine the operations on the work order. The work order type is R, indicating a rework order.

Note You cannot release an RMA with a non-blank action status to a work order. A non-blank action status indicates that the RMA is on credit hold.

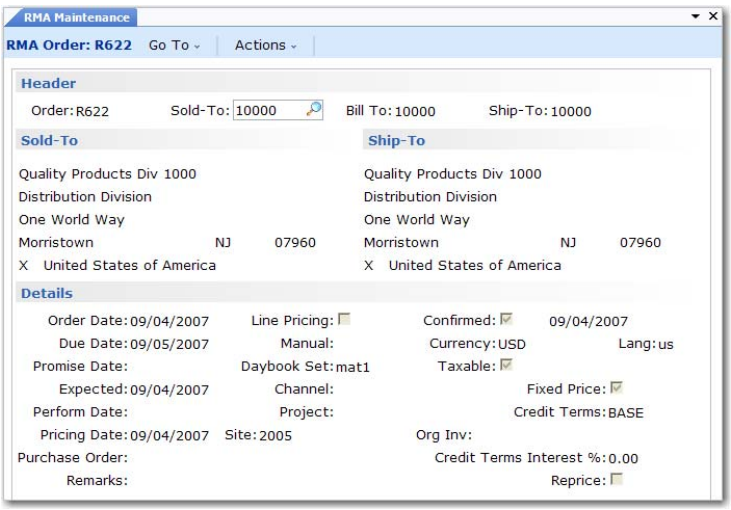
RMA Maintenance

The execution of RMA Maintenance follows several steps:

- Fill out the RMA header, including customer, end user, and call, and coverage information specific to RMA processing. This sets up default values for line item issues and receipts.
- Specify items to be shipped to the customer.
- Specify items to be received from the customer for repair or replacement.
- Enter trailer information, including trailer codes, tax, and standard credit information.
- Complete the trailer that totals billing amounts and trailer codes.
- Optionally ship or receive directly from RMA Maintenance. You can also use the separate ship and receive functions.

This section illustrates the frames used to complete this sequence.

Fig. 23.15
RMA Maintenance (11.7.1.1)



Order. If you leave this field blank when you create a new RMA, the system supplies a number by appending the RMA Sales Order Prefix in RMA/RTS Control to the value in the Next RMA Sales Order field. The system increments this field.

Call ID. A pop-up window displays so that you can supply a call ID. This field is optional; RMAs do not have to reference a call. If you supply a call, several fields on the RMA default from the call: the sold-to address, which is the call customer; end user; purchase order; contract; and call service type. The call number and comments designated to print on invoices display on the invoice for the RMA.

Sold-To. If the RMA references a call, the customer associated with the call's end user displays by default. Otherwise, you must supply a valid customer code.

Bill-To. This defaults from the Sold-To value unless you define the sold-to address with a different bill-to.

End User. A pop-up window displays so you can enter the end user for the items being returned or replaced. If the RMA references a call, the end user defaults from the call. If you enter a nonexistent end user, the system prompts you to create a new end user directly from RMA Maintenance. The frames for creating an end user are the same as those displayed in Call Maintenance. See "End User Selection Frame" on page 289 for details.

Ship-To. Defaults from Sold-To. You can specify a different ship-to address for this customer, or you can create a ship-to address directly in RMA Maintenance by leaving the field blank.

Order Date. Defaults from the system date and indicates the date you recorded this RMA. This can be the date you entered the RMA or the date the customer requested an RMA.

Due Date. Defaults from the system date plus the shipping lead time in Sales Order Control and indicates the date you need to ship the replacement items from your facility. This field provides the default date for each RMA issue line. The system uses the issue line due date to search for effective coverage limits for the line item.

Promise Date. Indicate the date the customer was promised delivery. The promise date can be different than the due date. Promise dates include delivery transit time, while due date is the date the items must be ready for shipment.

The header default is blank. If you leave it blank, the system automatically calculates line-item promise dates under these conditions:

- Calculate Promise Date is Yes in Sales Order Control.
- Transit time data has been defined for the ship-from site in Delivery Transit Time Maintenance (2.16).

See *User Guide: QAD Master Data* for information on transit times.

Expected Date. Defaults from the system date. Indicate the date you expect to receive items returned from the customer on this RMA and provides the default date for each RMA receipt line.

Perform Date. Enter the date originally planned to be the due date. This date does not include transit time and can be used to evaluate the accuracy of shipment due dates.

Pricing Date. The pricing date for an RMA defaults from the order date. This is unlike a standard sales order where the default comes from the value of SO Default Pricing Date in Pricing Control (1.10.1.24). This can have five possible values: Due Date, Order Date, Required Date, Promise Date, or Performance Date. The system uses Price Date in determining the effective date for price list searches.

Whether you can change Pricing Date on individual lines depends on the setting of Vary Pricing Date by SO Line in Sales Order Accounting Control (36.9.6). When that field is Yes, you can change the date on each line. When it is No, you cannot. Instead, the system automatically updates all lines when you change the header.

Purchase Order. Defaults from the call if you specified one. You can change this field. This field is required if the current end user is defined to require a PO.

Remarks. Any remarks specified for the sold-to customer display by default. You can change these to make them specific to this RMA. Remarks display on printed documents.

Line Pricing. This field has effect only for a newly created order. If you are maintaining an existing order, the system sets this field to No and you cannot change it. For a new order, it defaults from the Price SO by Line field in Pricing Control (1.10.1.24).

If No, the system prices each line without considering other lines on the order. This may not be the best price, since additional item quantities on other lines can qualify a line for a different price list. If Yes, the system prices each line item as it is entered in relation to other lines on the order and displays the best price. In either case, if prices change because of quantity breaks, the system recalculates them at the end of order entry.

Set this field to No to improve performance during order entry, since fewer calculations are performed.

Manual. You can apply field security to this field. Manual enables you to enter a price list code to be considered for RMA issue lines. Define this price list first with Manual set to Yes in Price List Maintenance (1.10.1.1). Manual price lists do not necessarily determine the issue line price. The system uses them with the other price list search algorithms to determine the best price.

Daybook Set. Enter the daybook set that will be used when this order is invoiced. This value defaults from Customer Data Maintenance.

Valid values depend on the setting of Use Daybook Set by Site in Sales Order Accounting Control:

- When Use Daybook Set by Site is Yes, the value you enter must either be defined in Daybook Set by Site Maintenance for the order header site, or that program must include a daybook set with a blank site value.
- Otherwise, the value you enter must be defined in Daybook Set Maintenance.

At Invoice Post and Print, the system assigns an invoice number based on one of the daybooks in the specified set. It selects the specific daybook code by determining the value and type of the invoice; for example, customer invoice or correction invoice.

Channel. Specify an optional code identifying the distribution channel through which this RMA originated. Channel can be used to determine GL sales and COGs accounts affected by inventory transactions. Set up optional sales accounts with Sales Account Maintenance (1.2.17) based on product line, site, customer type, and channel. To standardize usage, set up values in Generalized Codes Maintenance for field so_channel.

Project. Project code is one component of an account number defined in GL setup functions. Other account components are account, sub-account, and cost center. Each component you enter must be valid on its own and in combination with other account number components. The project on the header is the default for all line items. You can change this for any line.

Site. The RMA header site helps determine the default tax environment associated with the RMA. You can specify a different site at the item level. At the item level, Site defaults from the Customer Spares Site/Location and Customer Return Site/Location in RMA/RTS Control. If you use site security, the person executing this transaction must have access or the system generates an error.

Confirmed. For sales orders, this field defaults from Sales Order Control. For RMAs, Confirmed always defaults to Yes since direct contact with an end user has normally already taken place. MRP processes confirmed orders as sales demand and the orders consume forecast. The header's Confirmed setting provides the default for each line item's Confirmed field.

Confirmed orders are allocated, consume forecast, and create demands for Material Requirements Planning (MRP). Confirmed orders also affect the customer order total when the system reviews credit limits.

You cannot ship unconfirmed line items using RMA shipments. If unconfirmed, you must execute confirmation before shipment using RMA Confirmation.

Currency. Defaults from the currency of the customer Bill-To address. When you create an RMA, you can change this value to any valid currency. After you move to the next frame, you cannot change it.

When you specify a foreign currency, a pop-up displays the exchange rate relationship effective on the order date. You can change it or mark this rate as fixed. If the exchange rate is not fixed, the system uses the exchange rate effective on the invoice post date. If the exchange rate is fixed, the system does not change it.

Language. Defaults from the language associated with the Ship-To address. Use this field when printing formal documents, which can be run by selecting a range of language codes. This enables you to use preprinted forms in different languages. The system stores comment information with a language code.

Taxable, Class, Effective Date. Defaults from the values for the ship-to address. Indicate whether this RMA is subject to tax. The taxable status for the order header displays as the default for each line item, but you can change it.

Fixed Price. Defaults from the Fixed Price setting for the sold-to address. Indicate whether the prices are fixed or subject to updates due to inflation or commodity repricing. Fixed Price must be No for an RMA to be considered by Sales Order Repricing.

This use of fixed price is different from fixed prices as used in service pricing, which enable the customer to be invoiced for a fixed price regardless of the cost of items, labor, and expenses recorded.

Credit Terms. Defaults from the credit terms for the sold-to address. Credit term codes identify types of payment terms, defining the due date and discounts for early payment.

Original Invoice. This field does not apply to RMAs.

Credit Terms Interest. The implicit interest added into an item's price based on the number of days to pay defined for the credit term. Use terms interest percent in hyperinflationary environments to accrue the estimated inflation increase.

The list price for the line item displays the included interest amount, based on the list price and the credit terms. This field sets the default for each issue line. You can modify it only if Vary Pricing By SO Line is Yes in Sales Order Accounting Control. When that field is No, you cannot modify individual lines. Instead, the system automatically updates the lines when you change the header value.

Reprice. You can edit this field only when you are maintaining an existing order. It indicates whether you can update prices for RMA issue lines or whether the prices come from current pricing data during this edit session. To change the charge type or prices for an issue line, Reprice must be Yes. Also, set this to Yes if you are combining RMA issue lines with sales order lines to accumulate quantities for price breaks.

This field affects only the current maintenance session. The value of Fixed Price determines which orders are repriced by Sales Order Repricing.

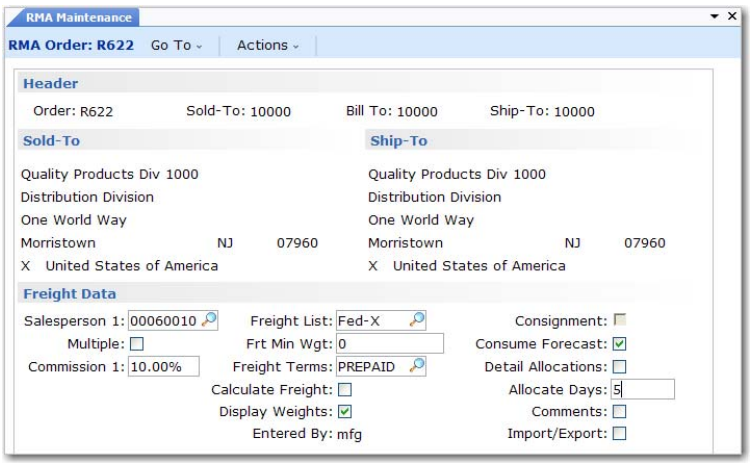
Reprice also affects RMA receipt lines. If you change the header service type or credit price list, existing receipt lines are affected only if Reprice is Yes or if you change the price fields on the line.

If Reprice is Yes, it affects all lines on the order and you cannot change it at the line level. If it is No on the header, a pop-up window during issue line entry enables you change it to Yes for the line. The system reprices new lines regardless of this setting.

Second RMA Header

When you click Next on the first RMA header frame, a second frame displays.

Fig. 23.16
Second RMA Header Frame



Salesperson. Defaults from the sales person for the sold-to address. Identifies the salesperson to receive commission and quota credit for this RMA. The salesperson information on each line item defaults from the salesperson and commission rate on the header.You can change it on each line item. To change the salesperson on a line item, set Multiple to Yes.

Multiple. Indicate whether more than one salesperson is responsible for this RMA. If this field is Yes, a pop-up window prompts you to enter up to four salesperson codes.

Commission. Specifies the commission percentage this salesperson is to receive. Besides the normal commission rate for the salesperson, you can enter commission rates for sales to specific customers or sales of specific product lines.

Freight List. Defaults from the freight list for the sold-to address. Freight list codes identify a set of shipping rates for different zones and shipping weights or units. The freight list on the header sets the default for each line item.

Freight Minimum Weight. Defaults from the freight minimum weight for the sold-to address. This field is the minimum weight on which to base the shipping charge if the freight list type is bulk. This field does not apply to freight lists of type unit. For bulk freight lists, shipments that weigh less than this amount are charged based on a minimum weight charge, not the shipment weight.

Freight Terms. Defaults from the freight terms for the sold-to address. The freight terms determine how the system applies freight charges. They can be added to the order trailer, added to the unit cost for each ordered item, displayed as a freight allowance, or not calculated.

Calculate Freight. Defaults to Yes for a new order; otherwise, defaults to No. If Yes, the system calculates site- and currency-specific freight charges on RMAs. Charges can be calculated for the line item's shipping weight for unit price lists or for the order's total shipping weight for bulk price lists. Calculated freight charges appear on the trailer.

Display Weights. Specifies whether to display the Freight window for each line item, which enables you to enter or modify data in the Freight Class and Freight Ship Weight fields. For inventory items, these fields default from the item master. For memo items, you must specify them. The Freight window also shows information the system uses to calculate freight for the line item, so you can review freight amounts easily.

Consume Forecast. Defaults from RMA/RTS Control. This field specifies whether the quantity ordered on the RMA consumes available forecast. If Yes, the order consumes the forecast. If No, the system considers the order quantity abnormal and plans for it in addition to the forecast.

Detail Allocations. Defaults from RMA/RTS Control. Specifies whether you usually make detail allocations during line item entry. Detail allocations assign specific inventory lot/serial numbers and locations to be shipped on an order. The setting on the header determines each line's default.

If Yes, at the line level, a pop-up window for detail allocations displays. If you do not detail allocate during line item entry, the system detail allocates when you print the RMA packing list.

Allocate Days. Defaults from the Allocate Days field in RMA/RTS Control. This field specifies the number of calendar days into the future for the system to use as a cutoff for allocating items on RMA issue lines. If the header's due date extends beyond the allocation window, automatic allocation does not take place for a new issue line.

Allocation is subject to two settings in Sales Order Control:

- The Quantity Available to Allocate calculation method specifies how the system determines the number of items available to allocate.

- The value for Limit Allocations to Avail to Allocate determines how the system handles shortage situations. If this field is No, the quantity allocated for an RMA issue line defaults from the quantity ordered even if a sufficient quantity to allocate does not exist. If this is Yes, quantity allocated never exceeds the quantity available. If there is no quantity available to allocate, quantity allocated defaults to 0.

See “Inventory Allocations” on page 597 for more information.

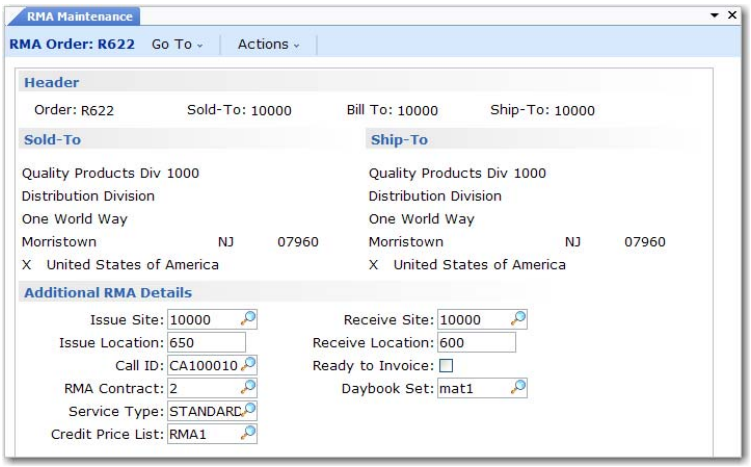
Comments. Defaults from the Header Comments field in RMA/RTS Control. If this is Yes, the transaction comment frame displays for you to enter comments specific to this RMA. Enter information here that relates to the entire RMA, such as delivery information or credit comments.

Import/Export. Defaults from Imp/Exp Default in Intrastat Control and appears if Use Intrastat is Yes in the same control program. Set this field to Yes to enter or maintain import and export data for the order used to create Intrastat History Reports. If Yes, the standard Intrastat frames displays for input of appropriate data.

Additional RMA Details

The next frame requests information unique to RMA processing.

Fig. 23.17
Additional RMA Details Frame



Issue Site. Defaults from Customer Spares Site in RMA/RTS Control and identifies the site from which you ship replacement items to customers. This site displays as the default for each RMA issue line, but you can change it. If you use site security, you must have proper access or the system generates an error.

Issue Location. Defaults from Customer Spares Location in RMA/RTS Control and identifies the location from which you ship replacement items to customers. This location displays as the default for each RMA issue line, but you can change it.

Receive Site. Defaults from Customer Return Site in RMA/RTS Control and identifies the site where you receive returned items. This site displays as the default for each RMA receipt line, but you can change it. If you use site security, you must have proper access or the system generates an error.

Receive Location. Defaults from the Customer Return Location defined in RMA/RTS Control and identifies the location where you receive returned items. This location displays as the default for each RMA receipt line, but you can change it.

Call ID. If you reference a call ID on the header, it displays here and you can change it. If you change the call after you create the RMA, the system does not recalculate the information that defaults from the call—sold-to, end user, purchase order, contract, service type.

RMA Contract. If you select a contract from the pop-up window of contracts for the specified end user, or if a contract defaults from a referenced call, it displays here. If a contract is available, it determines the coverage percentages and the default service type, which determines other coverage terms and conditions such as the credit price list, restocking charge, and ship before return setting.

If the service type of the contract is not changed, the Charge Type, or CT, field for RMA issue lines defaults to S, indicating service contract coverage.

The contract specified on the RMA header prints on the RMA invoice for both issues and receipts if a contract service type is used for coverage.

Service Type. Defaults from the contract displayed in the previous field, or the service type on the referenced call. Otherwise, defaults from Default RMA Contract in RMA/RTS Control.

The RMA header service type determines the default credit price list for returns, restocking charge to be added for returned items, and whether or not you can ship items before you complete a return. If you do not specify a contract in the RMA Contract field or no applicable limits exist on the contract, the service type determines the coverage percent applied to line item issues. The service type also sets the default charge type for issue line item entry. The values are: S if a contract type, W if a warranty.

If you change the service type on the RMA header after lines exist, its terms and conditions apply to new lines you add. They are applied to existing lines only if you reprice them. A message displays, indicating that you may want to review the coverage and pricing for existing RMA lines.

Credit Price List. Enter the price list code that applies to items returned on an RMA.This price list is accessed when processing RMA receipts to determine the amount of credit to give to the customer for the returned items.

The credit price list is ONLY used for RMA receipts. RMA receipt lines access price lists defined with Cust Schedule Price List Maint. You cannot enter a supplier price list in an RMA receipt.

The credit price is used in conjunction with any restocking charge defined for the service type in effect in RMA Maintenance. The credit is automatically reduced by the amount of the restocking charge. If no credit price list is available in RMA Maintenance or if a price for the item being received is not found, its price defaults to zero and must be specified manually.

Ready to Invoice. This field is initially set to No. After you have shipped or received items, the system sets it to Yes. Invoice Post and Print examines this field. It must be Yes before you can post the invoice. You can change the field to prevent invoicing.

If you ship more items later, the system sets Ready to Invoice to Yes so the RMA can be selected the next time invoices are posted.

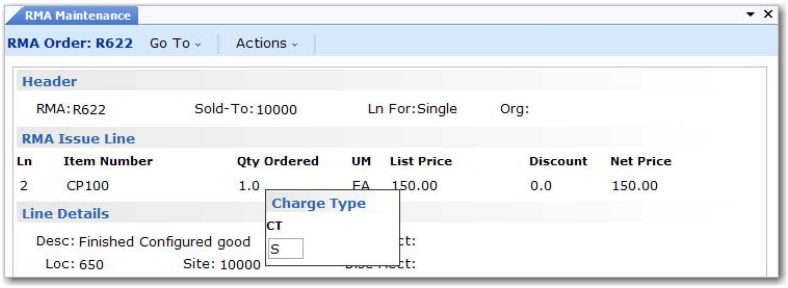
RMA Issue Line

This frame is similar to the line item entry frame for sales orders (7.1.1). Most fields in the item detail default from values in the RMA header, and have the same effect as described previously. This section describes the fields unique to RMAs.

If the item you enter has replacement types defined for it and the entry is on or past the item replacement's effective date, the system either prompts you to confirm the item replacement or displays pop-up frames to select other types of item replacements.

See *User Guide: QAD Master Data*.

Fig. 23.18
RMA Issue Line Entry Frames



Charge Type. After entering an item and quantity on a new line, a pop-up displays for entering a charge type. This code identifies how to bill the line item. If coverage is from a warranty type, charge type defaults to W. If coverage is from a contract or contract type, it defaults to S. You can define billable and giveaway charge types in RMA/RTS Control.

Charge types let you determine, per line, the service type for the item. Define four charge type/service type relationships using settings in RMA/RTS Control:

- The warranty charge type, set by the system to W, identifies charges covered under warranty. If the RMA header service type is a contract type and W is specified for the charge type, the system uses the level of coverage of the warranty service type in the control program.
- The contract charge type, set by the system to S, identifies charges covered under a service contract. If the RMA header service type is a warranty, specifying S brings in the coverage levels of the Default RMA Contract specified in the first frame of RMA/RTS Control.
- The giveaway charge type that you define in the control program can be specified as an override in RMA Maintenance and brings in the coverage level of the giveaway service type. This service type normally provides full coverage.
- The billable charge type, which you define in the control program, can be specified as an override in RMA Maintenance and brings in the coverage level of the Billable Service Type. This service type normally provides no coverage—the end user is responsible for the full amount.

You can modify the charge type for an existing line item only if Reprice is Yes for the line and you have not shipped any quantity.

See “RMA Charge Types” on page 602.

List Price. You can apply field security to this field. The value in this field is the unit price before applicable discounts or markups are applied. The system uses this value in calculating the net price. The system posts the list price to the sales account when posting an invoice to AR or GL. If a difference between the net price and list price exists, the system posts the difference to the sales discount account.

During order processing, the system first determines the best list price for an item by searching for applicable price lists in Price List Maintenance with a list type of Price List. If more than one price list exists, the system uses the lowest price.

If Line Pricing is No, the system prices each line without regard to other lines. When order entry is complete, the system determines if the new lines qualify for any quantity breaks and recalculates prices accordingly.

You can change the calculated list price, discount, and net price if you have access to these fields. If you do, the system records a manual discount, which reflects the difference between the system-generated price and the price entered.

Discount. You can apply field security to this field. It displays the discount calculated by the system to be applied to this item. The number of decimals comes from the SO Factor Rounding field in Pricing Control.

The system accesses each applicable Discount %, Discount Amt, Markup, and Net Price price list. It then determines the combination yielding the lowest net price. The rules for combining price lists come from Combination Type in Price List Maintenance (1.10.1.1).

Once the system determines the best discount, it adjusts the price for minimum and maximum list amount and adds the coverage percent for the contract or service type. The value in the Discount % field includes discounts calculated based on pricing structures and the discount applied due to service coverage. Maximum discount is 100%. A message at the bottom of the screen indicates the portion of the discount percent that is derived from service coverage.

Note You can display and enter Discount as a percent or as a factor, depending on the setting of Display SO Discounts As in Pricing Control.

Net Price. You can apply field security to this field. The system calculates this value by multiplying the list price by the discount %. If you enter a manual discount, the system recalculates net price based on it.

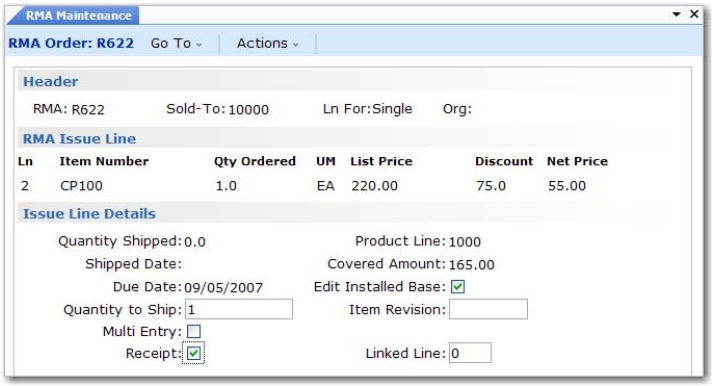
Product Line. When you leave the line item entry on a new line, a pop-up for Product Line displays. The default depends on the setting of Use Item Prod Line in SSM Accounting Control. If this is Yes, Product Line defaults from the item. If No, Product Line defaults from the service type. The product line determines the GL accounts affected by shipments on this RMA.

The system determines sales-related accounts and COGs accounts using this product line. Once you ship items on a line or invoice the line, you can no longer change the product line and the pop-up does not display. See page 599 for a discussion of product lines in RMAs.

Issue Line Details

The next frame displays information unique to RMA processing. The first five fields—Qty Shipped, Shipped Date, Product Line, Covered Amount, and Due Date—are display only.

Fig. 23.19
Issue Line Details Frame



Quantity to Ship. Enter a number to indicate the quantity to ship from RMA Maintenance during inventory processing.

Multi Entry. Defaults to No unless detail records exist, in which case it is set to Yes and cannot be changed. Indicate whether this issue transaction involves multiple sites, locations, lot/serial numbers, or lot reference numbers. Use this field only if you plan to ship from RMA Maintenance.

If Multi Entry is Yes and Quantity to Ship is nonzero, a window pops up for you to record issue details. Specify No if this transaction involves only one site, location, and lot/serial number, and the lot reference is blank.

Receipt. Indicate whether to generate a receipt line and link it to this issue line. If Yes, a pop-up window displays, enabling you to enter the item number, site, location, lot/serial, ISB reference, quantity expected, and price of the item to be returned from the customer. The system generates a receipt line and links it to the issue line. If No, you can enter and link receipt information later.

When a receipt line is linked to an issue line, the shipment cannot occur before the defective item is returned unless Ship before Return is Yes for the service type.

Edit Installed Base. Defaults from the value of Edit Installed Base in RMA/RTS Control and determines whether the Installed Base Detail frame displays. This frame enables you to change the defaults for installed base updates, such as whether to update the installed base, end user, warranty, and other details.

Item Revision. This defaults from the revision number you specified when you defined the issue line item in the Item Master.

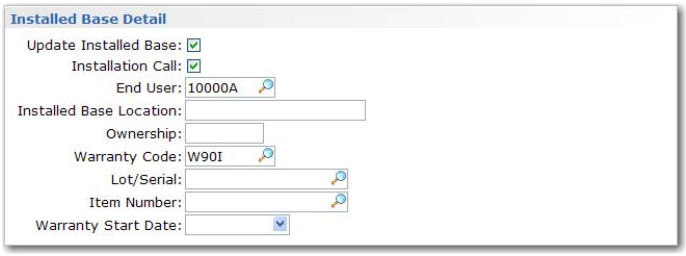
Linked Line. If this issue line is linked to a receipt line, the receipt line number displays in this field. The system updates this field when you set Receipt to Yes to create an associated receipt line. If you add receipt lines later, you can update this field to link the receipt lines to the correct issue line.

When lines are linked, the system checks the value of Ship Before Return on the service type for the RMA. If this is No, you must process the receipt line before the shipment, or at the same time if you are shipping or receiving from RMA Maintenance. If you do not process the entire quantity expected on the return, you can ship only the number received.

Installed Base Detail

The Installed Base Detail frame displays when Edit Installed Base is Yes in the previous frame.

Fig. 23.20
Installed Base Detail Frame



Update Installed Base. This field defaults to Yes if the Installed Base field in Service Item Maintenance is Yes for the item *and* the Create ISB field is Yes for the end user in End User Data Maintenance. Yes indicates that an installed base record should be created for this line item. If Yes, when you post the invoice for this RMA, the system records the item and serial number in the installed base. The system uses information in the remaining fields in the Installed Base Detail frame when the record is created.

Note The value of Create ISB for a new end user defaults from the Create ISB field in End User Control.

Installation Call. This field defaults to Yes if the item being issued requires an installation call and Auto Install Calls is Yes in Call Management Control. If Yes, the system creates an installation call when it adds the item to the installed base during invoice post. Use this for item installations that need an engineer's technical expertise. If the item requires an installation call, set Installation Call to Yes in Service Item Maintenance.

End User. This field defaults from the end user on the RMA header. You can change it to another end user for this customer.

Installed Base Location. A reference-only field used for a 24-character description of the current location of this installed base item at the end-user site. This might be a building location, suite number, or floor.

Ownership. A reference-only field indicating who possesses the item. If the end-user address code refers to a large company, you can enter the department or individual using the item. Set up values for ownership with generalized codes for field isb_owner.

Warranty Code. Defaults from the warranty for the item in Service Item Maintenance and determines the coverage terms and conditions including response time, credit price list, and days of coverage.

Parent Serial and Item. You can track both products and components in the installed base. This is especially true for configured products. If you maintain the entire configuration in the installed base, the customer can return a component such as a PC disk drive, and you can relate the new component issued to the original PC. Use the Parent Item field to make sure that the issued item is added as part of the original purchase.

Warranty Start Date. The warranty start date defaults to blank. If you do not specify a date, the system uses the RMA ship date as the warranty start date when it creates the installed base record for the issue line item during invoice post.

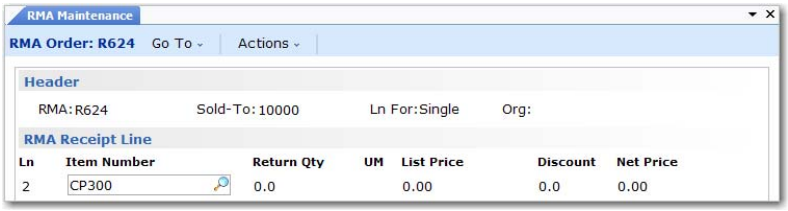
The system calculates the warranty end date by adding the warranty duration to the warranty start date. If an install call is created for the item during invoice post, the system updates the warranty start and end dates again when the install call is closed based on the call closure date.

All system updates to the warranty start and end dates occur *only* if you do not specify a date. To let the system manage this date for you, leave the field blank.

RMA Receipts

RMA receipts is similar to RMA issues. Most fields in the item detail default from values in the RMA header and have the same effect as described previously. The few differences are described here.

Fig. 23.21
RMA Receipt Lines



List Price. You can apply field security to this field. List price comes from the RMA Credit Price List on the header, which in turn defaulted from the service type.

Discount. You can apply field security to this field. If a restocking charge exists for the service type, it displays in this field. In this case, you cannot modify Discount. A message displays indicating that a restocking charge has been applied. If you have not defined a restocking charge, you can enter a discount to be applied.

You can display and enter values in Discount as a percent or as a factor, depending on the setting of Display SO Discounts As in Pricing Control. The number of decimals is determined by the SO Factor Rounding field in Pricing Control.

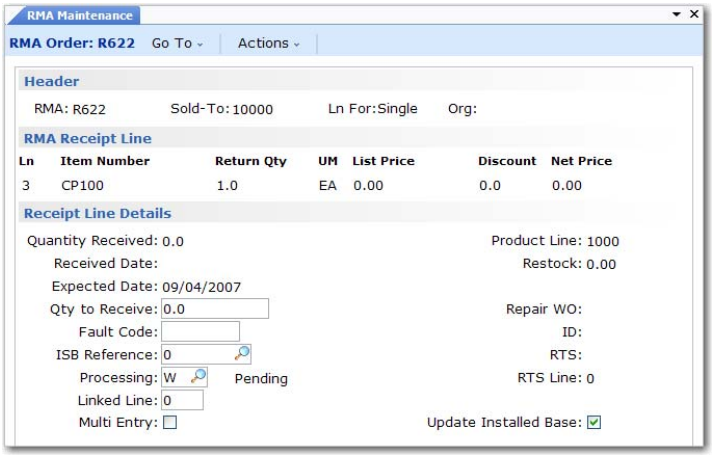
Net Price. You can apply field security to this field. The system calculates net price based on the list price and discount. If you change Net Price and the discount is derived from a restocking charge, the system recalculates the list price.

Receipt Line Details

The Receipt Line Details frame contains fields unique to RMA processing. The first five fields—Qty Received, Received Date, Expected Date, Product Line, Restock—are display-only fields. Qty Received and Received Date have values if a return has been made. Expected Date and Product Line default from the header. Restock displays the restocking charge for the service type.

Repair WO, ID, RTS, and RTS line are also output-only fields that have a value only if you have released the received item to a work order or created an RTS to return the item to the supplier for repair.

Fig. 23.22
Receipt Line Details Frame



Qty to Receive. Defaults to 0. Specify a value to receive items directly from RMA Maintenance.

Fault Code. An optional code that identifies the problem or reason for the return. Set up fault codes for field rmd_fault_cd in Generalized Code Maintenance.

ISB Reference. Each item that is not controlled by serial numbers in the installed base needs a unique ISB reference number. If you specify the ISB reference on a return, the system can identify which item to remove from the installed base if Update Installed Base is Yes.

Processing. Enter one of three values:

- *P (Pending)*. Enter P if you are not sure of the item's disposition.
- *W (Work Order)*. Enter W so RMA Release to Work Order can consider this line item when rework work orders are created.
- *R (RTS)*. The value R is for reference only, and indicates that you plan to repair the item by returning it to the supplier.

Linked Line. If this receipt line is linked to an issue line, its line number displays in this field. If you did not link the receipt from the issue line, you can link the issue line from the receipt by specifying its line number here.

Multi Entry. Defaults to No unless detail records exist, in which case it is set to Yes and cannot be changed. Indicate whether this receipt transaction involves multiple sites, locations, lot/serial numbers or lot reference numbers. Use this field only if you receive items directly from RMA Maintenance.

If Yes and Qty to Receive is nonzero, another window pops up for you to record inventory details. Specify No if this transaction involves only one site, location, and lot/serial number, and the lot reference is blank. If you are using lot reference numbers, you must specify Yes even if only one item is being received.

Repair WO and ID. If the processing option for this line is W (work order) you can execute RMA Release to Work Order to create a work order for refurbishing the item. The work order number consists of the RMA number followed by the line number, separated by a period. The system updates this field with the work order number and ID created.

RTS and RTS Line. If you use an RTS to return the item to the supplier for refurbishment, the system keeps track of the RTS and line that shipped the item.

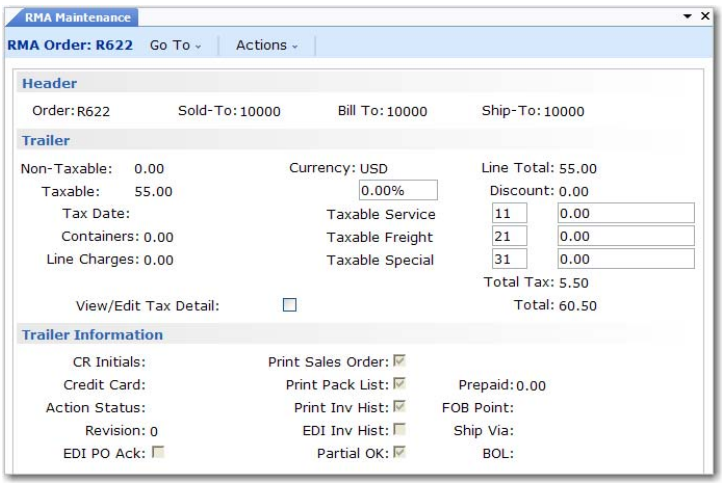
Update Installed Base. This field indicates if an installed base record for the item being returned should be deleted. It defaults to Yes when three conditions are true:

- The Installed Base field in Service Item Maintenance is Yes for the item.
- The Create ISB field is Yes for the end user in End User Data Maintenance.
- At least one installed base record exists for the item, lot and reference, or serial number specified.

RMA Trailer

The RMA trailer is the same as a sales order's. It displays charges and credits and information for shipping and invoicing.

Fig. 23.23
RMA Trailer Frames



Most fields on the trailer default from the bill-to address—CR Initials, Credit Card, Action Status, Partial OK, Ship Via—or Sales Order Control and have the same function as in sales orders.

RMA Confirmation Screen

You can ship and receive items directly from RMA Maintenance. When you click Next after completing the trailer, you are prompted to display RMA lines. If you respond Yes, a confirmation screen displays, first for receipts, then for issues.

Fig. 23.24
RMA Receipt Confirmation Frame

If you entered a quantity to receive or a quantity to ship earlier, it displays in the Qty to Receive or Qty to Ship column. The system prompts you to initiate shipment or receipt from RMA Maintenance.

Ship/Receive RMA Lines. Respond Yes to initiate the shipment or receipt of items with a nonzero quantity in the Qty to Ship or Qty to Receive column.

Effective Date. The default is the system date. The date in this field is the ship date for invoice generation and other accounting processes. Inventory transaction history uses the current system date and time.

Chapter 24

Returns to Suppliers

Use the return to supplier (RTS) process to manage items received from your end users that need to be returned to a vendor for repair. Like a return material authorization (RMA), an RTS has two parts that let you set up lines for shipment to the supplier and receipt from the supplier when the repair is complete. This chapter describes RTS functionality and discusses how it fits into the service environment.

RTS Life Cycle

The return to supplier process takes the return material authorization (RMA) process one step further. Sometimes you send an item returned from the end user back to a supplier, who repairs or replaces it. Use the return to supplier function to track the return to the supplier (RTS) and link the original return from your customer to it.

See Chapter 23, “Return Material Authorizations,” on page 593.

Fig. 24.1
RTS Flow

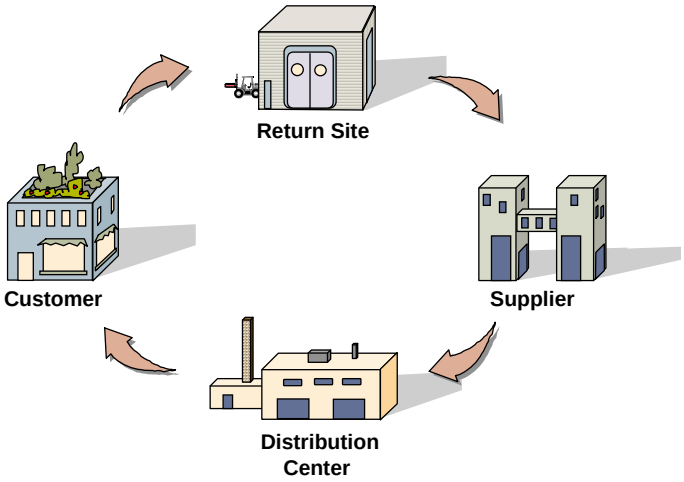


Figure 24.1 shows the full route of the item as it is received by the customer, returned to you, then returned to your supplier, who in turn returns it to you.

RTS Maintenance executes two distinct processes: you return items to the supplier, and you receive items back from the supplier. You can specify whether:

- The supplier ships the repaired item to you at your service repair site, or
- The supplier ships the repaired item to the customer.

RTSs have a life cycle similar to a standard purchase order. You create them with RTS Maintenance. You ship and receive them in separate functions: RTS Shipments and RTS Receipts.

If you are using shipping groups and inventory movement codes, you can enter shipment information and generate shippers during RTS shipments just like a PO return.

See the Shipping chapter in *User Guide: QAD Sales* for details.

Tracking RTS Inventory

You can use one of two methods to manage inventory for an item returned to a supplier:

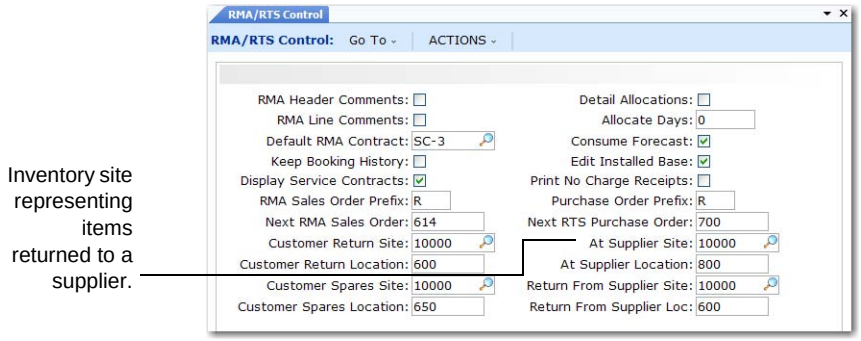
- Specify the supplier as an inventory site and track the inventory within the application database.
- Issue the item out of inventory and not track it until it is returned.

Transferring RTS Inventory

In the first option, inventory remains within view in your application database, even though it is not physically present. You specify a supplier inventory site and locate the RTS item there. This approach gives you the advantage of knowing at all times how many units of the item are being repaired. Since the system supports costing by site, you can assign any cost or no cost to these RTS items while they are at your supplier's site.

The supplier site for inventory is set up in RMA/RTS Control (11.7.24).

Fig. 24.2
RMA/RTS Control (11.7.24)



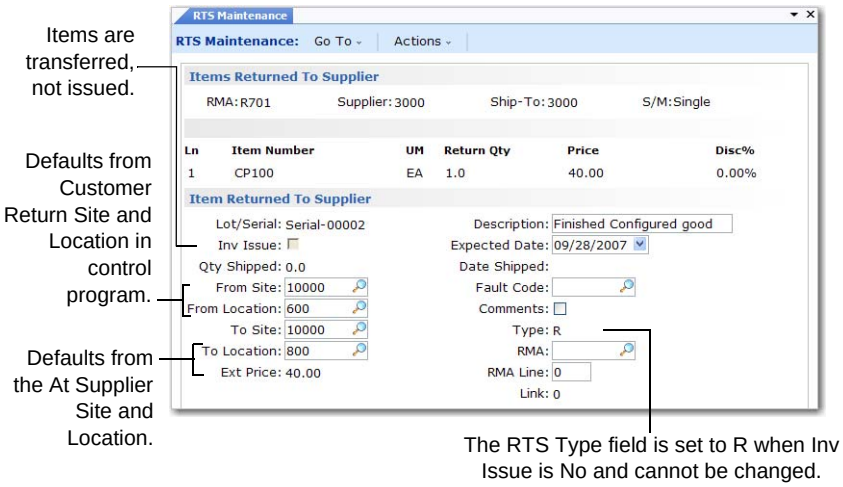
At Supplier Site represents all your suppliers. To track the RTS when you have multiple suppliers, set up one at supplier site and define a different location for each supplier.

To track RTS items as inventory, set Inventory Issue to No in RTS Maintenance (11.7.3.1). When inventory issue is No, the system creates the RTS with a ship type of R.

Note You can use this feature only for inventory items. For memo items, inventory issue is Yes and you cannot change it.

A non-blank ship type normally indicates a memo item. Even though ship type is non-blank for an RTS, the system enforces required inventory edits and compliance features. You are moving inventory during the transaction. The R indicates inventory is being transferred rather than issued and received.

Fig. 24.3
RTS Maintenance (11.7.3.1)



When Inventory Issue is No, the destination site defaults from the At Supplier Site value. Inventory is transferred from the customer return site to the supplier site and displays in inventory inquiries and reports as on-hand at the supplier site.

Table 24.1
Inventory Transactions Generated with Inv Issue = No

Transaction	Description	Debit Account	Credit Account
ISS-TR	Ship from site	Goods in transit	Inventory
RCT-TR	At supplier site	Inventory	Goods in transit

Issuing Inventory for an RTS

The second option for processing RTS items is to set Inventory Issue to Yes in RTS Maintenance (11.7.3.1). This means you are issuing inventory and not tracking the returned item in the database.

Setting Inventory Issue to Yes is similar to processing a sales order shipment or RMA shipment. When the shipment occurs, the inventory is reduced and you no longer have visibility of it. When you set Inventory Issue to Yes, the inventory ships from the customer return site and is no longer visible within your application database.

Table 24.2
Inventory Transactions Generated with Inv Issue = Yes

Transaction	Debit Account	Credit Account
RCT-PO	PO Receipts	Inventory

Both a return to supplier and a receipt from supplier create the same transaction type (RCT-PO). The only difference is that the quantity is negative for a return.

Note Whether you are performing inventory issues and receipts or transferring inventory, the features of the Regulatory Attributes module that affect purchase orders also apply to RTSs. This includes the ability to modify inventory attributes upon RTS receipt and lot-control level. The value of Single Lot per PO Receipt affects an RTS only when inventory issue or receipt is Yes.

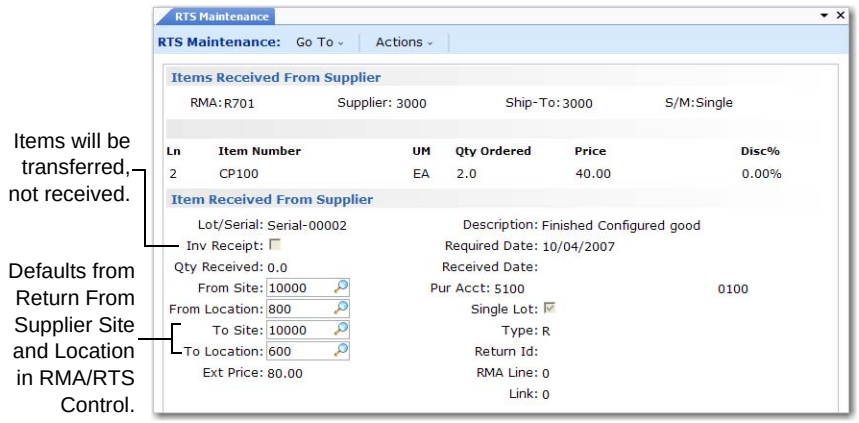
Receiving an RTS Transfer from a Vendor

Use RTS Maintenance for two functions:

- Sending an item needing repair back to the supplier
- Receiving the refurbished item

Two similar frames in RTS Maintenance correspond to these functions: one for sending an item to the supplier and one for receiving an item returned from the supplier. The frame titles in RTS Maintenance indicate which function is being executed.

Fig. 24.4
Receipt from Supplier



The Inventory Receipt field functions like the Inventory Issue field. When you have a matching issue and receipt line on an RTS, you must set Inventory Issue and Inventory Receipt the same for both lines, so they both affect inventory in the same way.

Set Inventory Receipt to Yes to receive the item from the supplier into your inventory. No indicates you are transferring inventory from the At Supplier Site and At Supplier Location to the Return from Supplier Site and Return from Supplier Location defined in RMA/RTS Control. You can change these settings for each line.

In Figure 24.4, Inventory Receipt is No so you can transfer the item. The From Site and From Location default from the At Supplier Site and Location; the To Site and To Location default from the Return From Supplier Site and Location.

RTSs and Regulatory Attributes

If you are using the Regulatory Attributes module, RTSs are affected in the same fashion as purchase orders. Several control program settings in Regulatory Attributes Control (1.22.24) affect an RTS.

- If Compliance Active is Yes, a pop-up appears in RTS receipts that let you modify inventory attributes during receipt.
- When inventory receipt is Yes, Single Lot per PO Receipt also affects RTSs. If this is set to Yes and you have previously received a lot, you cannot receive it again on an RTS.

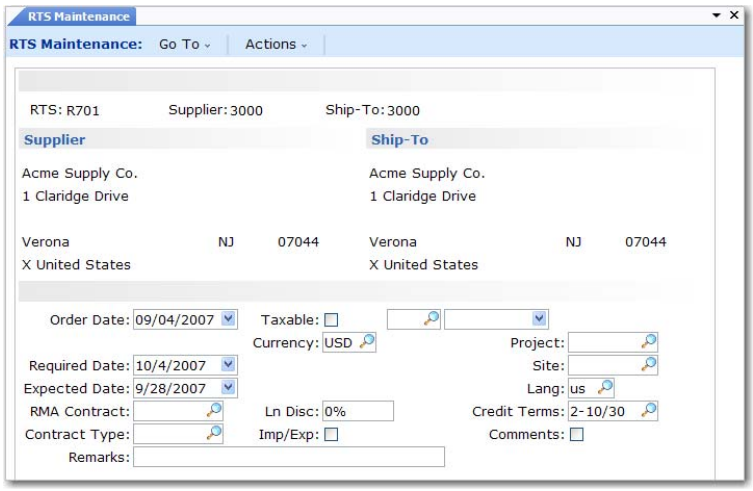
Example You need to consider the implications of this carefully. You receive a lot from a supplier. Later you return two items from that lot to the supplier with an RTS. When you receive the items back, you cannot receive them to the same lot number in a controlled environment. The reason for this is that additional work has been done on them and they are no longer the same as other items in the lot.

- RTSs are also affected by the lot-control level in Regulatory Attributes Control.
- If you enable automatic lot numbering for an item in Item Master Maintenance, it is effective in RTS Receipts.

RTS Maintenance

Figure 24.5 illustrates the first two frames of RTS Maintenance (11.7.3.1).

Fig. 24.5
RTS Maintenance (11.7.3.1)



RTS. If you leave this field blank when you create an RTS, the system supplies a number by appending the Purchase Order Prefix in RMA/RTS Control to the value in Next RTS Purchase Order. The system increments this field.

Supplier. Enter a supplier defined in Supplier Create (28.20.1.1) and set up in Supplier Data Maintenance (2.3.1). This is the supplier to whom you are returning items.

Note Only suppliers set as active in Supplier Create are available for this program.

Ship-To. This defaults from the Supplier record, but you can change to an alternate address.

Order Date. The default is the system date, indicating when you recorded this RTS. This can be the date when you entered the RTS or the date the customer requested an RTS.

Required Date. If left blank, defaults to the order date. This field is the date that the items are required back from the supplier and provides the default date for each RTS receipt line.

Expected Date. If left blank, defaults to the order date. Indicate the date you expect to ship the items to the supplier on this RTS and provides the default date for each RTS issue line.

RMA Contract. If you have linked this RTS to an RMA, you can enter the RMA contract number in this field. This field is for reference only.

Contract Type. If you have linked this RTS to an RMA, you can enter the RMA contract type in this field. This field is for reference only.

Remarks. Any remarks specified for the supplier display by default. You can enter remarks specific to this RTS. Remarks display on printed documents.

Taxable, Class, Effective Date. Default from the values for the Supplier address. These fields indicate whether this RTS is subject to tax. The taxable status for the order header displays as the default for each line item, but you can change it.

Currency. Defaults from the currency for the supplier. When you first create an RTS, you can change this to any currency, but once you move to the next frame, it cannot be changed.

When you specify a foreign currency, a pop-up displays the exchange rate relationship effective on the order date. You can change it or mark this rate as fixed. If the exchange rate is not fixed, the system updates it at later points in the RTS life cycle. If the exchange rate is fixed, the system does not change it.

Ln Disc. Defaults from the supplier. This field indicates the percentage discount usually offered by this supplier.

Import/Export. Defaults from Imp/Exp Default in Intrastat Control and displays if Use Intrastat is Yes in the same control program. Set this field to Yes to enter or maintain import and export data for the order used to create Intrastat History Reports. If Yes, the standard Intrastat frames display for input of appropriate data.

Project. Project code is one component of an account number defined in GL setup functions. Other account components are account, sub-account, and cost center. Each component you enter must be valid on its own and in combination with other account number components. The project on the header is the default for all line items. You can change this for any line.

Site. Must be a valid site code. The system uses the site to determine the default tax environment. Sites for RTS issue and receipt lines default from RMA/RTS Control.

Language. Defaults from the language for the Sold-To address. Use this when printing formal documents as a selection criteria for the print function.

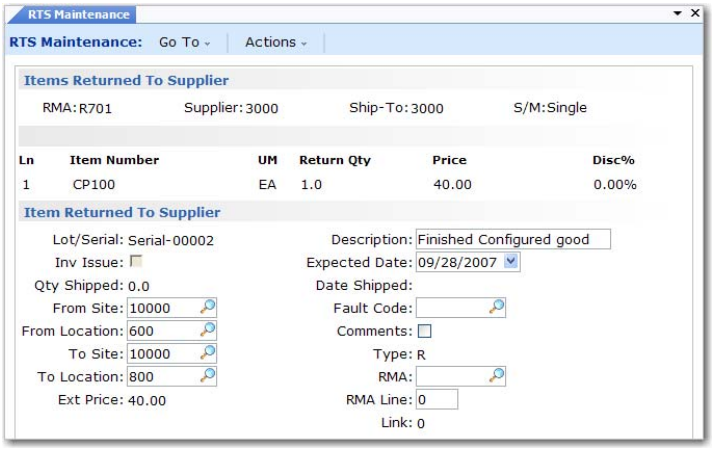
Credit Terms. Defaults from the credit terms for the supplier. Credit terms identify specific types of payment terms, defining the due date and any discounts for early payment.

Comments. Defaults from the RMA Header Comments field in RMA/RTS Control. When Comments is Yes, a frame displays where you can enter comments for this RTS. Enter information that relates to the entire RTS, such as delivery information or credit comments.

Items Returned to Supplier

There are two line item entry frames for an RTS: one for items returned to the supplier and one for items received from them. Many fields on this frame are the same as in standard purchase order functions and are not described here.

Fig. 24.6
Items Returned to Supplier (11.7.3.1)



Item Number. Enter the number of an item to be returned to your supplier. The lookup for this field displays all RMA receipt lines with an open quantity that has not already been attached to an RTS return line. These are the items you are most likely to be returning to your supplier.

If you enter a memo item, inventory issue defaults to Yes in the lower frame and you cannot change it.

Price. List price must be specified manually and indicates the amount of credit you expect to receive.

Disc %. Discount percent comes from the supplier in the header and indicates the discount the supplier normally gives you for this returned item.

Inv Issue. Indicate whether to issue inventory from stock or to transfer it to a temporary supplier location when you ship items back to a supplier. If Yes, items are issued from stock and no longer appear on your inventory balance.

If No, the system transfers items to At Supplier Site and At Supplier Location in RMA/RTS Control. When the items are received back from the supplier, the system transfers them from the at-supplier site and location to the Return From Supplier Site and Return From Supplier Location.

Note When you have a matching issue and receipt line on an RTS, you must set Inv Issue and Inv Receipt the same for both, so they affect inventory the same way.

From Site and Location. These fields default from Customer Return Site and Customer Return Location in RMA/RTS Control. Indicate the site and location where the items to be returned to the supplier currently reside.

To Site and Location. You can edit these fields only if Inventory Issue is No. In this case, the system transfers the items to another site and location for tracking instead of issuing them from inventory. The site and location default from the At Supplier Site and At Supplier Location in RMA/RTS Control.

Type. When Inventory Issue/Receipt is Yes, Type defaults from Memo Order Type in Item-Site Inventory Data Maintenance (1.4.16), if defined for the order line site; otherwise, it defaults from Item Master Maintenance (1.4.1). If Type is blank, the line item is shipped from or received into inventory, recorded in GL, and used by planning.

When Inventory Issue/Receipt is No: The system sets Type to R, indicating an RTS with Inventory Issue/Receipt set to No. For Item Master items, inventory movement still takes place even when Issue/Receive is No. In this case, items are transferred from one site/location to another.

For this reason, the ship type loaded into transaction history is blank, not R, since the transfer affects inventory balances. This ensures accuracy on reports (such as Inventory Valuation as of Date Report, which uses the transaction history to reconstruct the quantity on hand).

Other standard ship types do not apply to RTS shipment/receipts. These include S (subcontract) and B (blanket). Any other type is interpreted as a non-inventory item. Receipts of memo items do not affect inventory, but do debit Purchasing Expenses in general ledger.

This field is validated against values defined in Generalized Codes Maintenance (36.2.13) for field name pod_type.

RMA and RMA Line. If you receive an item from a customer on an RMA and are now returning it to the supplier, enter the RMA and RMA line numbers in these fields for reference. If you select the RMA line item from the lookup on the Item field, the system fills in the RMA number and line. The system verifies that:

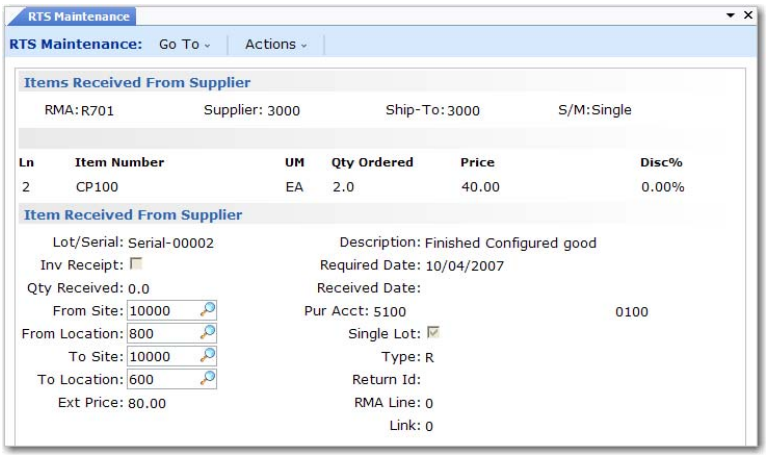
- The RMA line exists.
- It is a receipt line, not an issue line.
- The item number matches with an open quantity not already associated with other RTS return lines.

Link. The system maintains this field. It links lines from the receipt portion of the RTS. When an RTS receipt line is linked to the RTS return—or ship—line, its number appears here.

Items Received from Supplier

RTS receipts is similar to RTS returns. Again, most fields in the item detail have the same effect as described previously. The differences are described here.

Fig. 24.7
RTS Receipt Lines



Inv Receipt. Indicate if inventory is to be received into stock or transferred from the at-supplier location when you receive items from the supplier.

No: Items are transferred from the At Supplier Site and At Supplier Location in RMA/RTS Control to the Return from Supplier Site and Return From Supplier Location.

Yes: Items are received into stock and appear on your inventory balance.

When you have a matching issue and receipt line on an RTS, you must set Inventory Issue and Inventory Receipt the same for both, so they affect inventory in the same way.

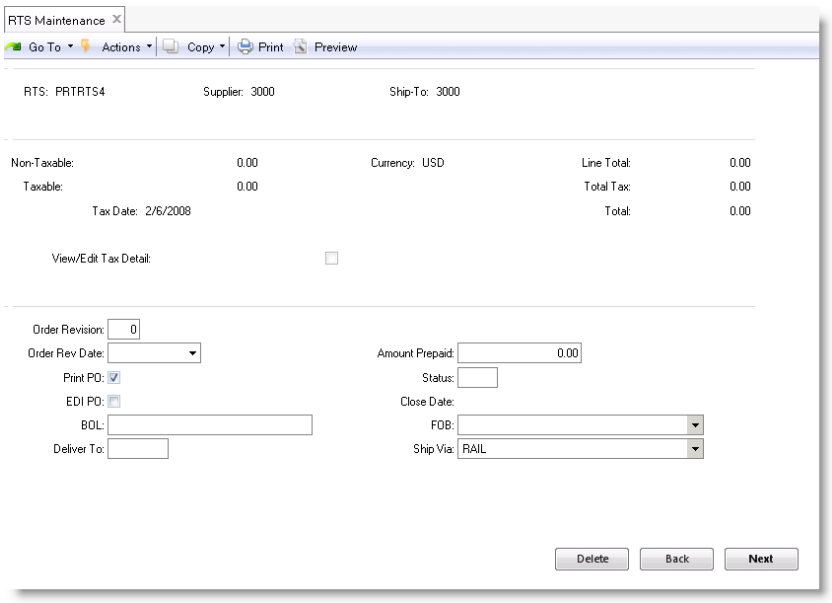
Link. If this receipt is related to a line you issued previously, enter the line number here. The system updates the issue line with this information.

Note Lines can only be linked if the Inventory Issue/Receipt settings are the same.

RTS Trailer

The RTS trailer is similar to a purchase order trailer. It displays charges and credits and other shipping and invoicing information.

Fig. 24.8
RTS Trailer Frames



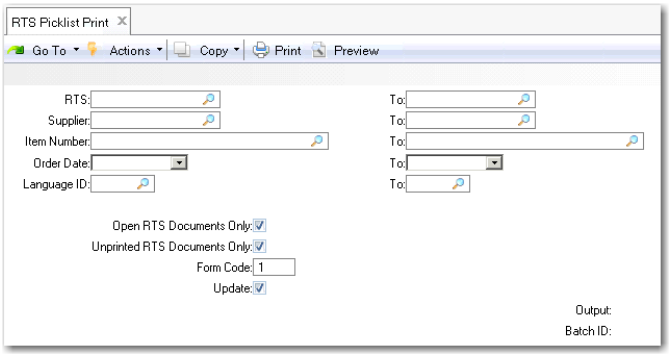
Some fields on the trailer default from the supplier address such as Ship Via or from Purchasing Control (5.24) and have the same function as in purchase orders. Enter a BOL number, if required, to track RTS shipments.

RTS Picklist

The RTS Picklist Print report (11.7.3.15) enables you to display items due for return to suppliers before picking the items. It lets shipping keep a hard-copy list of what items need to be picked and shipped back to a supplier.

The report is intended for an organization’s internal use and does not contain financial fields, such as prices and tax information.

Fig. 24.9
RTS Picklist Print (11.7.3.15)



RTS (From/To). Specify the first and last RTS numbers in the range for which to print the report.

Supplier (From/To). Specify the first and last supplier codes in the range for which you want to print the report.

Item Number (From/To). Specify the first and last items in the range for which you want to print the report.

Order Date (From/To). Specify the first and last order dates in the range for which you want to print the report.

Language ID (From/To). Specify the first and last language ID in the range for which you want to print the report.

Open RTS Documents Only. Set to Yes to print open RTS documents only.

Unprinted RTS Documents Only. Set to Yes to only print RTS documents that have yet to be printed.

Form Code. Specify the form code of the document format on which you want these documents to print. You can customize forms to suit your business needs.

Update. Set Update to No to print a simulated picklist for review without updating the database.

Chapter 25

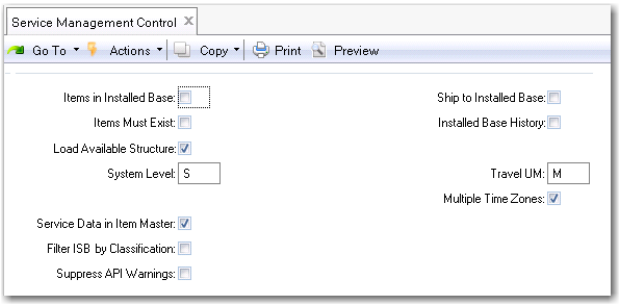
Control Programs

With its inherent flexibility, the Service/Support Management (SSM) module meets the needs of users with diverse business requirements. Settings in the eleven SSM control programs support this flexibility. This chapter discusses each control program and describes each setting and its impact on service activity.

Service Management Control

Service Management Control (11.24) contains general settings that affect more than one kind of service activity. Most of these settings are used to manage the installed base.

Fig. 25.1
Service Management Control (11.24)



Items in Installed Base. If Yes, you can record service contracts and service calls only for items in the installed base. If No, you can take calls in Call Maintenance for items not in the installed base. You can add a record for the item and end user to the installed base when you record activity in Call Activity Recording.

Use this field with Items Must Exist to define the degree of control you want over the item specified on service contracts and calls.

The four ways to combine these two fields are listed in Table 25.1.

Table 25.1
Item Control Field Combinations

Items in Installed Base	Items Must Exist	Effect
No	No	You can add any item to a call or service contract. The installed base does not have to contain the item and it does not have to exist in the item master. With this pairing, you can take calls and generate service contracts for any item, even those your company does not sell.
No	Yes	You can take calls and generate service contracts only for items in the item master. However, the customer's installed base record does not have to contain the item. Use this pairing if you do not need an accurate installed base, but you do support only products you manufacture and sell.
Yes	Yes	You can take calls or issue service contracts only for items that are in the installed base and in the item master. This combination gives you the most control.
Yes	No	You can take calls or issue service contracts for any item in the installed base; you may not have made or sold the item. Use this to keep accurate installed base records and if you service items you do not manufacture.

Items Must Exist. If Yes, an item must be in the item master before you can create a service contract or call for it. If your company services only products that you have manufactured and shipped, set this field to Yes. If you service products from other manufacturer or operate a walk-in type repair service, set this field to No.

Load Available Structure. The field determines whether the system adds product structures to the installed base during invoice post and in Call Activity Recording. Setting this field to Yes has an effect only if other conditions are true:

- The item is one you manufacture or configure.
- Ship to Installed Base is Yes.
- The parent and each component are service items defined with Service Item Maintenance (11.3.7), and the Installed Base field is Yes.
- The item can be added with a quantity of 1. The shipment quantity for configured items is 1, and the work order quantity for serial- or lot-controlled items is 1 for the system to identify the as-built structure. Since you seldom create lots with a quantity of 1, Load Available Structure usually has no effect on lot-controlled items.
- The parent item is serial number controlled or is a configured product. A configured product shipped on a final assembly work order can be identified without a serial number as long as it is shipped with a quantity of one.

If the situation meets these conditions, the system attempts to add components of the parent item to the installed base as derived from the sales order BOM or the work orders used to build it and its components. The system derives this information from transaction history records.

If Load Available Structure is No and Ship to Installed Base is Yes, the system creates an ISB record only for the parent and includes no component details.

System Level. This field enables you to specify a code indicating a system-level item. Set up values in Generalized Codes Maintenance for field pt_sys_type. Associate system-level codes with installed base items in the System Type field of Service Item Maintenance (11.3.7).

The system uses the code defined in Service Management Control with the System Level On Calls field in Call Management Control. Before you can set System Level On Calls to Yes, specify a value for System Level. The system checks this code in two places:

- In Call Management, it is checked during next/previous processing on the Item field.
- In the Installed Base Report (11.3.3), selecting the System Level Only option restricts the report to items with a system type that matches the System Level value in the control program.

Service Data in Item Master. If Yes, you can edit the service attributes of an inventory item in Item Master Maintenance (1.4.1). These are the same frames as in Service Item Maintenance (11.3.7). If No, you can edit these attributes only in Service Item Maintenance.

Filter ISB by Classification. Specify whether you want to filter ISB records based on classification codes before displaying ISB lookups.

No: All ISB records are displayed.

Yes: You can select a classification code to limit records included before an ISB lookup displays.

This field defaults to Service/Support User Preferences (11.21.23) where you can specify a different value for individual users as needed.

The value of this setting affects all programs that have a field with an associated installed base lookup.

If you want to use filtering by classification, you must set up classification codes in Classification Maintenance and associate them with items in Service Item Maintenance.

See “Classifying ISB Records” on page 30.

Ship to Installed Base. Controls the integration between sales and service. If Yes, the system updates the installed base during Invoice Post and Print (7.13.4) of sales orders for service items. If you use the Sales Orders/Invoices module and ship to end users, set this field to Yes, since it can streamline recording installation information. If you sell through distributors or retailers, this may not be appropriate.

Installed Base History. Determines whether the system creates transaction history records for manual updates to the installed base. When Yes, a history record is created whenever a user manually creates an ISB record, deletes a record, or changes the serial number on an existing record. Review these transactions with the ISB History Report (11.3.22.3). Tracking history provides an additional level of security in managing an installed base.

Travel UM (M, KM). M indicates travel distances are in miles; KM indicates kilometers. This setting determines the default for the travel distance unit of measure in the Service Office Detail frame of End User Data Maintenance (11.9.1). This value in Call Maintenance (11.1.1.1) designates distance between the end-user installation and service office.

Multiple Time Zones. This field indicates whether MTZ is active. You can update it in the control program only when its value is Yes. To activate MTZ, use the Multiple Time Zones Startup Utility (11.21.22.24), which changes the value in the control program from No to Yes.

When MTZ is active, you can associate time zones with customers, end users, and engineers. Most call-related dates and times are displayed relative to the end-user time zone.

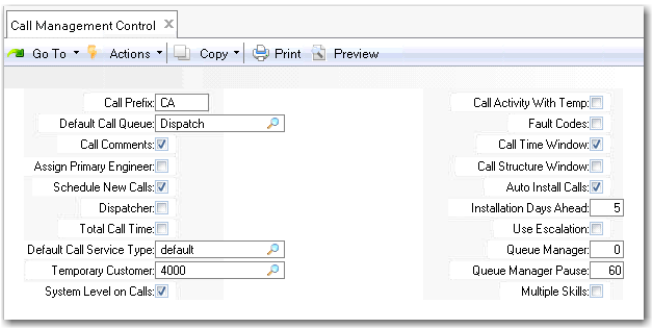
See Chapter 4, “Multiple Time Zones,” for details.

Warning You can turn MTZ on and off, but it is not recommended. If you turn it off, you must enter call dates relative to the end-user time zone. Otherwise, data is not consistent when MTZ is reactivated.

Call Management Control

Call Management Control (11.1.24) manages many aspects of calls, including call statuses, defaults for call creation, call activity recording and invoicing, and call quotes.

Fig. 25.2
Call Management Control (11.1.24)



Call Prefix. Used with the Next Call ID in a later frame to assign a default call ID number for new calls. Use prefixes to distinguish calls, quotes, RMA, service requests, and contracts. You must specify different prefixes for calls and call quotes.

Default Call Queue. Default queue for grouping service calls for dispatch and review with the Call Queue Manager. Define queues in Call Queue Maintenance (11.1.21.7). The system searches for a call queue default as follows. If escalations are in effect, it determines call queue by the escalation step; next, call defaults defined with Call Default Maintenance; then the call queue in Service/Support User Preferences, and, finally, the call queue in the control program.

Call Comments. Specify Yes if you normally enter transaction comments during Call Maintenance (11.1.1.1). You can enter up to 99 pages of information on a call. This field determines the default that displays in the Call Info frame of Call Maintenance when you create a call.

Assign Primary Engineer. If Yes, the system assigns the primary engineer for the end user to new calls and call quotes. You can change this value. If this field is Yes, Schedule New Calls is normally set to No.

Schedule New Calls. Specify whether to execute the engineer scheduling sequence in Call Maintenance. If Yes, the Schedule field in the Call Info frame defaults to Yes. This initiates the engineer scheduling sequence upon completion of the Call Info frame. Set this to No if you do not use engineer scheduling.

Dispatcher. The default is No. Sets the default for the Page Engineer field in the Call Update frame of Call Maintenance when you create a call. If the call's engineer has Field Engineer set to Yes in Engineer Maintenance and Dispatcher is Yes, the Engineer Paging frame appears so that paging can be initiated. Use Yes if a call dispatcher routes incoming calls to engineers.

Total Call Time. Indicate whether the system calculates the time spent on a call. Telephone support organizations may want the system to calculate time spent. This field determines the value for Time Spent in the Call Update frame of Call Maintenance (11.1.1.1). If this field is Yes, the system keeps track of the elapsed time in decimal hours spent maintaining the call. The system begins calculating time when you enter the Call Info frame and stops when you reach the Call Update frame. Each time you modify a call, the additional time spent displays.

If you spend time on the call outside of Call Maintenance, you must adjust the time spent manually.

When this field is No, the time spent defaults to zero and must be entered manually.

Default Call Service Type. Specify the default contract type for terms and conditions when a call item has no contract or warranty. Define contract types with Contract Type Maintenance (11.5.10). This service type determines the response time, hours of coverage, and priority. Normally, the call default has no coverage levels.

Temporary Customer. Enter a valid, active customer defined in Customer Create. Use this customer in Call Maintenance when taking calls from end users who are not in the system. Use this feature if you service items sold through distributors or retailers and end users contact your company directly for service. If your company sells only to end users, you may not need a temporary customer number.

System Level on Calls. Use this setting if you take calls only for certain items, or to ensure that calls are taken only for the parent item in a configured product structure. Default is No. Before you can enter Yes, specify a code for the System Level field in Service Management Control. Define these codes in Generalized Codes Maintenance for field pt_sys_type. Setting this field to Yes affects next/previous processing in the Item Number field in Call Maintenance. Only items designated as system level display.

Call Activity With Temp. Used with the Temporary Customer setting. Set this field to No to prevent update of a call in Call Activity Recording or Call Invoice Recording until the customer is changed. You cannot close calls recorded for the temporary customer number. You must create a valid customer/end-user record, then update the call.

Fault Codes. Sets the default for the Fault Codes field in Call Maintenance, Call Quote Maintenance, and Call Activity Recording. If Yes, the Fault Codes field defaults to Yes and the Fault Codes frame appears. In this frame, enter information about the reasons for the call and its resolution.

Call Time Window. The default is No. Determines whether the Travel and Estimated Time frame appears in Call Maintenance. Enter Yes if you normally record estimated call length, travel distance, and travel time. User preferences in Service/Support User Preferences (11.21.23) can override the control program.

Use the estimated call length to calculate engineer availability during call scheduling if Display by Calls is No in Engineer Schedule Control. Estimated call length defaults from Call Management Control settings for the various work codes.

Call Structure Window. The default is No. Determines whether the Item Service Structure Detail frame appears in Call Maintenance. If Yes, you can enter or modify the service BOM and routing for the call's first item. The BOM and routing, in turn, can determine the items and operations loaded into Call Activity Recording detail frames. User preferences in Service/Support User Preferences (11.21.23) can override this value. The service BOM and routing can also be specified later in the Call Item frame.

Auto Install Calls. Indicate whether the system generates installation calls. You can mark each item as customer installable in Service Item Maintenance (11.3.7). Schedule an engineer for items that the customer cannot install. When Auto Install Calls is Yes and an item requires installation, Invoice Post and Print generates a call to schedule the installation.

Installation Days Ahead. Specify the number of days after an item's ship date that you want to schedule an installation call. When an item requiring an installation call is loaded into the installed base, the system calculates the call's next activity date based on the ship date plus the value of Installation Days Ahead.

Use Escalation. Enter Yes to use escalations. Set this value to Yes before you can set up other escalation parameters in Call Escalation Control. When using escalations, the first step of the escalation (sequence 0) determines the defaults in Call Maintenance for Priority, Queue, Status, Next Queue, Next Status, Next Status Date, and Next Status Time.

Queue Manager (0, 1, 2, 3). Controls the sort criteria for calls in the Call Queue Manager (11.1.6). User preferences set up in Service/Support User Preferences (11.21.23) can override this value.

0 (zero): Displays calls by Next Date and Next Time. Use Pivot to toggle the sort order by end user.

1: Groups calls by the Assigned field, then response priority. Use Pivot to toggle the sort order by queue.

2: Sorts by the Assigned field. Use Pivot to toggle the sort order by end user.

3: Sorts by the Area field. Use Pivot to toggle the sort order by customer.

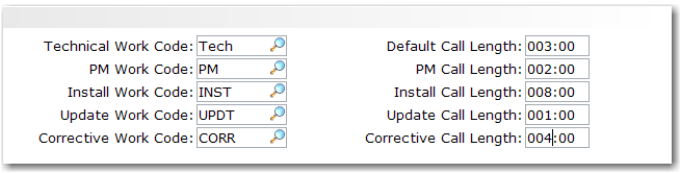
Queue Manager Pause. Specify the number of seconds that the Call Queue Manager (11.1.6) waits before it refreshes the screen. When the screen refreshes, new calls are included. If this field is 0 (zero), the screen does not refresh.

Multiple Skills. Indicate the default value for the Multiple Skills field in Call Maintenance (11.1.1.1). The Multiple Skills field controls the option to define the list of skills an engineer requires to solve a call.

If you set this field to Yes, the Multiple Skills field in Call Maintenance will always be set to Yes. If you set this field to No, the system checks whether multiple skills are specified for the call. If the call has multiple skills, the system sets the Multiple Skills field in Call Maintenance to Yes; otherwise, it is set to No.

Work Code Settings

Fig. 25.3
Work Code Frame (11.1.24)



Technical Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). Defines the default work code for calls you create in Call Maintenance (11.1.1.1) and Call Quote Maintenance (11.1.1.7).

PM Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). Defines the default work code for calls the system generates during preventive maintenance scheduling in Contract Maintenance. The system uses this work code for all calls it creates for a preventive maintenance schedule.

Install Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). Defines the default work code used for installation calls generated during Invoice Post and Print.

Update Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). The system currently does not use this field.

Corrective Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). You can use this work code with field notifications, which support the mass generation of calls for recall or other corrective action.

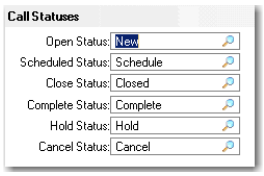
Default Call Length. Average call duration in hours; defaults to the Estimated Length field in the Travel and Estimated Time frame of Call Maintenance (11.1.1.1) for calls with the technical work code. The system also uses it as the default for the PM, install, update, or corrective work codes if no values exist for them. It is the general default for all other work codes. Call length affects engineer scheduling when Display by Calls is No in Engineer Schedule Control.

PM, Install, Update, and Corrective Call Length. Average call duration in hours for calls using the associated work code; defaults to the Estimated Length field in the Travel and Estimated Time frame of Call Maintenance (11.1.1.1). Call length affects engineer scheduling if Display by Calls is No in Engineer Schedule Control.

Call Statuses Frame

In the Call Statuses frame of Call Management Control, you define the status defaults for the call management programs. Define call statuses first in Call Status Maintenance (11.1.21.1).

Fig. 25.4
Call Statuses Frame (11.1.24)



Open Status. Specify the general status for an open call and the initial status for new calls. An open call is dynamic—its line item and other data can change at any time. The system sets line items that cannot be completed or closed in Call Activity Recording to this status. In addition, a call quote must have this status to be released to recording.

Scheduled Status. Specify the default status for scheduled calls. When a call is scheduled in FSS, its status is set to this value. If you do not define a scheduled status, scheduled calls retain their previously assigned status.

See *User Guide: QAD Field Service Scheduler* for more information on FSS.

Close Status. Specify the status that represents the final status of a call and indicates no more service activity for this call is needed. If the call items have not already been added to the installed base in Call Activity Recording, the system can create an installed base record when the call status is set to closed.

You cannot record activity for a closed call. For example, you cannot order service items for it or add new lines or reports. However, you can reopen it to record more activity. You can move a closed call to history and archive and delete it if it is fully invoiced.

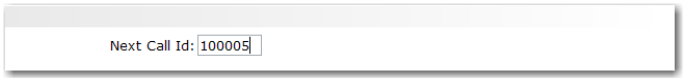
Complete Status. The complete status means the call is ready for invoicing—that is, at least one invoiceable report with detail exists. You can still modify related data, order service items for it with an material order, and record new activity for it.

Hold Status. The hold status prevents recording new activity for a call or line in Call Activity Recording or generating an invoice from CAR. You cannot create a material order for a call on hold. For anything further to happen to the call, change its status. You can still invoice existing activity in CIR.

Cancel Status. You cannot record activity for the call or line item or order service items for it. You can cancel a call or line item only if you have not recorded activity for it. Without activity, no invoice can be generated for a canceled call. You can move a canceled call to history and archive and delete it.

Next Call ID Frame

Fig. 25.5
Next Call ID Frame (11.1.24)



Next Call ID. The next call number for system-assigned call identification numbers. The system uses the next call number in Call Maintenance if the Call ID field is blank on a new service call. Call IDs begin with a prefix, specified earlier, followed by the next sequential call number. The system increments this next call number and displays it in this field.

Call Recording/Invoicing Frame

The next frame in Call Management Control contains settings that affect recording service activity and invoicing. Figure 25.6 displays the Call Recording /Invoicing frame.

Fig. 25.6
Call Recording/ Invoicing Frame (11.1.24)

Labor Svc Category. This value is the default in the labor/expense detail of Call Activity Recording if no other value exists. It also provides the default for standard operations and routing steps. You can change the value during any CAR session. Define service categories with Service Category Maintenance (11.21.9). One of the labor or expense fields for the service category must be Yes.

Item Svc Category. This value is the default in the item detail of Call Activity Recording if no other value exists. You can also define a service category for each service item in Service Item Maintenance (11.3.7). Define service categories with Service Category Maintenance (11.21.9). One of the item fields for the service category must be Yes.

Travel Svc Category. This value is the default for consuming labor for travel time on a visit in Call Activity Recording if no other value exists.

Return Status. Sets the default status for returned items in Call Activity Recording if that item is defined as repairable with Service Item Maintenance (11.3.7). Also sets the default return status in MO Direct/Pending Returns (11.11.8). First define the status in Return Status Maintenance (11.21.17).

Scrap Status. Sets the default status for returned items in Call Activity Recording if that item is not defined as repairable with Service Item Maintenance (11.3.7). First define the status in Return Status Maintenance (11.21.17).

Note You cannot use a status with Pending set to Yes.

Exchange UM. Defines the unit of measure for Service Pricing Maintenance (11.17.1) when you define repair price lists for exchanges in Call Activity Recording. When you use a return status with Exchange set to Yes in Call Activity Recording, the system searches the call price list for a price with this UM. If a price is found, it displays as the default price for the exchange credit.

Fixed Price UM. Defines the unit of measure for Service Pricing Maintenance when you define a repair price list for fixed price service in Call Activity Recording. When you use a work code with Fixed Price set to Yes in Call Activity Recording, the system searches the call price list for a price with this UM and displays it as the default fixed price. The end user is invoiced this amount, regardless of the cost of service.

Coverage Window. This value determines the default for the Coverage field of the Call Item frame of Call Maintenance and the Item Detail frame of Call Activity Recording. If Coverage is Yes, a frame displays showing coverage information such as contract number, contract service type, start and end dates, active service type, warranty service type, and install date. Levels and limits of coverage also display; for contracts, information about limit consumption is included. Set this field to Yes to enable service personnel to more easily analyze the billing impact of proposed service activity.

Close on Recording. Determines how the system normally changes call statuses Call Activity Recording. If Close on Recording is No, the system attempts to set the call status to complete when you finish recording service activity. If the call cannot be completed, its status is unchanged.

If Yes, the system attempts to close the call by setting its status to the closed status in the control program. If all conditions for call closure are not met—for example, there are open MOs, reports on hold, invalid line statuses—the system attempts to set the call status to complete so that invoicing can take place.

Service Work Center. Enter a work center defined with Service Work Center Maintenance (11.19.13) or standard Work Center Maintenance (14.5). Used in the Call Activity Recording Labor/Expense frame to supply the cost of labor if a routing or standard operation is not used.

Call Quotes Frame

Fig. 25.7
Call Quotes Frame (11.1.24)

Quote Prefix. Used with Next Quote ID to assign a default call quote ID number. Helps to distinguish calls, quotes, RMA, service requests, and contracts. The call quote prefix cannot be the same as the call prefix.

Next Quote ID. The next call quote number the system assigns. The next quote number is used in Call Quote Maintenance (11.1.1.6) if the Quote field is blank for a new quote. Quote IDs begin with a prefix, followed by the next sequential quote number. The system increments this next quote number and displays it here.

Default Quote Queue. Code used to group service quotes for dispatching and review with the Queue Manager. Define queues in Call Queue Maintenance (11.1.21.7). When you create a quote with Call Quote Maintenance (11.1.1.7), the system searches first for a default queue in Call Default Maintenance (11.1.21.10), then the Call Quote Queue in Service/Support User Preferences, and finally, the value in the control program.

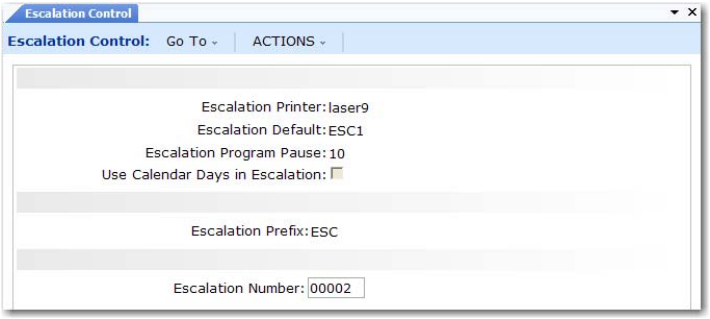
Days Until Expire. The default is 0. The system determines the expiration date for a new call quote by adding the value in this field to the creation date. You can change the expiration date in Call Quote Maintenance (11.1.1.7).

Call Escalation Control

The Use Escalation setting in Call Management Control (11.1.24) indicates whether or not to use escalations. If this field is No and you access Call Escalation Control (11.1.13.24), a warning displays asking if you want to enable escalations.

If you respond with Yes to this message, the system changes the setting in the call control program, enabling you to modify the escalation control program. If you respond with No, you cannot specify values for these fields.

Fig. 25.8
Call Escalation Control (11.1.13.24)



Escalation Printer. Dedicated printer used by the Escalation Monitor (11.1.13.13) to print call reports. Must be defined in Printer Setup Maintenance (36.13.2). When Print is Yes for an escalation step, the system sends the call report to this printer.

Escalation Default. Must be an escalation code defined with Escalation Maintenance (11.1.13.1). If you use escalations, the system searches for a default escalation code in Call Maintenance (11.1.1.1) in the following order: escalation defined for the end user, escalation defined in Call Default Maintenance, escalation defined in Service/Support User Preferences, escalation defined in the control program.

Escalation Program Pause. Number of seconds the Escalation Monitor (11.1.13.13) pauses before restarting a cycle. Set this interval to a value less than the shortest period of time in any escalation. If the shortest amount of time between two sequences is zero days and four hours, which the system calculates by summing the Days Allowed in Status and Time Allowed in Status fields in Escalation Maintenance, then set Escalation Program Pause to a value less than four hours.

Use Calendar Days in Escalation. This field sets the default for the Use Calendar Days in Escalation field in the Escalation Monitor. It determines whether to use calendar days or workdays to calculate Next Status Date. The formula is: today's date + Days Allowed in Status from the current escalation step.

- If Yes, the system uses calendar days in the calculation. If the Next Status Date resolves to a non-workday as determined by the warranty or service type, the system advances the date to the next workday.
- If No, the system uses only work days in the calculation, excluding non-workdays. When No, the calculated date is either the same or later than the date calculated with a value of Yes.

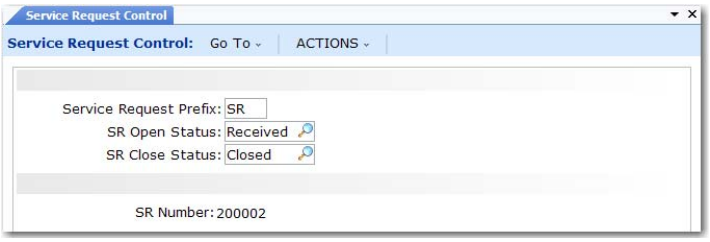
Escalation Prefix. Used with the Next Escalation Number for automatic numbering of new escalations. Prefixes help to distinguish between different types of codes.

Escalation Number. The next number the system assigns in Escalation Maintenance (11.1.13.1) if the Escalation field is blank. Escalation numbers begin with a prefix, followed by the next sequential escalation number. The system increments this next number and displays it here.

Service Request Control

Service Request Control (11.1.15.24) contains settings that affect the life cycle of service requests.

Fig. 25.9
Service Request Control (11.1.15.24)



Service Request Prefix. Used with the SR Number field to assign a default service request ID number.

SR Open Status. Enter an SR status defined in SR Status Code Maintenance (11.1.15.7). This status indicates the beginning point in the life cycle of an SR. It displays by default when you create a new SR in Service Request Maintenance.

SR Close Status. Enter an SR status defined in SR Status Code Maintenance (11.1.15.7). This status indicates no further activity can take place. You can delete or archive closed SRs.

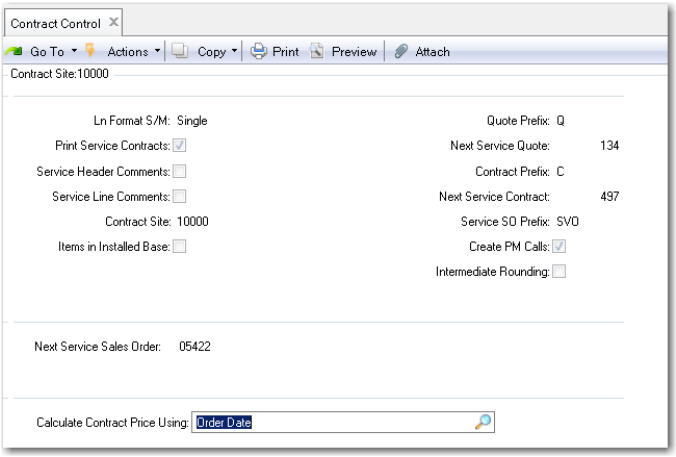
SR Number. The next service request (SR) number the system assigns in Service Request Maintenance (11.1.15.1) if the SR field is blank. Service request numbers begin with a prefix, followed by the next sequential SR number. The system increments this next SR number and displays it here.

Contract Control

Use Contract Control (11.5.24) to define defaults for streamlining the definition and printing of service contract and managing billing and invoicing issues.

Contract Management Frame

Fig. 25.10
Contract Management Frame (11.5.24)



Ln Format (S/M). Indicate the preferred method for entering service quote and contract line items. Specify single to display and maintain detailed information for each line item. In multiline mode, you can enter basic information such as item, quantity, and price for up to 12 lines on a single screen. Dates, site, location, tax status, and GL accounts default. Use single-line format to access and change this information. You can change the line format at any time during order entry and alternate between single and multiline format.

Print Service Contracts. Indicate whether you normally print service contracts. This field determines the default for a new service contract, but can be changed. Contract Print (11.5.13.4) includes only contracts with Print set to Yes. At the completion of printing, Print is set to No.

Note For Contract Print, the country for the sold-to customer determines the numeric and date formats.

Service Header Comments. Indicate whether you normally enter comments on each contract quote or contract header. Header information usually applies to the entire quote or contract and prints at the top of the document. This setting determines the default that displays when you enter or modify a contract, but can be changed.

Service Line Comments. Indicate whether you normally enter comments on each order line. Line item information usually applies to a specific line item and prints following that line. This setting determines the default that displays when you enter a line, but can be changed.

Contract Site. The site responsible for this service quote or contract. Usually this is the site where you perform the repairs. When you release a service contract for billing, this site gets revenue credit.

Items in Installed Base. Indicate if a record of an item must exist in the end user's installed base before it can be added to a contract or contract quote. The initial value defaults from the same field in Service Management Control (11.24).

No: You can reference an item on a contract even when it is not present in the end user's installed base. However, the system issues a warning that an installed base record does not exist.

Yes: Contract quotes and contracts can reference only items that exist in the end user's installed base. Use Installed Base Item Maintenance (11.3.1) to add an installed item for the end user, if necessary.

This field supports a flexible approach to managing the installed base. For example, you can set the field in Service Management Control to No so that you can take calls for any item. Then set the field in Contract Control to Yes so you provide coverage for items in the installed base only.

You can define any combination of Yes and No values for the two Items in Installed Base fields. However, setting Items in Installed Base to Yes at the system level and No at the contract level can create problems if you do not ensure that covered items are added to the installed base later. Otherwise, you will not be able to create a call for an end user with valid contract coverage.

Use Items In Installed Base in Contract Control and Items Must Exist in Service Management Control together to define the degree of control you want to exercise over the item codes entered on contracts. Four possible combinations exist.

Items In Installed Base is No, Items Must Exist is No:

> You can add any item to a service contract. The installed base does not have to contain the item and it does not have to exist in the item master. This pairing lets you take calls and generate service contracts for any item, including items your company does not sell.

Items In Installed Base is No, Items Must Exist is Yes:

> You can generate contracts only for items in the item master. However, the customer's installed base record does not have to contain the item. This pairing works best for companies that do not need to maintain an accurate installed base, but that support only products they manufacture and sell.

Items In Installed Base is Yes, Items Must Exist is Yes:

> You can issue contracts only for items that are already in the installed base and that are in the item master.

Items In Installed Base is Yes, Items Must Exist is No:

> You can issue contracts for any item in the end user's installed base; the item does not have to be something that you make or sell. This combination works best for companies that need to keep accurate installed base records and who also service items they do not sell.

Quote Prefix. Unlike other prefix codes, the contract quote prefix is used only internally. The system does not combine it with the next contract quote number. The contract prefix cannot be the same as the contract quote prefix. Do not change the contract quote prefix after contract quotes exist in the system. See "Managing Deferred and Accrued Revenue" on page 235 for details.

Next Service Quote. The next automatic service quote number for system-assigned numbers. When you enter a contract quote, you can leave the quote number blank to let the system set it to the next sequential number.

Contract Prefix. Unlike other prefix codes, the contract prefix is used only internally. The system does not combine it with the next contract number. The contract prefix cannot be the same as the contract quote prefix. Do not change the contract prefix after contracts exist in the system.

Next Service Contract. The next automatic contract number for system-assigned numbers. When you enter a service contract, leave the contract number blank to let the system set it to the next sequential number.

Service SO Prefix. An optional prefix code for pending invoice numbers created when a contract is released for billing. Use a prefix to distinguish the origin of orders and invoices. The system sets the number for this pending invoice to the prefix code followed by the next sequential number in the Next Service Sales Order field.

Create PM Calls. Determines whether the system creates calls during the PM scheduling sequence in Contract Maintenance. If Yes, the system creates the first scheduled call before the Contract PM Schedule frame displays. When this call is closed, the system generates the next call on the schedule.

If No, the system does not generate the first call or subsequent calls. You can still generate a call by selecting a schedule date and clicking Next in Contract Maintenance. However, normally you use the Call Generator to create all scheduled calls within a range of dates.

Set Create PM Calls to No for more control over call open dates and to use BOM types. When the first call is created in Contract Maintenance, you cannot specify a BOM type.

See “Using BOM Type” on page 256 for details.

Intermediate Rounding. Use this field to control the way in which the system rounds off amounts when calculating contract extended prices.

Yes: The system rounds off the cost at an intermediate step, before factoring in the quantity to bill. It first multiplies Item Quantity by Net Price, then rounds the product. Finally, it multiplies by Qty to Bill to calculate Extended Price.

No: The calculation is completed before rounding. The system multiplies Item Quantity by Net Price, then multiplies that result by Qty to Bill. It rounds the product to determine Extended Price.

Next Service Sales Order. The Billing Release to Invoice function uses this number when it creates pending invoices for contracts. Each pending invoice has a unique sales order number, which the system creates by appending the Service Sales Order Prefix to the number in this field. The system increments this number and records it in the control program. You can use a distinct range of numbers to distinguish the origin of orders and invoices.

Calculate Contract Price Using. Enter a default price date to use for the contract (start date or order date). Entering a price date allows you to choose which date to use to execute the price list selection, thus providing default pricing effective date capability.

Start Date. Causes the system to select the valid price list in which the start date is on or before the start date of the contract or contract quote; and the expiration date is equal to or greater than the start date of the contract or contract quote.

Order Date. Causes the existing price list selection to remain unchanged for contracts and contract quotes.

Example

Two contracts called “Maint” have been created, identical in all details apart from their start dates and expiration dates. Contract A has a start date of 1/1/09 and an expiration date of 1/31/09. Contract B has a start date of 2/1/09 and an expiration date of 2/28/09.

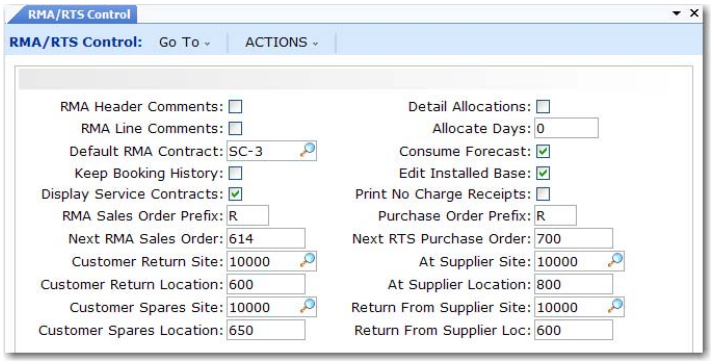
A user creates a new contract with an order date of 1/28/09 and a start date of 2/2/09. Using the start date setting, the system now can retrieve the contract price from contract B; in previous versions, the system would have retrieved the contract price from contract A.

When retrieving price lists or prices, this Contract Control setting is checked by Contract Maintenance (11.5.13.1), Contract Copy to Contract (11.5.13.6), Renew Single Contract (11.5.13.8), Contract Quote Maintenance (11.5.1.1), Contract Quote Copy from Quote (11.5.1.6), Contract Quote Copy from Contract (11.5.1.7), and Contract Quote Release to Contract (11.5.1.5).

RMA/RTS Control

Set up RMA/RTS Control (11.7.24) to match how you normally enter RMA and RTS transactions. This is also where you designate default shipping and receiving sites and locations for returns and spares.

Fig. 25.11
RMA/RTS Control (11.7.24)



RMA Header Comments. Indicate whether you normally enter comments on an RMA or RTS header. If Yes, the Comments field on the RMA and RTS header defaults to Yes. You can change this setting.

RMA Line Comments. Indicate whether you normally enter comments on each RMA or RTS line. If Yes, the Comments field on each RMA and RTS line defaults to Yes. You can change this setting.

Default RMA Contract. This service contract type supplies default coverage information for items on RMAs without other coverage. The system also uses this service type if you change the charge type suggested for an RMA line item to the service contract charge type (S). The service type defines the default level of coverage for RMA line items, restocking charges for returns, the credit price list, and determines whether or not you can issue a replacement item before you receive an item from the customer. Set up contract types with Contract Type Maintenance (11.5.10).

Keep Booking History. Indicate whether to maintain booking history. If Yes, the system keeps an audit trail of changes to RMAs by creating transaction history records, identified as type ORD-SO. The record includes the item, order quantity, price, cost, date, user ID, and other information. You can review this information using booking inquiries and reports. Use Transactions Detail Inquiry (3.21.1) to review detailed transaction history.

Display Service Contracts. This field determines if the Service Contract pop-up window appears when you create an RMA not referencing a call. Coverage for an RMA referencing a call defaults from the call. For RMAs without a call, the contract pop-up enables you to select coverage from available service contracts for the current end user. If this field is No, the pop-up does not display and the contract defaults from Default RMA Contract in the control program.

RMA Sales Order Prefix. Defines the prefix for new RMAs that you create with a blank Order field. Because the system stores RMAs and sales orders in the same table, you use the prefix to distinguish RMAs from other types of sales orders.

Next RMA Sales Order. Used with the RMA Sales Order Prefix to determine the next RMA number when the Order field is blank on a new RMA. The prefix is not required. The system increments this RMA number each time you enter an RMA.

Customer Return Site/Location. This site and location display as defaults for RMA receipt lines, but you can change them. When you receive the items back from the customer, the system increases the inventory balance at this site and location. For an RTS, this site and location provides the default for items being returned to the supplier.

Customer Spares Site/Location. Site/location from which you ship replacement parts on RMAs. This site and location are the defaults for RMA issue lines, but you can change them. When you ship the items to the customer, the system decreases the inventory balance at this site and location.

Detail Allocations. Enter Yes if you usually make detail allocations during RMA issue line entry, No if you do not. Detail allocations assign specific inventory lot/serial numbers and locations to be shipped on an RMA. You can change this value on each line item.

Allocate Days. Specifies the number of days into the future to use as a cutoff for allocating items on RMA issue lines. This value defaults to the corresponding field in the RMA header, which in turn defaults to each line.

Allocations reserve inventory so it is not allocated to other sales orders, RMA issue lines, intersite requests, or work orders. The system only tries to allocate available inventory to RMA issue line items due within the specified number of days, giving you more control over the allocation process. Two other control program settings affect allocations in RMAs:

- The Quantity Available to Allocate calculation method in Sales Order Control controls how the system determines the number of items available to allocate. The calculation is the same for all items and sites.
- The value for Limit Allocations to Avail to Allocate in Sales Order Control determines how the system handles shortage situations. If this field is No, Quantity Allocated defaults from Quantity Ordered even if a sufficient quantity to allocate does not exist. If this is Yes, Quantity Allocated never exceeds the quantity available. If there is no quantity available to allocate, Quantity Allocated defaults to 0.

Consume Forecast. Determines the default in the Consume Forecast field on the RMA header, which determines the default for each line item. If Consume Forecast is Yes for an RMA issue line item, it consumes forecast the same way that sales order lines do. When you enter an RMA issue line, the system decrements the available quantity in the sales forecast for the item by the RMA quantity.

Edit Installed Base. Determines the default for the Edit Installed Base field in RMA Maintenance, which controls the appearance of the Installed Base Detail frame. Use this frame to modify the defaults for the installed base for RMA issues. This setting has no effect if Ship to Installed Base is No in Service Management Control.

Print No Charge Receipts. This field indicates if the system generates and prints invoice lines for RMA receipt lines that have no invoiceable amount. This field also affects the printing of the invoice itself if none of its lines involve a financial transaction.

- If Yes, the system generates invoices lines even if no financial transaction occurs. The system prints an invoice even if none of the lines on the RMA generate a financial transaction.
- If No, the system does not generate an invoice line for RMA receipt lines that do not involve a financial transaction. The system does not print an invoice if none of the lines create financial transactions.

RMAs normally involve two events: receiving damaged or defective goods from an end user and shipping replacements. The shipment of an item produces an invoice line even if no financial transaction occurs. For the receipt portion of the RMA, you can use this field to control whether or not the system creates invoice lines for no-charge transactions.

If you typically use RMA receipts only to ensure that an item is returned from the end user and do not give credits or add restocking charges, set Print No Charge Receipts to No to simplify invoicing. If a receipt without financial impact is an exception, set Print No Charge Receipts to Yes to ensure visibility over the invoicing process.

Purchase Order Prefix. Defines the prefix for new RTSs that you create with a blank Order field. Since the system stores RTSs and purchase orders in the same table, use the prefix to distinguish RTSs from other types of purchase orders.

Next RTS Purchase Order. Used with Purchase Order Prefix to determine the next RTS number when the RTS field is blank in RTS Maintenance.

At Supplier Site/Location. This site and location display as the default To Site and To Location for RTS issue lines and From Site and From Location on RTS receipts when Inventory Issue/Receive is No.

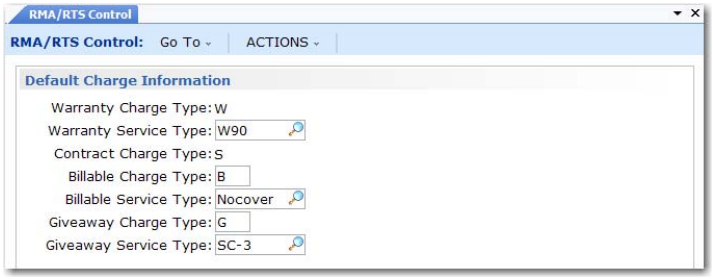
In this case, RTS Shipments performs an inventory transfer. Rather than issuing the returned items from inventory, they are transferred to the designated At Supplier Site and Location. You still own the items and see them on your inventory. When you receive the items back from the supplier, the system transfers them from the At Supplier Site and Location to the Return From Supplier Site/Location.

If Inventory Issue/Receive is Yes on an RTS, shipping the items back to the supplier removes them from stock. The system decreases inventory at the site and location specified on the RMA. When you receive them back, the system returns them into inventory at the site and location specified on the RMA.

Return From Supplier Site/Location. Identifies the site/location into which the system transfers items received back from a supplier. This site and location display as the default To Site and To Location on the Receipts section of an RTS, but you can change them.

Default Charge Information

Fig. 25.12
RMA/RTS Control (11.7.24)



Warranty Charge Type. This display-only value is always W. This charge type is the default on an RMA line item when the service type is a warranty. If you change another charge type to W, the system displays the terms and conditions for Warranty Service Type in the control program.

Warranty Service Type. Identifies the service type defined with Warranty Type Maintenance to use when you change the charge type (CT) value to W on an RMA issue line item. The system uses the level of coverage and price list for this service type instead of the default service type on the RMA header.

Contract Charge Type. This display-only value is always S. This charge type is the default on an RMA issue line when the service type in effect is a contract. If you change the charge type to S, the system displays the terms and conditions for the Default RMA Contract type specified on the previous frame of the control program.

Billable Charge Type. Specify any value other than W or C. Enter this charge type on an RMA issue line to apply the terms and conditions for the Billable Service Type defined in the control program.

Billable Service Type. Identifies the service type defined with Contract Type or Warranty Type Maintenance to use when you change the charge type (CT) field to the Billable Charge Type on an RMA issue line. The system uses this service type's level of coverage and price list instead of the service type on the RMA header. Normally, the service type provides no coverage and you bill the customer for the entire amount on this line item.

Giveaway Charge Type. Specify any value other than W or C. Enter this charge type on an RMA issue line to apply the terms and conditions for the Giveaway Service Type defined in the control program.

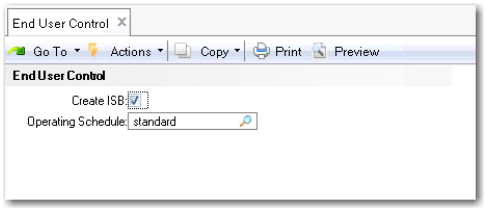
Giveaway Service Type. Identifies the service type defined with Contract Type or Warranty Type Maintenance to use when you change the charge type (CT) field to the Giveaway Charge Type on an RMA issue line. The system uses this service type's level of coverage and price list instead of the service type on the RMA header.

Normally, the service type provides 100 percent coverage and you do not invoice the customer for this line item.

End User Control

Use End User Control (11.9.24) to determine the default value for the Create ISB field and the default schedule to use for end users.

Fig. 25.13
End User Control (11.9.24)



Create ISB. Sets the default for Create ISB in a new end-user record. The value of Create ISB for an end user determines whether to add items associated with the end user to the installed base.

The system considers two values to determine whether to add an item to the installed base:

- The value of Create ISB for the end user
- The value of Installed Base, specified in Service Item Maintenance, for the item

These both must be Yes before the system adds the item to the installed base. If both these fields are Yes, the Update ISB field defaults to Yes in Call Maintenance, Call Activity Recording, and RMA Maintenance.

If Ship To Installed Base is Yes in Service Management Control, the value of Create ISB in End User Control has a special effect. If the Ship To address on the sales order is not an end user, the system creates an end-user record when it posts the sales order invoice. The system uses the value of Create ISB in the control program to determine whether to add items to the installed base for the new end user.

For an undefined end user, if the item normally goes to the installed base and Create ISB is Yes in the control program, Update Installed Base defaults to Yes in Sales Order Maintenance. You can change this value in a pop-up window if SO Edit ISB Defaults is Yes in Sales Order Control. Otherwise, it takes effect during invoice post and the item is added to the installed base when the end-user record is created.

If you are tracking the installed base, this field gives you more control over how items are added. If you normally add items to the installed base regardless of the end user, set Create ISB to Yes and this value defaults to the functions where you create ISB records. To more tightly control ISB updates so that you can create ISB records only for a predefined set of end users, set this field to No and change the field in End User Data Maintenance.

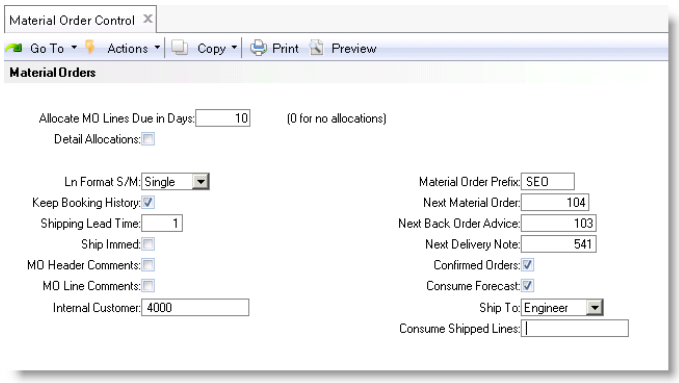
Operating Schedule. Specify the default schedule to use for end users. You can select one of the schedules defined in End User Master Schedule Maintenance (11.9.13). See “End User Schedules” on page 22 for more information.

Note If the Operating Schedule field is blank and no schedules are defined in End User Master Schedule Maintenance, the system does not consider end user schedules when scheduling calls.

Material Order Control

Use Material Order Control (11.11.24) to define defaults for many MO input fields and establish values that affect MO processing.

Fig. 25.14
Material Order Control (11.11.24)



Allocate MO Lines Due in Days. Specifies the number of days into the future to allocate MOs. Use allocations to control shipments, especially in shortage situations. Set this value to 0 (zero) to prevent automatic allocations. When you enter an MO, the system compares the order quantity to the quantity available to allocate. If a shortage exists, the order cannot be filled. The system tries to allocate available inventory only to line items due within the number of days specified here, giving you more control over the process.

If you use automatic allocations, set Confirmed Orders to Yes to allocate only confirmed orders.

Detail Allocations. Determines the default in the Detail Allocations field of the MO header, which determines the default for each MO line. Detail allocations assign specific lot/serial numbers and locations for shipping on an MO. Enter Yes if you normally make detail allocations during Material Order Maintenance. Otherwise, enter No.

Ln Format (S/M). Indicate the normal mode for entering material order line items. Use S, single-line mode, to display and maintain detailed information for each line item. Use M, multiline mode, to enter information such as item, quantity, and price for up to 12 lines on one screen. Dates, site, location, confirmed orders, comments, and other values default. Use single-line format to access and change the defaults. You can change the line format at any time during order entry, and alternate between single and multiline format.

Keep Booking History. Indicate whether to maintain booking history. If Yes, the system keeps an audit trail of changes to MOs by creating transaction history records, identified as type ORD-MO. The record includes the item, order quantity, price, cost, date, user ID, and other information. You can review this information using booking inquiries and reports. Review detailed transaction history using Transactions Detail Inquiry (3.21.1).

Shipping Lead Time. The usual number of calendar days between the date you enter an MO and the date you ship the items. If you ship orders immediately, use zero. When you create an MO, the required and due dates default to the system date plus the shipping lead time, indicating the normal delivery date. You can change this date.

Ship Immediately. If Yes, a frame appears when you leave line entry so you can initiate the shipment process from Material Order Maintenance. If Ship Immediately is No, you are finished with the material order when you accept your input.

MO Header Comments. Indicate if you normally enter header comments for MOs. If Yes, the Comments field on the MO header defaults to Yes.

MO Line Comments. Indicate if you normally enter comments for MO line items. If Yes, the Comments field on each MO line defaults to Yes.

Internal Customer. Enter a valid, active customer defined in Customer Create. Values associated with the Internal Customer are used whenever an MO is created without an associated call.

When an MO has a call, the customer number and currency default from the customer associated with the call's end user. For an MO without a call, the system uses the number and currency associated with the customer specified in this field. Normally, this customer should have the domain base currency.

Material Order Prefix. Defines the prefix for automatic numbering of MOs when the MO field is blank in Material Order Maintenance. Because the system stores MOs, RMAs, and sales orders in the same table, use the prefix to distinguish MOs from other types of sales orders.

Next Material Order. The system uses this value with the Material Order Prefix to create the next MO number. The prefix is optional. The system increments the MO number each time you enter an MO.

Next Back Order Advice. The system uses this value when a Back Order Advice is created during MO shipments. The system increments this number each time a Back Order Advice is created.

Next Delivery Note. The system uses this value when an Material Delivery Note is generated during MO shipments. The system increments this number each time a Delivery Note is created.

Confirmed Orders. Indicate whether you normally enter MOs as confirmed. This field determines the default in Material Order Maintenance. Enter Yes if you normally enter MOs as confirmed orders. Enter No if they are not confirmed when entered, but require a separate confirmation step.

Confirmed orders are allocated, consume forecast, and create demands for material planning. Unconfirmed orders are not allocated, do not consume forecast, and do not create demands for material planning until you process a separate Material Order Confirmation function.

Consume Forecast. Determines the default in the Consume Forecast field on the MO header, which determines the default for each line item. If Consume Forecast is Yes for an MO item, it consumes forecast the same way that sales order lines do. When you enter an MO, the system decrements the available quantity in the sales forecast for the item by the MO quantity.

Ship To. Possible values are user or engineer. The value for Ship To determines the value for Ship-To on a new MO associated with a call.

- If user, the MO Ship-To defaults from the end user who called.
- If engineer, the MO Ship-To defaults from the address of the engineer assigned to the call.

Use this field to tailor the Ship-To default according to your business practices. You can change the Ship-To entry on a particular MO.

Note For MOs without a call, Ship-To is the engineer's address, and cannot be changed.

Consume Shipped Lines. Set this field to control the consumption of items.

Yes. Enables the automatic MO shipment/CAR consumption for all material orders.

Only DOM. Enables the automatic MO shipment/CAR consumption for depot material orders only (that is, for orders associated with calls that have a work code with the Repair Center check box set to Yes.)

No. Do not auto-consume items; instead, use the standard MO shipment/CAR consumption.

Engineer Schedule Control

Engineer Schedule Control (11.13.15.24) enables you to prioritize how engineers are assigned to calls. The system uses the following factors when ranking engineers for a call:

- Whether the engineer is assigned to the same area as the end user
- How much time an engineer has available to handle the call
- Whether the engineer is the end user's primary engineer
- Whether the engineer has the skills to handle the call
- Whether the engineer is in the same time zone or within a defined range of the end user on the call

  Note This factor is considered only if Multiple Time Zones is active.

The system calculates engineer points according to this formula:

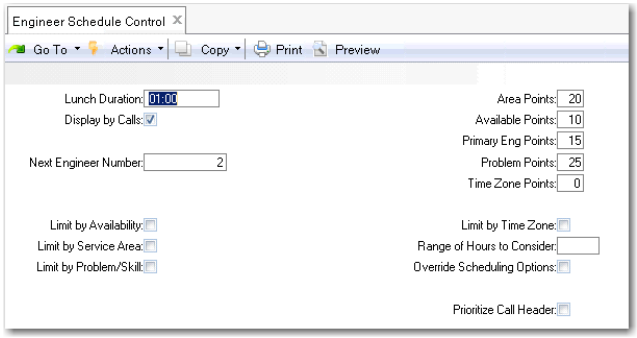
*Area Points + (Available Points * available hours) + Available Points + (2 * Primary Eng Points) + Problem Points + Time Zone Points*

Note Time zone points are considered only if Multiple Time Zones is active.

Specify the highest value for factors that are most important to your company. The greater the value, the higher the weighting. The formula weights availability and primary engineer higher than other factors.

The engineer with the highest score displays at the top of the list in the scheduling window in Call Maintenance (11.1.1.1).

Fig. 25.15
Engineer Schedule Control (11.13.15.24)



Lunch Duration. The length of time, in hours and minutes, normally taken by engineers for lunch. The system deducts this value from the total daily available time. If you change this field, rebuild the engineer schedules to update existing schedules. Run Rebuild Engineer Schedules (11.13.15.25) to recalculate available hours.

Display by Calls. Specifies whether to calculate and display engineer availability in terms of available hours or by the number of calls an engineer can take.

- If Yes, the availability window in Call Maintenance prioritizes engineers according to their point totals, and displays the number of calls each can still take.
- If No, it prioritizes engineers according to point totals, but lists the number of hours per day that each is still available.

Next Engineer Number. A number the system maintains and uses to match engineer codes and addresses. When you define an employee as an engineer, the system creates an address master record for the engineer. The system can then retrieve address information when you specify the engineer as a drop-ship address in Material Order Maintenance.

The system creates the address master using the engineer code, unless that code already identifies another address. In this case, the system uses Next Engineer Number and updates the control program.

Area Points. The number of points to add to an engineer's scheduling score if the engineer's assigned service area, defined in Engineer Maintenance, matches that of the call's end user, defined in the Service Office Detail frame of End User Data Maintenance.

Available Points. The number of points to use when calculating the scheduling score for an engineer with an available status. Statuses can have any name, but their Available field must be Yes. The system multiplies this value by the number of calls or hours the engineer has remaining for the day. Define availability status codes in Engineer Status Maintenance (11.13.4).

Primary Eng Points. If the engineer is the primary engineer for the end user initiating a call, the system doubles these points and adds them to the scheduling score. The secondary engineer is given these points without doubling them. Define primary engineers in the Engineer Code field in the Service Office Detail frame of End User Data Maintenance.

Problem Points. The number of points to add to the scheduling score if an engineer has a skill matching the problem on the call. Assign skills to an engineer in Engineer Skills Maintenance.

Time Zone Points. You can update this field only when MTZ is active. The system uses this field with Range of Hours to Consider. The value can range from 0 to 99 and specifies the number of points to give to an engineer with a time zone that matches or falls within the specified range relative to the time zone of a call's end user. Define time zones for engineers in Engineer Maintenance. See Chapter 4, "Multiple Time Zones," for details about MTZ.

Limit by Availability. Indicate whether the engineer scheduling routines in Call Maintenance consider only engineers who have an available status and available hours or calls on the date being examined.

If Override Scheduling Options is Yes in Engineer Schedule Control, you can modify this value in Call Maintenance before the Engineer Availability window displays. Otherwise, it is always applied.

Limit by Service Area. Indicate whether the engineer scheduling routines in Call Maintenance consider only engineers with a service area that matches the call's area.

The system checks this field when you assign an engineer to an end user in End User Data Maintenance. If it is Yes, a warning displays if the area of the assigned engineer and the end user do not match.

If Override Scheduling Options is Yes in Engineer Schedule Control, you can modify the value of this field in Call Maintenance before the Engineer Availability window displays. Otherwise, it is always applied.

Limit by Problem/Skill. Indicate whether the engineer scheduling routines in Call Maintenance consider only engineers with a skill that matches the call problem.

If Override Scheduling Options is Yes in Engineer Schedule Control, you can modify the value of this field in Call Maintenance before the Engineer Availability window displays. Otherwise, it is always applied.

Limit by Time Zone. You can update this field only when MTZ is active. Indicate whether the engineer scheduling routines in Call Maintenance consider only engineers with a time zone that matches the time zone of the call's end user.

The system uses this field with Range of Hours to Consider. It checks both fields when you assign an engineer to an end user in End User Data Maintenance. If Limit by Time Zone is Yes, a warning displays if the time zone of the assigned engineer is not within the range of the end user's time zone.

Range of Hours to Consider. You can update this field only when MTZ is active. The system considers it only when Limit by Time Zone is Yes. It indicates how many other time zones you can include for scheduling.

- Blank indicates the time zone of the engineer must match the time zone of the call's end user.
- An integer value indicates any time zone within a range is considered a match. The integer represents the number of time zones more or less than the end user's that are considered a match for scheduling.

Override Scheduling Options. Indicate whether you can modify the four limiting options—and range of hours when Multiple Time Zones is active—when you edit a call.

- When Yes, a pop-up window with these options displays in Call Maintenance before the Engineer Availability window displays. The limit settings display with the values in the control program. You can modify them to affect the scheduling of engineers for that edit session only.
- When No, the system always applies the scheduling options in the control program in Call Maintenance.

Prioritize Call Header. Select the field if you want to display call header values for the Status, Engineer, and Work Code fields in the Call View Browse in Field Service Scheduler (FSS). Clear the field to display call line values for the Status, Engineer, and Work Code fields in the Call View Browse in FSS.

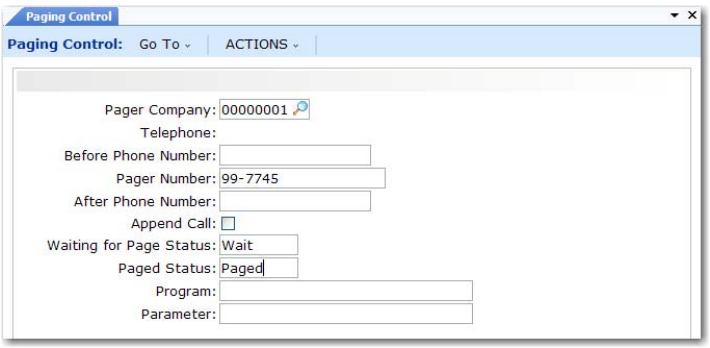
See *User Guide: QAD Field Service Scheduler* for more information on FSS.

Auto Create Visit. Select the field if you want the system to automatically create a visit or scheduling transaction when an engineer is assigned to a call. The visit will be created for the assigned engineer and scheduled on the next status date and time on the call. Clear the field if you want to manually create a visit or scheduling transaction.

Paging Control

Settings in Paging Control (11.13.17.24) establish the connection with your communications application.

Fig. 25.16
Paging Control (11.13.17.24)



Pager Company. Specify the company supplying your paging services. This should be defined as a valid, active supplier in Supplier Create.

Telephone. The system displays the pager company's phone number from its associated supplier record.

Before Phone Number. Parameters to pass to the dialing program before the phone number string. An example for UNIX systems using the cu program:

```
-s 9600 -l tty1A
```

Pager Number. The pager number to use in Call Maintenance if the Pager field of Engineer Maintenance is blank.

After Phone Number. Parameter string to pass to the operating system after the pager phone number. Some dialing programs require an escape sequence after the phone number to hang up the line or reset the modem.

Append Call. Not used.

Waiting for Page Status. Not used.

Paged Status. Not used. The value written to paging history signifying that an engineer has been paged.

Program. Path and program name for the communications application. For UNIX systems using the cu program:

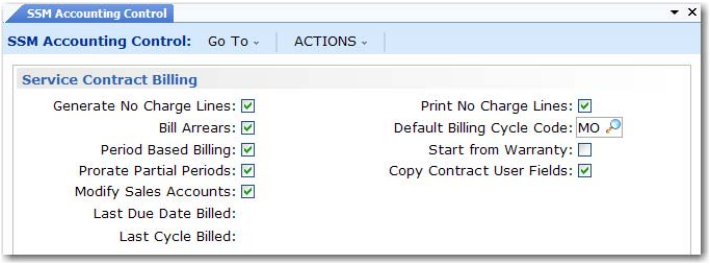
```
/usr/bin/cu
```

Parameter. Parameters that follow the Program field, if you need more space than is available in the Before Phone Number field.

SSM Accounting Control

Settings in SSM Accounting Control (36.9.10) affect various operational aspects of SSM that also have financial impacts. They are included in a single program to simplify access control.

Fig. 25.17
SSM Accounting Control (36.9.10), Service Contract Billing Frame



Generate No Charge Lines. Indicate whether to generate invoice lines for contract line items that have no associated charge. Billing Release to Invoice (11.5.18.13) examines this field when the system generates invoice lines for a contract. If No, only a contract line with an amount to be billed generates a corresponding invoice line. If no lines on the contract create a financial transaction, the system does not generate an invoice. If Yes, the system creates an invoice line for each service contract line regardless of the invoice amount.

An invoice line with a zero amount can exist when a service contract line has either a zero quantity or price.

Use this feature to generate a billing that shows items covered at no additional charge as part of some other purchased coverage.

Example The first line on a contract is for service on a computer. Lines 2 through 5 list components that are included at no charge: CPU, Memory, Disk Drive, Terminal.

When the service invoice is created, you can choose to see only line 1 by setting Generate No Charge Lines to No, or all lines by setting Generate No Charge Lines to Yes.

Use this field with Print No Charge Lines, which Invoice Print examines. If Generate is No, the setting of the Print field has no effect. If Generate is Yes, you normally set the Print field to Yes also. Set the Print field to No only to generate and print a no-charge invoice without displaying any line items on it.

Bill Arrears. This field determines the default for Bill Arrears in Contract Maintenance (11.5.13.1). This field indicates whether to bill service contracts at the beginning or the end of the service period. If Yes, service contracts are billed on the first day following the end of the billing period. After a bill is released for invoicing, the system sets the next billing date to the first day of the next billing period.

The setting of Bill Arrears affects which revenue type can be used with a contract:

- When Bill Arrears is Yes, you can choose cash basis or accrued.
- When Bill Arrears is No, you can choose cash basis or deferred.

See “Managing Deferred and Accrued Revenue” on page 235.

Period Based Billing. Indicate whether contract billing is normally synchronized with calendar months:

Yes: Invoicing begins on the first day of the next calendar month, regardless of the start date of the contract. For example, a contract with a start date of January 23 is billed starting on February 1.

No: Billing periods for contract invoices use the actual start date of the contract header and line, without synchronizing to the start and end days of the month. A contract on a monthly cycle starting on January 23 is billed on January 23, February 23, March 23, and so on, assuming Bill Arrears is No.

The value you define in the control program sets the default for the same field when new contracts and quotes are created.

Period Based Billing works in conjunction with Prorate Partial Periods. If Period Based Billing is Yes, you can set Prorate Partial Periods to Yes to ensure that any partial periods are included in invoicing. If Period Based Billing is Yes and Prorate Partial Periods is No, any days in the partial period prior to the beginning of the month or after the end are essentially given away free.

Billing periods are always determined by the contract header start and end dates, in conjunction with the billing cycle code. The system then fits the line billing into those periods, based on the line start and end dates and billing cycle. If contract line start and end dates differ from the header, partial periods can result for the line even if none exist for the header.

Prorate Partial Periods. Indicate how the system normally invoices for coverage periods that are less than a complete month:

No: If Period Based Billing is Yes, partial periods are essentially given away free and no invoice is generated for them.

Yes: Invoices are generated for partial periods based on the percentage of a month the partial period represents.

The value you define in the control program sets the default for the same field when new contracts and quotes are created.

If Period Based Billing is Yes, partial periods are likely to occur. You can use the Prorate Partial Periods field to make sure that any partial periods are included in invoicing. If Period Based Billing is Yes and Prorate Partial Periods is No, any days in the partial period prior to the beginning of the month are essentially given away free.

Partial periods can also occur even if you are not using period based billing. You might have a contract that begins on January 12 and ends on March 20. The system would bill for two months, leaving a partial period from March 12 to March 20. The value of Prorate Partial Periods would determine whether billing is created for this period.

Modify Sales Accounts. Determines whether you can update the Sales and Sales Discount accounts in Contract and Contract Quote Maintenance. If No, the accounts display but you cannot change them.

Print No Charge Lines. Specifies if invoice lines with zero amounts print on service contract invoices. Invoice Print and Invoice Reprint examine this field. If Yes, an invoice line is printed even if there is no charge to the customer. If No, only nonzero invoice lines print.

This field is used with Generate No Charge Lines, which is examined by the Billing Release to Invoice function. If the Generate field is No, the setting of the Print field has no effect. If the Generate field is Yes, you normally set the Print field to Yes also. Set the Print field to No only to generate and print a no-charge invoice without displaying any line items on it.

Default Billing Cycle Code. Enter a code indicating how often you typically bill service contracts. For example, contract lines can be billed monthly, quarterly, or annually. This field is required. Set up billing cycles with Billing Cycle Code Maintenance (11.5.18.1).

This code defaults to the header Billing Cycle field when new contract quotes or contracts are created. The header billing cycle defaults to the next contract level, either default items or end users, based on the value of Item End Users in the contract header.

You can accept the default or specify a different billing cycle code at various levels below the contract header. However, you cannot specify a lower-level cycle that indicates less frequent billing than the cycle specified on the header.

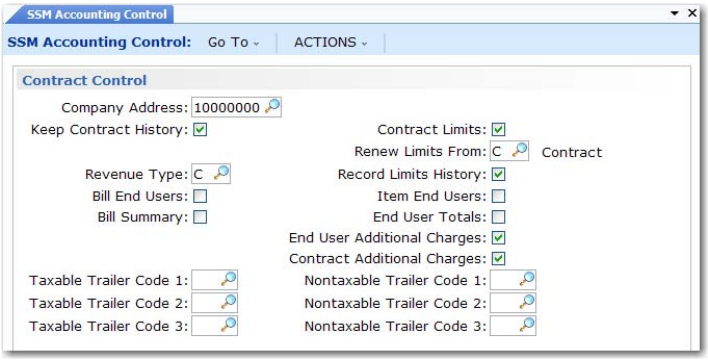
Start from Warranty. Indicate whether a service contract normally starts only after the warranty expires. If Yes, when you enter a service contract for an installed base item, the system sets the start date to the day following the warranty expiration date. You can change this start date.

Copy Contract User Fields. If Yes, the system copies data for user-defined fields from the service contract to the pending invoice without requiring custom programming.

Last Due Date Billed. An output-only field updated when you execute Billing Release to Invoice. It displays the date in the Contracts Due Until field when you last executed Billing Release to Invoice (11.5.18.13).

Last Cycle Billed. An output-only field updated with the Billing Cycle value when you execute Billing Release to Invoice.

Fig. 25.18
SSM Accounting Control, Contract Control Frame



Company Address. Address code that normally appears on printed documents such as service quotes and contracts. This address also applies to call quotes and service marketing letters. You can change it to another address prior to printing. If you print on pre-addressed forms, leave this field blank.

Keep Contract History. Indicate whether to maintain booking history for contracts. If Yes, the system keeps an audit trail of contract billings and billing reversals in transaction history, identified as type ORD-SO. It records the service type, order quantity, price, cost, date, and user ID, among other information. Use booking inquiries and reports to review this information. Review detailed transaction history using Transactions Detail Inquiry (3.21.1).

Contract booking history differs from sales order booking history in that contract additions and changes are not recorded, only the billing activity.

Revenue Type. Enter the revenue type code to use as the default for billing service contracts. Valid values are A (Accrued Revenue), C (Cash Basis), or D (Deferred Revenue). The default is C.

Cash Basis: To post contract revenue upon receipt, set Revenue Type to C. In cash-basis accounting, revenue is recorded in the period it is actually received.

Accrued Revenue: To accrue revenue by default, set Revenue Type to A. You should also set Bill Arrears to Yes; otherwise, errors are generated in Contract Maintenance. In accrual-basis accounting, revenue is recorded in the period in which it is earned, regardless of whether cash is received in that period. Run Revenue Recognition (11.5.18.21) to accrue amounts, usually monthly.

Note The default setting of Bill Arrears should be appropriate for the default revenue type.

Deferred Revenue: To defer revenue by default, set Revenue Type to D. You should also set Bill Arrears to No; otherwise, errors are generated in Contract Maintenance. Perform the normal invoicing procedure at the beginning of the contract coverage period. Collected revenue is held in a deferred account and is posted periodically over the contract duration when you run Revenue Recognition.

The value you define in the control program sets the default for the same field when new contracts and quotes are created.

If you plan to use deferred or accrued revenue types, you must set up appropriate accounts for the system to use either in Domain/Account Control (36.9.24) or in Product Line Maintenance (1.2.1).

See “Recognizing Revenue” on page 236.

Bill End Users. Indicate who normally receives invoices generated for contracts by Billing Release to Invoice:

No: Only one billing address, specified in the contract header, is associated with the contract. Billing Release to Invoice (11.5.18.13) generates all contract invoices to this address.

Yes: Multiple billing addresses can be associated with the contract, one for each contract end user. At least one invoice is generated in Billing Release to Invoice for the bill-to address associated with each end user defined on the contract.

See“Billing Customers or End Users” on page 233.

Note The invoice for contract-wide additional charges is always sent to the header billing address, regardless of the value of Bill End Users.

This field sets the default for the same field in the header of new contract quotes and contracts.

Bill Summary. Enter Yes if you typically invoice contracts in summary format; otherwise, enter No. This field sets the default for the same field in the header of new contract quotes and contracts.

When Bill Summary is Yes for a contract, the details that are not printed on an invoice are stored in the database. You can view these details using Billing Detail Report.

See“Summarized or Detail Billing” on page 233.

Note The system limits invoices to 999 lines. If the setting of Bill Summary would result in more than 999 lines on an invoice, Billing Release to Invoice creates separate invoices as needed.

Contract Limits. This field determines whether limit amounts can be defined in Contract Type Maintenance and updated in Contract Quote Maintenance and Contract Maintenance. This setting has no affect on warranty types. Limit amounts cannot be defined for them.

No: You can define coverage levels in Contract Type Maintenance, but limit amounts cannot be specified. The coverage levels as defined for the service type are used without modification when a contract or contract quote is created.

Yes: You can define both coverage levels and limits in Contract Type Maintenance. When you create a new contract or contract quote, you are prompted to copy coverage limit data from the contract type to the contract header. You can copy and update coverage limits at every level of the contract: header, default end user or item, and detail lines.

Important The enforcement of limits is only possible when coverage details are copied into the contract.

When used on a contract, limit amounts are checked in addition to coverage levels. As service is recorded for an item on a contract in Call Activity Recording, the amounts are accumulated against the limit. When the limit is reached, the system suggests an over-limit charge code, although this can still be overridden on a case-by-case basis.

If you do not plan to use the limit feature but provide a level of coverage without limits, set this field to No to avoid unnecessary prompts during contract maintenance.

Renew Limits From (C/S). Possible values are C, for contract, and S, for service type. The default is C. This field determines the default for the same field in Contract Maintenance and only has an effect when the Contract Limits is Yes. The value for the contract supplies the default for the Renew Single Contract and Copy Contract to Contract functions. In Renewal Process/Report, the system checks the value of this field for each contract being renewed.

- When set to C during renewal or copy functions, the system copies limits as defined on the existing contract, extending the effective dates to accommodate the new contract start and stop dates.
- When set to S, the system refers to the service type for the contract and copies the limits defined there. If you set up limits on the type with effective dates, the system copies the limits effective on the new contract start date from the service type.

Record Limits History. If Yes, the system writes a history record whenever contract limits are consumed during invoice post. This record includes information about the call and the activity that consumed the limits. If No, the system does not create this history.

Item End Users. Indicate how you typically set up the relationship between items and end users on contracts. This field sets the default for the same field in the header of new contract quotes and contracts.

No: The contract is designed to provide coverage for one or more end users with associated items.

Yes: The contract is designed to provide coverage for one or more items with associated end users.

The value you specify for this field on a contract determines the order in which frames display as you maintain the contract. You cannot change this value after a contract has been created.

See “Contract Design” on page 175.

End User Totals. This field controls the display of the End User Total frame in Contract Maintenance and Contract Quote Maintenance.

No: The frame is not included in the sequence of frames.

Yes: The frame is included.

This field is also checked by Contract Quote Print (11.5.1.3) and Contract Print (11.5.13.4). End-user totals are not printed when this field is No.

End User Additional Charges. This field controls the display of the End User Additional Charges frame in Contract Maintenance and Contract Quote Maintenance.

No: The frame is not included in the sequence of frames.

Yes: The frame is included.

Note If the contract being edited has end-user additional charge items, the frame displays regardless of this setting.

Contract Additional Charges. This field controls the display of the Contract Additional Charges frame in Contract Maintenance and Contract Quote Maintenance.

No: The frame is not included in the sequence of frames.

Yes: The frame is included.

Note If the contract being edited has contract-wide additional charge items, the frame displays regardless of this setting.

Taxable Trailer Code [1,2,3]. The taxable trailer codes most frequently used on service quotes and contracts. Trailer codes identify miscellaneous non-sales charges. These codes display as the default on the trailer for taxable contracts and quotes, prompting you to enter any miscellaneous charges. You can change these charges. Miscellaneous charges can include freight, customs and import duties, setup, service, handling, or other special charges.

Each trailer code is set up with the appropriate GL account to which amounts are posted. You can enter trailer codes along with an amount on the trailer section of service quotes and contracts. The system calculates any applicable taxes. The trailer code, description, and amount print on all formal documents.

Nontaxable Trailer Code [1,2,3]. The nontaxable trailer codes most frequently used on service quotes and contracts. Trailer codes identify miscellaneous non-sales charges. These codes display as the default on the trailer for nontaxable contracts and quotes, prompting you to enter any miscellaneous charges. You can change the charges. Miscellaneous charges can include freight, customs and import duties, setup, service, handling, or other special charges.

Each trailer code is set up with the appropriate GL account to which amounts are posted. You can enter trailer codes along with an amount on the trailer section of service quotes and contracts. The trailer code, description, and amount print on all formal documents.

Fig. 25.19
SSM Accounting Control, Service Management Frame

Credit Hold Option. This field indicates how the system should manage a request for service activity from a customer on credit hold or over their credit limit. Service activity includes:

- Calls
- Contracts
- Return material authorizations (RMAs). For RMAs, the value of Credit Hold Option is checked rather than the value of Hold Orders over Credit Limit in Sales Order Accounting Control.
- Material orders (MOs), only when they are associated with a service call that does not have the hold status defined in Call Management Control; an MO can never be created for a call on hold. This field also does not affect MOs associated with project activity orders (PAOs), which are controlled by a similar field in Project Realization Control.

Enter one of the following values:

0: Service activity is accepted, regardless of the customer credit status.

1: Service calls, call-related MOs, RMAs, and contracts are accepted, but a warning displays if the customer is on credit hold or the credit limit is exceeded. The action status of MOs, RMAs, and contracts is set to HD (hold). The call status is set to the Hold status defined in Call Management Control.

2: Service calls, RMAs, and contracts cannot be created for customers who are on credit hold or over their credit limits. An error message displays and you cannot record the call or create an RMA or contract until the customer credit hold field is reset to No. In addition, contract quotes cannot be released to contract, and call quotes cannot be released to a call. RMA shipments are not allowed if the customer balance plus the order value exceeds the customer credit limit, and RMAs cannot be released to a work order.

MO processing is slightly different. If the call customer is on credit hold, the MO cannot be created. However, if the customer balance exceeds the credit limit, the MO can be created, a warning displays, and the action status is set to HD.

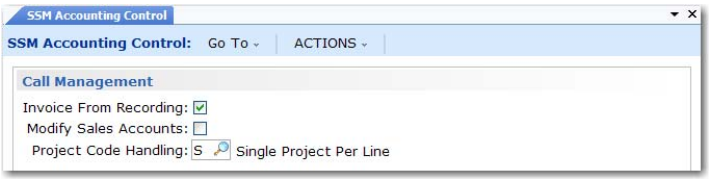
When Credit Hold Option is 2 and the RMA, contract, or MO line being entered puts the customer balance over the credit limit, the system does not prevent you from completing the request. This is because the credit limit is not actually exceeded until the order line is complete. Instead, the system accepts the service contract, RMA, or MO, displays a warning message, and places the resulting document on credit hold.

Use Item Prod Line. The default is Yes. If Yes, the system uses the product line of the item. If No, the system uses the product line from the service type. This setting affects the determination of the default product line in Contract Maintenance, Contract Quote Maintenance, RMAs, and Call Activity Recording. You can change the product line.

In each function, the effect of Use Item Prod Line can be different.

- In contracts and contract quotes, the product line determines the GL sales accounts.
- In RMAs, the product line determines the GL sales and cost of goods sold accounts.
- In Call Activity Recording, the setting of Use Item Prod Line determines which product line's WIP account is used for labor, expense, and item transactions. It can also affect the search for a charge product line if you have not set up one in Charge Product Line Maintenance.

Fig. 25.20
SSM Accounting Control, Call Management Frame



Invoice From Recording. Determines whether or not you can invoice from Call Activity Recording. If Yes, a Generate Invoice field appears in the Call Status frame of Call Activity Recording. If No, you can generate invoices only from Call Invoice Recording. Set this to No to restrict who is allowed to generate invoices.

Modify Sales Accounts. Determines whether you can modify the Sales and Sales Discount accounts in Call Invoice Recording. If No, the accounts display but you cannot change them.

Project Code Handling. Use this field to indicate how you want the system to apply project codes to the costs and revenue recorded for call service activity. There are two choices: Single Project per Line (S) and Project per Labor/Expense (P).

These two settings support two different models for using projects. The first choice lets you track both costs and revenue with the same project. This might be used for a lengthy installation of a complex system. The second model is closer to the way projects apply to standard work orders in a manufacturing environment. In this model, costs are tracked separately from revenue.

Up to three projects can be specified in Call Activity Recording:

- Project associated with the Sales account for tracking call revenue. This project is validated with the other Sales account components that display on the screen.
- Project associated with the Sales Discount account. This is typically the same as the sales account project. This project is validated with the other Sales Discount account components that display on the screen.

- Project associated with call line reports for tracking call costs. This project is validated with other Cost of Goods Sold account components during GL transaction post.

When Project Code Handling is set to Single Project per Line (S):

- One sales project and one sales discount project can be associated with each call line in Call Activity Recording. These default from the contract line providing coverage, if any, and are typically the same.
- The system sets the report project to the value entered for the sales project and it cannot be changed. The same project is used for both revenue and costs created by labor/expense transactions and material issues and receipts for this line.
- Once you have specified a project, it cannot be changed. The sales project defaults to each report and each labor, expense, and item detail record.
- When an invoice is created for the call line, either in CAR (if Invoice from Recording is Yes) or Call Invoice Recording (CIR), the sales and sales discount projects from CAR default to the call invoice. These values can be modified in CIR, if needed.

When Project Code Handling is set to Project per Labor/Expense (P):

- Each labor and expense transaction created for a call line can have a different project associated with it. The sales and sales discount project default from the contract line providing coverage and can be modified. The report project also defaults from the contract-line sales project and can be modified.
- If a contract does not provide coverage or a project is not specified on the contract line, all call line projects default to blank. Each time a new report is opened for a call line, the same defaulting logic is used.
- The report project sets the default for each labor record. For expenses, the project defaults first from the employee (engineer), if one has been defined; otherwise, the report project is used. This is similar to the way work orders handle project codes. You can modify the report project even after other reports exist, and the new project defaults to new labor and expense transactions.
- You can also modify the project on each labor and expense detail. However, the project associated with item consumption defaults from the report project and cannot be changed.
- The report project is used for costs only. When an invoice is generated, the sales and sales discount projects default to the invoice just as when Project Code Handling is set to S. The revenue projects (sales and sales discount) set the default for each line on the call invoice. The only difference in how revenue projects are handled when Project Code Handling is P is that the fields can be modified in CAR even after reports exist.

Chapter 26

Reference

This chapter includes additional reference information useful in customizing SSM for your particular environment.

User Exits

This is an extensive system that addresses a range of customer needs and requirements. Even with the broad functionality in Service/Support Management (SSM), users with unique requirements may need to customize one or more standard functions.

You can make customizations to Service/Support Management programs directly to source code, if this is available, or through user exit points that the system supports. The advantage of the user exit method discussed in this chapter is that it reduces maintenance costs for customization. Further, when you use exit points to call custom programs rather than modifying source code, you can upgrade your system more simply

In the SSM module, you can initiate calls to your own custom subroutines from many functions. When these subroutines are invoked, the system passes them one or more parameters, reflecting the Progress record identifiers for the records currently maintained by the calling routine. Design the custom subroutines invoked from user exits to accept the specific parameters in the designated order.

Setting Up User Exits

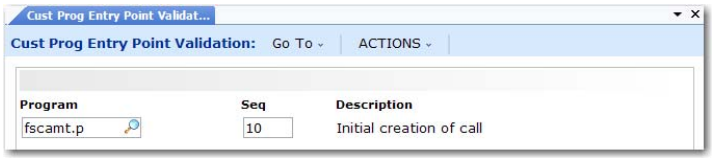
Use the following programs on the SSM Utilities menu (11.25) to set up user exits and specify the programs to be called:

- Use Custom Program Insertion Maintenance (11.25.1) to specify the program to be called at a particular exit.
- Use Custom Program Insertion Browse (11.25.2) to view the exits that have been activated.
- Use Custom Program Entry Point Validation (11.25.3) to define the exits that can be used in 11.25.1.
- Use Custom Program Entry Point Browse (11.25.4) to view the exits set up in 11.25.3.

Custom Program Entry Point Validation

Use Custom Program Entry Point Validation (11.25.3) to define the exits that can be used in Custom Program Insertion Maintenance (11.25.1).

Fig. 26.1
Custom Program Entry Point Validation (11.25.3)

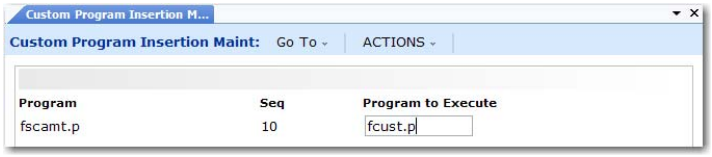


To set up an exit, specify the program name where the exit is found and its sequence number. Enter a description in the Description field. Table 26.1 lists programs and sequence numbers that you can use.

Custom Program Insertion Maintenance

To use a custom subroutine, you specify its program name and the appropriate exit point using Custom Program Insertion Maintenance (11.25.1).

Fig. 26.2
Custom Program Insertion Maintenance (11.25.1)



Program. Enter the menu-level name of an SSM program with user exits.

Seq. Enter the sequence number identifying which exit in Program you want to use.

Program to Execute. Enter the name of the custom routine you want to invoke at this user exit.

Progress Programming Rules

You must write all custom programs to accept one or more parameters. Table 26.1 describes these parameters.

Custom programs are executed within the flow of the standard programs. If your program displays any frames to the user, make sure that the way they are displayed does not interfere with the standard functions. Two important rules to follow are:

- Any frames displayed should be overlay frames.
- Do not use the “Hide All” command.

When batch processing occurs, a custom program should not solicit input from the user. The only interface should be messages. This rule applies to three of the user exits in Call Activity Recording that occur during inventory processing. These exits are numbered 50, 55, and 60.

Also, for the custom program to be found, make sure it resides in an appropriate directory in your propath. The system looks for the program in a directory that matches the first two characters of the program name. For example, place a program named `fscustom.p` in the `.../fs` directory.

List of User Exits

Table 26.1 lists the user exit points, a description of when each is activated, and the input parameters in their required order.

Table 26.1
User Exits

Program	Seq	Comments	Input Parameters
Installed Base Item Maintenance (`fsisbmt.p`)	10	Immediately after a new isb_mstr is created.	recid (isb_mstr)
	20	Immediately after an isb_mstr is deleted.	end user id part serial ref
	30	Immediately after the user changes the item’s serial number.	recid (isb_mstr) old serial number

Table 26.1 — *User Exits* — (Page 1 of 7)

Program	Seq	Comments	Input Parameters
Installed Item Move (`fsisbmv.p`)	10	Immediately before the end user number is changed on the parent level isb_mstr.	recid (isb_mstr) new end user number
	20	Immediately before the end user number is changed on a lower level component isb_mstr.	recid (isb_mstr) new end user number
Call Maintenance (`fscamt.p`)	10	Before the cursor enters the call ID field, `fscamtm.p` loads variable *canewrun* with the program name to execute. This program is then executed by `fscamtm.p` when a new call is being created just after the work code, model, service group pop-up displays to establish call defaults.	recid (ca_mstr)
	20	Before the cursor enters the call ID field, `fscamtm.p` loads shared variable *carun* with the program name to execute. This program is then executed by `fscamta.p` before the user keys in name, phone, etc. in the call header lower frame.	recid (ca_mstr)
	40	This user exit is called right before calling `fscammt.p` to handle call comments.	recid (ca_mstr)
	50	The program is called after the Item Service Structure pop-up.	recid (ca_mstr)
	55	The program is called after the Item Service Structure pop-up if *ca_assign* has changed.	recid (ca_mstr)
	60	After the Item Service Structure pop-up, if *ca_status* has changed (`fscamta1.p`).	recid (ca_mstr)
	70	After the Item Service Structure pop-up, if *ca_queue* has changed (`fscamtc.p`).	recid (ca_mstr)
	80	After the user selects or enters a new call line number, routine `fsitmcmt.p` calls this exit before displaying an existing line item or creating a new one.	recid (itm_det) Logical (newitem) indicating whether line is newly created.

Table 26.1 — *User Exits* — (Page 2 of 7)

Program	Seq	Comments	Input Parameters
Call Maintenance (`fscamt.p`)	85	When a user is editing a call line item and sets Fault Codes to Yes, `fsitmcmt.p` calls this exit right after the fault code frame displays. This exit requires three input parameters, but the middle one is only a place holder; it is not used in Call Maintenance.	recid (ca_mstr) recid (wo_mstr). Not used in Call Maintenance. recid (itm_det)
	90	Called right after all call data has been entered and before calling `fscamtb.p` to print a call.	recid (ca_mstr)
	100	If the call is being closed, after close processing is complete (fscamta1). Note that this exit applies to all programs where calls are closed: `fscarmt.p`, `fscamt.p`, `fsquemg.p`, and `fsegtmt.p`.	recid (ca_mstr)
Call Queue Manager (`fscamt.p`)	100	If you close the call at the end of the update transaction (`fsquem1b.p`).	recid (ca_mstr)
Service Request Maintenance (`fssrmt.p`)	10	Executed with the creation of a new SR.	recid (srr_mstr)
	20	Executed when the value of *srr_status* has been modified.	recid (srr_mstr)
	30	Executed when the value of *srr_assign* has been modified.	recid (srr_mstr)
	40	Executed when the value of *srr_que* has been modified.	recid (srr_mstr)
	90	Executed when the value of *srr_status* is set to the closed status defined in SR Control (*svc_srr_close*).	recid (srr_mstr)
Contract Maintenance (`fssamt.p`)	10	The name of a program to run for the contract header is loaded into the *sarun* variable by `fssamtm.p`. This program is executed between header comments and the first line item.	recid (sa_mstr)
	20	The name of a program to run for contract lines is loaded into the *sadrun* shared variable by `fssamtm.p`. This program is executed in `fssama01.p` immediately before line item comments may be entered and in `fssamtt.p` immediately after the comments are entered.	recid (sa_mstr) recid (sad_det)

Table 26.1 — *User Exits* — (Page 3 of 7)

Program	Seq	Comments	Input Parameters
RMA Maintenance (fsrmamt.p)	10	Executed by sosomt1a.p immediately before header comments are entered.	recid (so_mstr) recid (rma_mstr)
	20	Executed for RMA issue lines. The name of the program to run is loaded into variable *solinerun* by sosomta.p, and executed right before line comments by sosomtla.p.	recid (so_mstr) recid (sod_det) (sosomtla.p does not pick up rma_mstr or rmd_det)
	30	Executed for RMA receipt lines. The program to run is loaded into variable *solinerun* by sosomta.p, and executed right before line comments by sosomtla.p. Also loaded and executed by fsrmar02.p after the linked receipt line.	recid (so_mstr) recid (sod_det) (sosomtla.p does not pick up rma_mstr or rmd_det)
	100	Executed by fsrmamtu.p right before the “Display RMA Lines” message.	recid (so_mstr) recid (rma_mstr)
	110	Right after exit 100.	recid (so_mstr) recid (rma_mstr)
Sales Order Maintenance (sosomt.p)	10	Executed by sosomt1a.p immediately before header comments can be entered.	recid (so_mstr)
	20	The name of a program to run is loaded into variable *solinerun* by sosomta.p, and executed right before line comments by sosomtla.p.	recid (so_mstr) recid (sod_det)
Update ISB from Sales Order Maintenance and RMA Maintenance (sosomisb.p)	10	The program is called after the Update Installed Base Item pop-up.	recid (so_mstr) recid (sod_det) Logical (new_line) indicating whether line is newly created.

Table 26.1 — *User Exits* — (Page 4 of 7)

Program	Seq	Comments	Input Parameters
Call Activity Recording (`fscarmt.p`)	10	This exit is called by `fscarmtm.p` right after header comments, before the line items.	recid (ca_mstr)
Note: Call Quote Maintenance (`fscqmt.p` calls `fscarmt.p` to execute the same programs.	15	After the user selects or enters a new call line number, routine `fscarmta.p` calls this exit after displaying an existing line item or creating a new one.	recid (itm_det) Logical (newitem) indicating whether line is newly created
	20	This exit is called by `fscarmta.p` right after the Fault Codes pop-up and before the MO line selection. Only executed for call quote if not fixed price	recid (ca_mstr) recid (wo_mstr)
	50	Called by `fscarmk1.p` when the ISB quantity of a component item is increased. No input should be solicited from the user.	recid (wo_mstr) recid (itm_det) recid (wod_det) recid (isb_mstr) (of the component item)
	55	Called by `fscarmk1.p` when a new component is added to the ISB. No input should be solicited from the user.	recid (wo_mstr) recid (itm_det) recid (wod_det)
	60	Called by `fscarmk2.p` when a component item is deleted or has its ISB quantity reduced. No input should be solicited from the user.	recid (wo_mstr) recid (itm_det) recid (wod_det) Percentage of the ISB item that has been deleted (The delete percentage is defined like the field tr_qty_chg.)
Call Invoice Recording (`fscaimt.p`)	10	Executed by `fscaimtm.p` after the last header frame, before the billing summary displays.	recid (ca_mstr)
	20	Executed by `fscaimtj.p`, which creates the so_mstr, after tax processing completes.	recid (ca_mstr) recid (so_mstr)
	30	Program `fscaimte.p`, which creates the invoice, loads this exit program name into variable *carun*, then executes it after creating or updating the first sod_det (from the first invoiceable report) for the itm_det.	recid (ca_mstr) recid (so_mstr) (? if none) recid (itm_det) recid (sod_det) (? if none) recid (wo_mstr)
	50	Executed by `fscaimtf.p`, which does line maintenance, right before starting the labor/parts subroutines for the line.	recid (ca_mstr) recid (so_mstr) recid (itm_det) recid (sod_det)

Table 26.1 — *User Exits* — (Page 5 of 7)

Program	Seq	Comments	Input Parameters
Material Order Maintenance (fseomt.p)	10	Executed immediately before MO header comments by fseomt.p.	recid (so_mstr)
	20	Program fseomta.p (MO Line Items) loads variable *solinerun* with the name of this exit program, then fseomtla.p executes that program just before line item comments are maintained.	recid (so_mstr) recid (sod_det)
Service Contract Limits (fssalmt.p)	10	Executed by fssalmt.p after maintaining limits on a service contract or service contract lines.	recid (sal_mstr)
	20	Executed by fssalmt.p after maintaining warranty limits of isb_mstr type. (This feature has not been implemented yet.)	recid (sal_mstr)
	30	Executed by fssalmt.p after maintaining limits on contract or warranty types.	recid (sal_mstr)
Service Work Center Maintenance (fswcmt.p)	10	Executed by fswcmtm.p at the end of work center maintenance.	recid (wc_mstr)
Service Standard Op Maintenance (fsopmmt.p)	10	Executed by fsopmmt.p right before comments are entered.	recid (opm_mstr)
Work Code Maintenance (fsfwkmt.p)	10	Executed by fsfwkmt.p at the end of Work Code Maintenance.	recid (fwk_mstr)
Charge Product Line Maintenance (fsfcccmt.p)	10	Executed by fsfcccmt.p at the end of Charge Product Line Maintenance.	recid (fcc_mstr)
Revenue Product Line Maintenance (fsfccrmt.p)	10	Executed by fsfccrmt.p at the end of Revenue Product Line Maintenance.	recid (fcc_mstr)
Default Charge Code Maintenance (fsfcdmt.p)	10	Executed by fsfcdmt.p at the end of Default Charge Code Maintenance.	recid (fcd_mstr)
Charge Code Maintenance (fsfcgmt.p)	10	Executed by fsfcgmt.p at the end of Charge Code Maintenance.	recid (fcg_mstr)
Invoice Sort Maintenance (fsfismt.p)	10	Executed by fsfismt.p at the end of Invoice Sort Maintenance.	recid (fis_mstr)
Service Category Maintenance (fsfscmt.p)	10	Executed by fsfscmt.p at the end of Service Category Maintenance.	recid (fsc_mstr)

Table 26.1 — *User Exits* — (Page 6 of 7)

Program	Seq	Comments	Input Parameters
Service Price List Maintenance (fsfpcmt.p)	10	Executed by fsfpcmt.p at the end of Price List Maintenance.	recid (fpc_mstr)
Return Status Maintenance (fsfpstmt.p)	10	Executed by fsfpstmt.p at the end of Return Status Maintenance.	recid (fpst_mstr)
Contract Copy/ Renewal Routines (fsqosaa.p) (Refer to page 686 for additional details.)	10	The name of a program to run after a contract header is created by any copy/renewal routine. The exit should be attached to program fsqosaa.p and is executed in batch; no user input should be required.	recid (sa_mstr)
	20	The name of a program to run after a contract quote header is created by any copy/renewal routine. The exit should be attached to program fsqosaa.p and is executed in batch; no user input should be required.	recid (sa_mstr)
	30	The name of a program to run after a contract line is created by any copy/renewal routine. The exit should be attached to program fsqosaa.p and is executed in batch; no user input should be required.	recid (sa_det)
	40	The name of a program to run after a contract quote line is created by any copy/renewal routine. The exit should be attached to program fsqosaa.p and is executed in batch; no user input should be required.	recid (sad_det)
General Comments (gpcmmt01.p)	10	Executed after comments are defaulted, but before they are displayed for editing. Used in most places where comments are edited.	recid (cmt_det) Logical indicating whether comments are newly created
Service Comments (fscammt.p)	10	Executed after comments are defaulted, but before they are displayed for editing. Used in service routines where comments are edited that include a date/time stamp.	recid (cmt_det) Logical indicating whether comments are newly created

Table 26.1 — *User Exits* — (Page 7 of 7)

User Exits for Contract Copy/Renewal Routines

Most user exits are defined for a menu-level program. The exception to this is the family of six programs used to copy and renew service contracts and contract quotes, which are all very similar internally. This program family includes the following options:

- Contract Quote Release to Contract (11.5.1.5)
- Contract Quote Copy from Quote (11.5.1.6)
- Contract Quote Copy from Contract (11.5.1.7)
- Contract Copy to Contract (11.5.13.6)
- Renew Single Contract (11.5.13.8)
- Renew Process/Report (11.5.13.10)

Rather than creating separate user exits for each menu-level program, four generic exits can be set up to take affect whenever a contract or contract quote header or line is created. This is done by attaching the exits to program `fsqosaa.p`, rather than the menu-level program name. This approach means, for example, that the same user program is called whenever a new contract line is created, regardless of the particular program that initiated the update.

Note Enter `fsqosaa.p` in the Program field of Custom Program Entry Point Validation.

The user exits for contract copy/renewal programs all execute in the background. You should make sure that the program you call does not require any user input.

Installed Base Classification

Using features of SSM, you can set up classification codes for grouping items in the installed base into hierarchical relationships. This section provides some additional technical details about customizing the lookups that display installed based records.

Classification codes can be used in any of the service programs that display items from the installed base listed in Table 26.2. This table lists the fields that provide filtered data for each supported program.

See “Classifying ISB Records” on page 30.

Table 26.2
Programs with Fields that Support Classification Codes

Menu Number	Description	Program Name	Field Names
7.1.1	Sales Order Maintenance	sosomt.p	serial
11.1.1.1	Call Maintenance	fscamt.p	ref, part, serial
11.1.1.7	Call Quote Maintenance	fscqmt.p	itm_ref, itm_part, itm_serial
11.1.1.13	Call Activity Recording	fscarmt.p	itm_ref, itm_part, itm_serial
11.1.3.1	Pending Call Maintenance	fspcmt.p	ca_part, ca_ref, ca_serial
11.1.6	Call Queue Manager	fsquemg.p	itm_ref, itm_part, itm_serial
11.1.8	Call Generator	fscagen.p	fn_from_serial, fn_to_serial, fn_from_part, fn_to_part
11.3.1	Installed Base Item Maintenance	fsisbmt.p	serial, ref, isb_part

Menu Number	Description	Program Name	Field Names
11.3.5	Installed Configuration Maintenance	fsbmismt.p	par, comp, comp_ref, par_ref, par_ser
11.3.12.1	Field Notification Maintenance	fsfnmt.p	fn_from_serial, fn_to_serial, fn_from_part, fn_to_part
11.3.12.2	Field Notification Inquiry	fsfniq.p	fn_from_serial, fn_to_serial, fn_from_part, fn_to_part
11.3.13	Installed Item Move	fsisbmv.p	part
11.5.1.1	Contract Quote Maintenance	fsqomt.p	serial, sad_for
11.5.13.1	Contract Maintenance	fssamt.p	serial, sod_for
11.7.1.1	RMA Maintenance	fsrmamt.p	rmd_ref, serial, sod_serial, part
11.13.15.8	Engineer Assignment Maintenance	fsegtmt.p	itm_ref, itm_part, itm_serial

To support filtering data returned by lookups associated with fields that display ISB data, modified browses have been attached to these fields. It is possible in some cases that you may prefer to view the unfiltered data even though you normally use classification codes. In this case, you can replace the filtered lookup with the unfiltered one listed in Table 26.3.

Table 26.3
ISB Browses

Calling Procedure	Field/Variable	Field Label	Filtered Lookup	Unfiltered Lookup
fspcmt.p	ca_part	Item Number	fslu076.p	gplu153.p
fspcmt.p	ca_ref	Reference	fslu080.p	fslu057.p
	ca_serial	Serial	fslu078.p	gplu156.p
fs*.p	comp	Item	fslu075.p	gplu151.p
	comp_ref	Reference	fslu080.p	fslu057.p
fsbmismt.p	comp_serial		fslu079.p	gslu050.p
	fn_from_part	From Item	fslu075.p	gplu151.p
	fn_from_serial	From Serial	fslu078.p	gplu156.p
	fn_to_part	To Item	fslu075.p	gplu151.p
	fn_to_serial	To Serial	fslu078.p	gplu156.p
	isb_part	Item Number	fslu076.p	gplu153.p
	itm_part	Item	fslu076.p	gplu153.p
	itm_ref	Ref	fslu080.p	fslu057.p
fsrmais.p	lotserial	Installed Base	fslu079.p	fslu050.p
fsbmismt.p	par	Parent Part	fslu077.p	fslu039.p
	parent-item	Parent Item	fslu077.p	fslu039.p
fsisbmv.p	part		fslu076.p	gplu153.p
fsrmamt.p	part		fslu076.p	gplu153.p
	par_ref	Reference	fslu080.p	fslu057.p
fsbmismt.p	par_ser		fslu079.p	gplu156.p
fscamt.p	ref	Reference	fslu080.p	fslu057.p

Calling Procedure	Field/Variable	Field Label	Filtered Lookup	Unfiltered Lookup
fsisbmt.p	ref	reference	fslu080.p	fslu057.p
fsqomt.p	sad_for	Supported Item	fslu075.p	gplu151.p
fssamt.p	sad_for	Supported Item	fslu075.p	gplu151.p
fsisbmt.p	serial		fslu079.p	fslu050.p
fsqomt.p	serial	Serial	fslu079.p	fslu050.p
fsrmamt.p	serial		fslu079.p	fslu050.p
fssamt.p	serial	Serial	fslu079.p	fslu050.p
sosomt.p	serial		fslu079.p	fslu050.p
fscamt.p	serial	Serial	fslu078.p	gplu156.p
fsrmamt.p	sod_serial	Lot/Serial	fslu079.p	fslu050.p

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