QAD Enterprise Applications
Enterprise Edition

Training Guide

QAD Quick Start

70-3227-2017EE
QAD 2017 Enterprise Edition
Workspace: 10USA > 10USACO
March 2018

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Change Summary

The following table summarizes significant differences between this document and the previous version.

Date/Version	Description	Reference
March 2018/2017 EE	Removed all the answers to mastery questions	--
	Corrected errors in the exercise for the Product Definition chapter	--
	Updated information on how to set up the shop calendar	--
	Redesigned the exercise for GRS Process	--
	Other minor changes	--
March 2016/2016 EE	Replaced Standard Requisition with Global Requisition System in Procure-to-pay process	--
	Updated Shop Calendar	--
September 2015/2015 EE	Updated exercises for User Interface, Discrete Production Order, and Repetitive Schedules.	--
	Modified some data based on the training environment behavior.	--
	Minor edits throughout resulting from CTD editing process	--
May 2015/2015 EE	Added Dashboards and Application Help in User Interface	--
	Added the concepts of daybook and profile in Financial Structure	--
	Added cost calculation formula in Cost Calculation	--
	Rewrote the processes chapters and organized them by end-to-end process	--
	In Quote-to-Cash process, included basic process from quotation through customer payment and advanced process-customer schedules	--
	In Procure-to-Pay process, included basic process from requisition through account payables and advanced process-supplier schedules	--
	In Plan-to-Perform process, included basic process of discrete work order and advanced process-repetitive schedules.	--
April 2014/2014 EE	Added item quantity to Manually Add and Release a Work Order section of Exercise 7	--
October 2013/2013.1 EE	Numerous revisions Added what is Enterprise Edition? chapter	--
March 2013/2013 EE	Rebranded for QAD 2013 EE	--
March 2012/2012 EE	Rebranded for QAD 2012 EE, edited for clarity and consistency, minor content updates	--
Sept 2011/2011.1 EE	Rebranded for QAD 2011.1 EE	--

About This Course

Course Description

This course provides quick start training on QAD Enterprise Edition (QAD EE) by offering a high-level overview of most of the core features of the QAD system. The quick start is for students who want to rapidly begin using the application software. This accelerated course provides a focused introduction to the fundamentals of the system and demonstrates how features apply to critical business processes.

The focus on basic operational tasks lays a foundation for further training in more advanced functions. Training guides for the individual modules provide much deeper training with a narrower scope.

Course Objectives

The overall objective of the course is to provide a basic background in setup concepts and the processing of core business functions in QAD EE, the contents are structured as:

- Introduction
    - Introduction to QAD EE
    - User Interface
- Basic Setups
    - Corporate Structure
    - Manufacturing
    - Product Definition
    - Cost Calculation
- Processes
    - Quote-to-Cash Process
    - Procure-to-Pay Process
    - Plan-to-Perform Process

Each chapter includes a list of learning objectives for the topics covered in that chapter.

This course is not intended to take the place of implementation training or consulting. The complete body of knowledge necessary to make the business decisions required for system setup and implementation are beyond the scope of this course.

The format for this course is designed for the classroom with each student completing their own hands-on activities that simulate how to use QAD Enterprise Edition to run a business.

Audience

This course is intended for first-time users.

Prerequisites

An understanding of basic manufacturing principles is beneficial.

Course Credit and Scheduling

This course consists of mandatory and optional topics.

The entire course is valid for 40 credit hours and is typically taught in 4 days. The actual course credit is subject to the topics you choose.

Virtual Environment Information

Use the hands-on exercises in this book with the latest Enterprise Edition learning environment in the 10USA > 10USACO workspace. When prompted to log in, specify *demo* for user ID and *qad* for password.

Additional Resources

If you encounter questions on QAD software that are not addressed in this book, several resources are available. The QAD corporate Web site provides product and company overviews. From the main site, you can access the QAD Learning or Support site and the QAD Document Library.

Access to some portions of these sites depends on having a registered account.

http://www.qad.com/

QAD Learning Center

To view available training courses, locations, and materials, use the QAD Learning Center. Choose Education under the Services tab to access this resource. In the Learning Center, you can reserve a learning environment if you want to perform self-study and follow a training guide on your own.

QAD Document Library

To access release notes, user guides, training guides, and installation and conversion guides by product and release, visit the QAD Document Library. Choose Document Library under the Support tab. In the QAD Document Library, you can view HTML pages online, print specific pages, or download a PDF of an entire book.

To find a resource, you can use the navigation tree on the left or use a powerful cross-document search, which finds all documents with your search terms and lets you refine the search by book type, product suite or module, and date published.

QAD Support

Support also offers an array of tools depending on your company's maintenance agreement with QAD. These include the Knowledgebase and QAD Forums, where you can post questions and search for topics of interest. To access these, choose Visit Online Support Center under the Support tab.

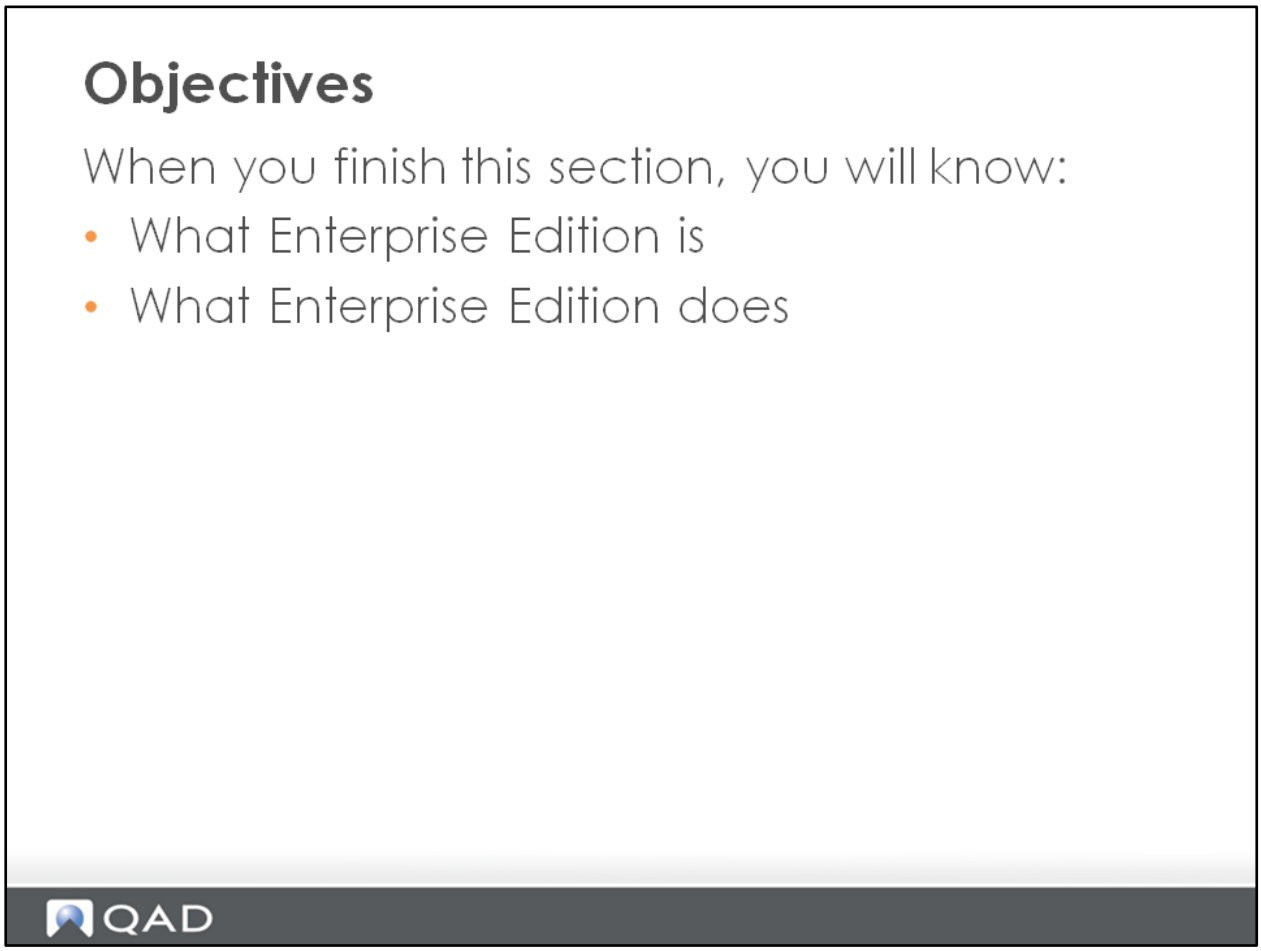
CHAPTER 1

Introduction to QAD Enterprise Edition

Introduction to QAD Enterprise Edition



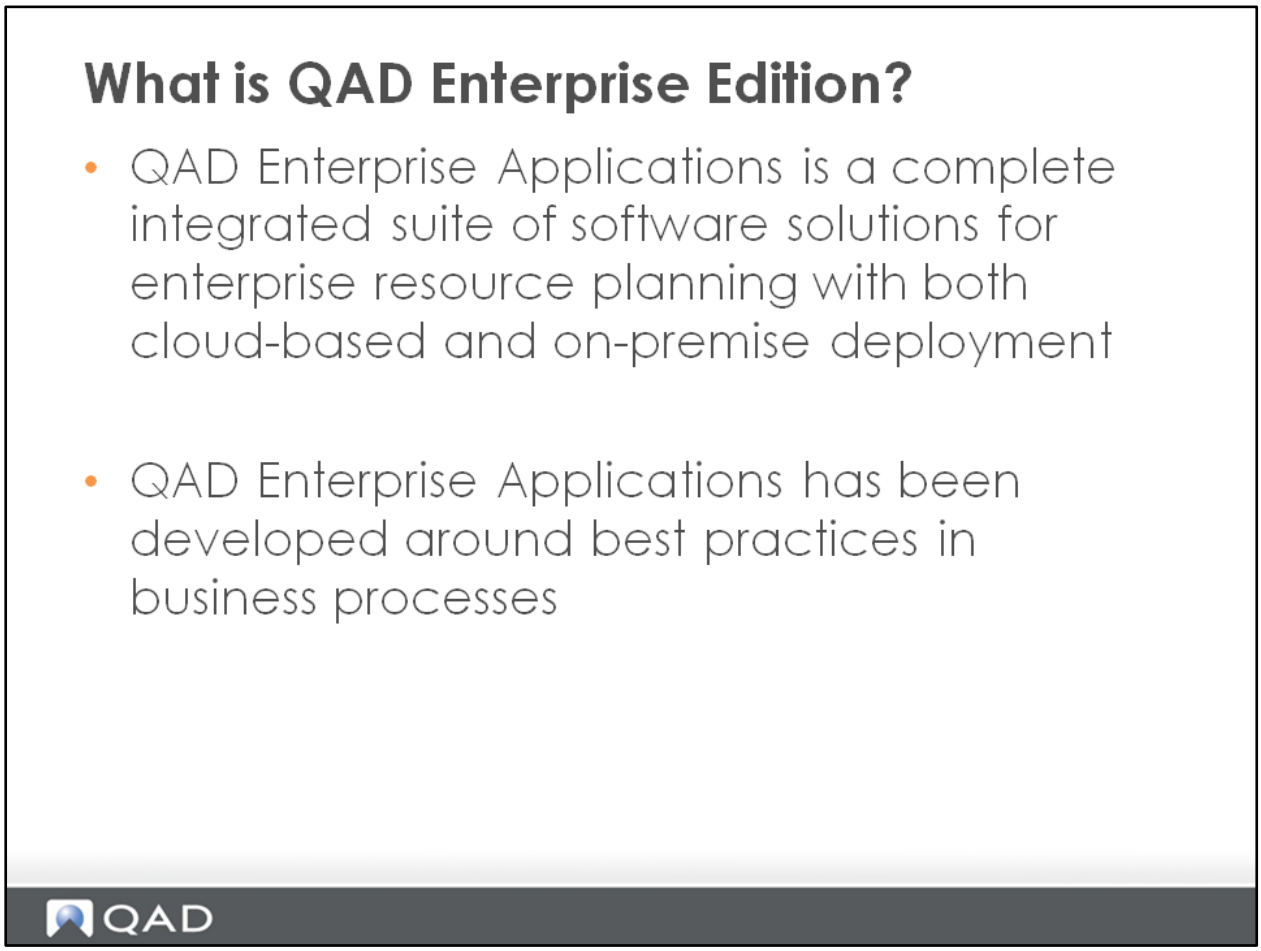
Objectives


Objectives
When you finish this section, you will know:
• What Enterprise Edition is
• What Enterprise Edition does
QAD

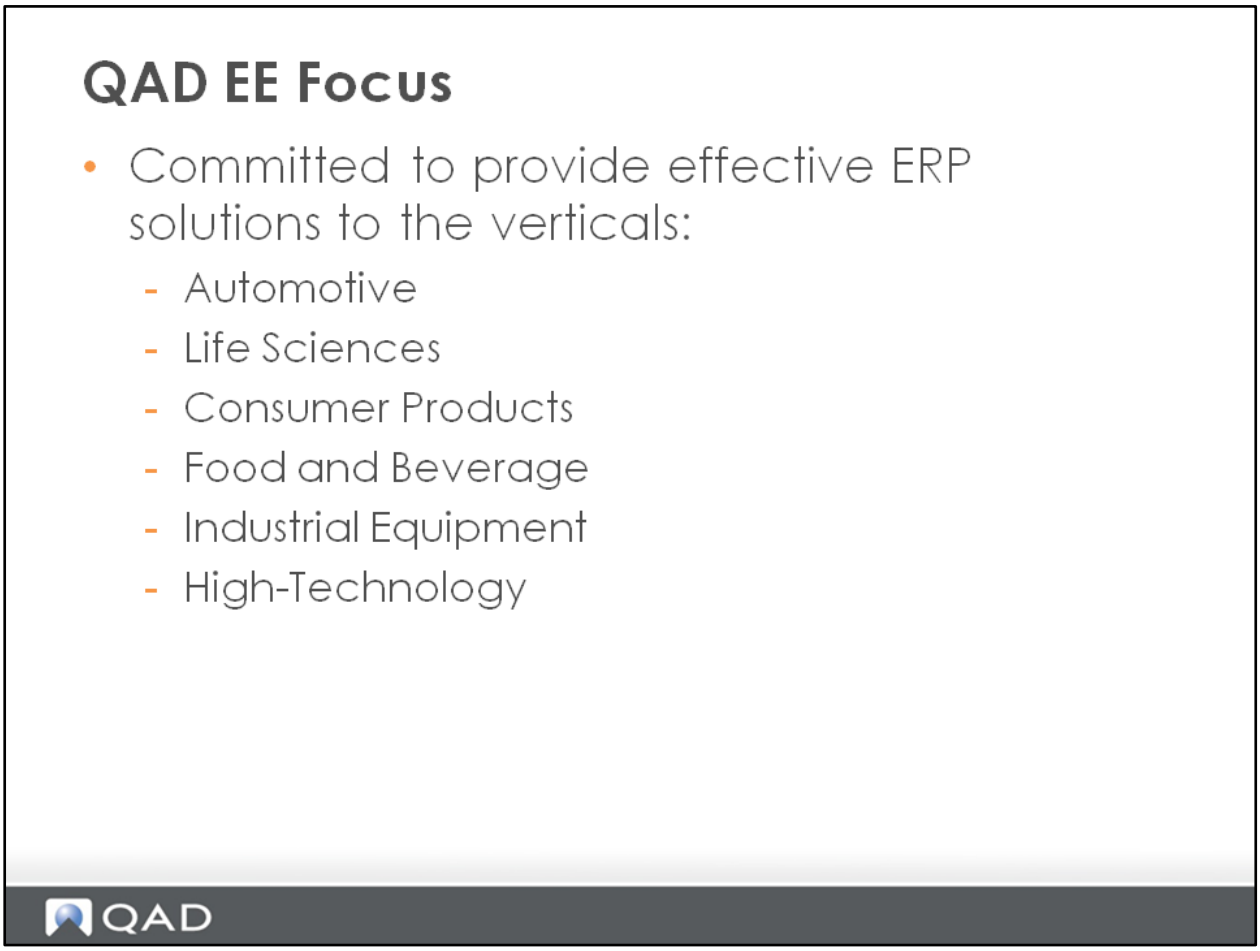
Topics


Topics
What is Enterprise Edition?
QAD EE focus
QAD EE benefits
QAD

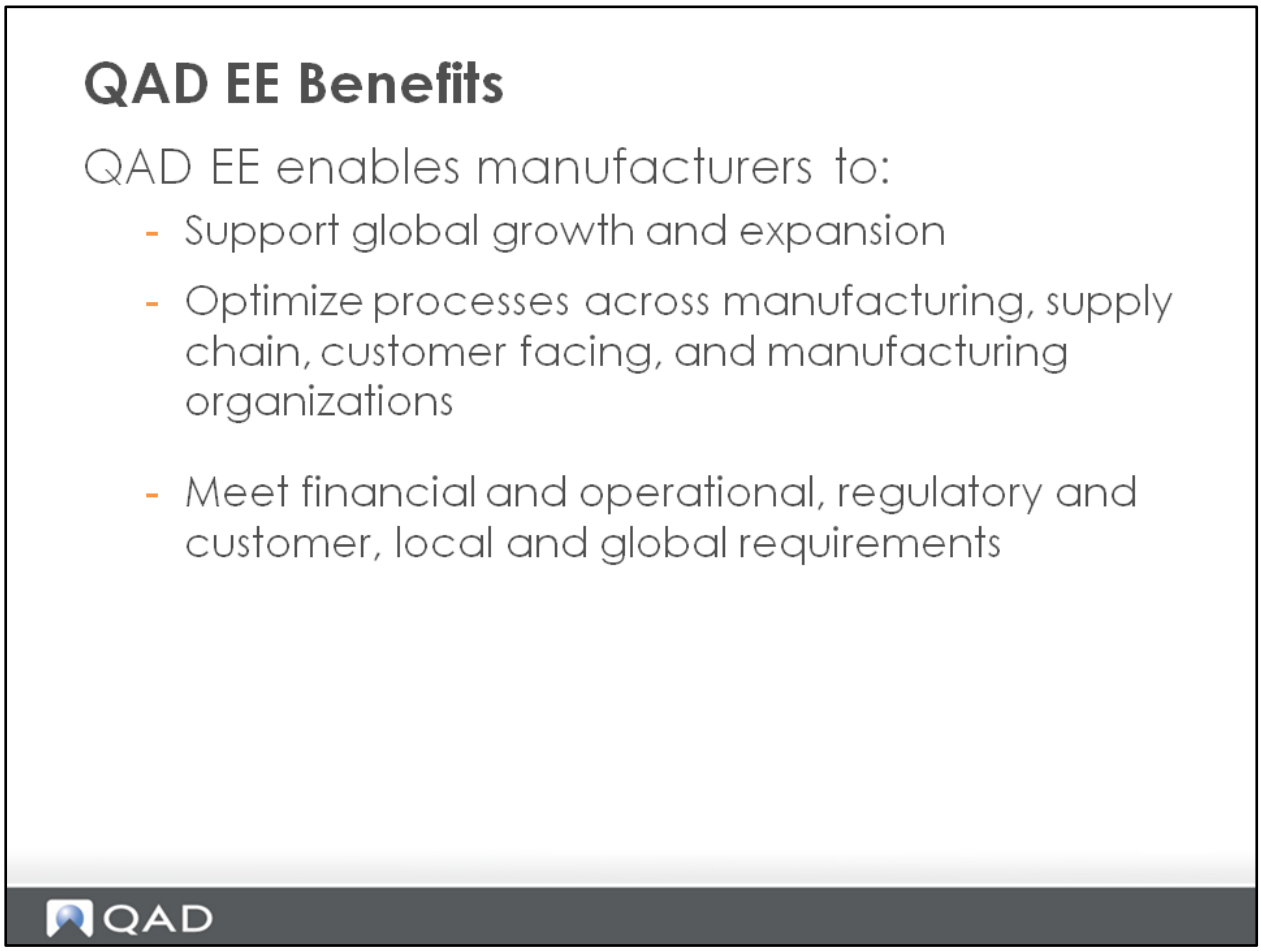
What is QAD Enterprise Edition?



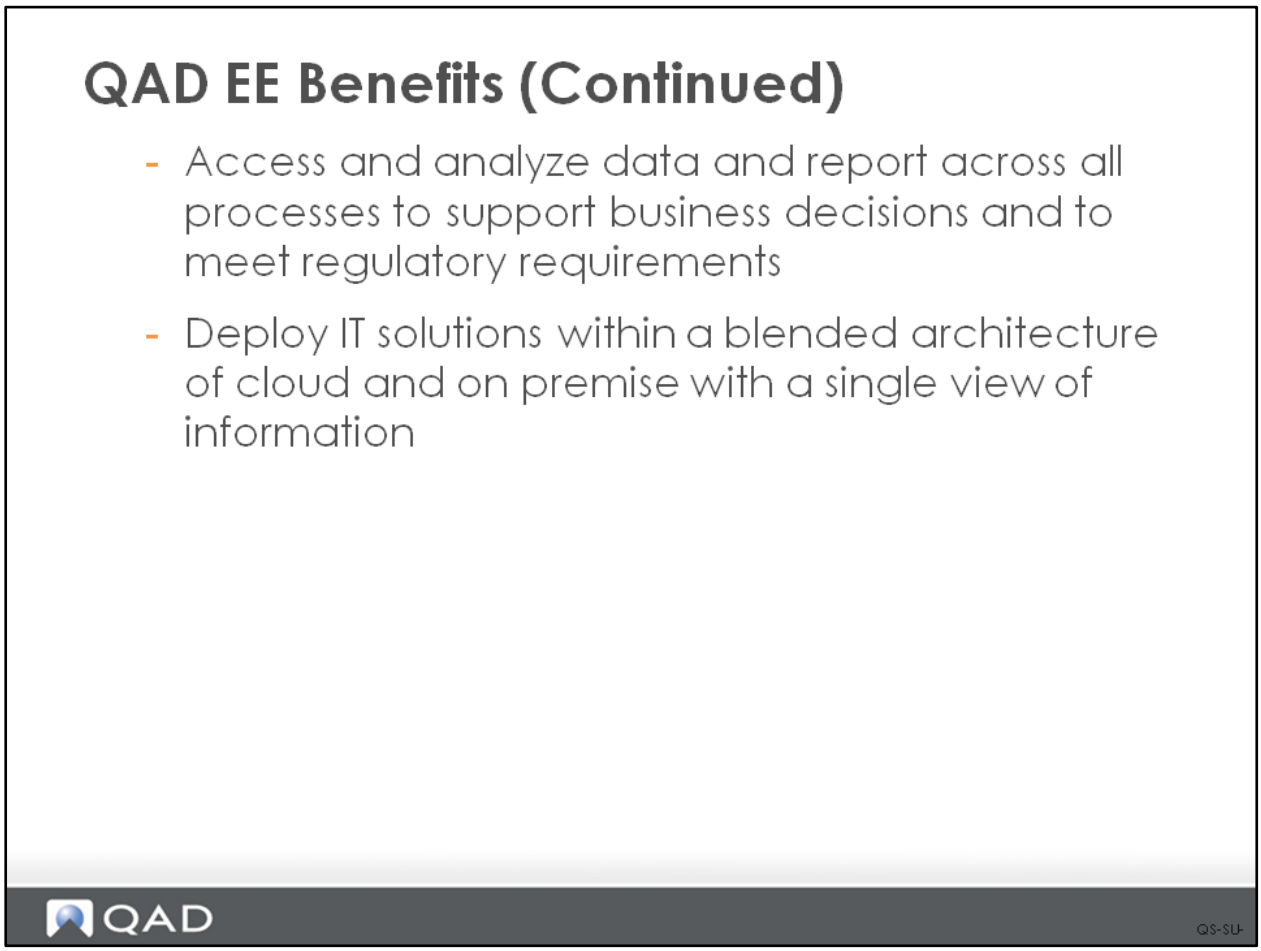
QAD EE Focus


QAD EE Focus
Committed to provide effective ERP solutions to the verticals:
Automotive
Life Sciences
Consumer Products
Food and Beverage
Industrial Equipment
High-Technology
QAD

QAD EE Benefits



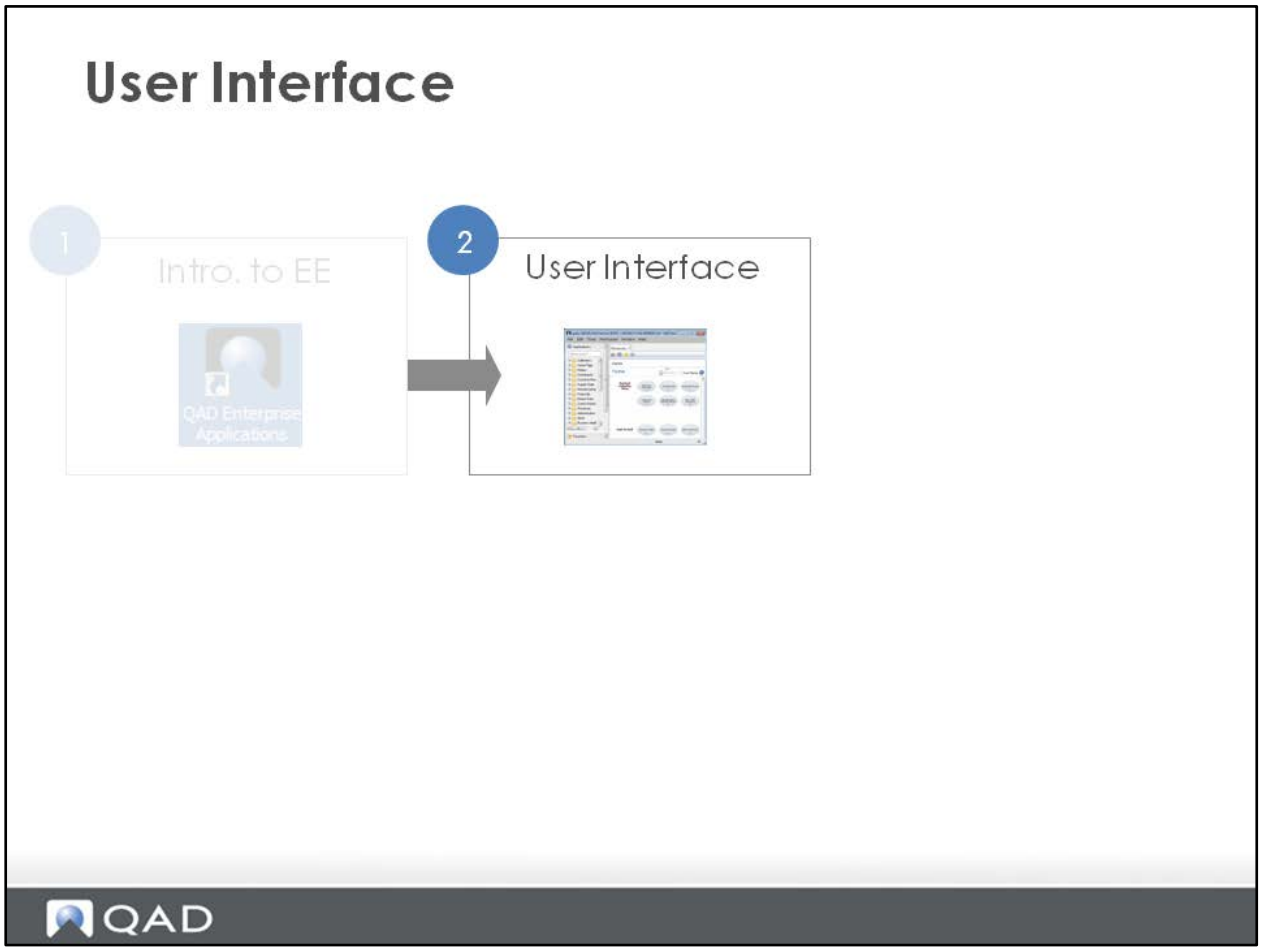
QAD EE Benefits (Continued)



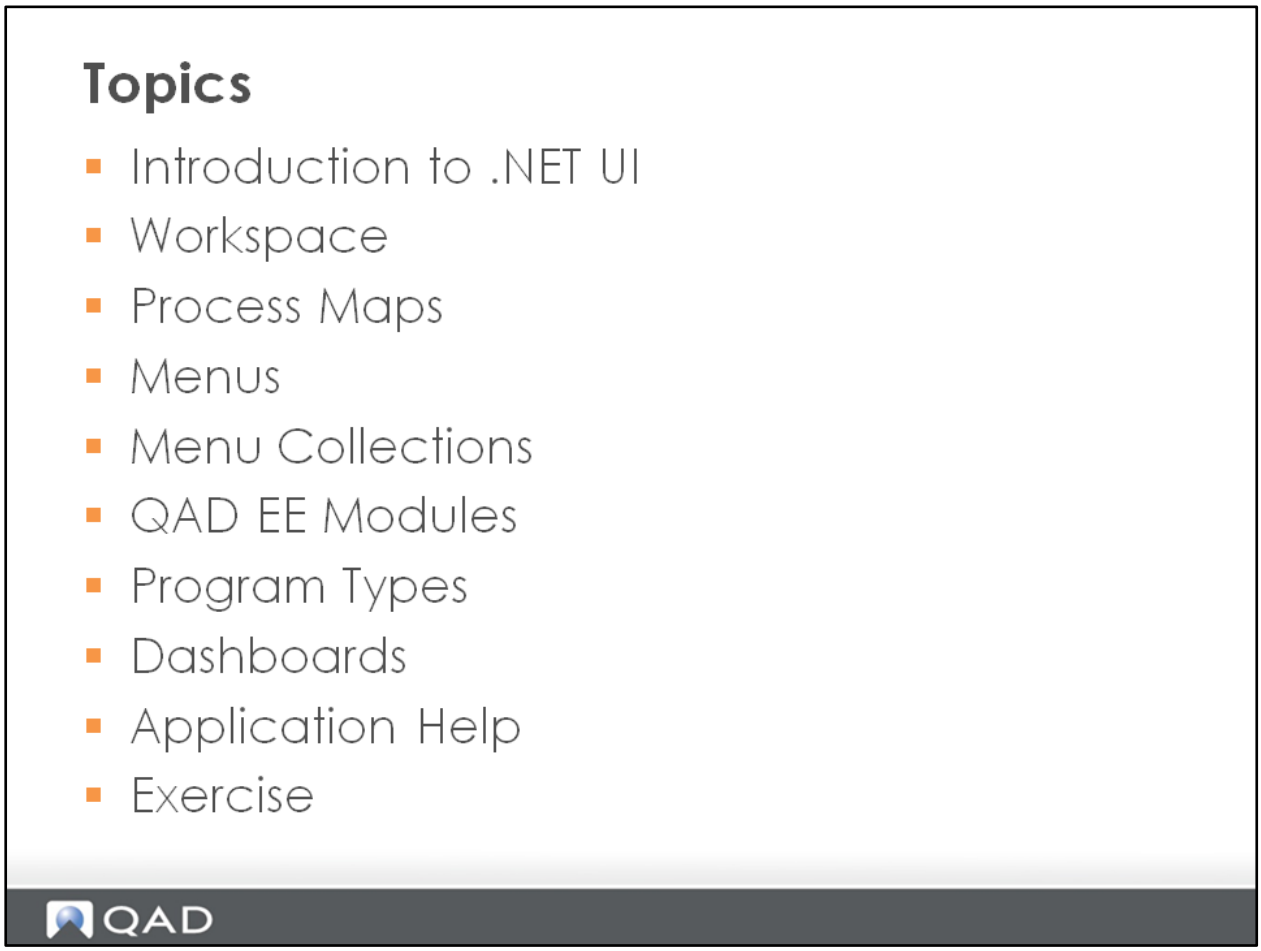
CFHAPTER 2

User Interface

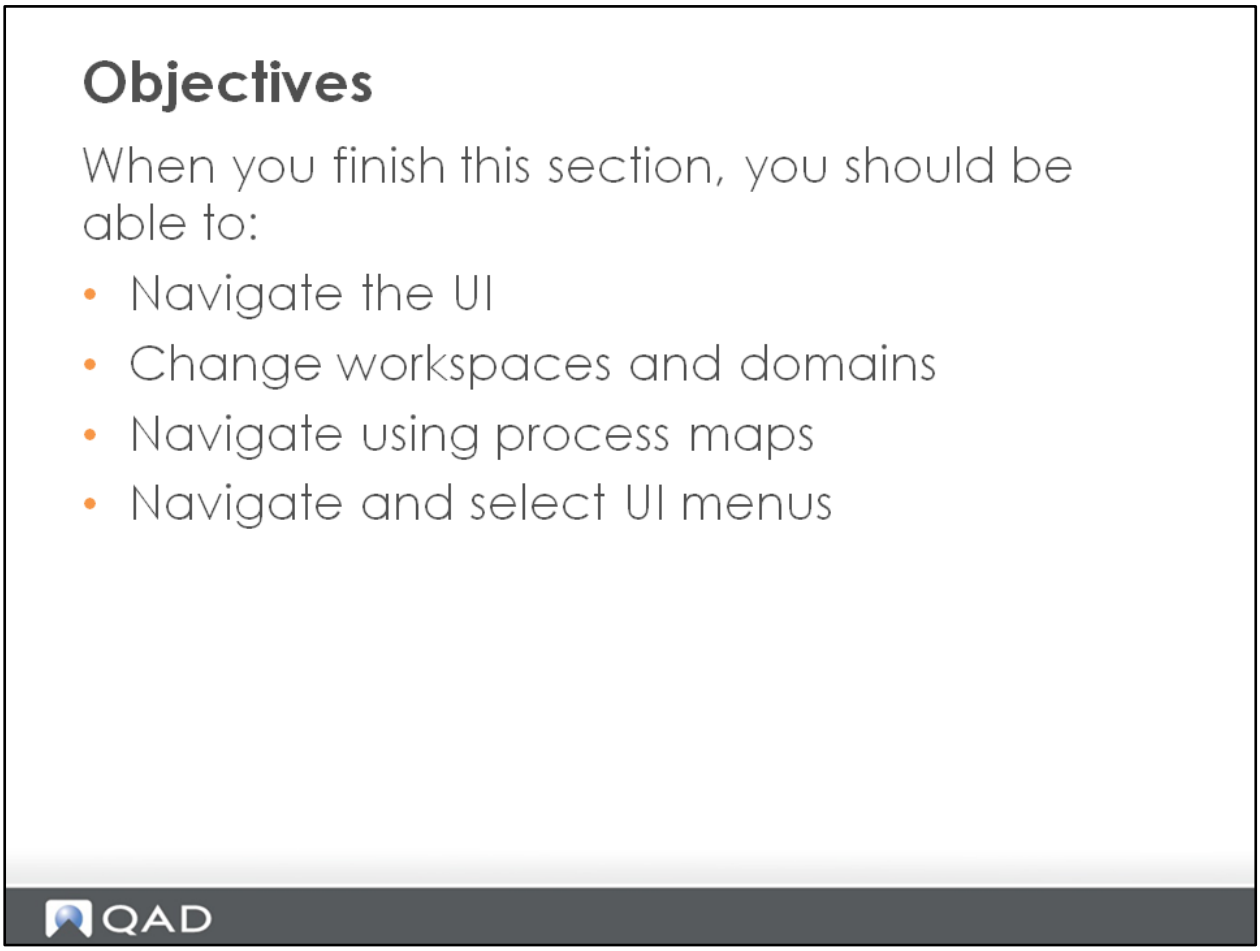
User Interface



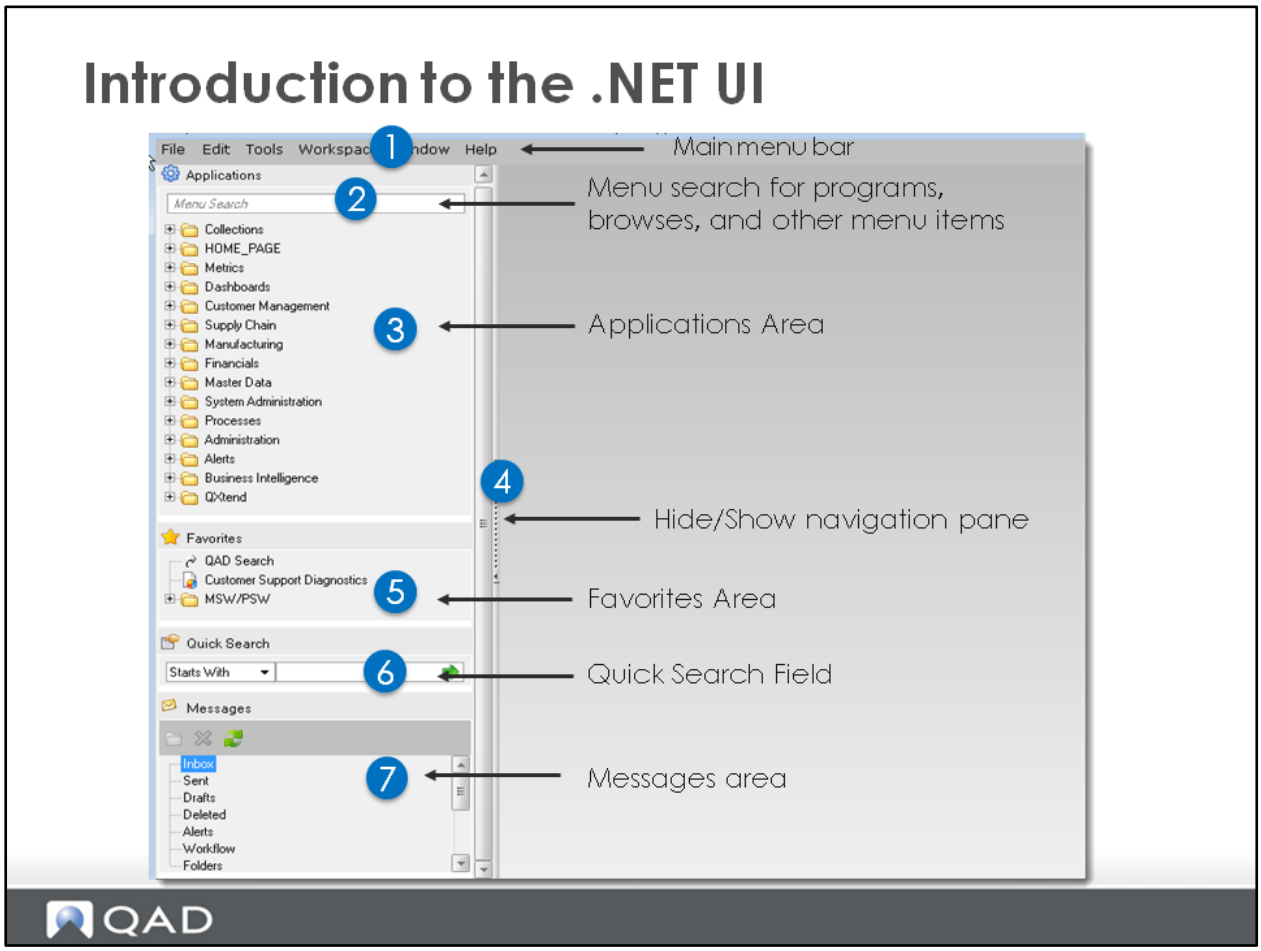
Topics


Topics
Introduction to .NET UI
Workspace
Process Maps
Menus
Menu Collections
QAD EE Modules
Program Types
Dashboards
Application Help
Exercise
QAD

Objectives


Objectives
When you finish this section, you should be able to:
• Navigate the UI
• Change workspaces and domains
• Navigate using process maps
• Navigate and select UI menus
QAD

Introduction to the .NET UI



The QAD .NET User Interface (UI) provides a common framework for multiple QAD applications. This framework, based on Microsoft .NET technology, has excellent performance and provides best-practice usability and deployment features, as well as extensive ways for you to adapt the UI to your preferred work style.

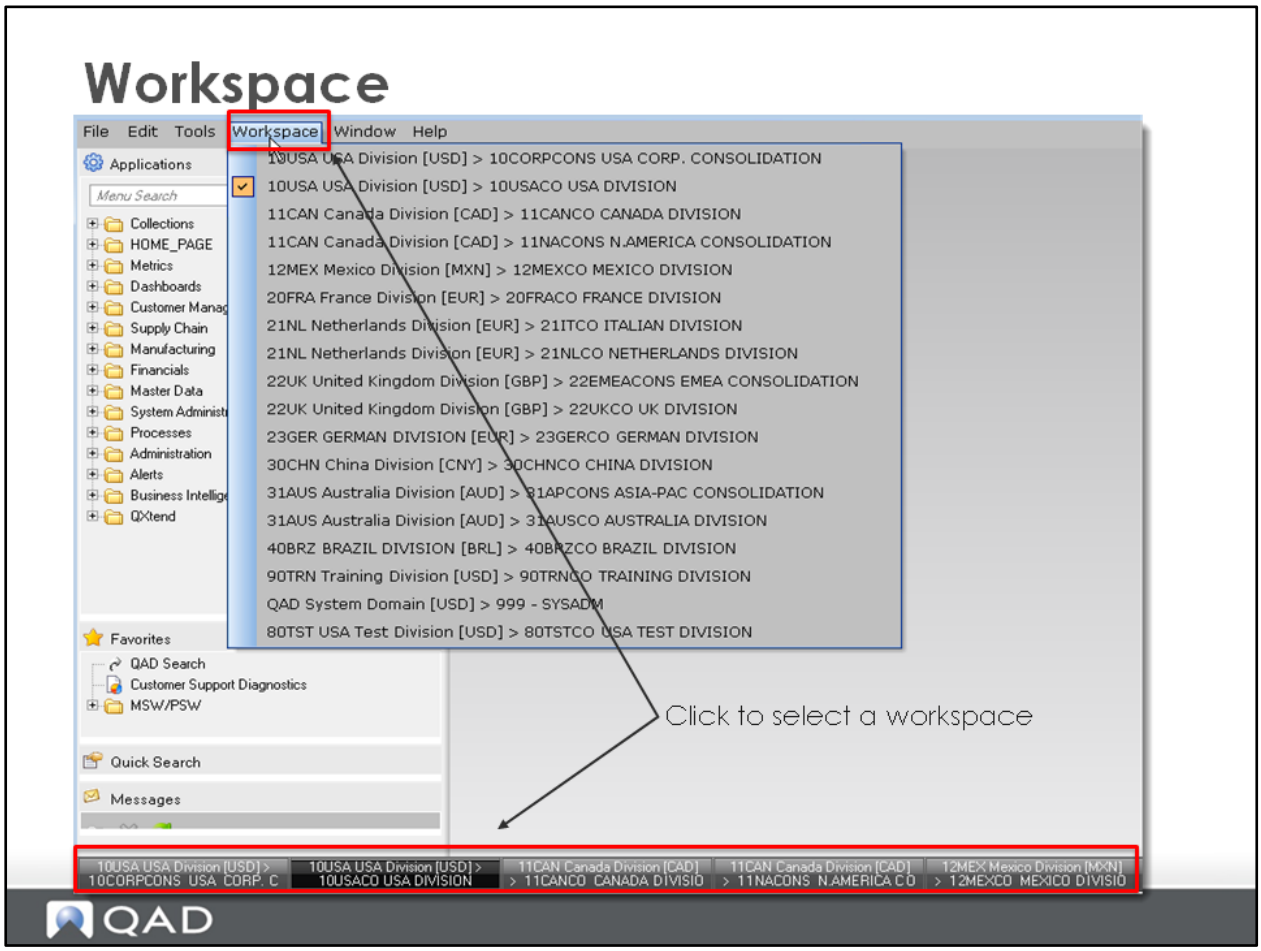
When you first log in to the .NET UI, you will see a screen like the one on the slide.

1. The main menu bar includes File, Edit, Tools, Workspace, Window, and Help menus.
2. The menu search helps you to locate programs to run.
3. The Application area displays the application programs that can be run in the QAD .NET UI.
4. Use the dashed bar to close and open the navigation pane. Closing the pane gives you more area to work in.
5. The Favorites area allows you to add frequently used programs.

6. The Quick Search area lets you search for a value across all fields in a browse group that you can define (see Quick Search for details).
7. The Messages area displays messages generated through the QAD Enterprise Applications internal mail system.

You can resize each distinct area of the UI to suit your needs by dragging the edge to the place you want.

Workspace



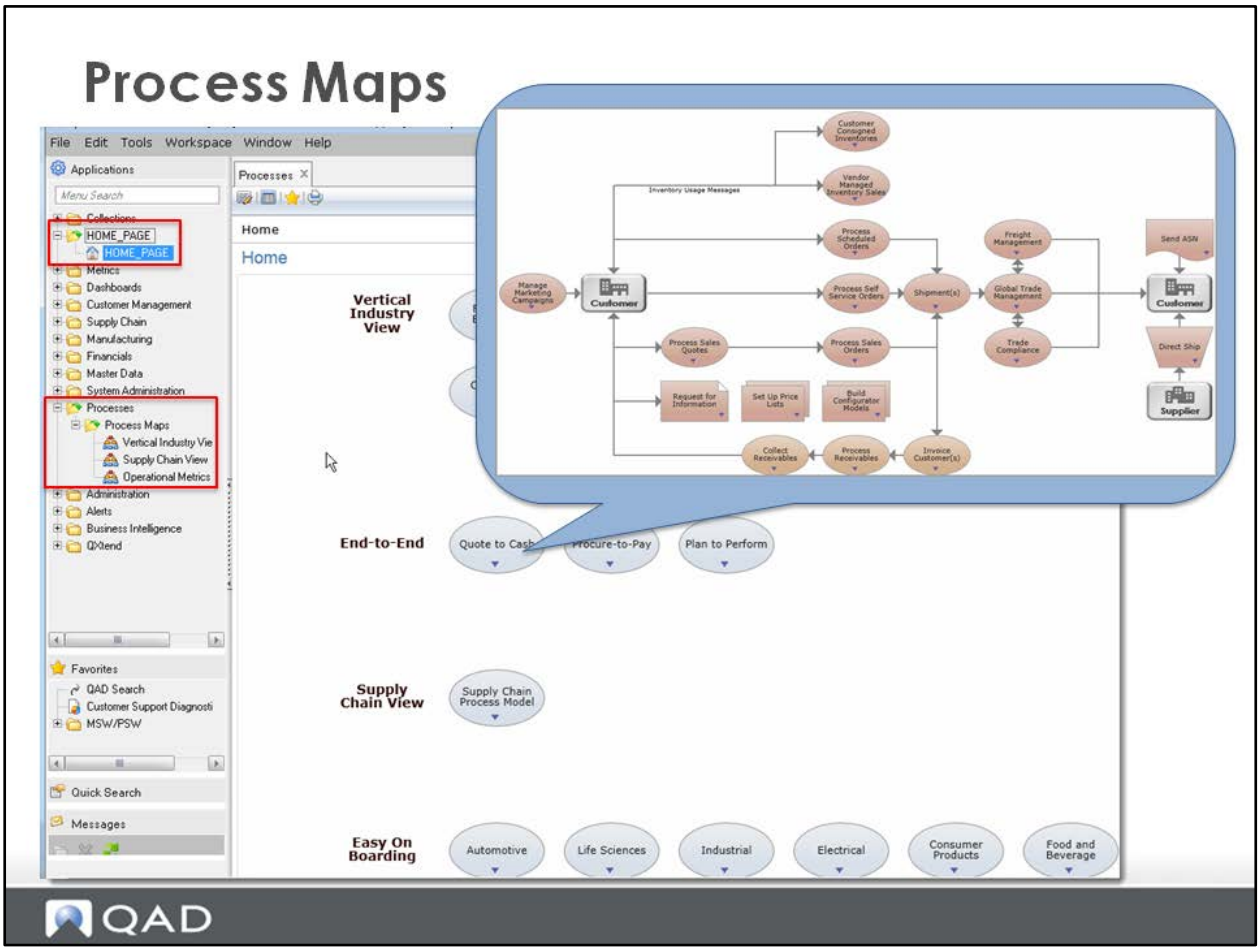
In the .NET UI, your application context is dependent on a domain and entity combination, called a workspace. Workspaces represent the area of your business where you are working. In this class, you are using the 10USA > 10USACO workspace, which represents the 10USA domain and the 10USACO entity.

Most users only use one workspace and, once selected, the workspace is always active by default. When you exit the QAD NET UI, the active workspace is saved and displays when you log in again.

If needed—and if you have the necessary access—you can select a different workspace that displays on the Workspace menu. The check mark signifies the domain that is currently active.

If you want to change workspaces regularly, you can enable the Workspace toolbar, shown above. Click a workspace name in the toolbar to change the current domain and entity. The toolbar is enabled using the Show Workspace Selector option on the Tools|Options menu.

Process Maps

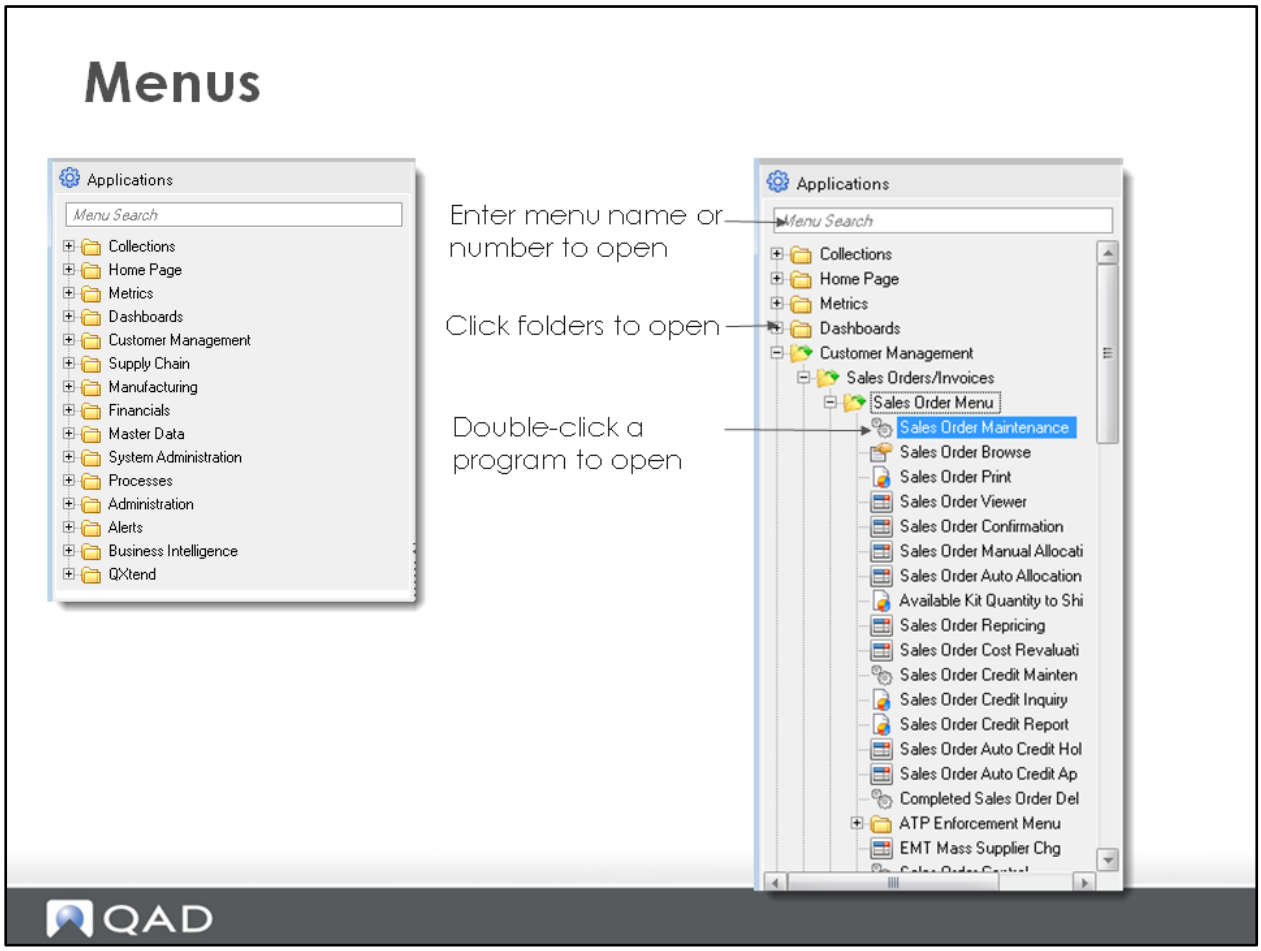


The .NET UI provides many ways to navigate and find programs you are interested in. This slide shows you how to use process maps, which are graphical models of workflows that link to programs, browses, and other process maps using advanced features of .NET technology. Process map nodes provide drill-down navigation to individual programs within process flows.

You can access the process maps from the left menu under Processes|Process Maps. As you see here, there are multiple predefined process views, including:

- Vertical industry
- Supply chain
- Operational metrics

Menus



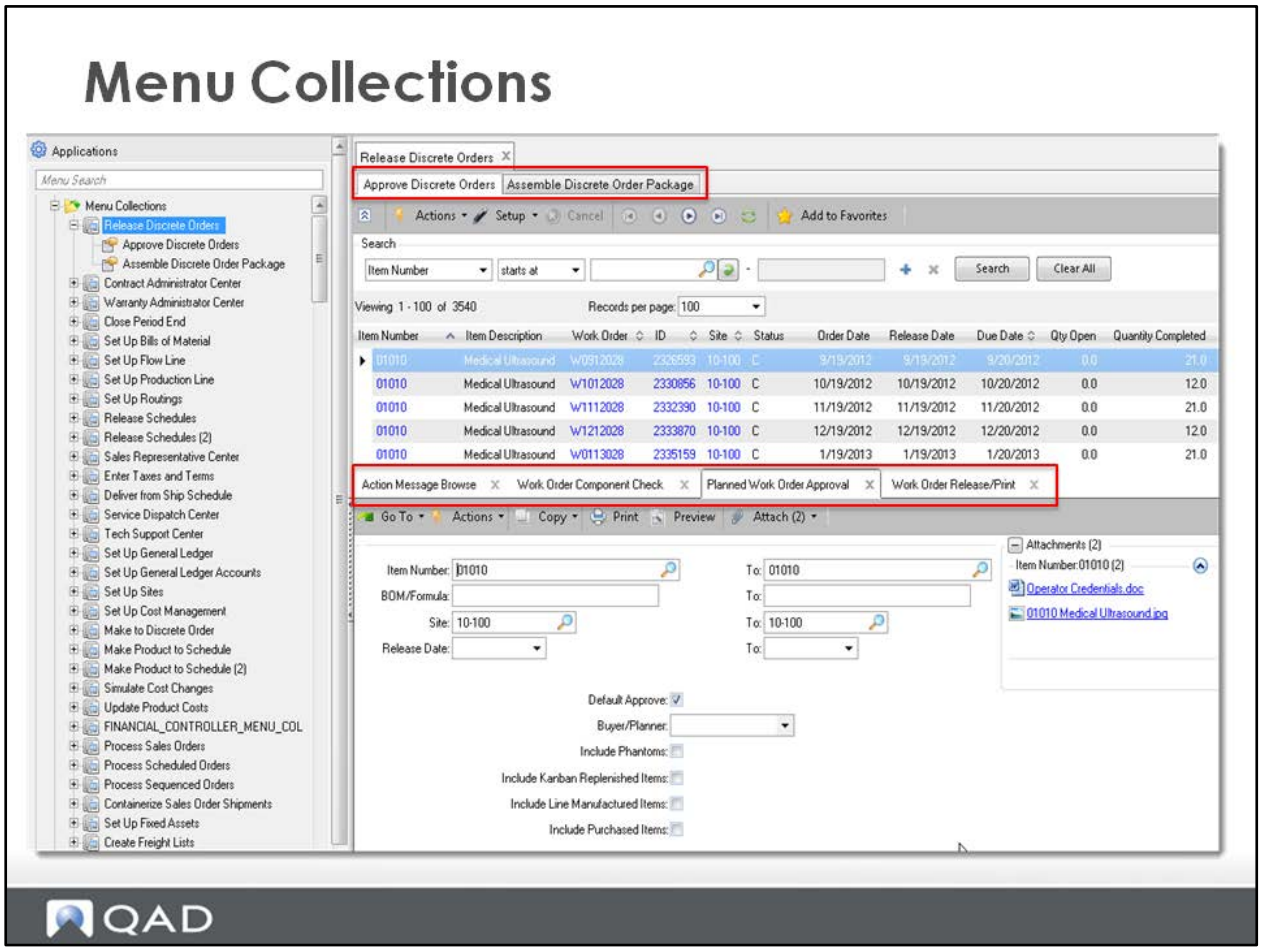
When the system is installed, the default menu organization is automatically loaded. The first menu in QAD EE is the main menu, which groups functions into application-related sections. Each menu folder contains other folders or menus of related business activities called modules.

This example of the menu structure shows the indented format of subfolders and items. Under the Customer Management folder is the Sales Orders/Invoices folder. It contains other folders for various functions required to manage sales orders and related functions such as Customer Schedules and Shipment Processing.

Note: The menu structure for QAD EE was revised from QAD Standard Edition. If you are upgrading from Standard Edition, you should familiarize yourself with the new menu structure. The QAD Financials module was revised from previous releases. Refer to the user guides and training guides for Enterprise Financials if you require in-depth knowledge of the QAD Financials functionality.

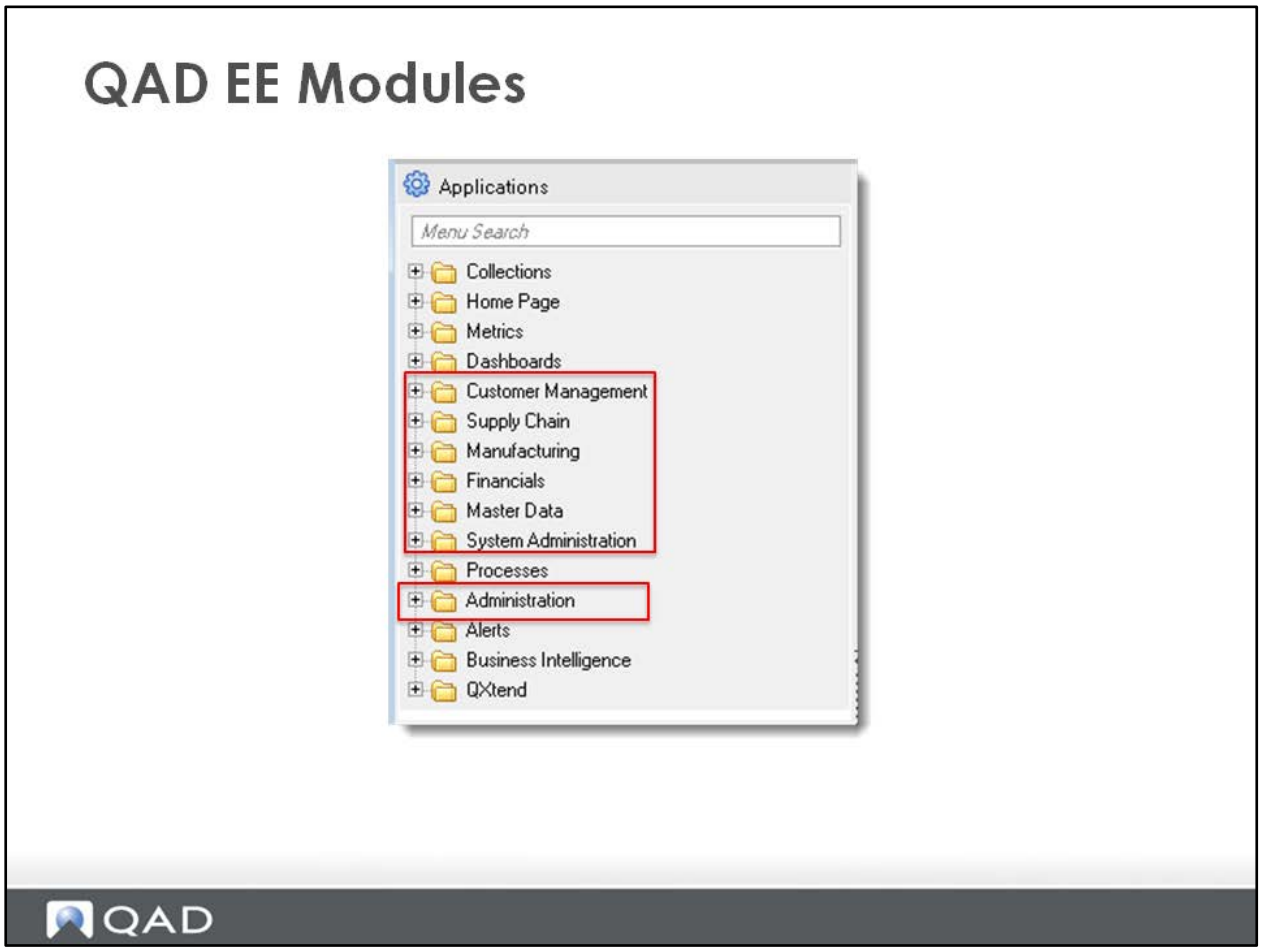
In order to provide enhanced separation of activities, most of the financial control settings are now updated separately from operational controls. For example, Sales Order Control (7.1.24) under the Sales Order menu in Customer Management now has only the operational control settings for sales orders. All of the financial control settings for sales orders are in Sales Order Accounting Control (36.9.6) under the Operational Acct Controls Menu in System Administration.

Menu Collections



Menu collections are collections of menu items such as programs, browses, process maps, and dashboards. Menu collections are stored in the Collections folder.

QAD EE Modules

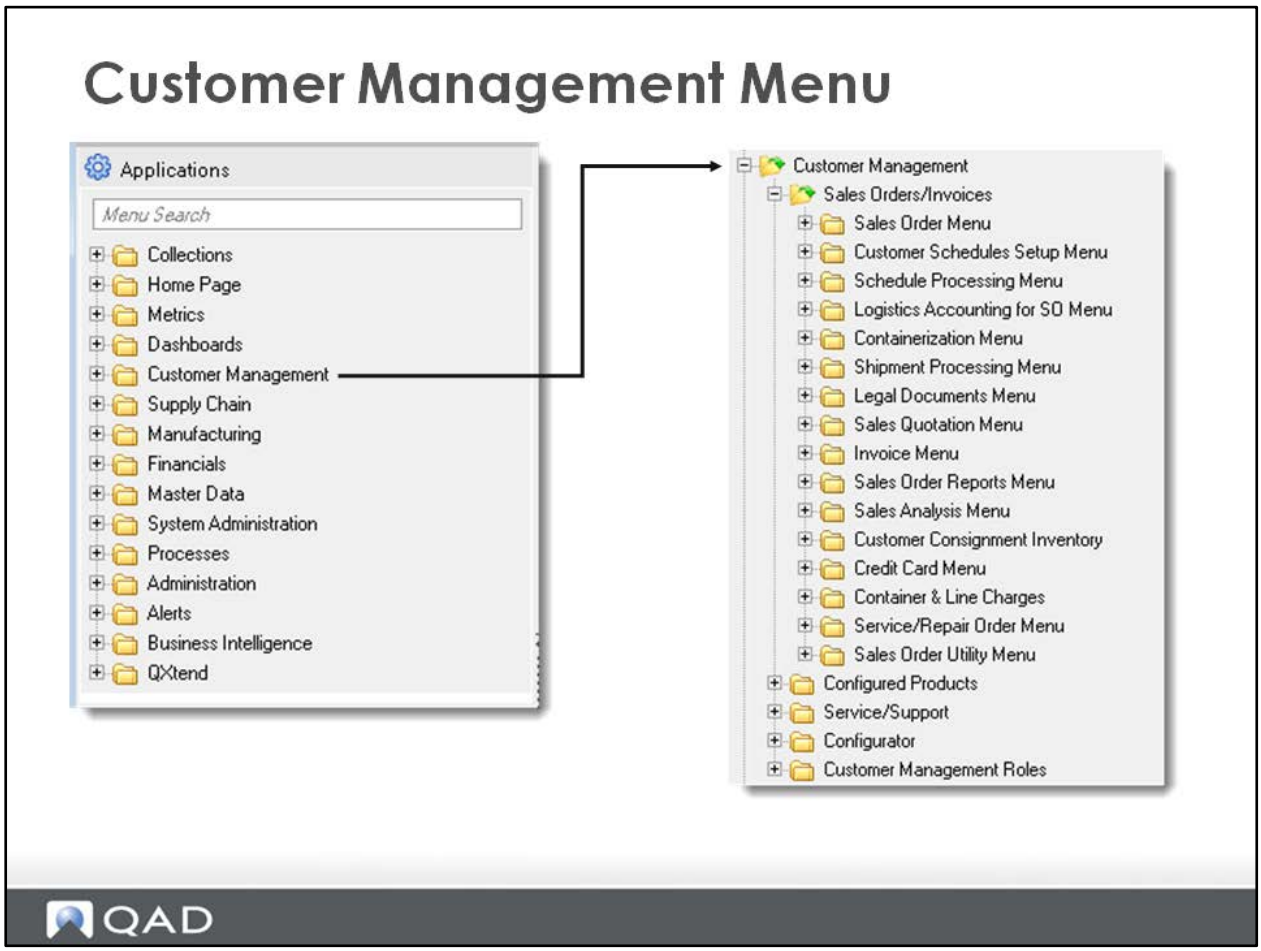


The main menu in QAD EE has seven application-related sections: Customer Management, Supply Chain, Manufacturing, Financials, Master Data, System Administration, and Administration. The figure shows this top-level menu in the .NET user interface.

Each folder contains groups of related business activities called modules and individual programs. This course covers only a small portion of QAD EE application functionality. The system includes many more capabilities than can be covered here. Other QAD classes provide in-depth, module-based training. You can access information and schedules on the QAD Web site.

Within each of the seven sections of the main menu are several top-level menu items. Each of these menu items represents a module.

Customer Management Menu

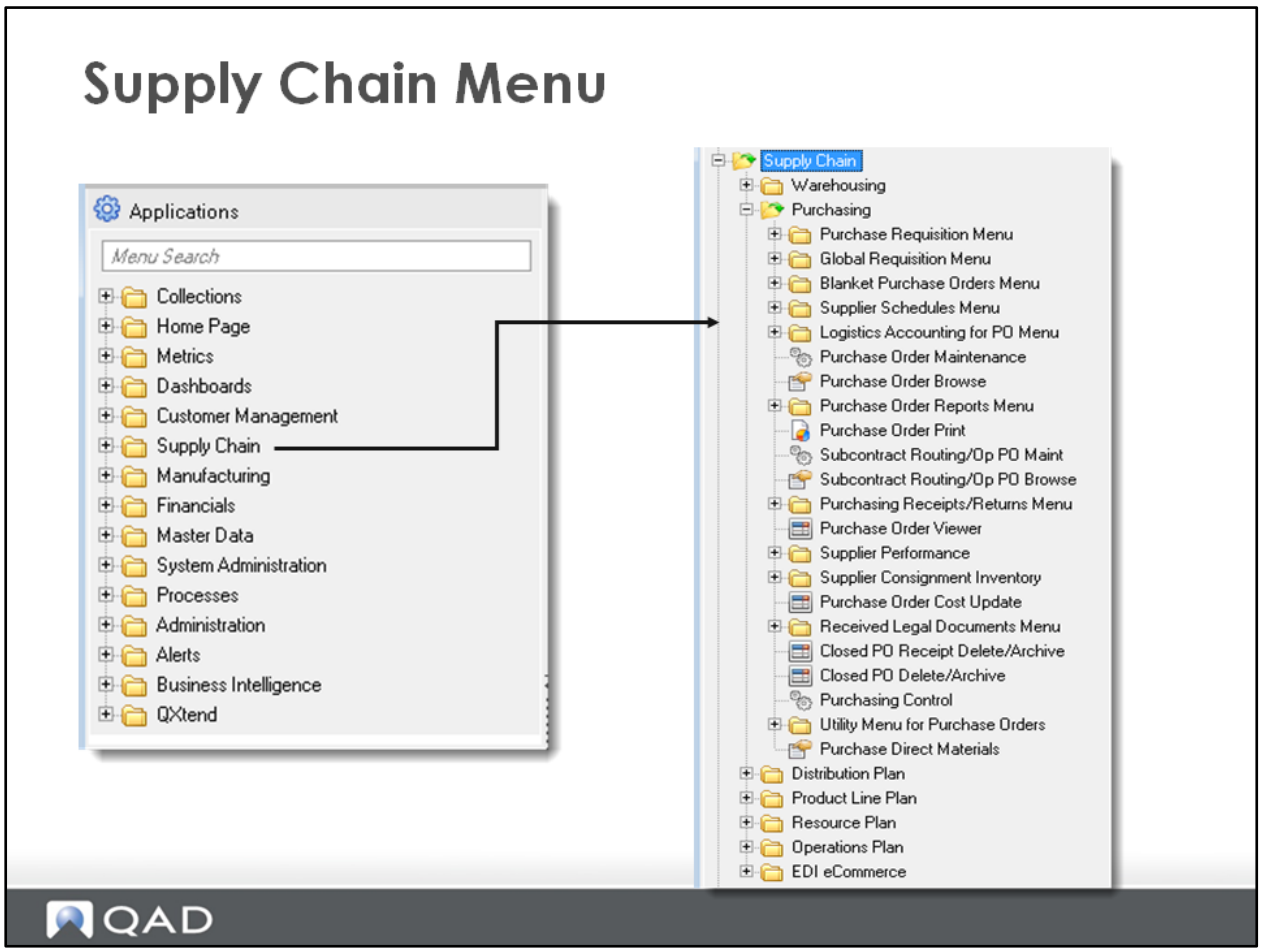


The Customer Management menu contains the menu folders required to manage all aspects of your customer relations.

The three major subdivisions under Customer Management are Sales Orders/Invoices, Configured Products, and Service/Support.

This course provides an overview of the Quotes, Sales Order, Invoicing, Customer Schedules functions, and a simplified shipment process. Other functions, such as Containerization, Consignment Inventory, Configured Products, and Service/Support, are covered in detail in their respective training guides. While these topics are not included in this course, a good understanding of the information presented here is a prerequisite to learning to use these more advanced functions.

Supply Chain Menu

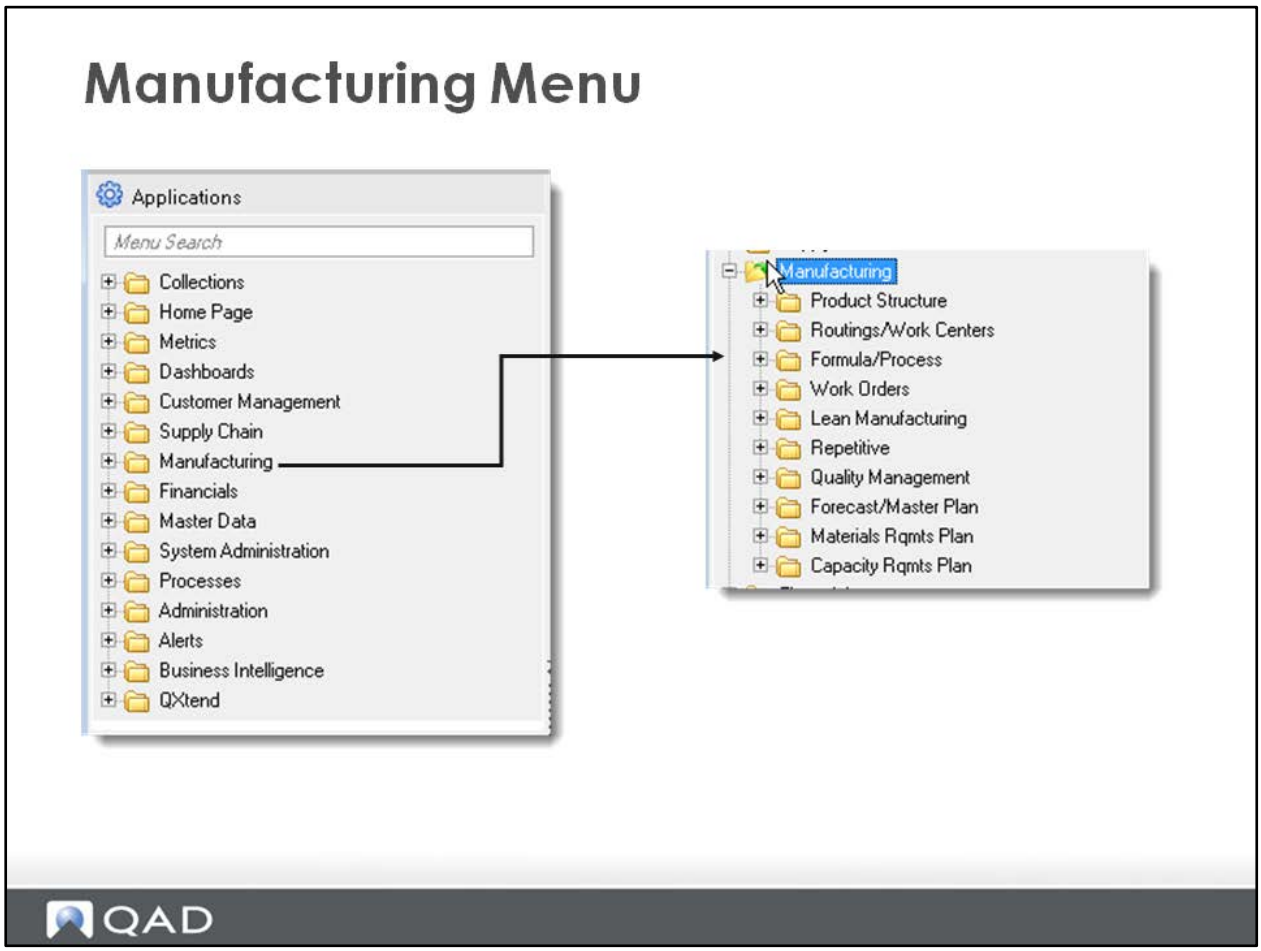


Supply chain management is the process of planning and controlling the movement of goods and information from suppliers and multiple company sites through the manufacturing and distribution processes to the customer.

Modules in the Supply Chain menu include Warehousing, Purchasing, Distribution Plan, Product Line Plan, Resource Plan, Operations Plan, and EDI eCommerce. The activities in these modules are focused on planning so they have significant system-wide impact.

This course covers basic requisition, purchasing, accounts payable activities, and supplier schedules. Separate courseware covers other supply chain functions.

Manufacturing Menu

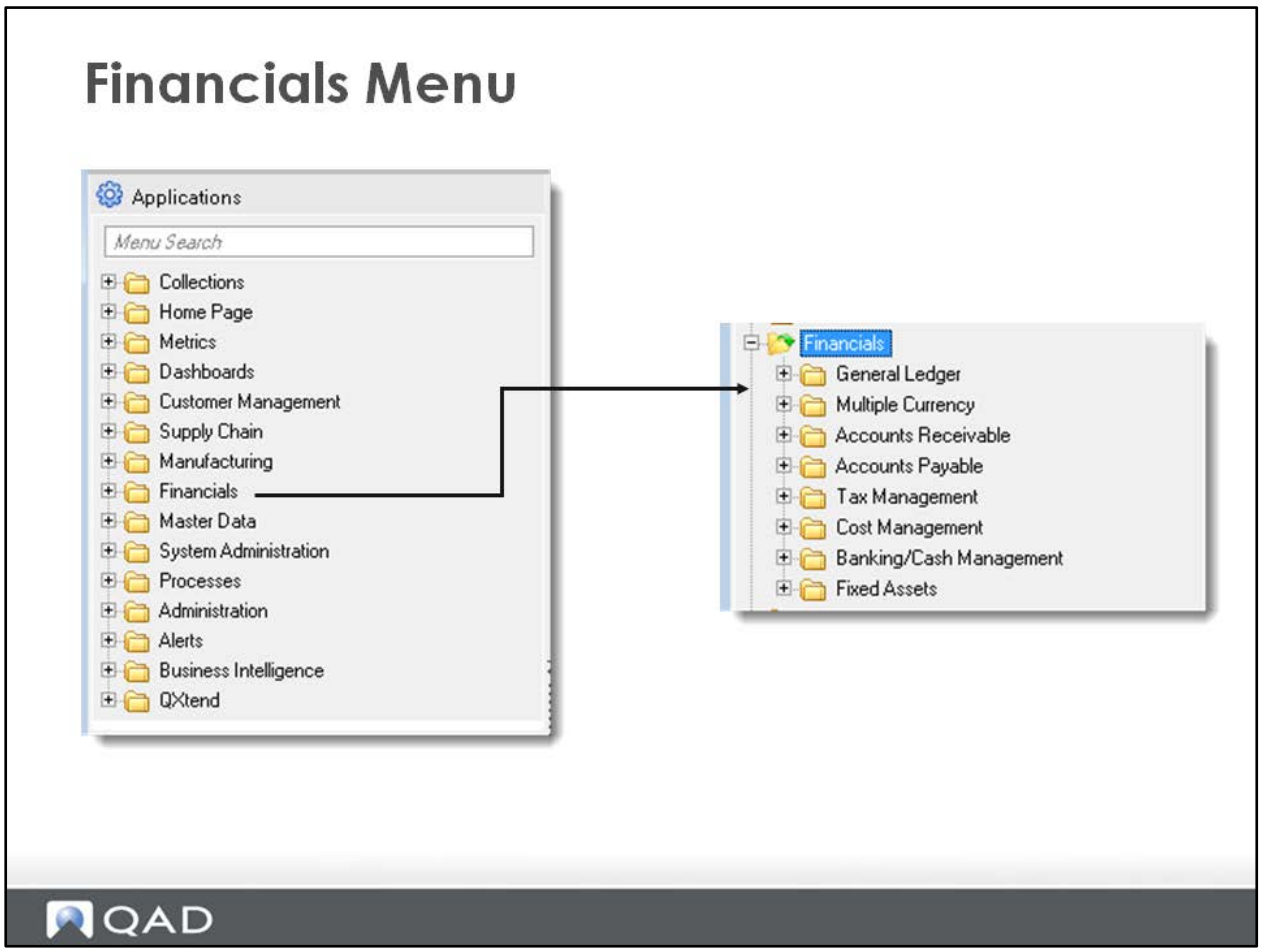


Manufacturing modules manage internal supply and demand. Components and raw materials are moved out of inventory into production (WIP). Work orders process these materials and return them to stores or finished goods inventory locations, or components are moved from production into inventory.

The Manufacturing modules include Product Structures, Routings/Work Centers, Formula/Process, Work Orders, Shop Floor Control (which includes Flow Scheduling and Kanban), Repetitive, Quality Management, Forecasting/Master Schedule Planning, Material Requirements Planning (MRP), and Capacity Requirements Planning (CRP).

This course provides an overview of activities in the Product Structure, Routings/Work Centers, Work Orders, Shop Floor Control, Forecasting/Master Schedule Planning, and MRP modules.

Financials Menu

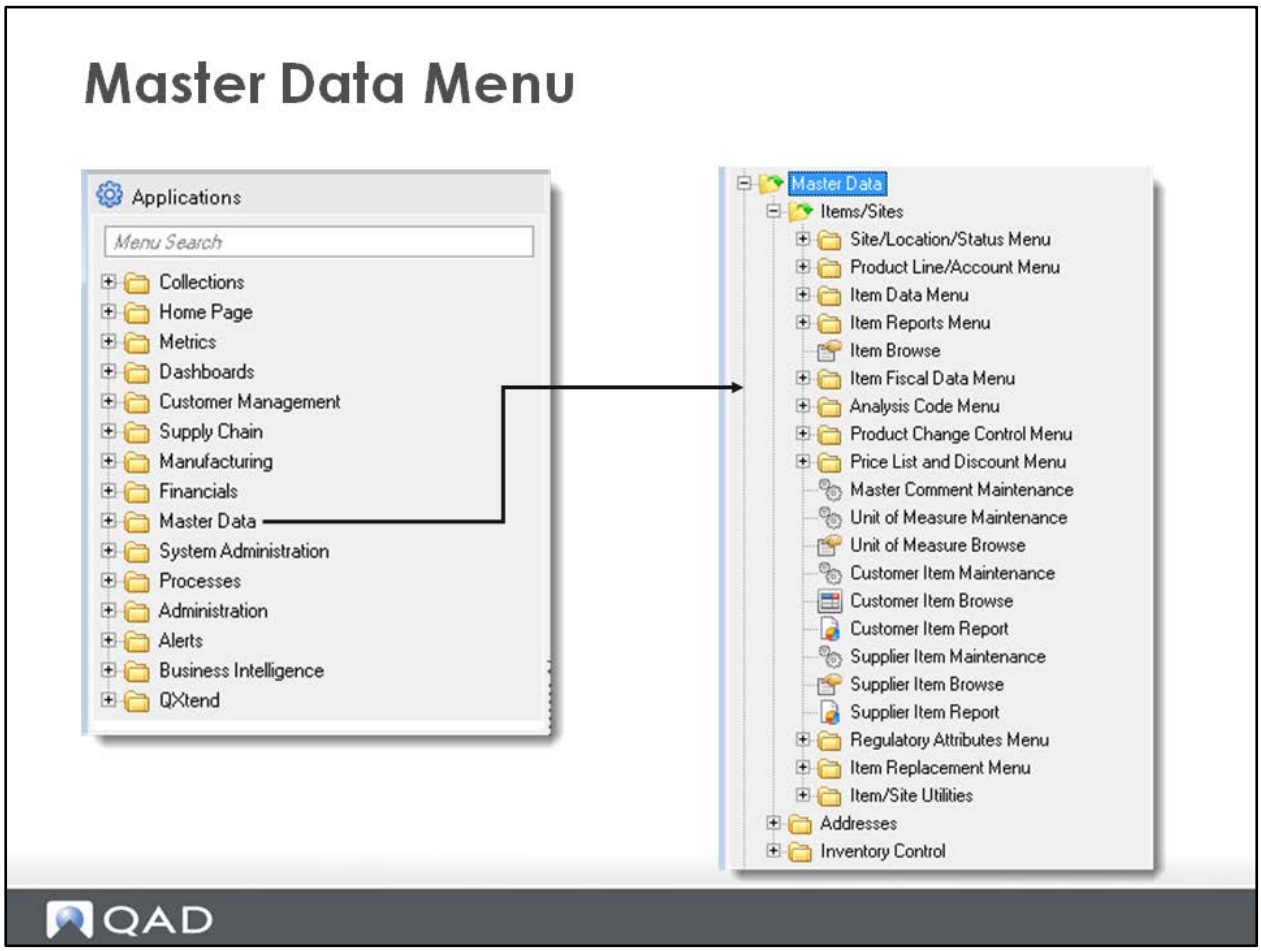


Financial modules support the financial activities of a business and allow you to set up the financial aspects of system administration:

- General Ledger, Accounts Receivable, and Accounts Payable track the financial effects of activities in other modules.
- Multiple Currency, Tax Management, Banking, and Cash Management are used primarily to set up financial data used during financial transactions.
- Cost Management, while having some setup features, is used primarily for cost planning and tracking.
- The Fixed Assets module manages the company's fixed assets from acquisition to retirement.

This course discusses the Accounts Receivable and Accounts Payable modules, generally as they relate to sales and purchasing activities. The broad concepts and tasks needed for system setup are also covered. Detailed courses are provided on Enterprise Financials, as well as some of the specific modules such as Fixed Assets and Cost Management.

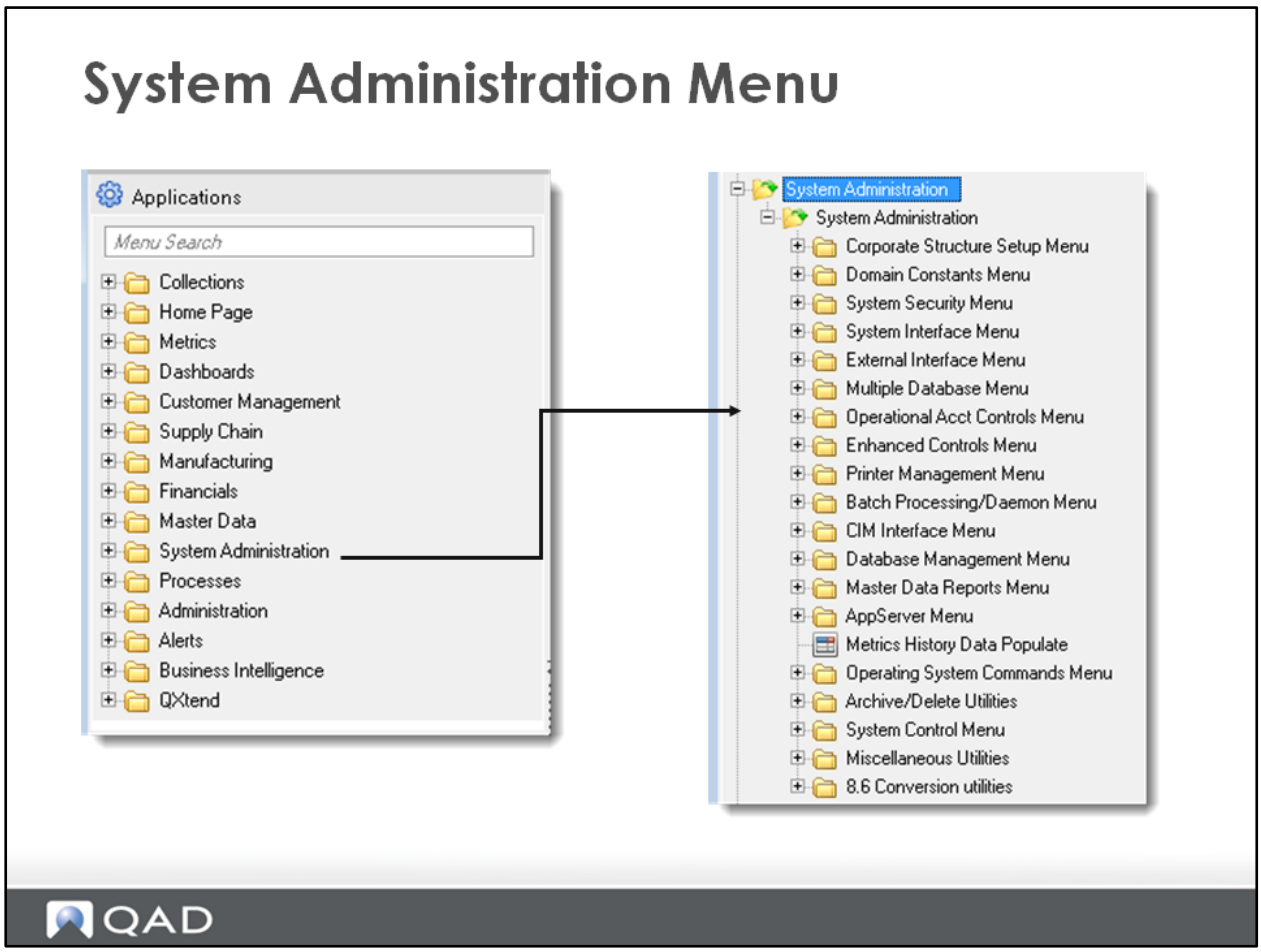
Master Data Menu



Use the modules in the Master Data menu to set up basic business information including item codes, site codes, and inventory control information. Basic address information is defined in Financial setup activities. You use the Master Data Addresses module to define additional operational information about customers, suppliers, and salespersons used during sales and purchasing activities. You also define codes associated with these activities such as country codes and freight charges.

This course covers activities in the Items/Sites, Addresses, and Inventory Control modules.

System Administration Menu

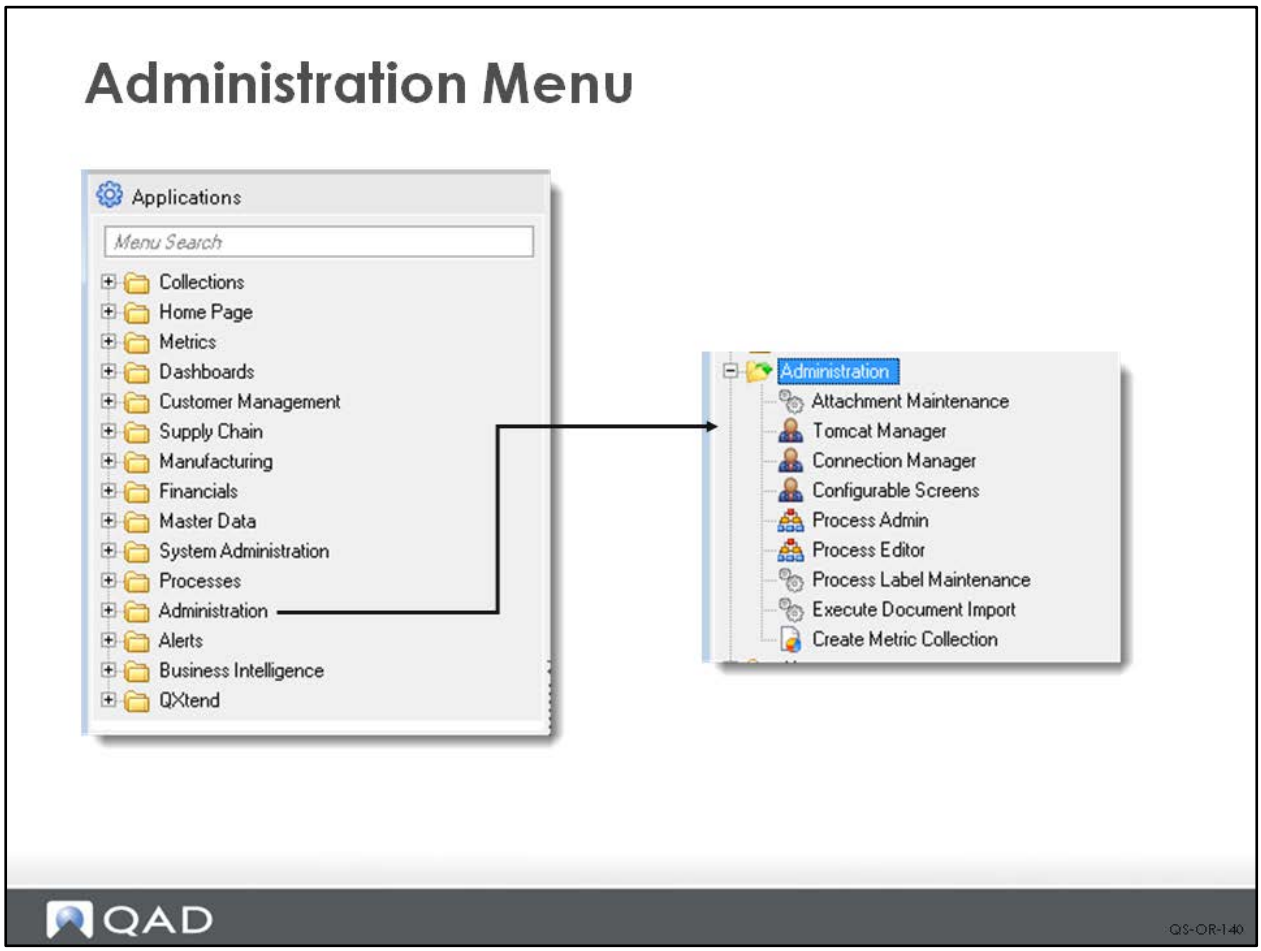


The System Administration folder contains many menus. Most of these menus relate to the technical administration and setup of the system hardware, software, security, and communications. These activities are beyond the scope of this course and are for system administrators only.

However, the Domain Constants menu has several user-defined functions that are covered in this course. Even if you do not have access to the Domain Constants functions, it is important for you to understand the concepts behind them. The Domain Constants menu contains the work day and holiday calendars, reason codes, generalized code validation tables, and sequenced number ranges for various documents.

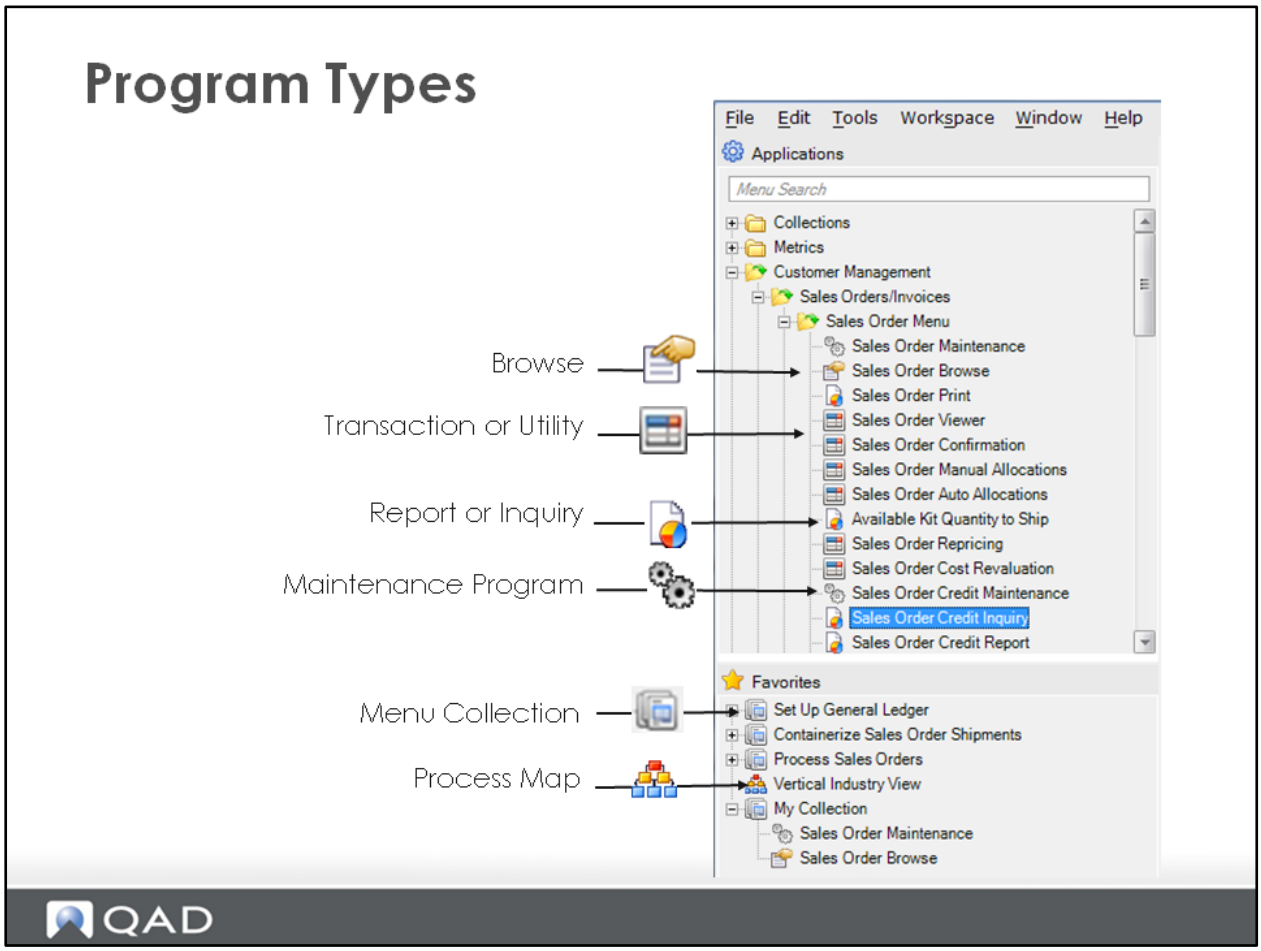
In addition, the concepts underlying the Corporate Structure Setup menu are essential to a high-level understanding of the system as a whole. These concepts, as well as a brief overview of system security, are introduced in the next chapter.

Administration Menu



Use the Administration menu to organize miscellaneous applications and customized programs that your company creates and uses. These topics are not covered in this course. If used, miscellaneous applications and customized programs are normally set up by your company's in-house technical support staff.

Program Types

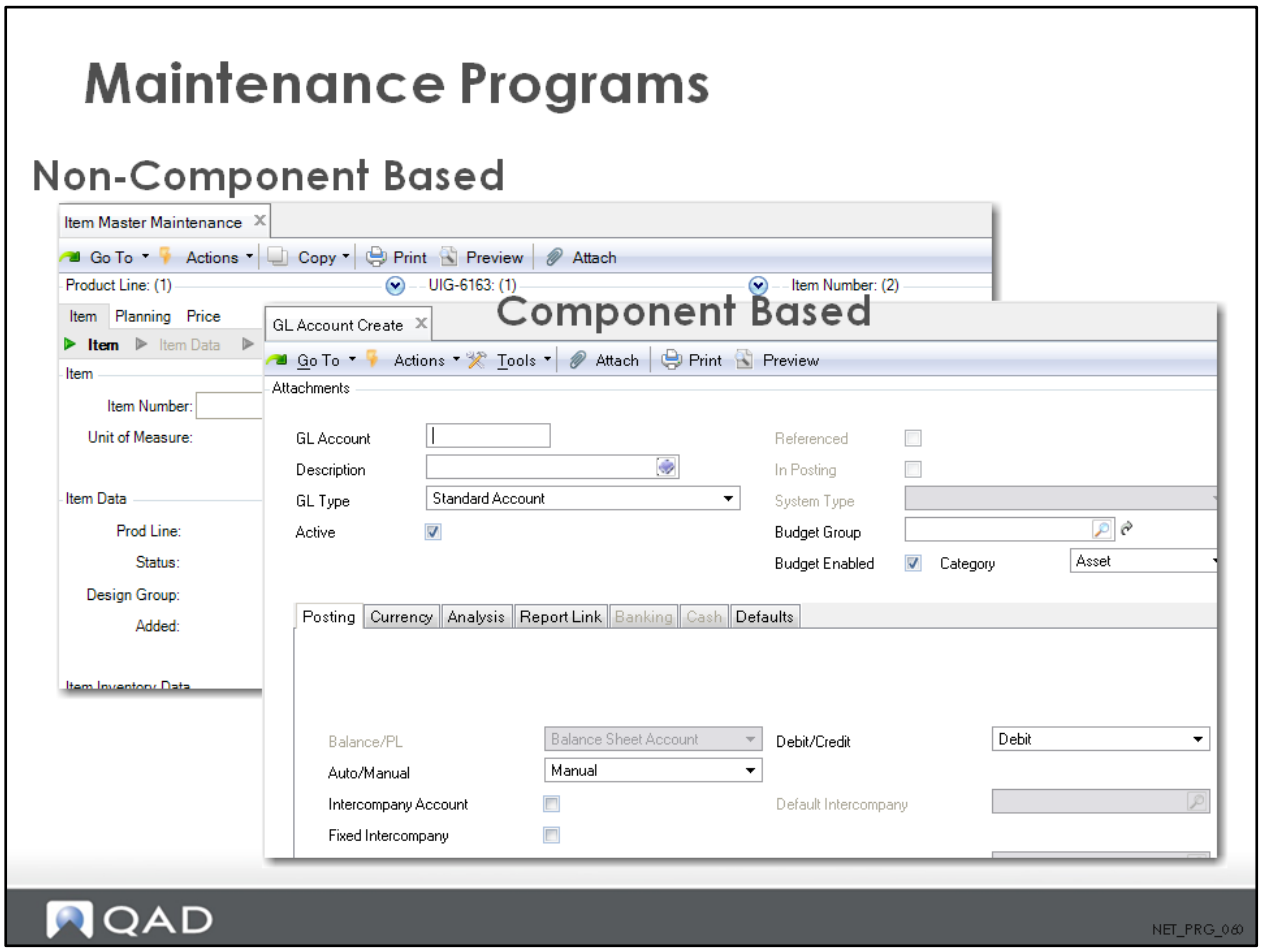


On the menu, a distinct icon indicates the type of program:

- Maintenance programs
- Transactions and utilities
- Reports and inquiries
- Browses and browse collections
- Menu collections
- Process maps

Each type of program maintains a specific type of data within the database. The following pages illustrate the types of programs that you encounter as you use the product during this course. However, be aware that there is an additional distinction between program types, which is described on the following slide.

Maintenance Programs

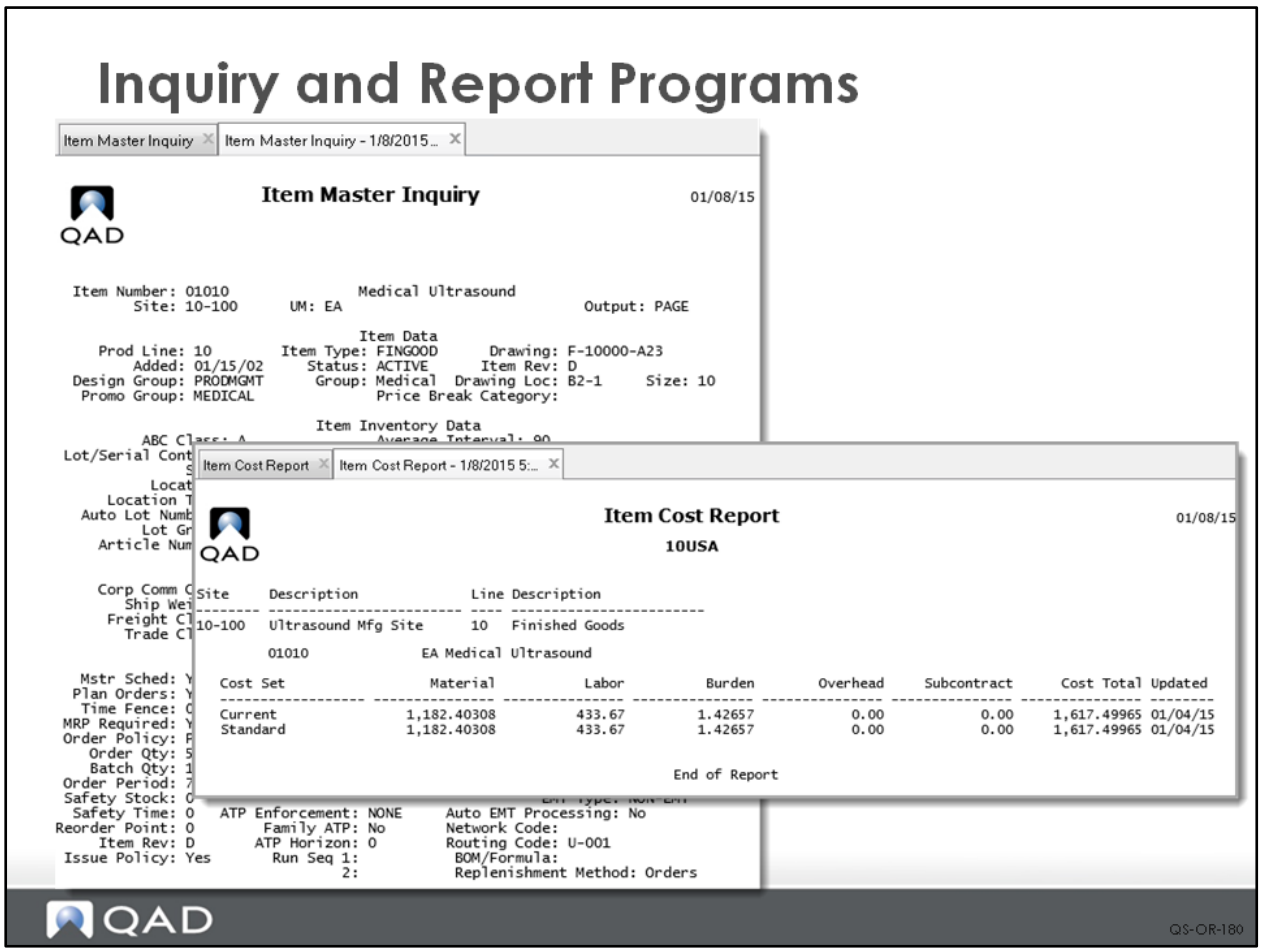


Maintenance programs create and maintain basic codes such as customers, inventory items, GL accounts, currencies, and other data. They are also used to record data that initializes business activity in a module such as sales orders and purchase orders. Most maintenance programs update static data, which is changed infrequently.

Entering data in a maintenance program creates a record in one or more tables controlled by the maintenance program. For example, item records are stored in the Item Master table controlled by Item Master Maintenance.

With non-component maintenance programs, all changes to the record are made in the same maintenance program. In component-based maintenance programs, changes are made in separate Create, Modify, or Delete functions.

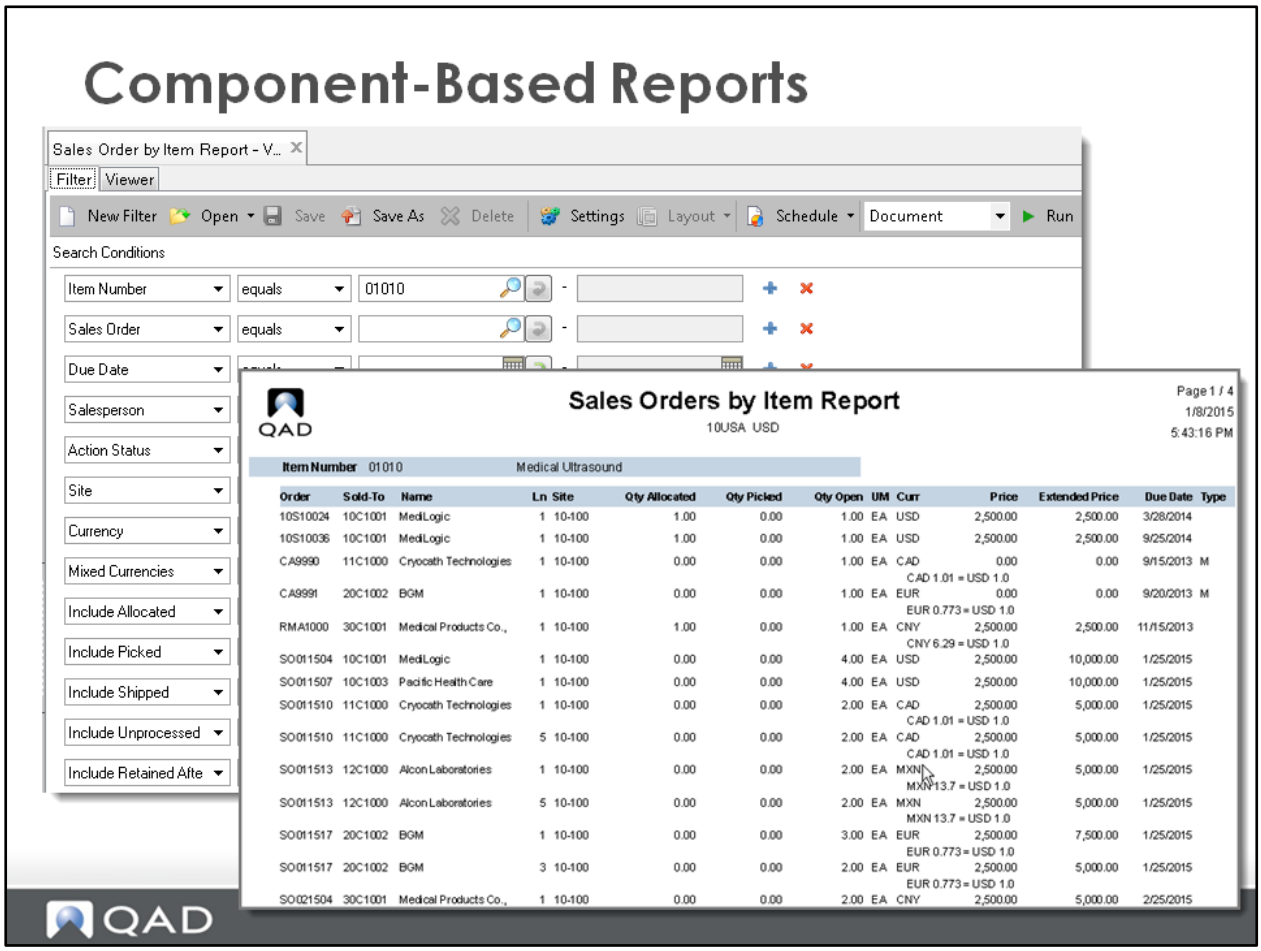
Inquiry and Report Programs



Inquiries and reports retrieve and display database records.

- Inquiries are primarily used to answer specific questions and are typically viewed online, although you can also print them.
- Reports usually provide additional detail to inquiries and you can print reports for a range of data records. Select data by entering a specific range of criteria such as the item number or date. Reports are often sent to a printer or file, but other output options, such as e-mail, are available.

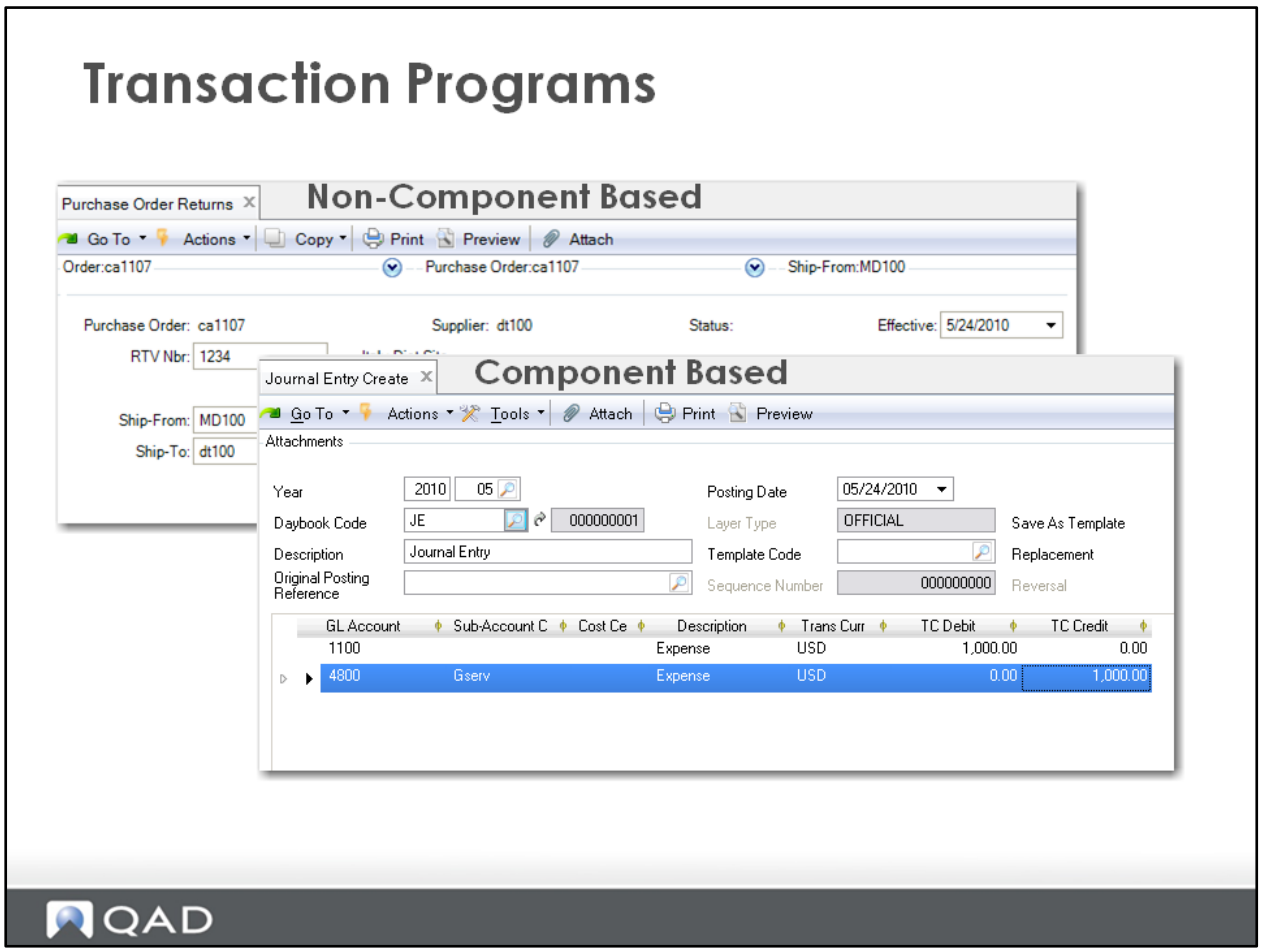
Component-Based Reports



Component-based reports have multiple output options, including viewer, printer, and export to PDF, XLS, and DOC standards. The report output is easy to customize, and you can create an extensive set of reports with unlimited report variants for many output types.

You can run a report immediately, or choose to schedule it to run later. If you schedule a report run, a pop-up window opens to let you enter details for running the report at a later time.

Transaction Programs



Transactions express the core business activities of a company. They control and record activities related to business documents such as sales orders and invoices. Examples of transactions include shipping a sales order or receiving a shipment for a purchase order. Enterprise Financials transactions programs include Customer and Supplier Invoice Create and Journal Entry.

Most data in the database is transaction data. Every day, sales orders come in, purchase orders go out, and work orders make demands on and create material for inventory. These events result in transactions, which are stored in transaction tables. In contrast to control programs, system users constantly update.

Transaction programs often update multiple database records and generate general ledger account transactions. For example, shipping a sales order and posting the invoice:

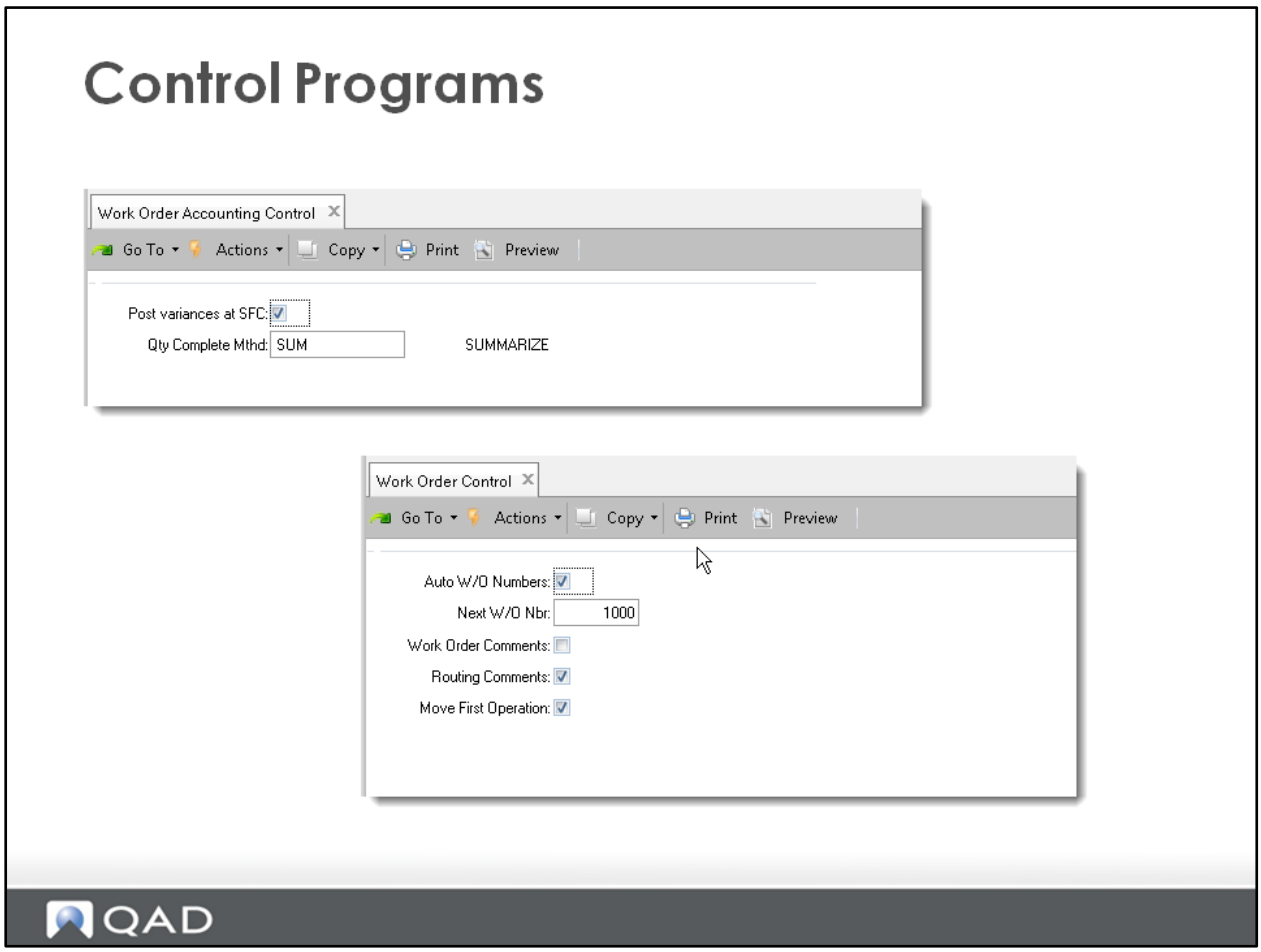
- Updates the on-hand inventory balance for the items shipped
- Charges the value to the cost of goods sold
- Updates the sales ledger for the value of the sale

- Updates the customer’s accounts receivable record

It also books charges to appropriate freight accounts, tax accounts, sales commission accounts, updates the inventory allocations, and updates the inventory quantities available to promise.

Utilities are a special type of transaction that are often designed to be used only once or under special circumstances. For example, many utilities perform one-time data conversions following system upgrades. Other utility programs enable you to manage and to perform calculations in internal databases. In Purchasing, Closed PO Delete/Archive is a database management utility and, in MRP, Net Change Materials Plan causes the system to run net change MRP calculations.

Control Programs



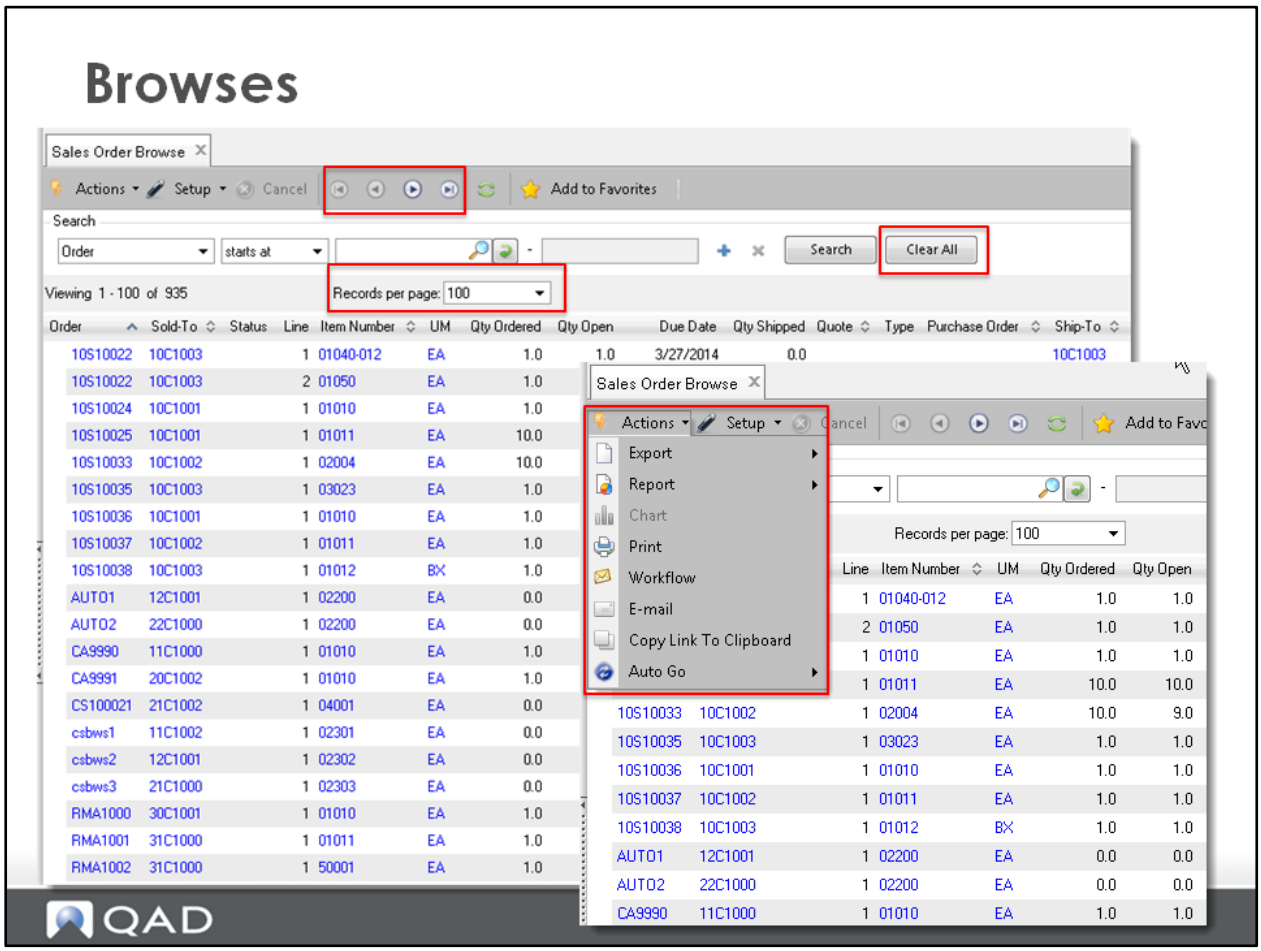
When you implement a module, you record data that the system later uses to control the interactions between users and the database. This implementation data is stored in control tables.

Control tables enable you to adapt QAD Enterprise Applications to your environment. The data and settings in these tables determine how certain programs are displayed, how numbers are assigned to transactions, the GL accounts to use for particular transactions, and so on. In cases where you can manage a typical manufacturing function in more than one way, control settings enable you to establish a preference.

This slide shows two control programs with settings that affect work order processing. To support the enhanced segregation of duties features of QAD Enterprise Edition, financial control settings are updated separately from operational controls. For example, Work Order Control (16.24) under the Work Order menu in Manufacturing has only the operational control settings for work orders. All financial control settings for work orders are located in Work Order Accounting Control (36.9.11) in the Operational Acct Controls menu in System Administration.

Note: The control programs in QAD Enterprise Edition are different than those in QAD Standard Edition, where all control settings for a functional area are updated in one program.

Browses



Browses are inquiry programs with advanced features such as filtering, sorting, and printing. The system supports several types of browses. Complex browses, such as the one in this slide (also called power browses), are listed on the menu. Complex browses can also be used as drill-down browses within programs.

Using browse navigation features, you can:

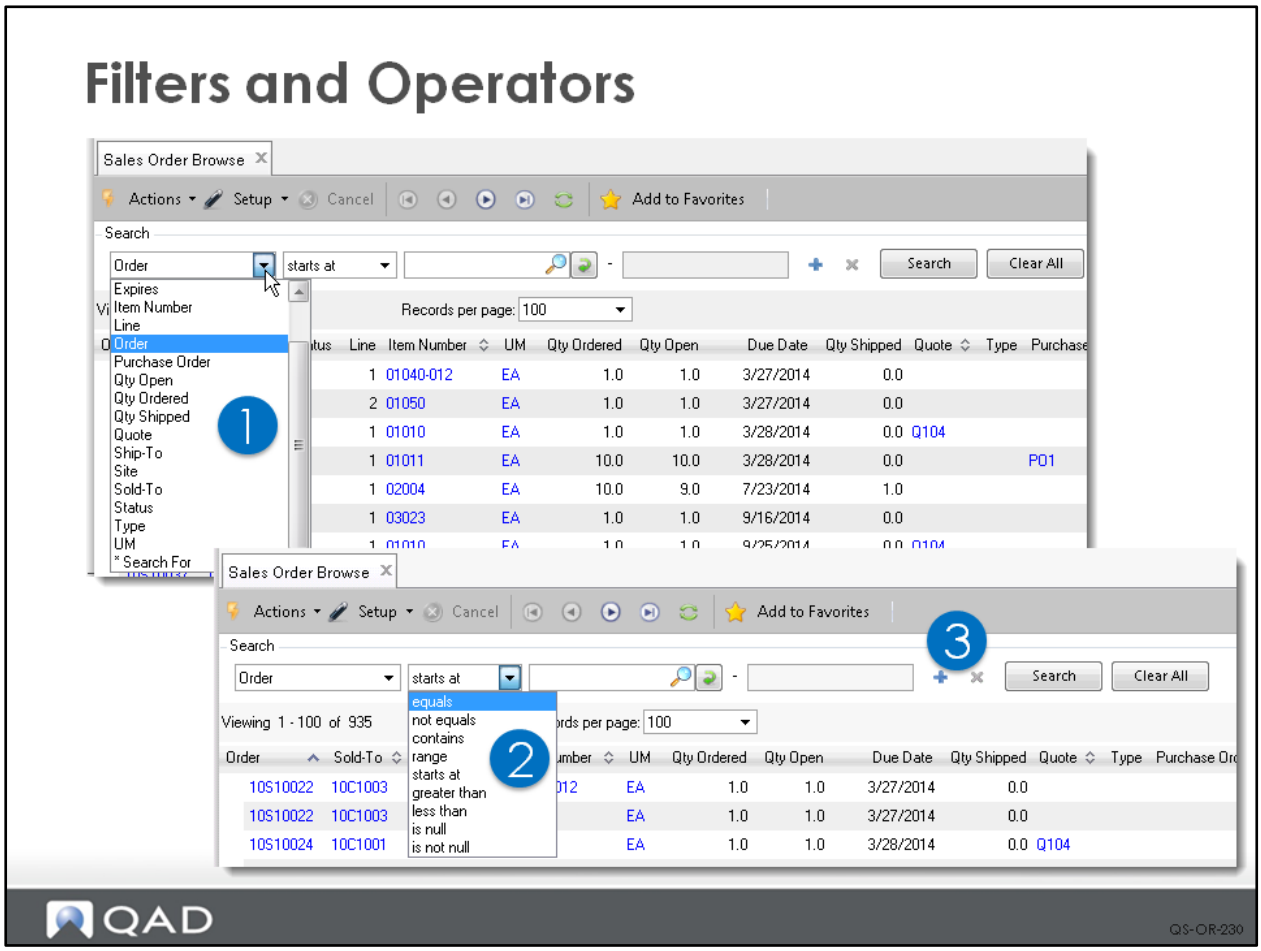
- Click Clear All to clear browse results.
- Use the navigation buttons to move through the records. Use the buttons, from left to right, to move to the first set of records, the previous set of records, the next set, and the last set.
- Use the Records per page drop-down to determine how many records display at one time in the browse. The default value can be set using the Rows Per Page setting in Tools|Options.
- Drag columns by their headings to rearrange the display or click any column heading to sort the records in ascending order; click again to sort the records in descending order.

- Drill down to information, where blue underlined text indicates values for which you can drill down. Right-click on any value to display its associated links such as a more detailed browse, a related program, or an external Web page.

Power browses also provide tools in the Actions drop-down menu that let you:

- Display browse data in graphical form such as pie charts and bar charts
- Export data to .csv or Excel for further processing
- Generate and e-mail a PDF or report, or include the output in a workflow

Filters and Operators



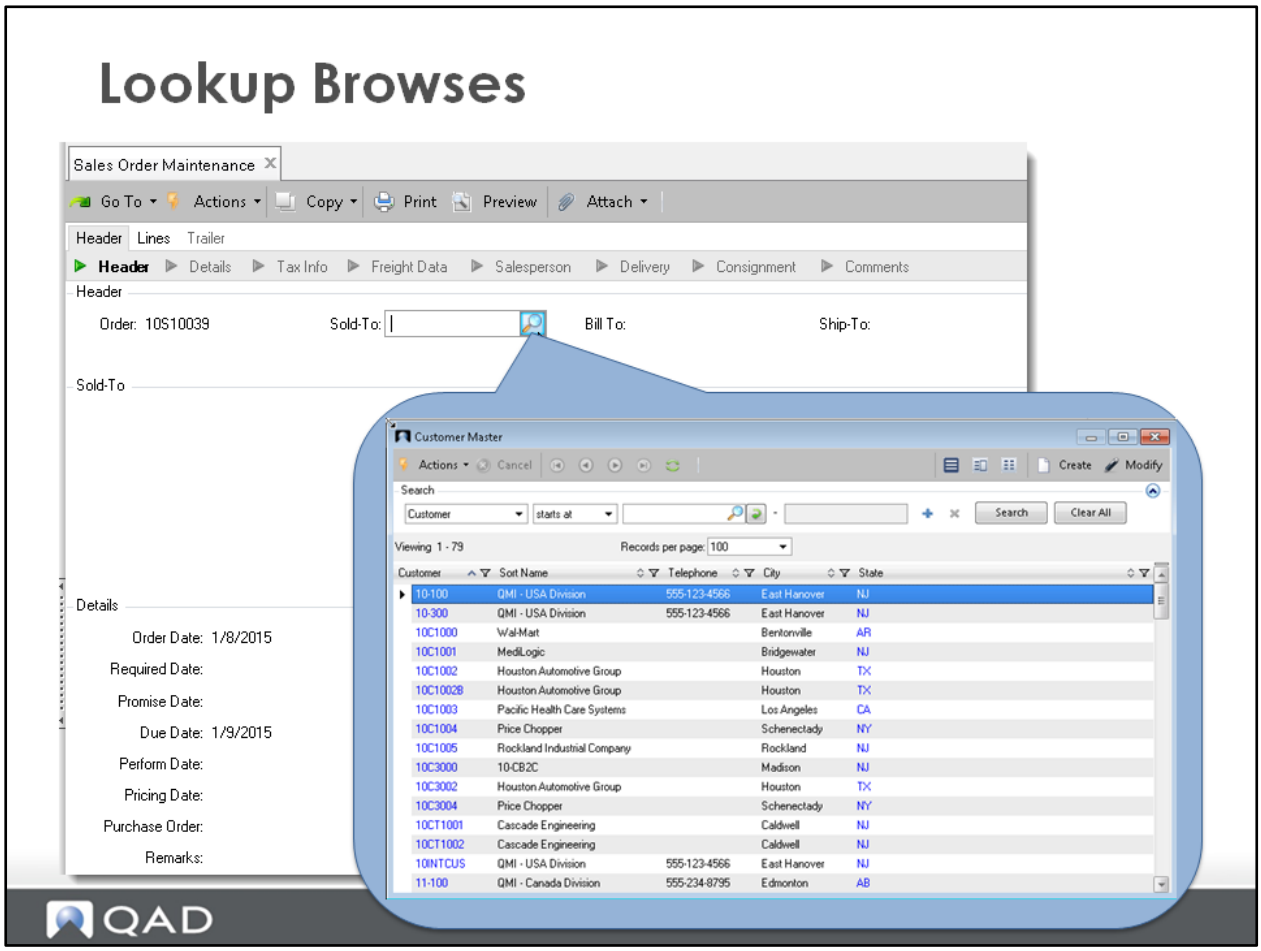
1. Filtering
   If you are using a component browse and stored search criteria exist, you can select the criteria from the drop-down list at the top of the Search area. This sets up the filter criteria to produce preconfigured results. Otherwise,, the search fields display using a default configuration (which is always the case in a non-component browse).
   Note: For non-component browses, you can save a browse configuration to your Favorites and use the preconfigured criteria.

2. Search Operators
   The various operators include equals, not equals, contains, range, starts at, greater than, less than, is null, and is not null. When an equal sign is displayed next to the field, you enter an exact matching value.

3. To refine your search further, click the plus (+) icon to add another search row. You can add as many rows as needed, each with different search values and operators. If you choose the range search

operator, the second search box is enabled for the ending value of the range. Use the x button to remove search filters you no longer want.

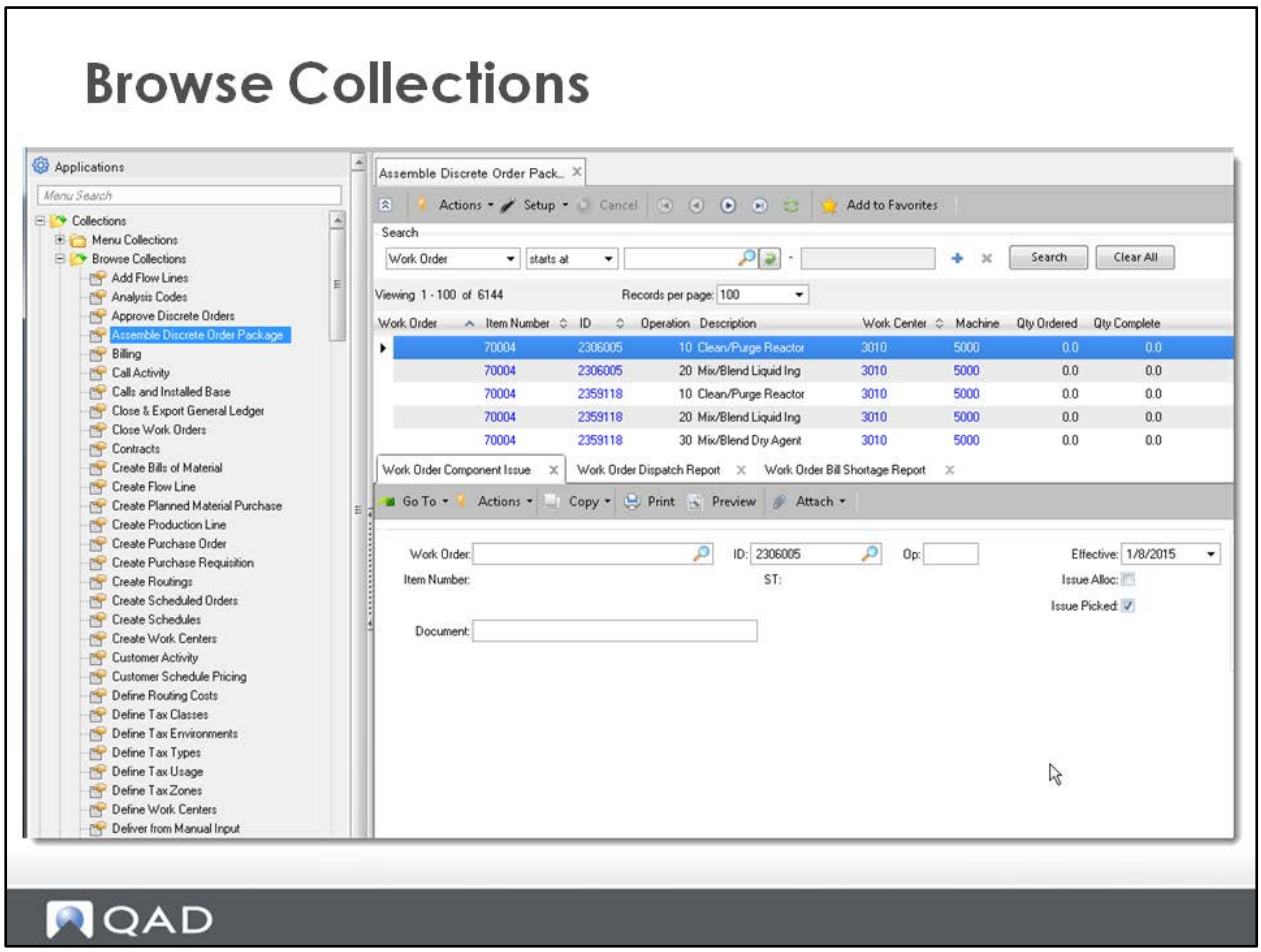
Lookup Browses



Lookup browses return the value selected to the active field in a calling program. The lookup browse has limited functionality. Lookup browses cannot filter, graph, or print data.

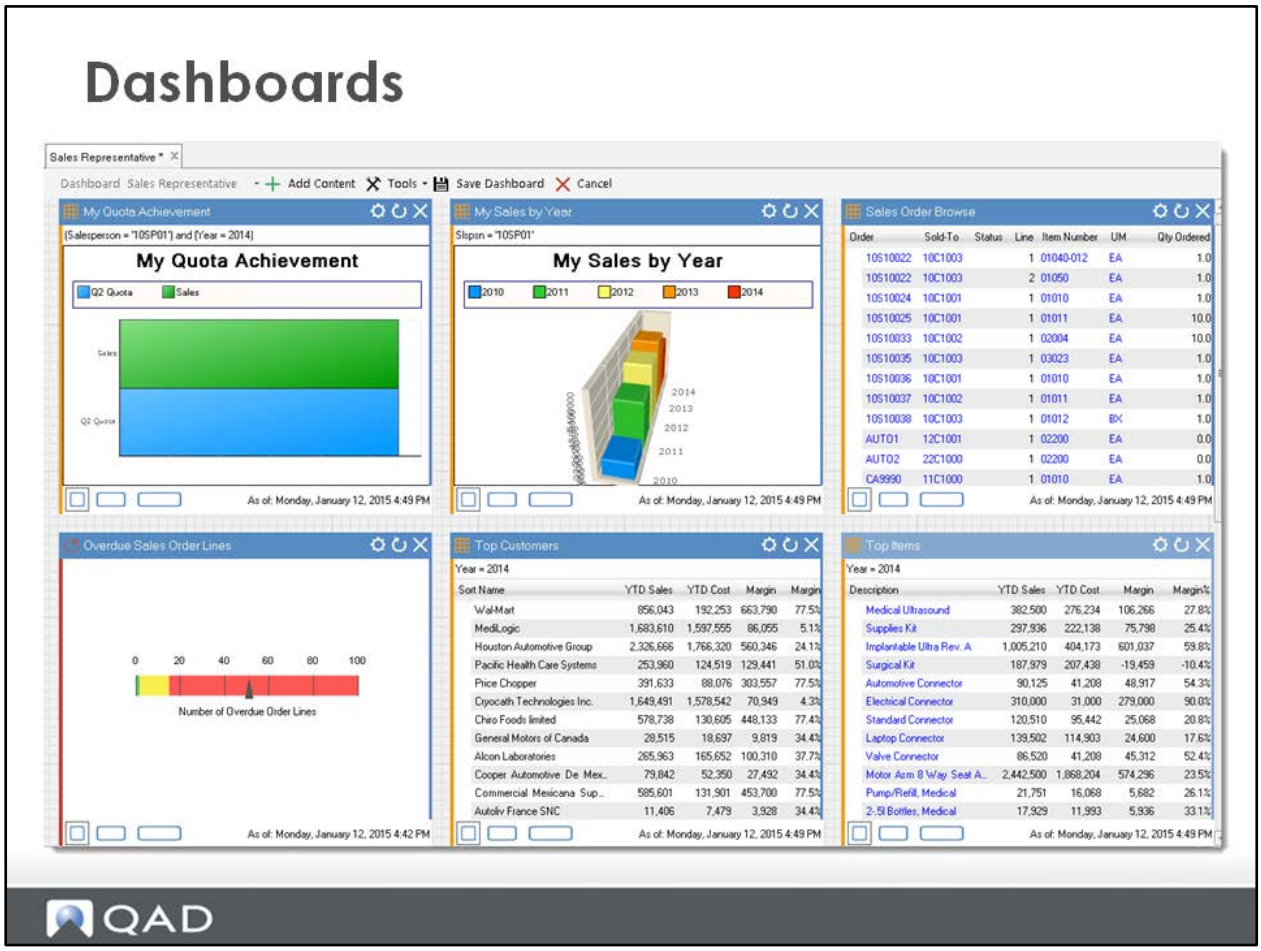
In the example in the slide, when you select the Sold-To lookup in Sales Order Maintenance, a lookup browse for the Customer Master table opens.

Browse Collections



Browse Collections comprise a main browse that can drive selected fields in other linked browses and programs.

Dashboards



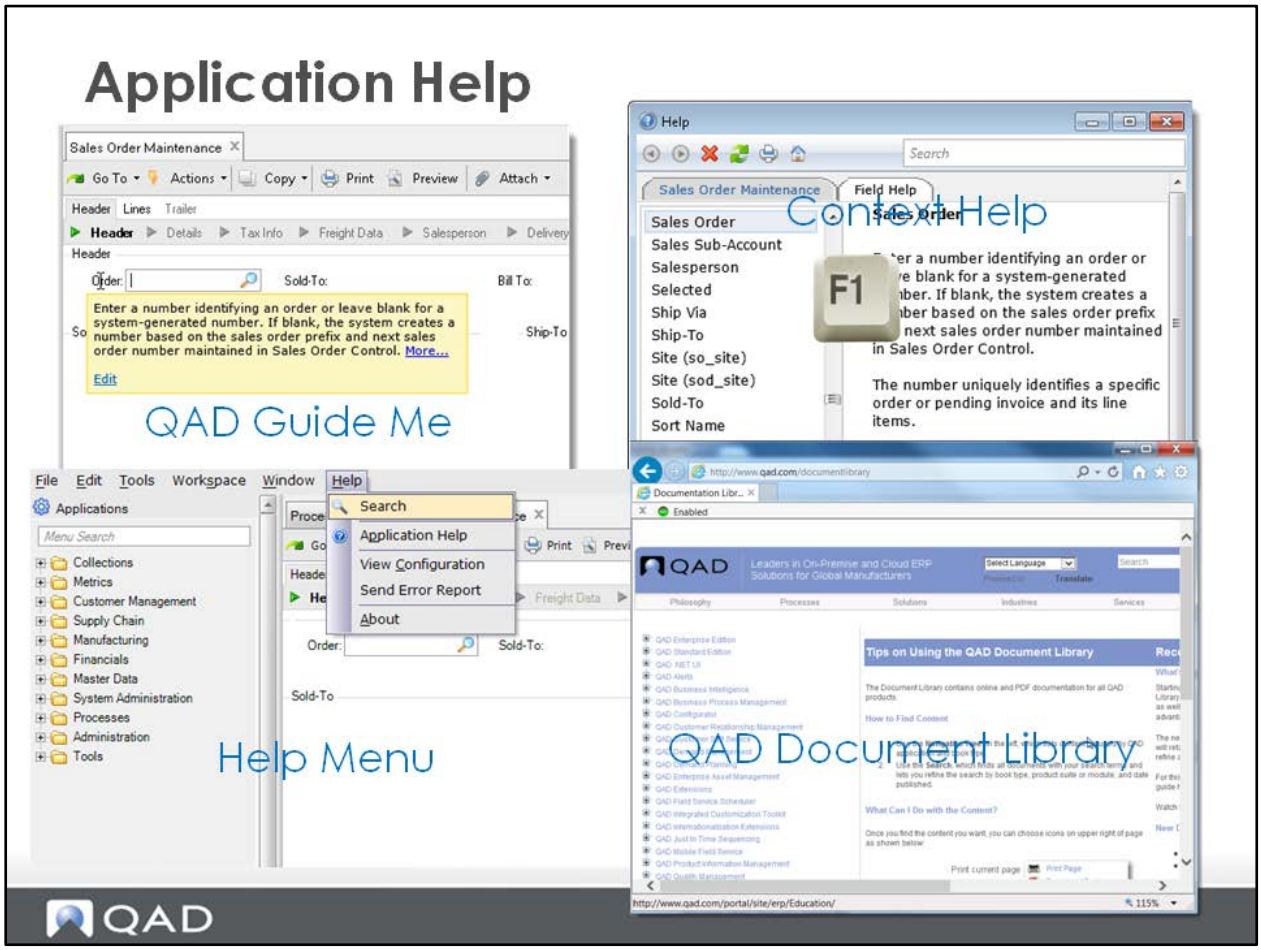
QAD Dashboards bring together browses, Web pages, business intelligence, and metrics within panels. The dashboards are role specific and easy to customize. You can download sample dashboards from QAD Store.

This slide shows an example of Sales Representative dashboard that you could create to review customer orders.

- The dashboard includes panels that provide information from Salesperson Quota Achievement, Sales by Salesperson Browse (using a chart view), Sales Order Browse, the Sales Order Performance metric, Top Customers, and Top Items.
- Each panel offers a quick summary. To find out more information, click the panel to open the item, such as a browse, within which you can drill down to detailed information.
- You can create, copy, and modify dashboards like this one directly in QAD .NET UI. Furthermore, you can save one or more dashboards as favorites and have them open automatically when you log in to the QAD .NET UI.

- As an administrative user, you can publish dashboards for use by others and assign them to one or more user roles defined in the system.

Application Help



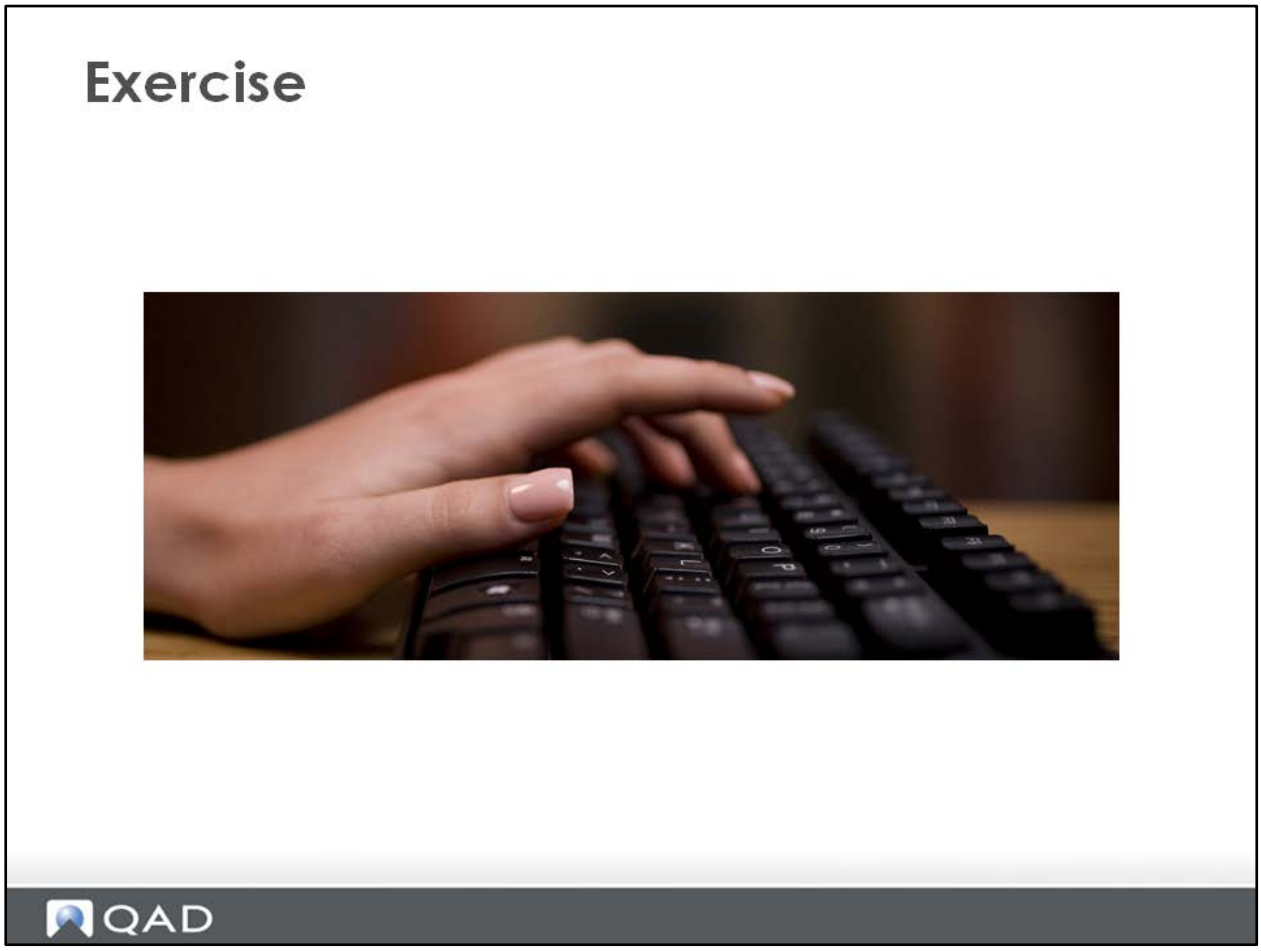
- **QAD Guide Me**
  The QAD Guide Me feature provides immediate mouse-over descriptions of fields. Hover the mouse over a field to see its description. Click More to expand the description.

- **Context Help**
  Press F1 on the keyboard to display the help for the current program or field.

- **Help Menu**
  Search: displays a panel where you can search through field or program help
  Application Help: available when your cursor is in a field. Choosing it displays the relevant field or program help.
  View Configuration: opens a window that displays various configuration settings that are useful for system diagnostics.
  About: displays information about the QAD .NET UI version, the time at which the session started, and the total amount of physical memory used.

- **Document Library**
  The QAD Document Library stores user documentations, training guides, and demo guides for all QAD products. The user documentations include user guides, installation guides, release notes, and technical references.
  You can access QAD Document Library within QAD EE through the hyperlink at the bottom of program help page. The Documentation Search link in the context menu of each process map node also leads you to the relevant content in the QAD Document Library.
  To access the QAD Document Library outside of QAD EE, use the URL:
  http://documentlibrary.qad.com
  Use the left pane to navigate the guides by product or use the search functionality to search for content.

Exercise



These exercises and discussion questions help you to become familiar with using QAD EE and navigating the user interface.

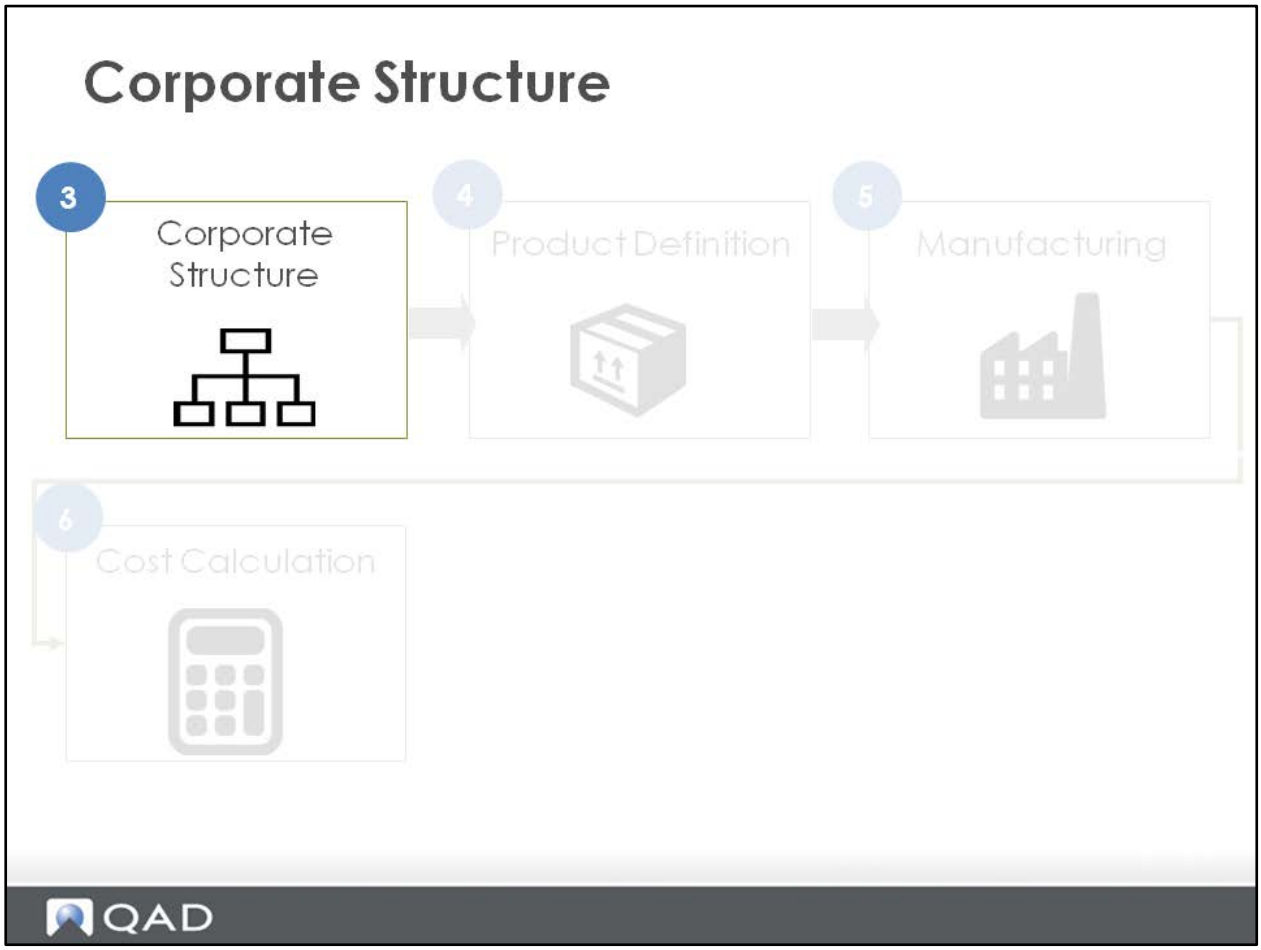
1. Sales Order Control (7.1.24) is an example of what type of program?
2. Create a custom menu by dragging several programs into the Favorites section of the UI.
3. Open Sales Order Browse (7.1.2). Highlight any order and drill down by double-clicking a sales order number. In the Sales Order Maintenance screen that opens, click the Sold-To lookup.
4. Use Sales Order Browse and limit the output of the browse to orders for a specific customer. What filter did you use? What operator did you use? Send the output to an Excel sheet.
5. Run Sales Order Browse and rearrange the columns. Group the results by Sold-To.
6. Go to Supplier Invoice View (28.1.1.3) and display a component-based browse. Try rearranging the columns by dragging them to new positions. Click the up or down arrow in the column heading to re-sort the browse.

7. Select GL Account List (25.15.1.10), run the report, and send the output to a printer. If you do not have access to a printer, you can view the output on your monitor.

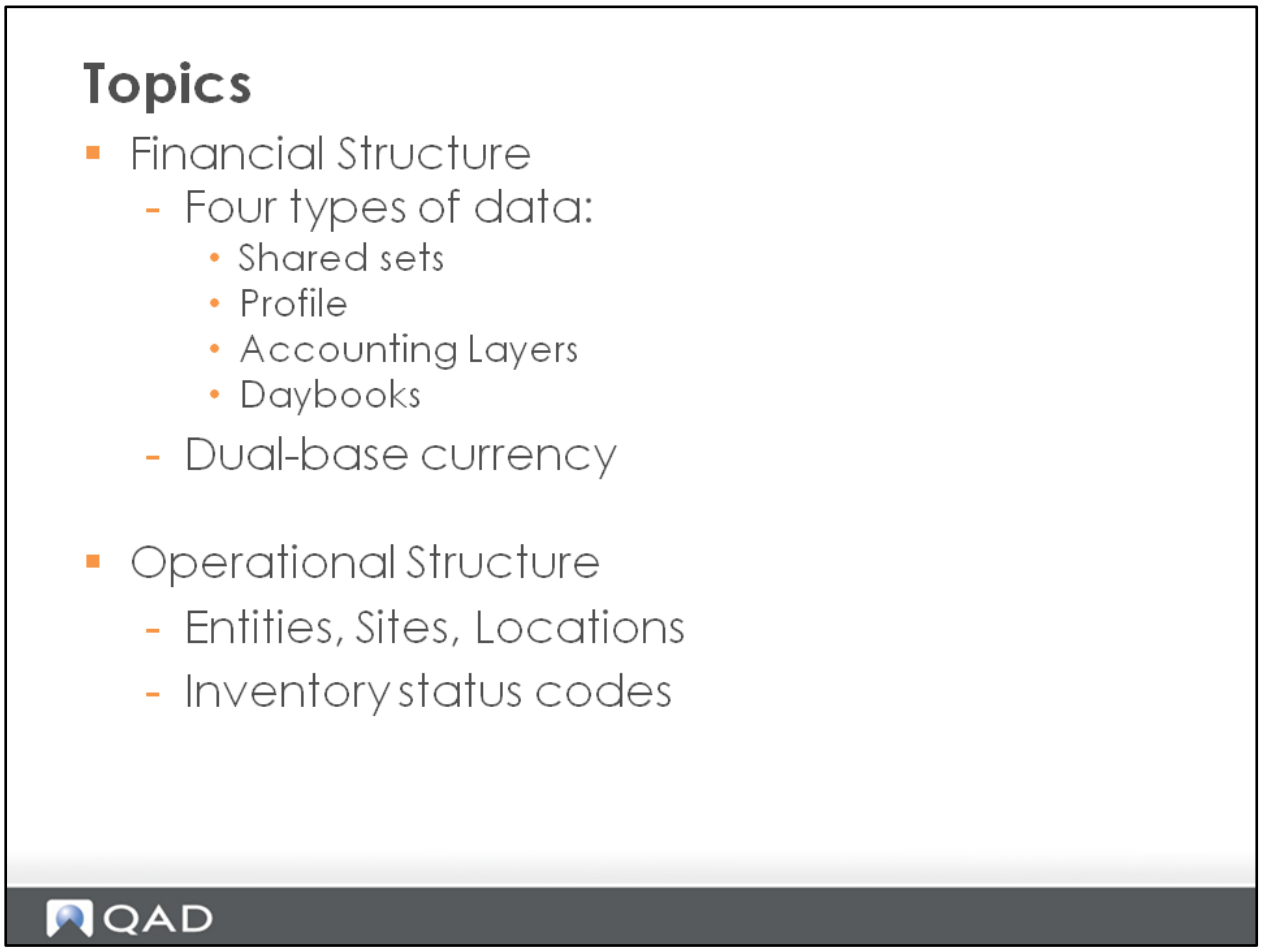
CHAPTER 3

Corporate Structure

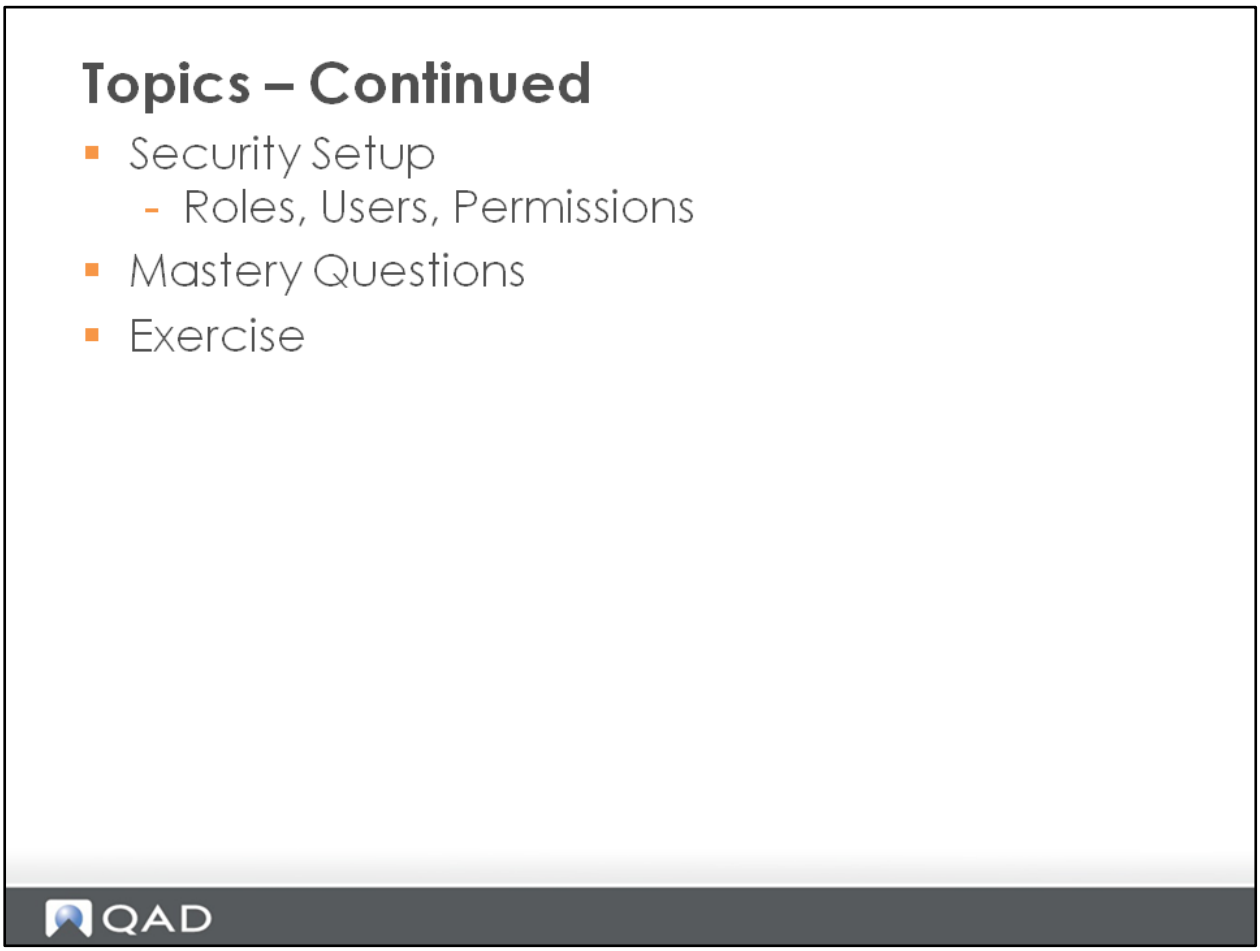
Corporate Structure



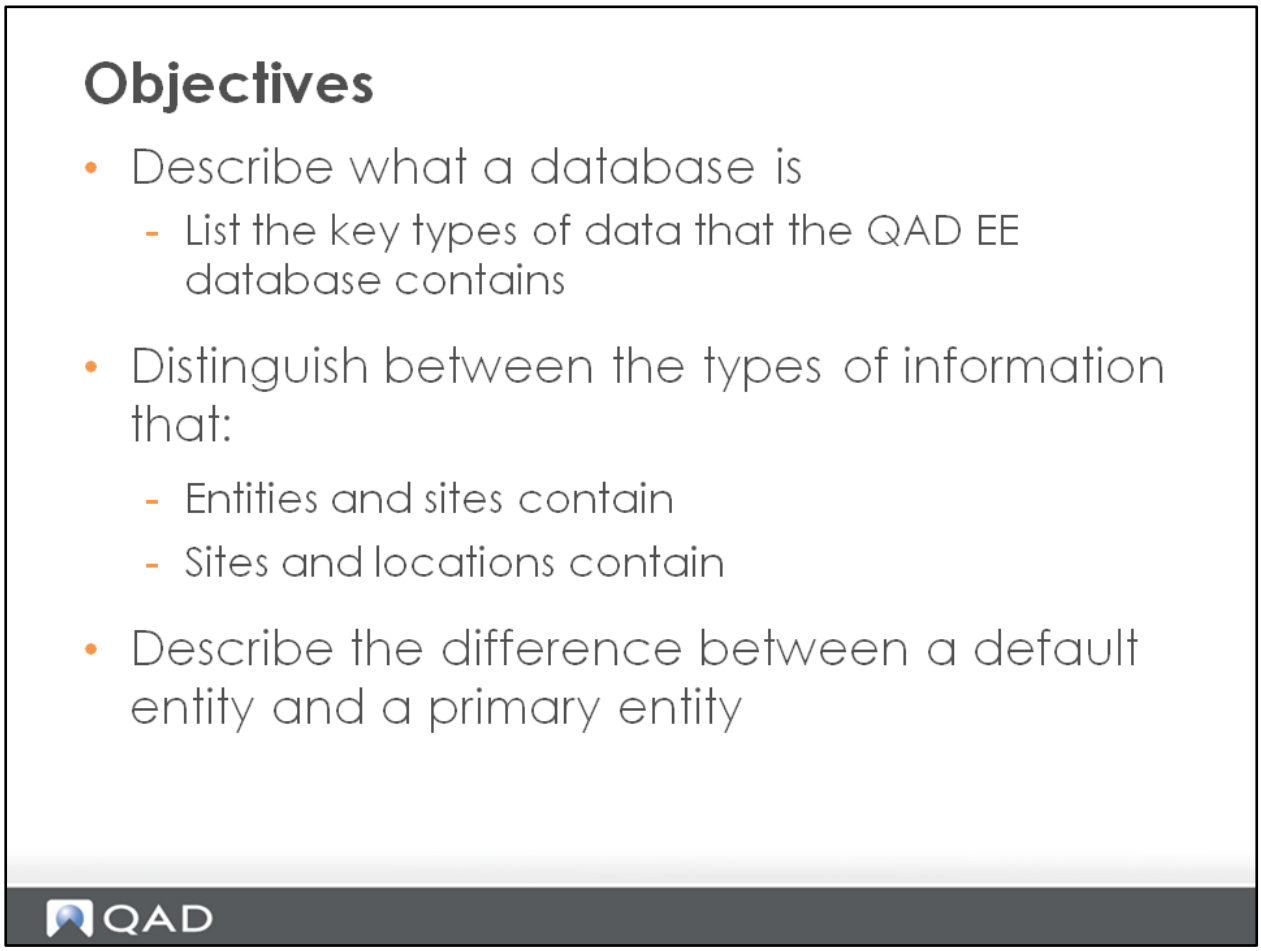
Topics


Topics
Financial Structure
Four types of data:
Shared sets
Profile
Accounting Layers
Daybooks
Dual-base currency
Operational Structure
Entities, Sites, Locations
Inventory status codes
QAD

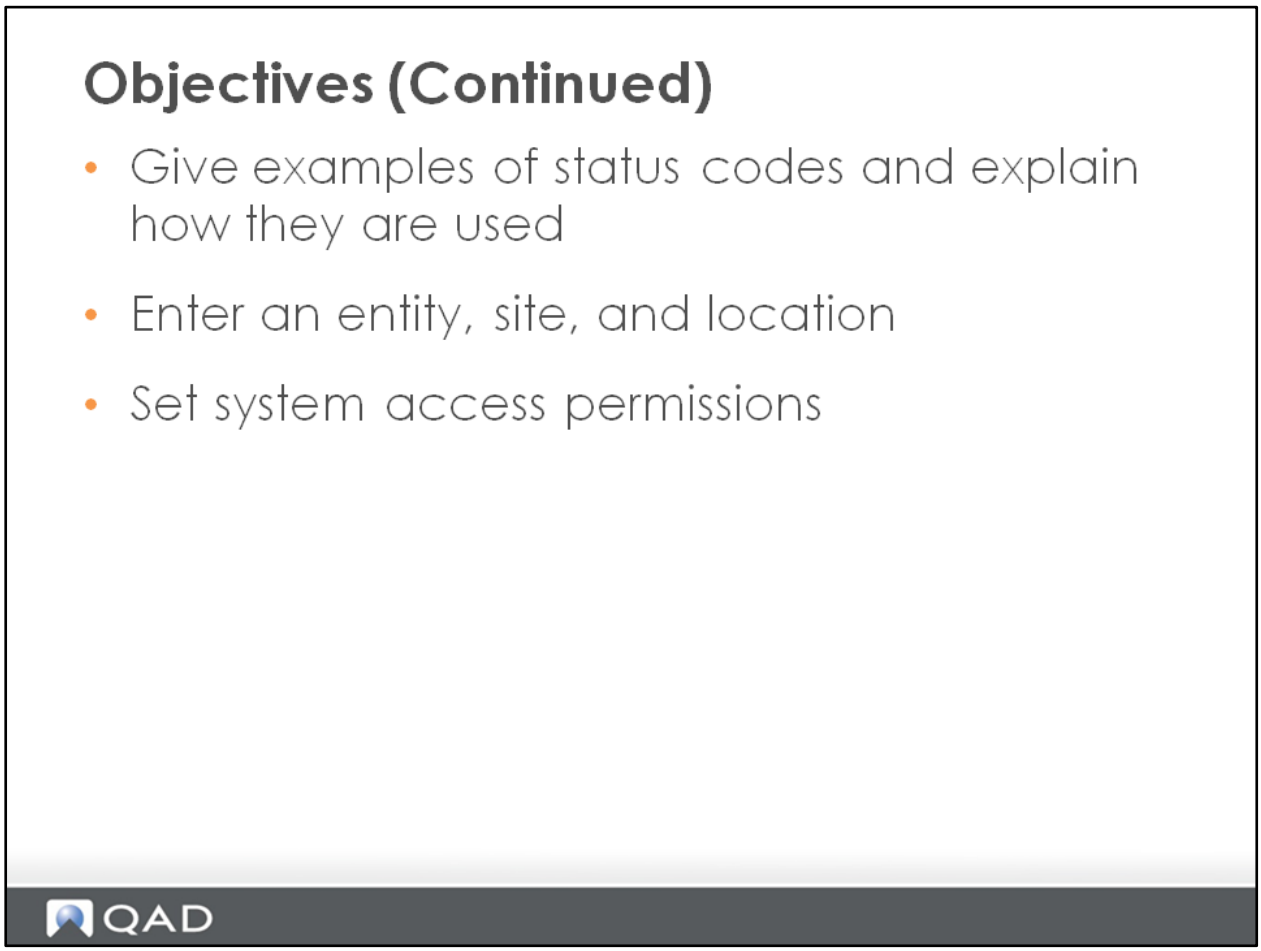
Topics – Continued



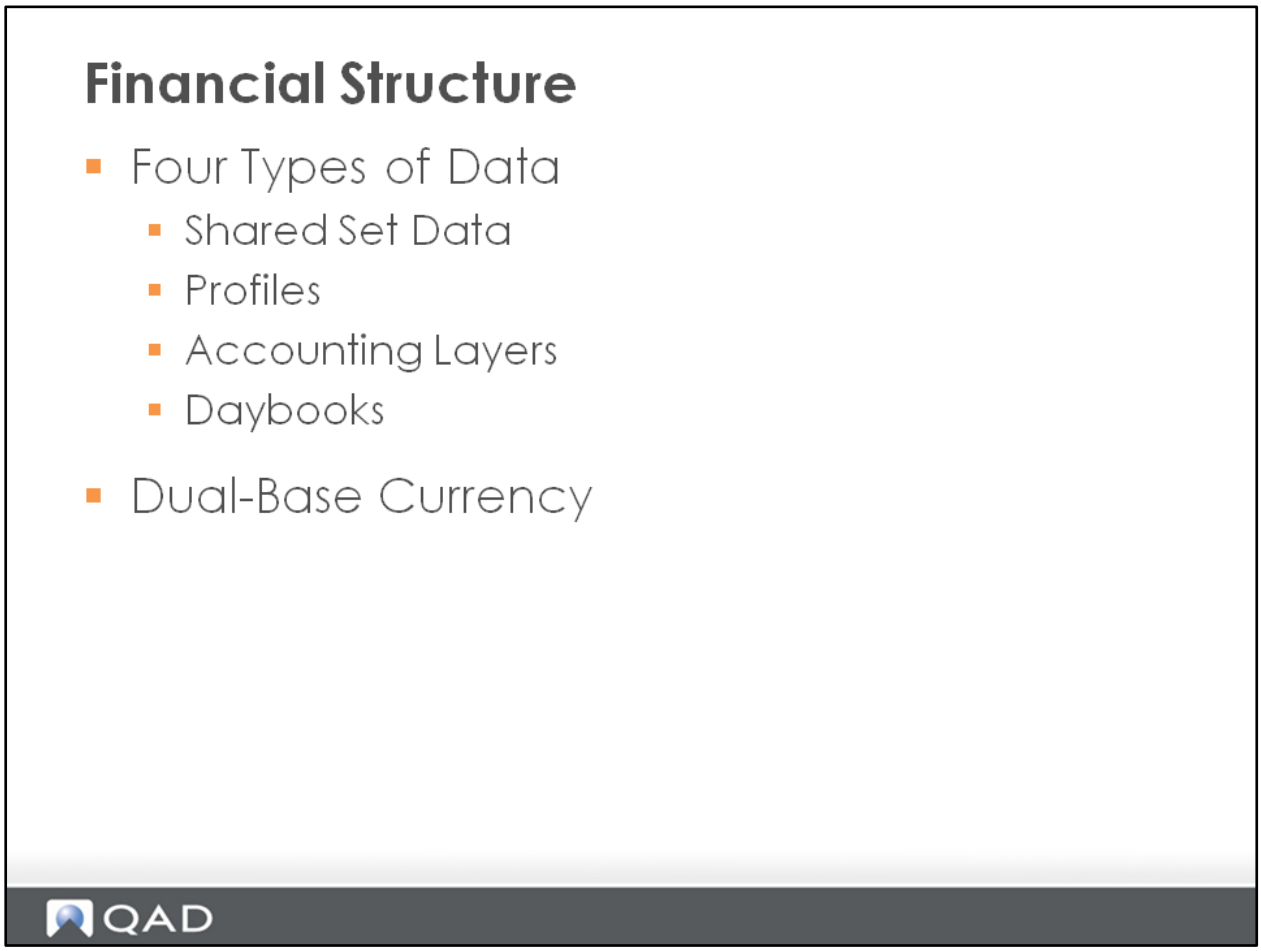
Objectives


Objectives
• Describe what a database is
- List the key types of data that the QAD EE database contains
• Distinguish between the types of information that:
- Entities and sites contain
- Sites and locations contain
• Describe the difference between a default entity and a primary entity
QAD

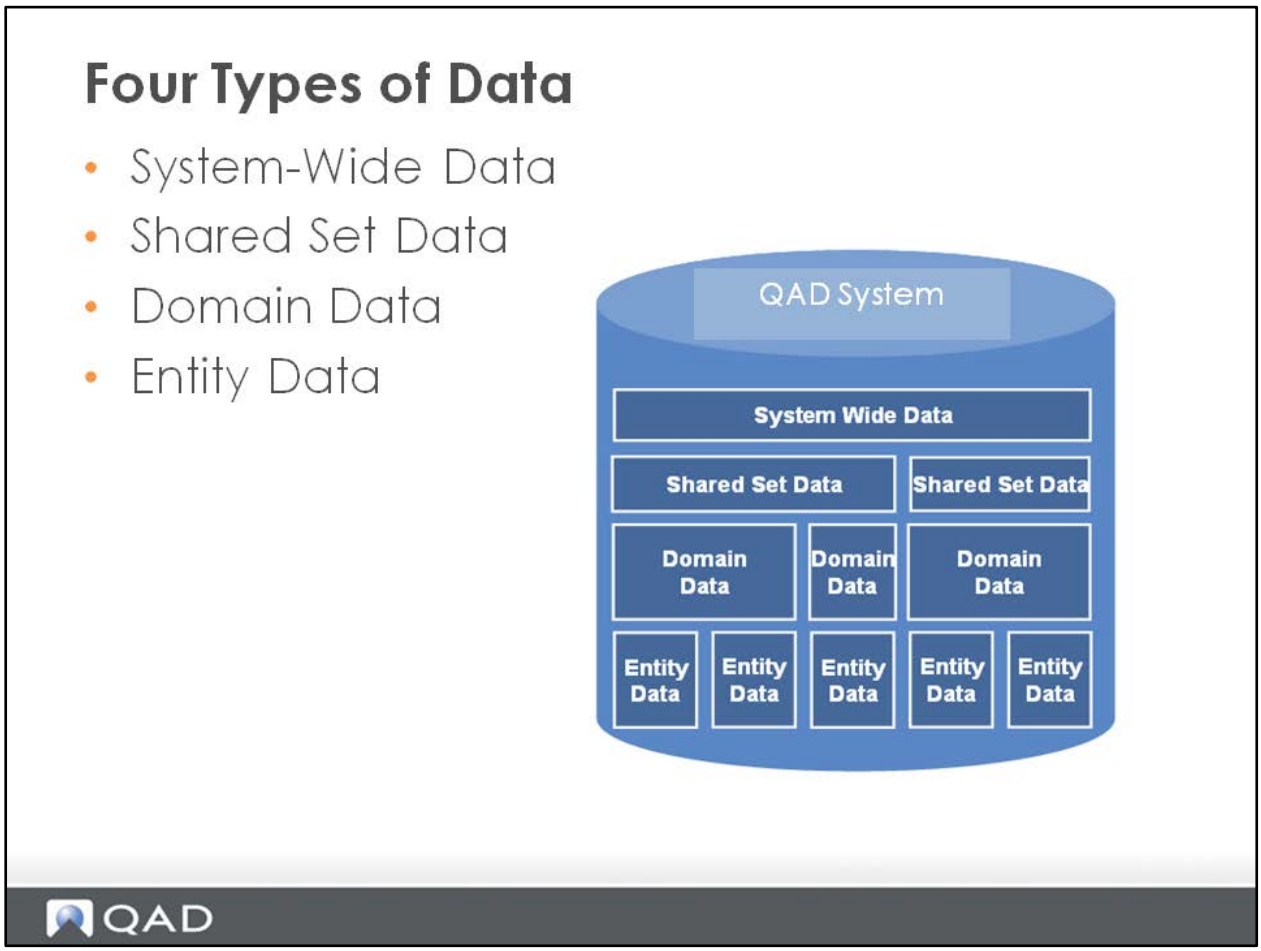
Objectives (Continued)



Financial Structure



Four Types of Data



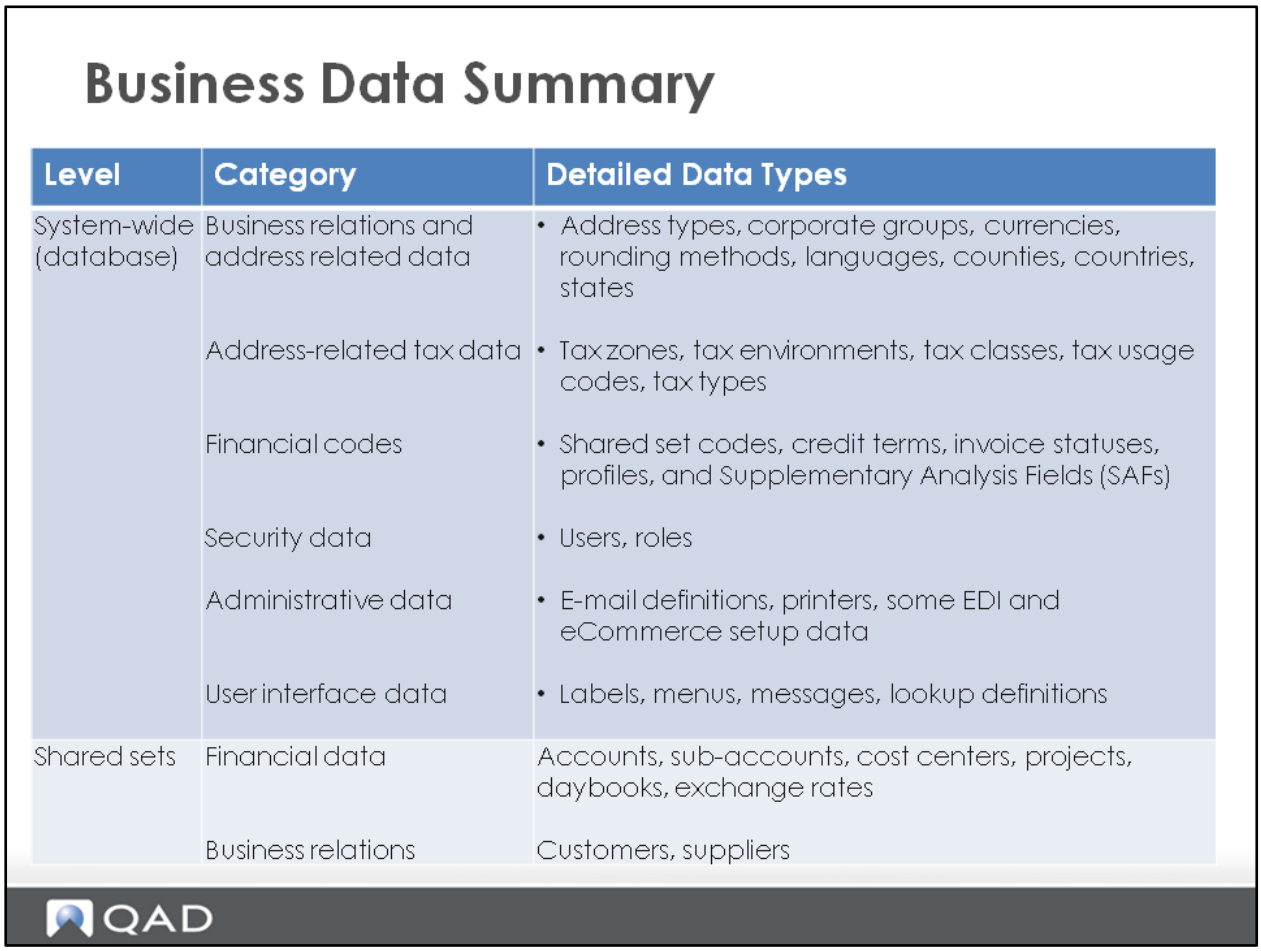
Four types of data:

- **System-wide data**
  Some data is shared throughout the system such as currency, country codes, and tax data. This data never differs from one business unit (entity or domain) to another, so it makes sense to share it across all business organizations. System-wide data includes administrative data related to security, user interface, and technical setup.
- **Shared sets**
  Shared sets group data that can be shared across domains. A single domain can have an independent chart of accounts or several domains can share a chart of accounts, streamlining setup and maintenance. Other types of data that can be shared are customers, suppliers, and exchange rates.
- **Domain data**
  A domain represents the base unit of the system and includes one or more entities. Each domain has its own base currency, and, optionally, statutory currency, which the entities within the domain then

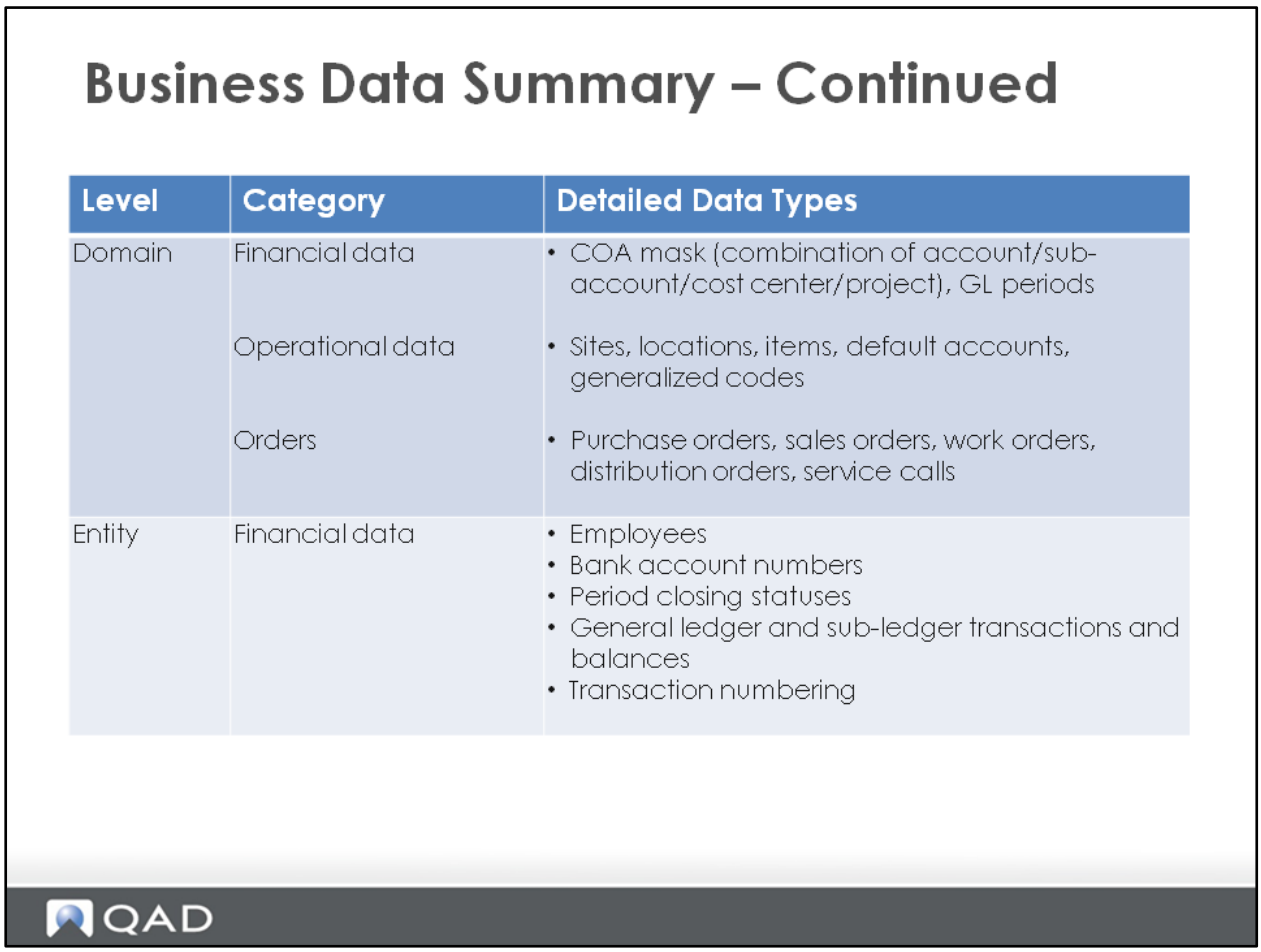
share. Domains derive some data from shared sets and also use system-wide data. However, most operational data is domain-specific. For example, all the item data and order transactions take place within a specific domain.

- **Entity data**
  An entity exists within a domain and inherits the domain attributes such as base currency. Entity-specific data is limited, for example, to the organization's own bank account number. General ledger transactions are associated with specific entities.

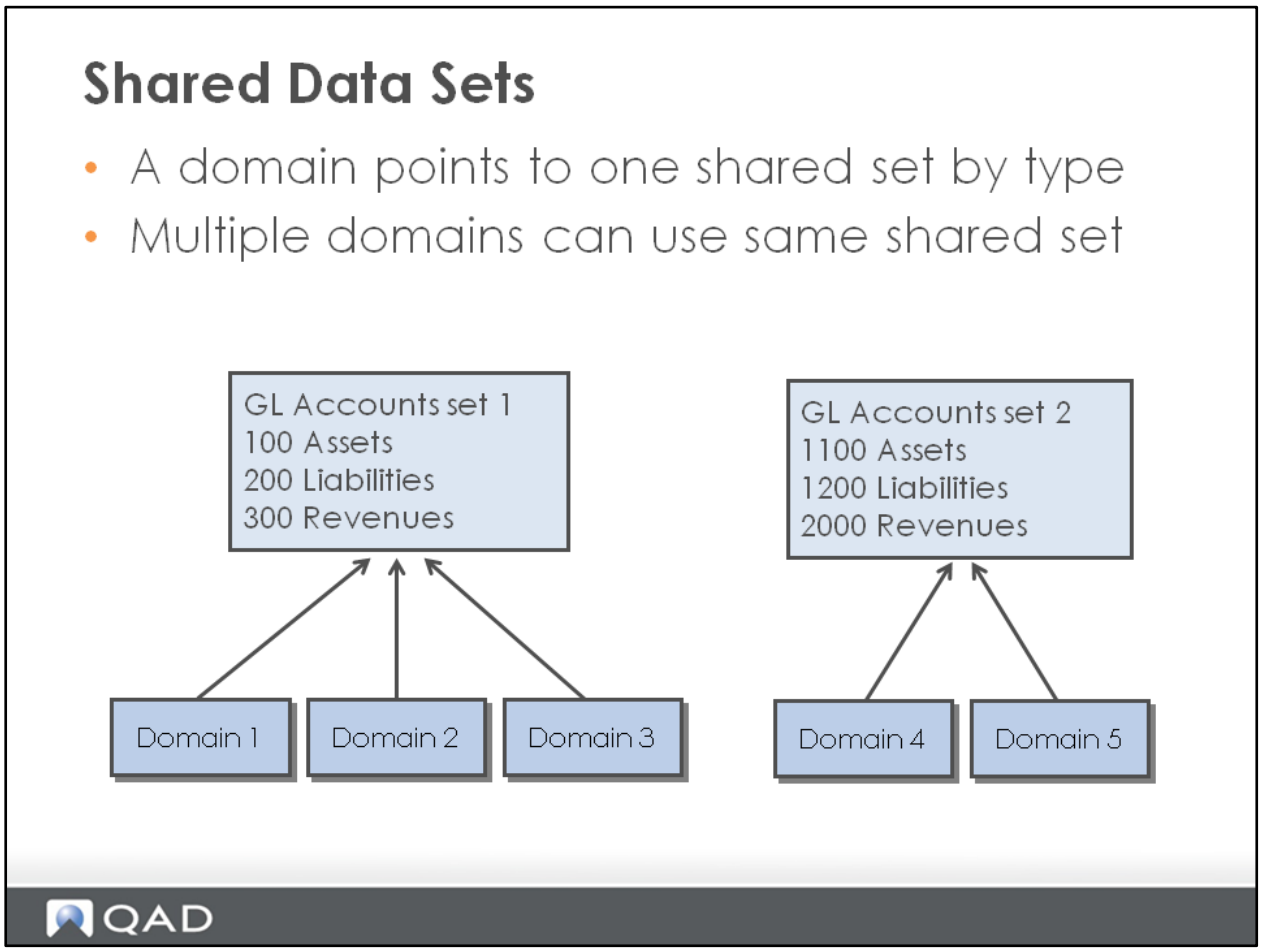
Business Data Summary



Business Data Summary – Continued



Shared Data Sets



Shared sets provide great flexibility in how a system can be set up. A default set of shared set codes is supplied with the system. However, you can create as many shared sets as necessary.

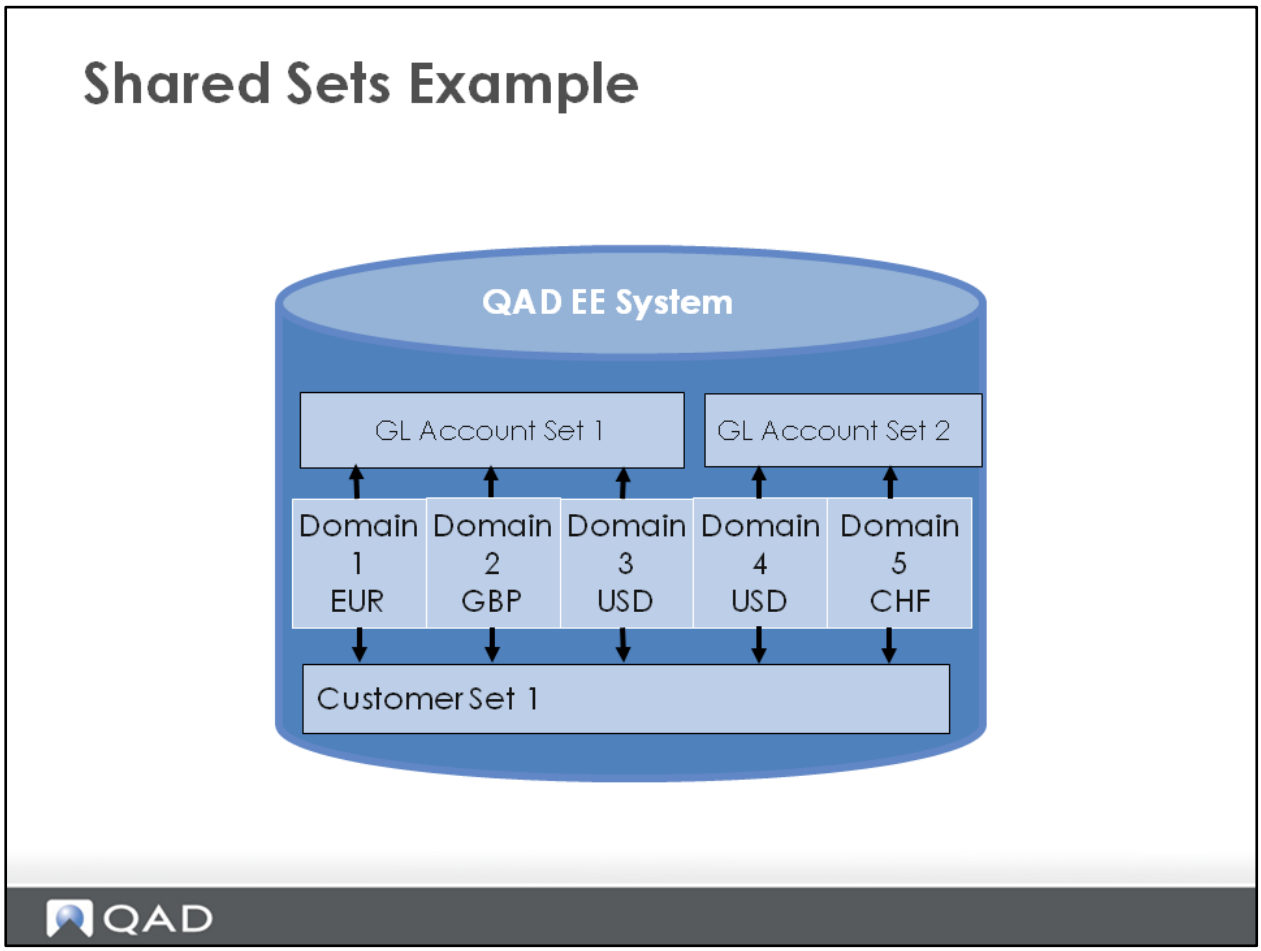
The following types of data can be shared:

- Customers
- Suppliers
- Accounts
- Sub-accounts
- Sub-account COA mask
- Cost centers
- Cost center COA masks

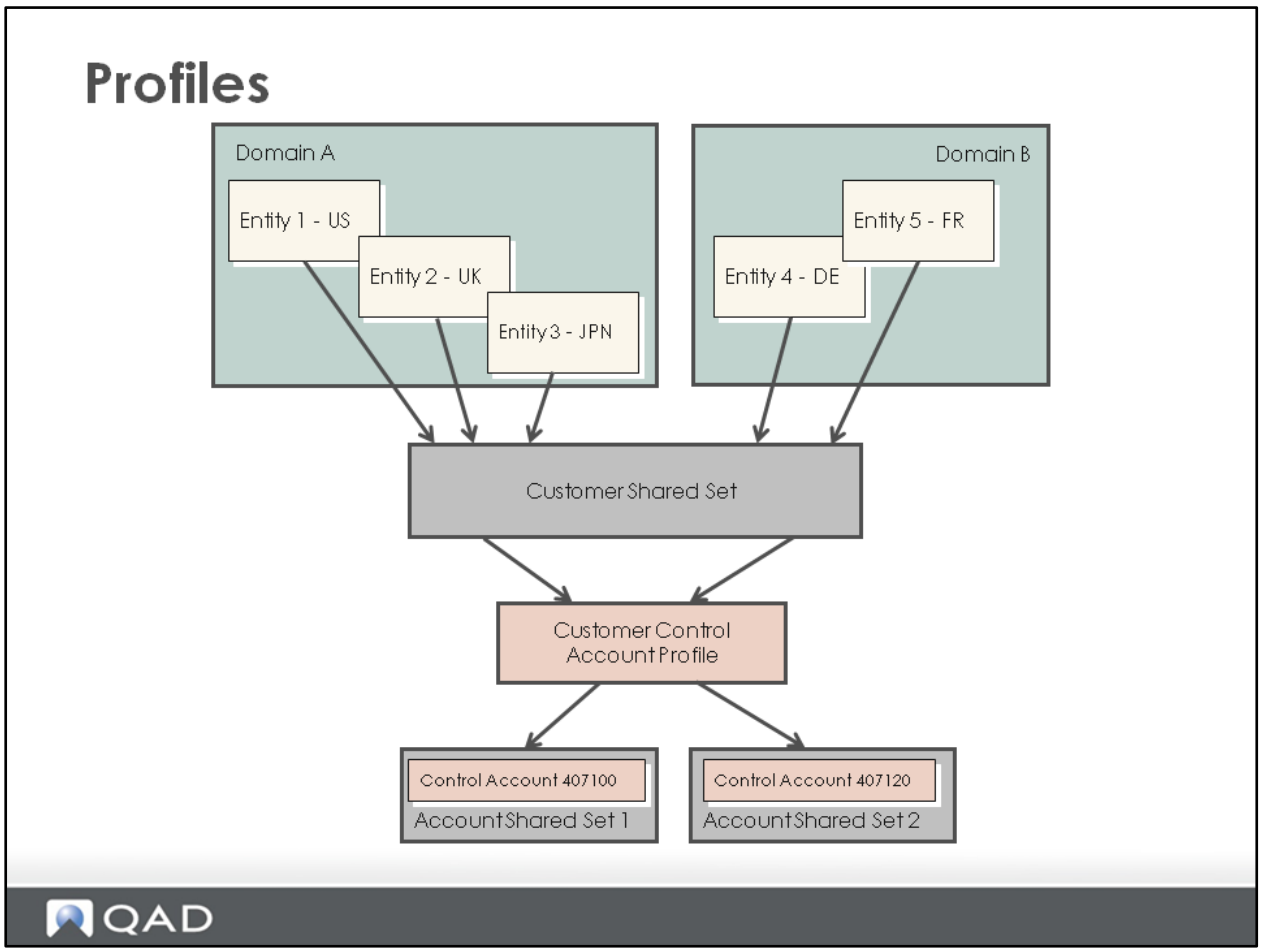
- Projects
- Project COA masks
- Exchange rates
- Daybooks

Example: Three US domains can use the same chart of accounts, while two other domains in Japan use another accounts shared set. Using shared sets streamlines and standardizes the use of accounts across the enterprise.

Shared Sets Example



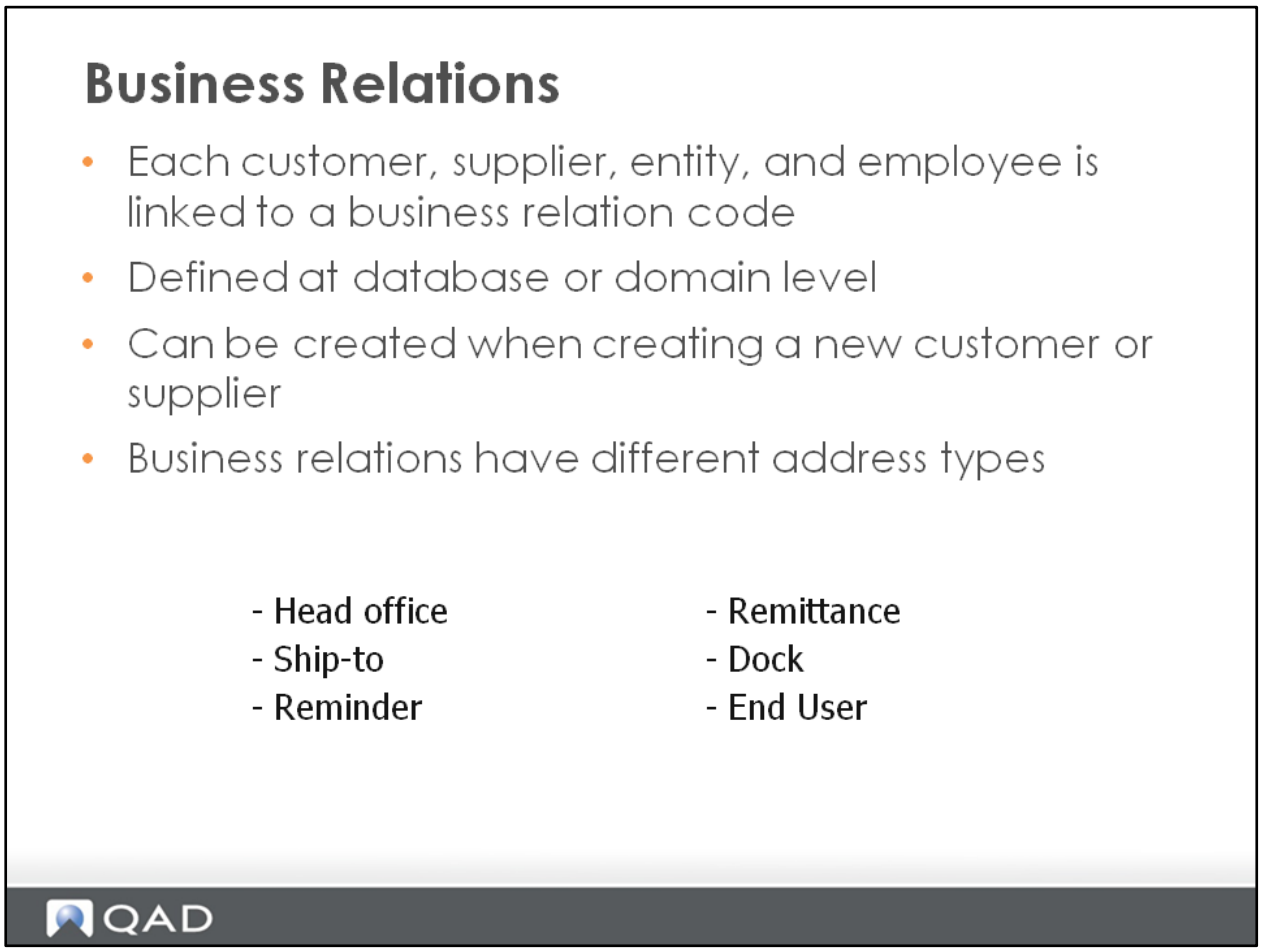
Profiles



In a multiple domain environment, you can use profiles to build relationships between shared sets.

In the above example, instead of linking a control account to the customer record, you specify a profile code. The profile code is linked to two different charts of account. The profile ensures that the correct control account is used for the domain in which the transaction is recorded.

Business Relations

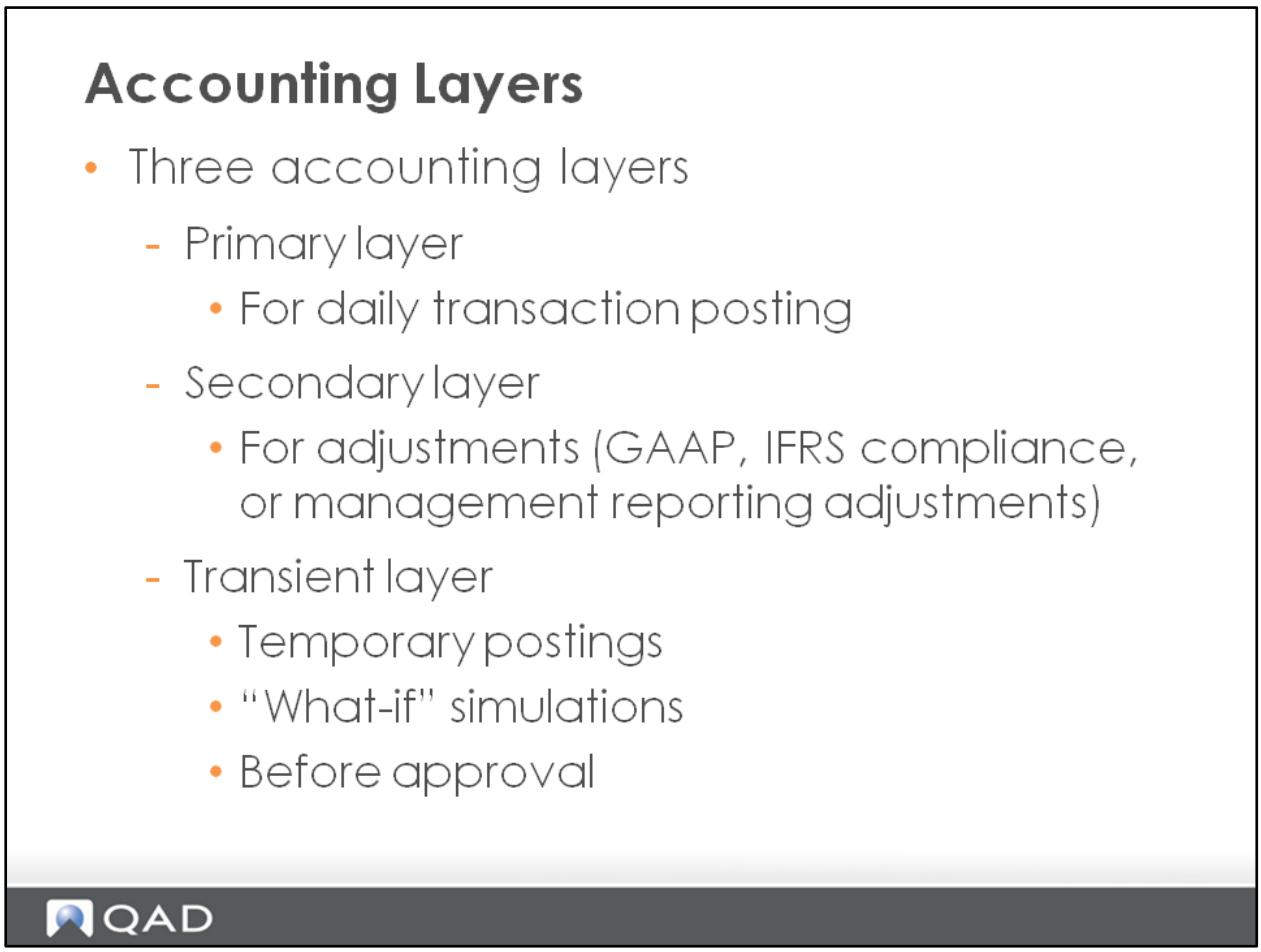


Business relations represent any organization or person that a company does business with, for example, customers, suppliers, employees, or an internal entity. A business relation address is a prerequisite for creating any of these records.

You can also create a business relation from within the customer or supplier creation menus.

Business relations can have different address types, as shown in the slide.

Accounting Layers

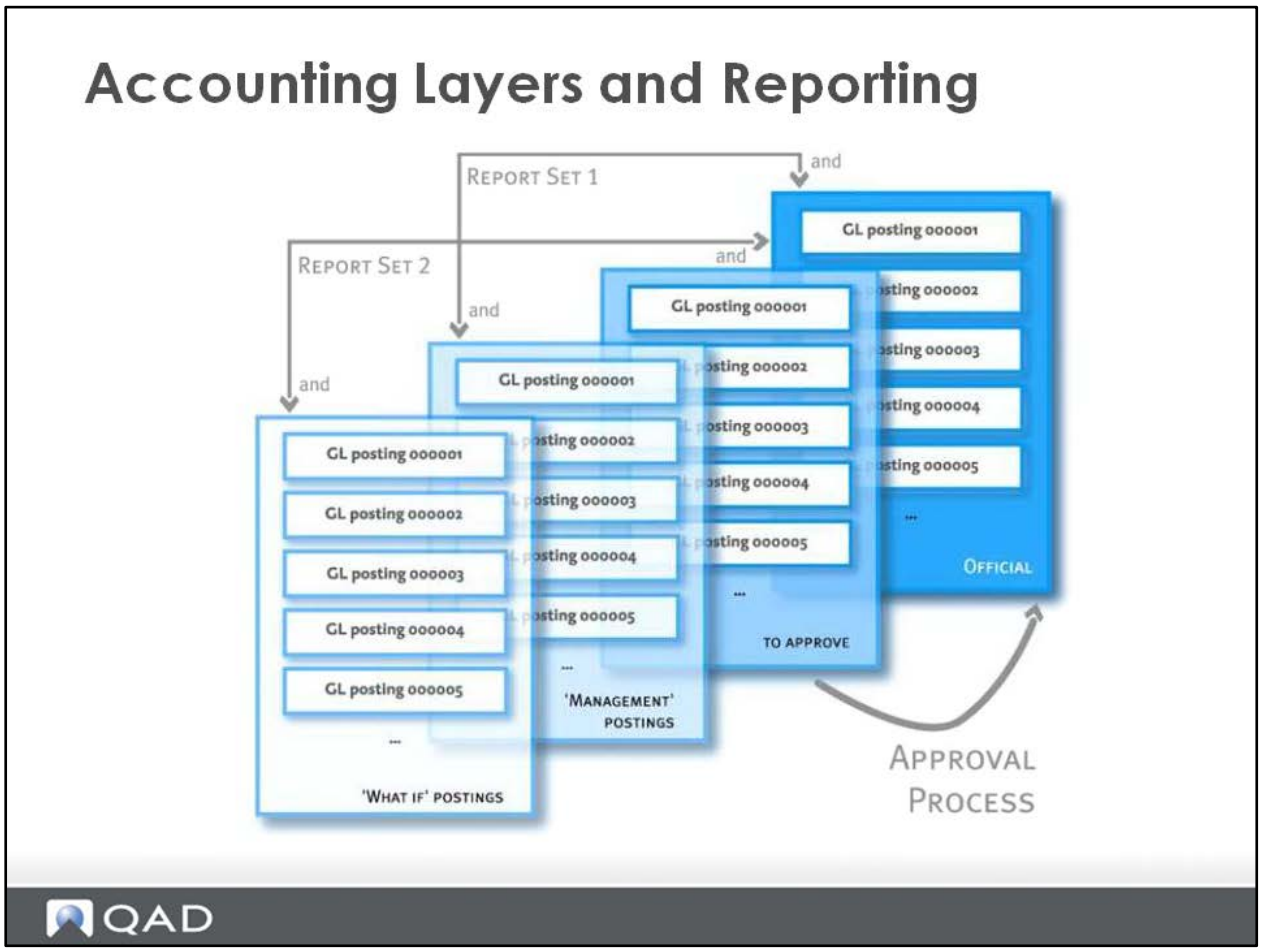


Accounting layers provide different ways of segregating transactions within a single GL account to satisfy reporting requirements. The posting of transactions is controlled by associating daybook types with one of the three system-defined accounting layers: primary (labeled “official” in the system), secondary (labeled “management” in the system), and transient.

- The primary layer is used for daily transaction posting.
- Define one or more secondary layers to allow for adjustments required to meet different GAAP or IFRS requirements, or for management reporting.
- The transient layer is used to temporarily post transactions pending approval, or to simulate postings.

GL entries can be moved from layer to layer by changing the daybook. You can use Mass Layer Transfer to change many transactions at one time. In reporting, you can select multiple layers.

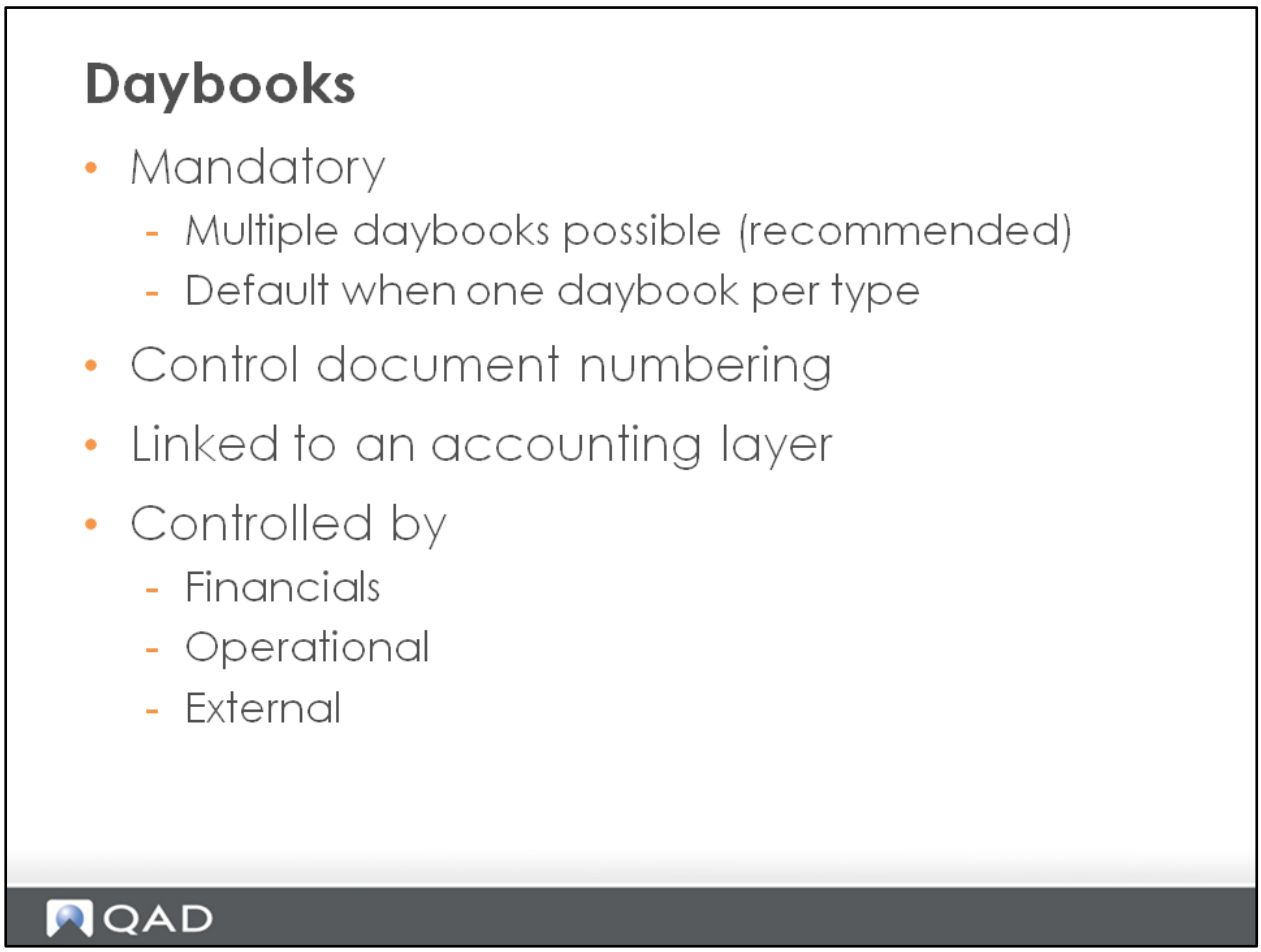
Accounting Layers and Reporting



Financials reports let you select multiple layers at a time, for example, you can select both the primary and secondary layers to include management adjustments.

Any combination is possible, as shown in the slide.

Daybooks

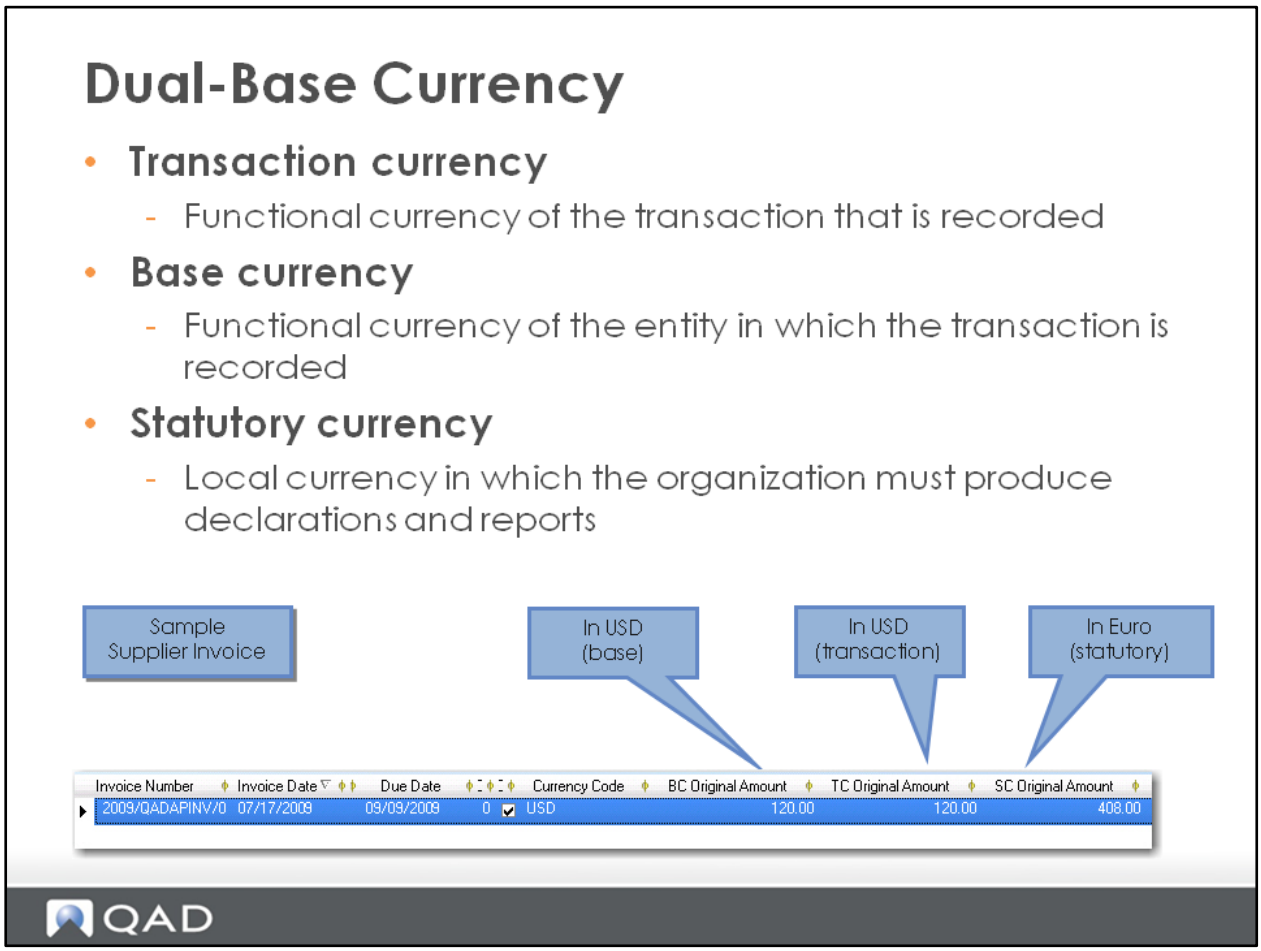


Daybooks, also known as journals, are system- or user-defined views of the general ledger, and contain all transactions.

Daybooks play an important role in QAD Enterprise Financials, and their use is mandatory. It is recommended to use more than one daybook as a means of grouping transactions. You can use daybooks to distinguish between different types of journal entries such as auditor adjustments, payroll entries, GAAP adjustments, and manually prepared accruals.

Daybooks control the numbering of invoices and credit notes, in addition to GL transaction numbers. Daybooks are linked to an accounting layer, and can be controlled by the financial functions or by the operational functions. You can also create daybooks to store transactions from external third-party products.

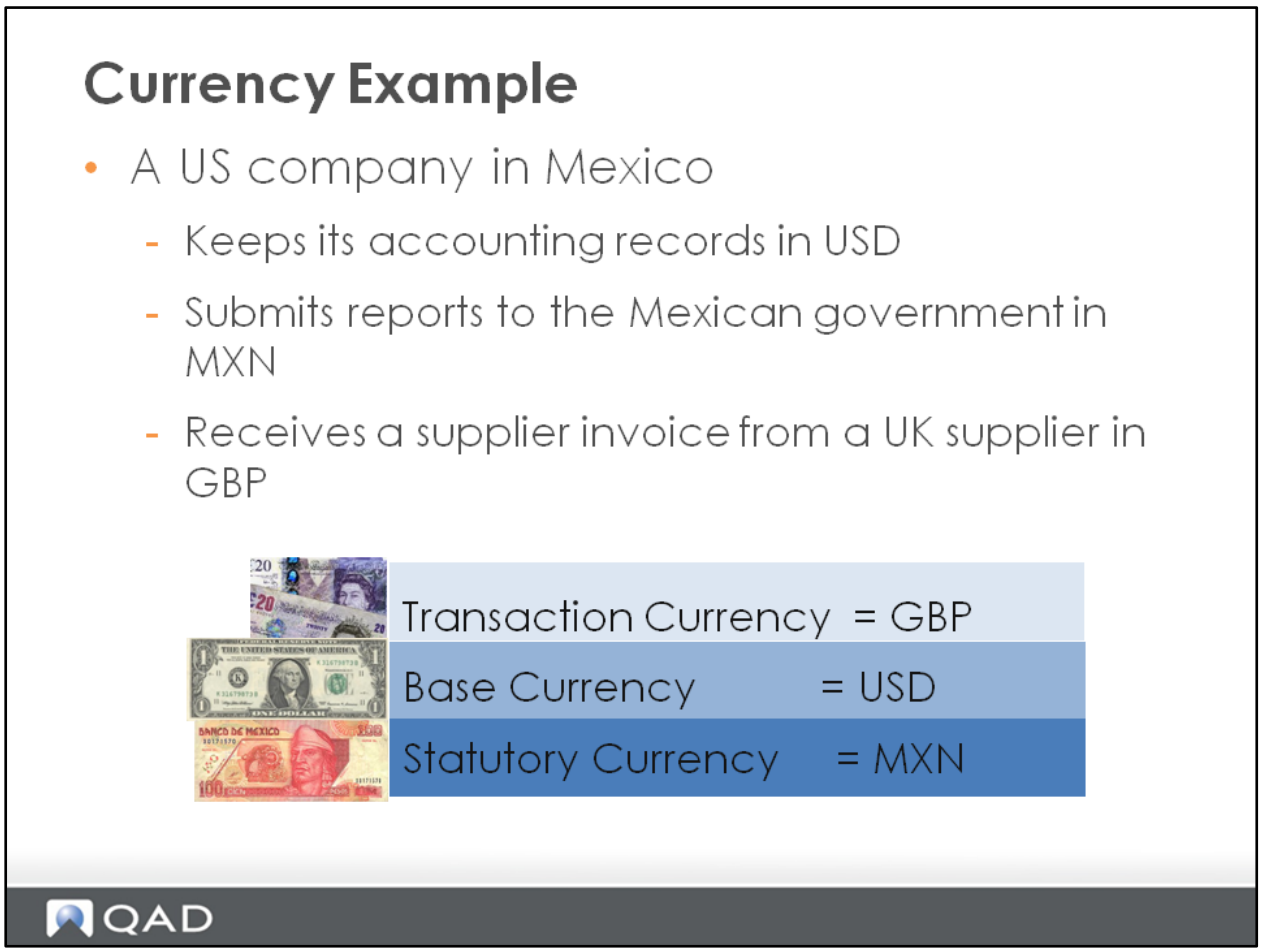
Dual-Base Currency



Each domain has a primary base currency at the domain level, and, optionally, has a second management currency for reporting purposes. This currency is known as the statutory currency, and is normally the local currency of the country in which the organization must produce its declarations and financial reports.

The need for a statutory currency is most likely to arise in a country that is geographically close to a strong currency zone (for example, Mexico and Poland), where the country itself has another local currency. Companies operating in countries close to strong currency zones, such as the Euro and US dollar, might use the stronger currency as their base currency (functional currency). However, local auditors and tax controllers can mandate that companies submit their declarations and financial reports in the local currency of the country. In these cases, the local country currency becomes the organizations' statutory currency.

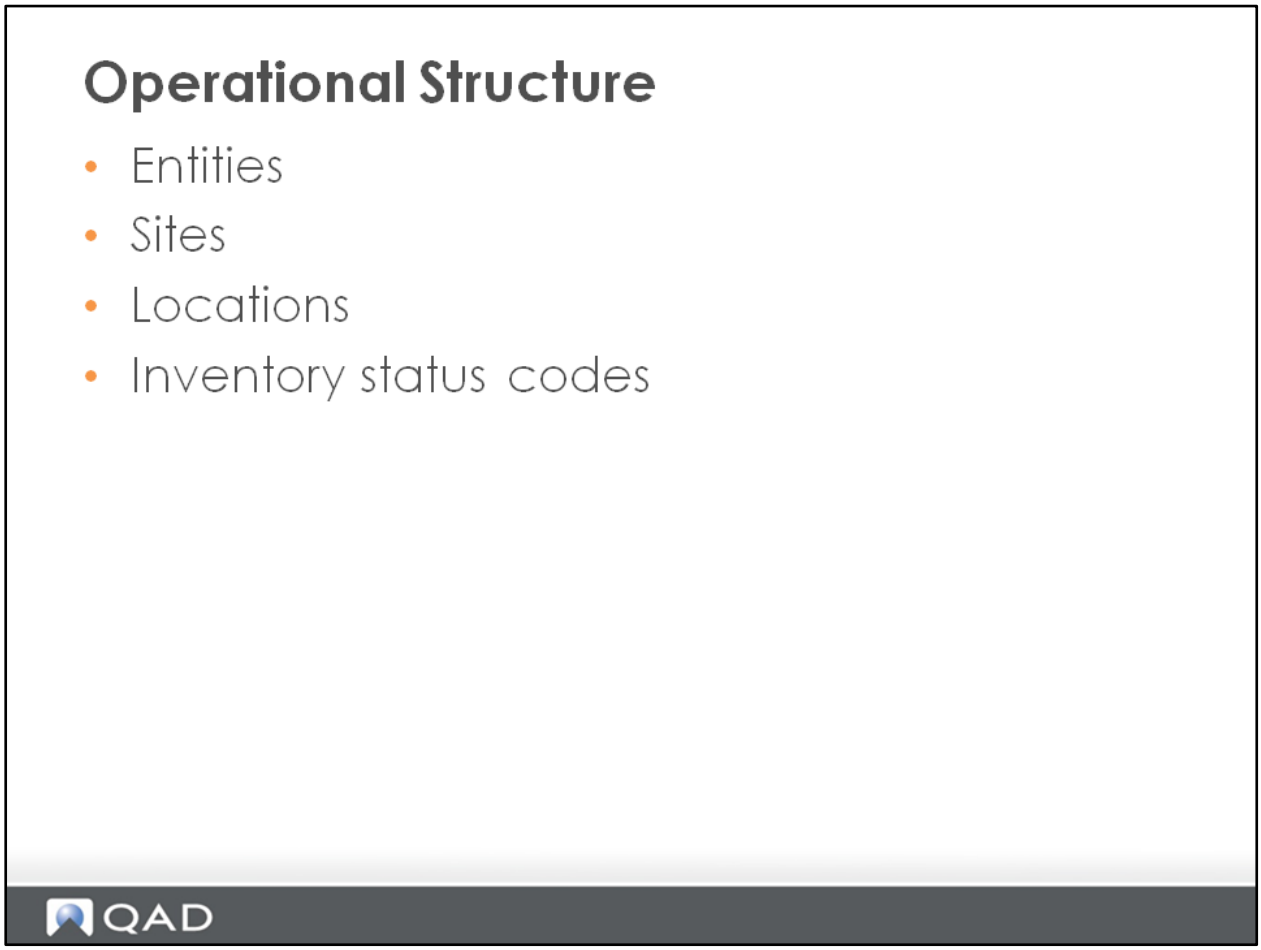
Currency Example



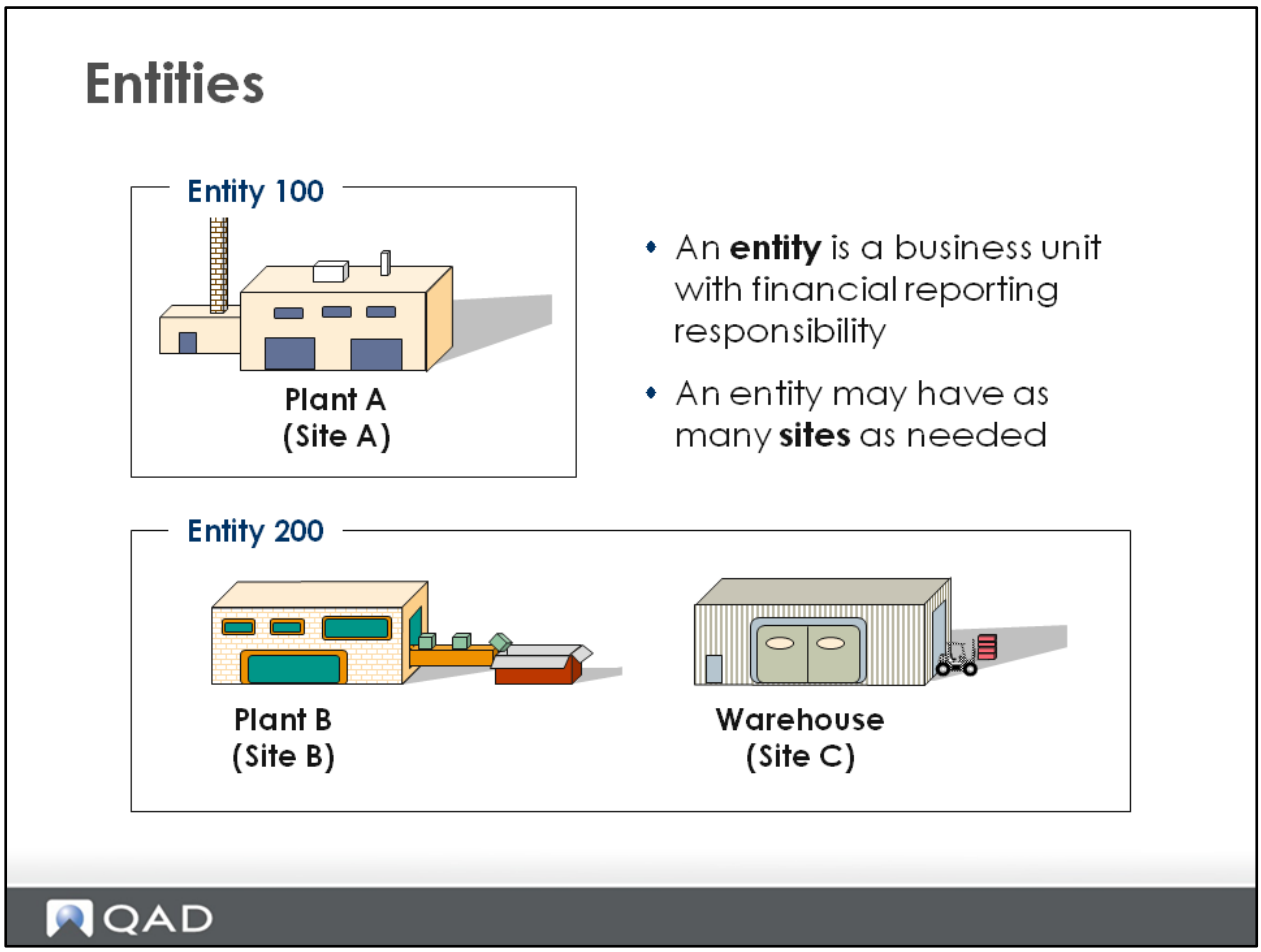
Example: A multinational corporation has a subsidiary in Mexico. In the Mexican subsidiary, most business transactions are conducted in USD, the base currency. However, all reports that the subsidiary must produce for the Mexican government are in Mexican pesos, which is the statutory currency.

- Transaction currency = GBP
- Base currency = USD
- Management currency = MXN

Operational Structure



Entities

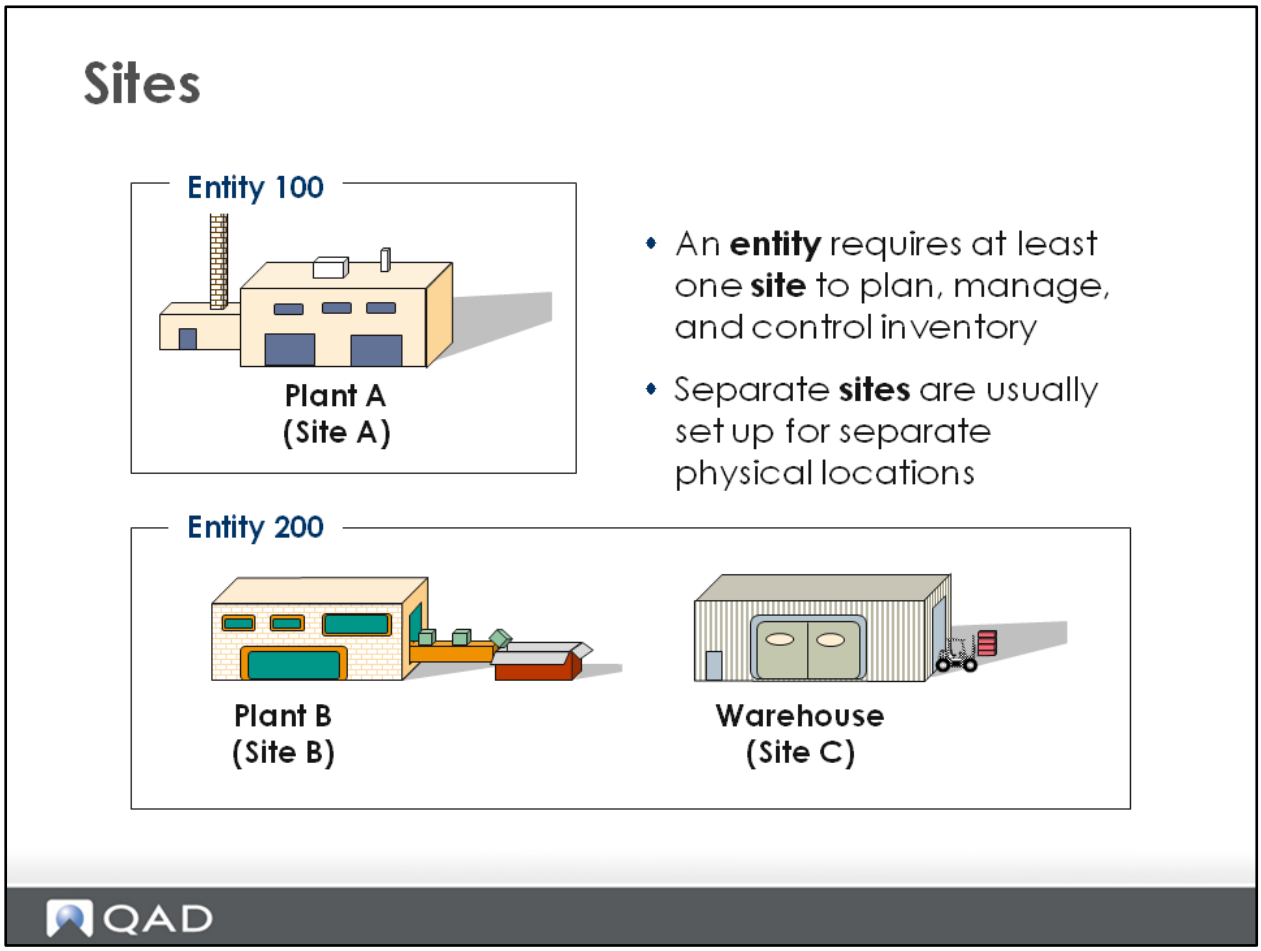


An entity is a subset of the business that does financial reporting. In QAD EE, an entity prepares balance sheets and income statements.

Other structures are used within a QAD EE database to manage inventory and execute planning functions. The next section introduces these elements:

- Sites
- Locations
- Inventory status codes

Sites



A site is an inventory planning and control concept. Inventory control and planning information is maintained on site basis, including inventory availability, manufacturing methods and costs, sales and purchasing data, manufacturing plans and orders, and forecasts. Each site is associated with a physical address. However, each physical address can have several sites.

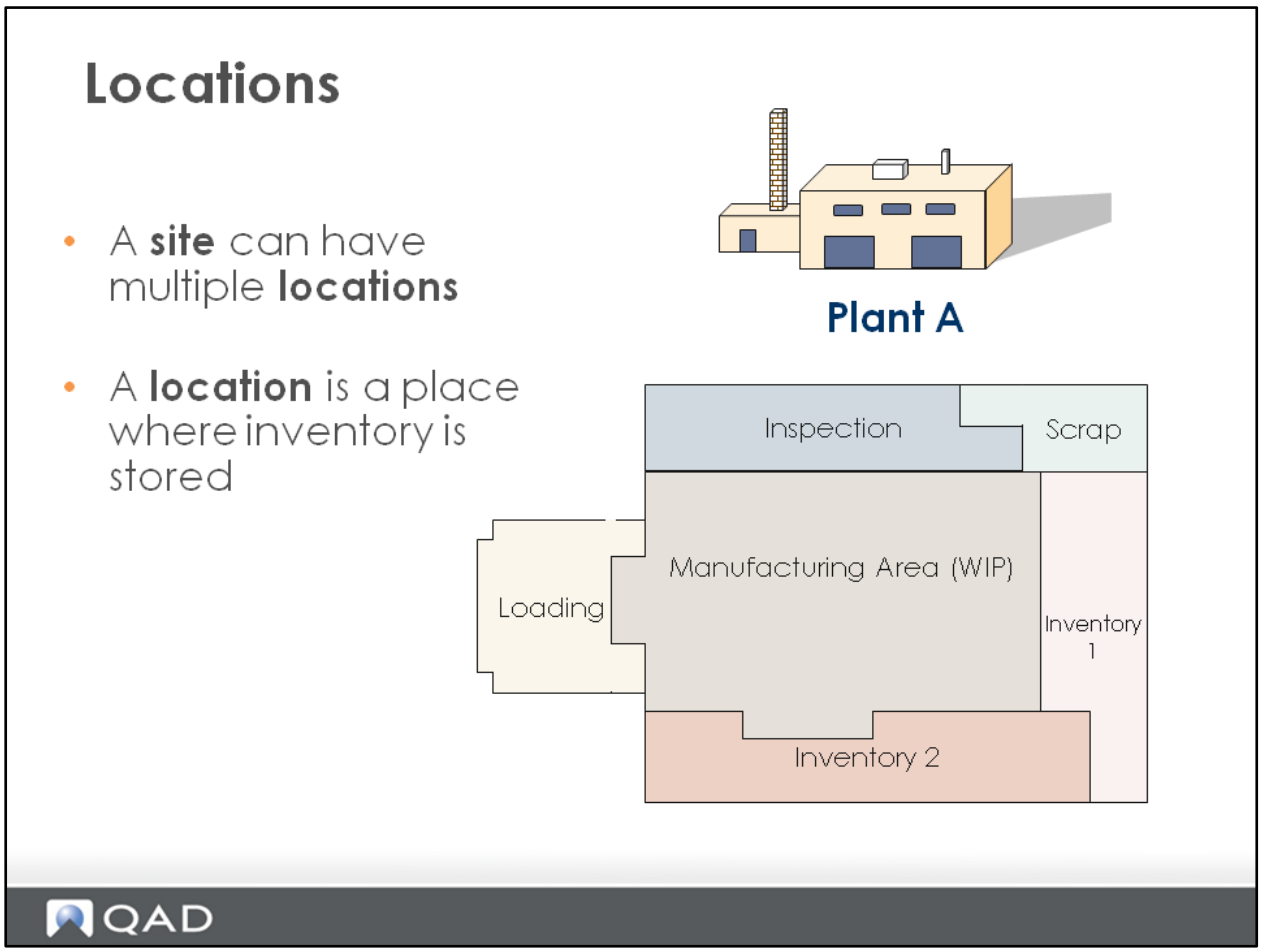
For example, you can set up separate sites for manufacturing, finished goods inventory, and field service in one physical location. There are no limitations on how many sites you have under one entity. Each site belongs to one (and only one) entity, but each entity can have more than one site. A site can be, for example, a distribution center, a warehouse, a manufacturing plant, or a combination of these functional sites.

Site Maintenance defines several attributes that default into inventory locations including a default inventory status code, whether automatic locations are allowed, and a transfer variance account.

Most planning and control functions work within one site. The system expects to find all the components for a manufacturing order at the same site (with a few exceptions); MRP and DRP calculate requirements one site at a time.

A few functions deal with multiple sites such as multi-site purchase or sales orders, distribution orders, and distributed inventory inquiries.

Locations



Every inventory transaction must have a site and location. Both can default from the item master. In QAD EE, each site can have various locations where inventory is stored. Locations can include shelves, bins, tanks, silos, refrigerators, freezers, humidity, or temperature controlled rooms, segregated quarantine or material review areas, or other storage areas. Each location's parameters identify what can be stored there and how that inventory can be used.

Predefined Locations

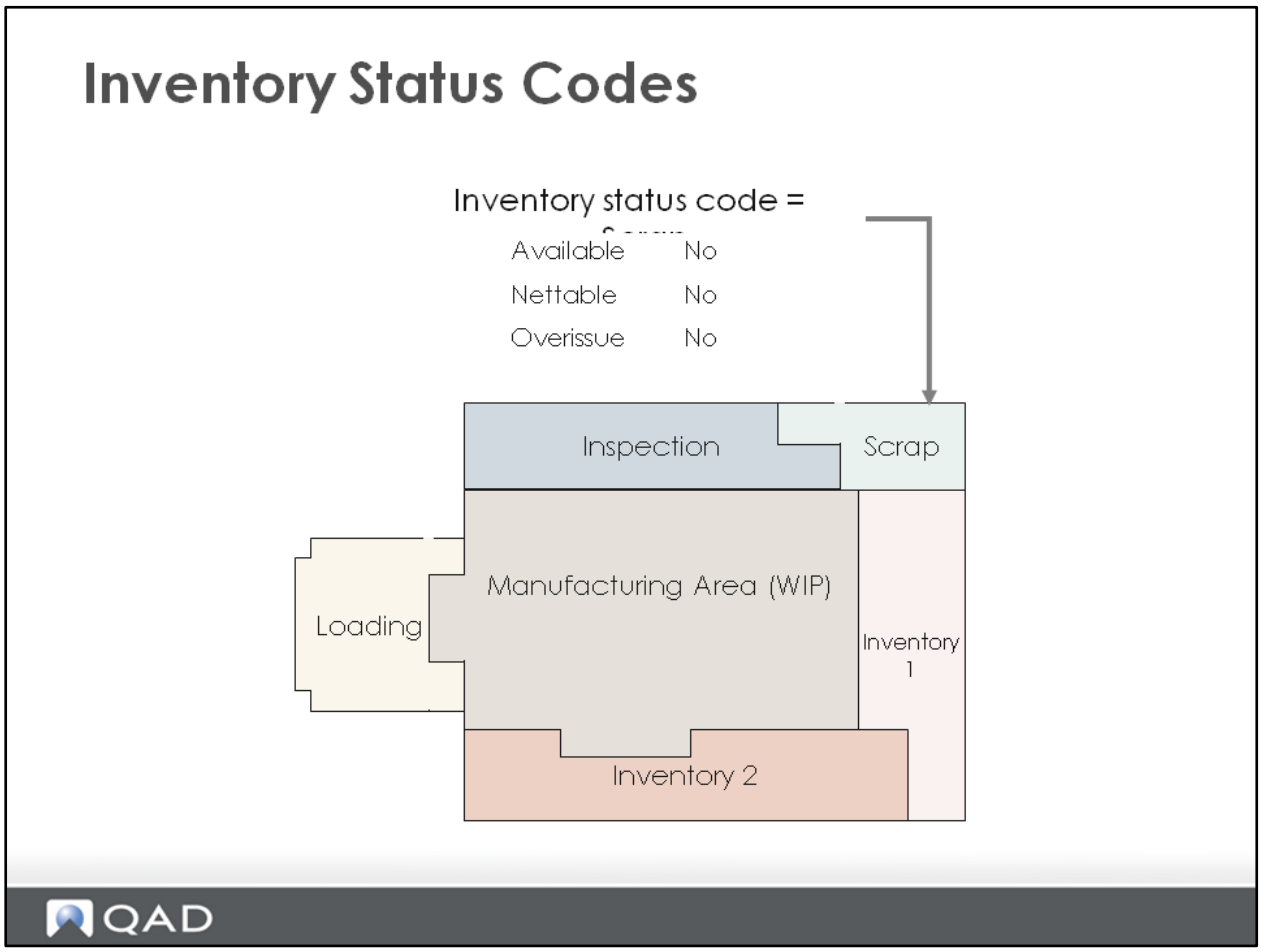
Most businesses have several predefined inventory locations such as raw material and or component inventory, finished goods inventory, and possibly other locations for sales returns, scrap, quality control quarantine, or material review board. In general, the more carefully defined locations you use, the higher level of inventory control you will obtain.

Locations are not necessarily predefined. The system can automatically create location codes whenever you enter an undefined value by setting Automatic Locations to Yes in Site Maintenance. While useful in some situations, this convenience offers a low level of control since anyone with access to inventory transactions can create new locations, possibly as a result of an error.

Inventory location attributes include:

- A description
- A default inventory status code (available, nettable, overissue)
- An indication regarding whether the location is permanent
- A location type code such as tank, silo, freezer
- Information that the location is restricted to single item (liquid tanks are usually restricted to a single item, for example)
- Information that the location is restricted to a single lot of a single item (lot-controlled liquids)
- An indication of whether items are assigned to certain locations (the location type code associated with the item is matched to location type code of the location)

Inventory Status Codes



Inventory status codes control your inventory and manage how that inventory is used. Think about how your scrap is managed differently than finished goods inventory or spares. In QAD EE, these different types of inventory are identified by their status codes.

Generic inventory status codes are set up for each type of inventory you have. These status codes identify whether inventory balances of this type are:

- Available to allocate to sales orders and manufacturing orders
- Nettable, to input to MRP when calculating net quantity on hand

Overissue, to denote whether this inventory balance is allowed to go negative Some general guidelines on how status codes are used:

- Scrap inventory is not available or nettable.
- Material in receiving quarantine is usually not available, but is nettable since it is expected to be of good quality.

- Material in material review board is usually not available, but can be nettable or not based on the likelihood of it being approved for use.
- Consignment inventory held for a specific customer is not normally available.
- Negative inventory balances are always errors and should not be allowed.

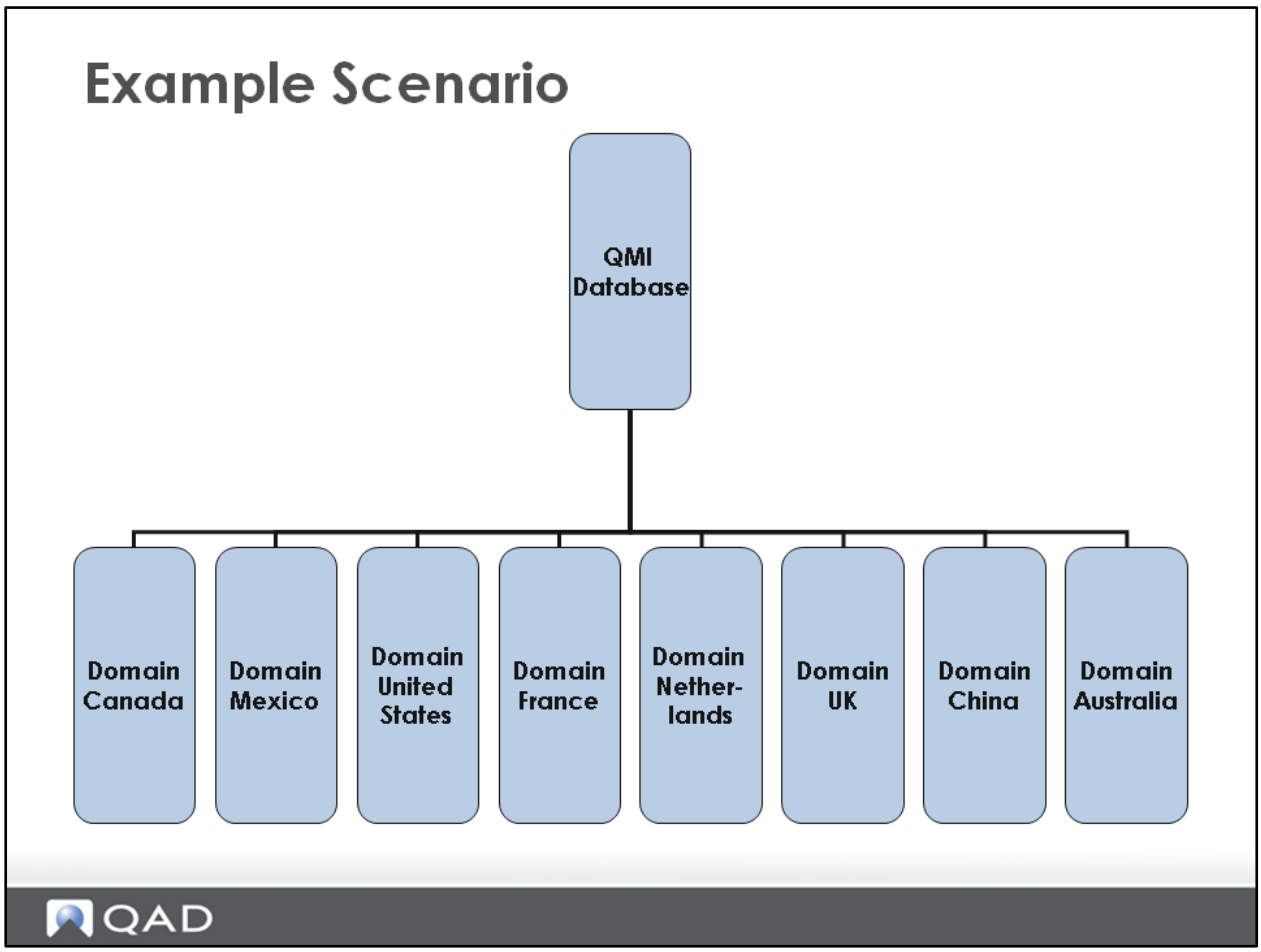
Note: Not allowing negative balances forces the user to fix the error at its source.

- Inventory in transit is usually not available.

In addition, certain transactions can be restricted. Each inventory status code can have a list of restricted transactions attached. For example, access to sales order issues can be restricted from a Quality Control Hold location.

Whenever items are received into inventory, a status code is associated with that inventory. This defaults to the status code entered for the location, but can be changed using Inventory Detail Maintenance. Whenever you attempt to do something with this inventory (allocate it, issue it, move it) the system checks its status code and ensures that the action is valid.

Example Scenario



Quality Manufacturing International (QMI) is a multinational company with its headquarters located in New York, NY.

- QMI has eight divisions located in USA, Canada, Mexico, France, UK, Netherlands, China, and Australia.
- QMI produces a wide range of products that cover Electrical and Industrial, Life Sciences, Consumer Products, and Automotive industries.
- These products are produced at all of the eight company divisions around the world.
- QMI uses shared services to manage its customers and suppliers. Customers and suppliers are also located in each of the countries where a QMI division is located.

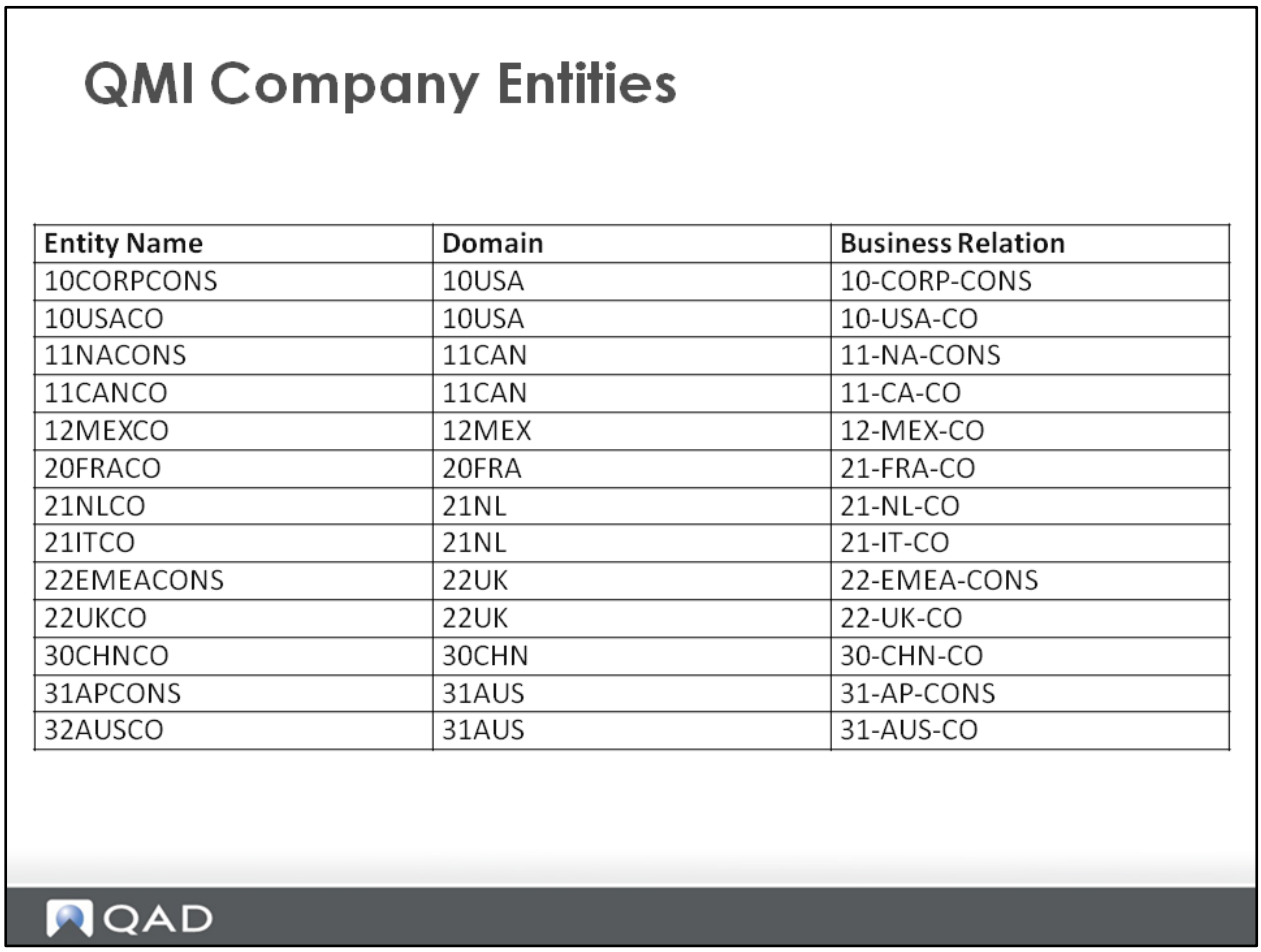
The example on the following pages shows how QMI sets up the foundations of its business structure. The domain and entity structure have been previously set up by corporate headquarters in preparation for the

startup of the new business unit. This process included the setup of the accounting structure and GL calendars to ensure that the new unit correctly integrates with corporate financial reporting requirements.

This course focuses on setting up:

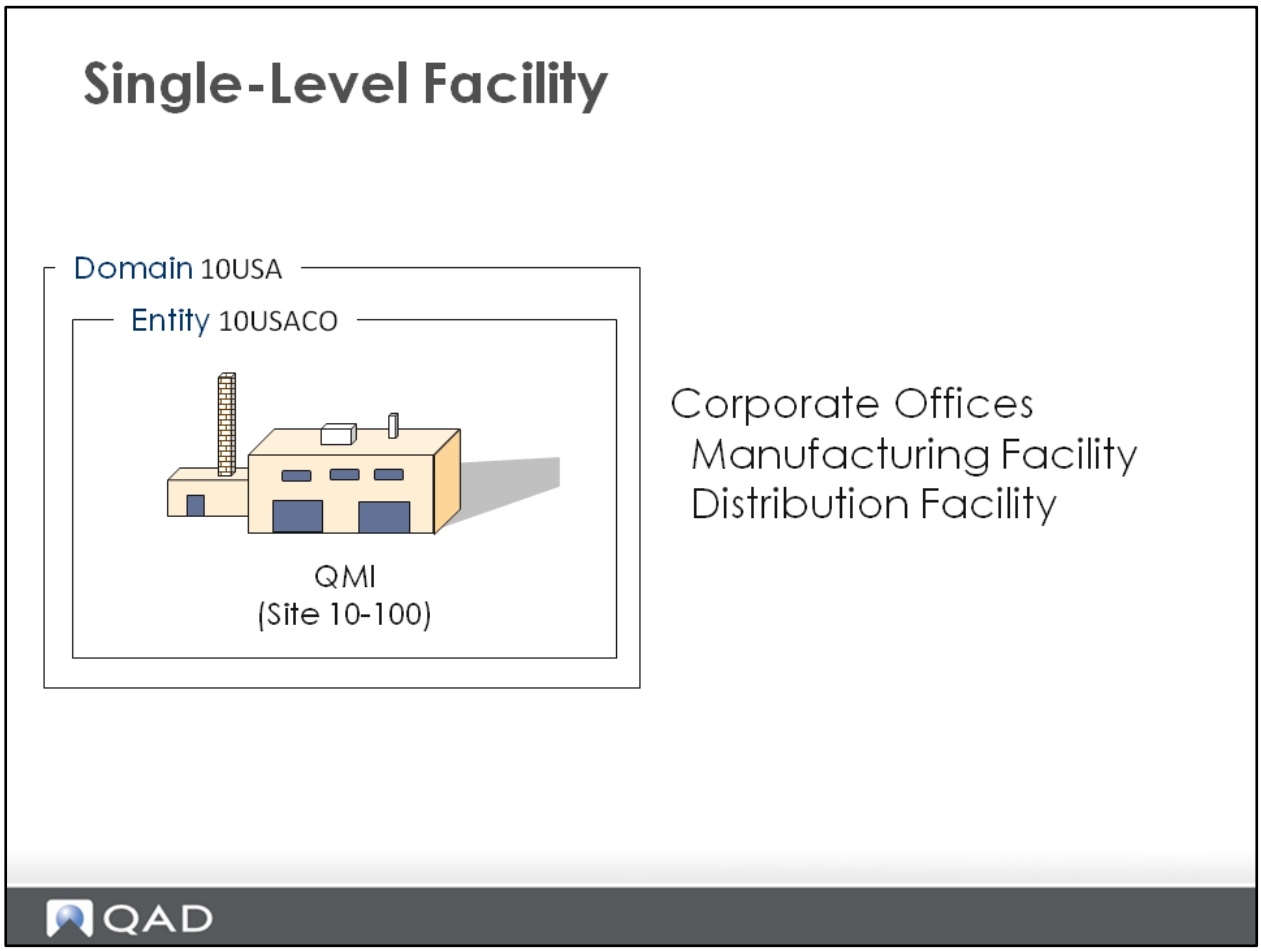
- Sites
- Locations
- Inventory status codes

QMI Company Entities

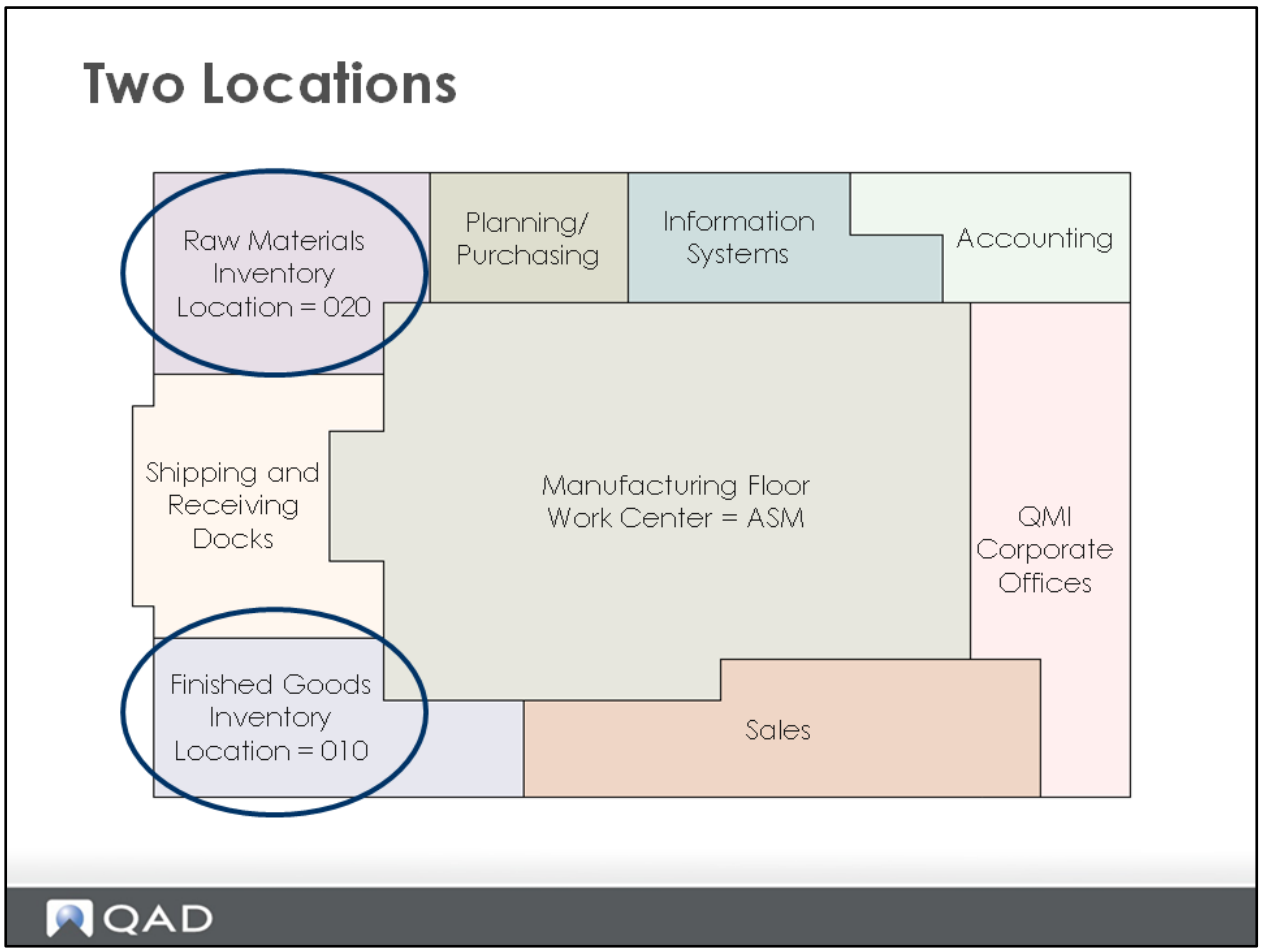


Entity Name	Domain	Business Relation
10CORPCONS	10USA	10-CORP-CONS
10USACO	10USA	10-USA-CO
11NACONS	11CAN	11-NA-CONS
11CANCO	11CAN	11-CA-CO
12MEXCO	12MEX	12-MEX-CO
20FRACO	20FRA	21-FRA-CO
21NLCO	21NL	21-NL-CO
21ITCO	21NL	21-IT-CO
22EMEACONS	22UK	22-EMEA-CONS
22UKCO	22UK	22-UK-CO
30CHNCO	30CHN	30-CHN-CO
31APCONS	31AUS	31-AP-CONS
32AUSCO	31AUS	31-AUS-CO

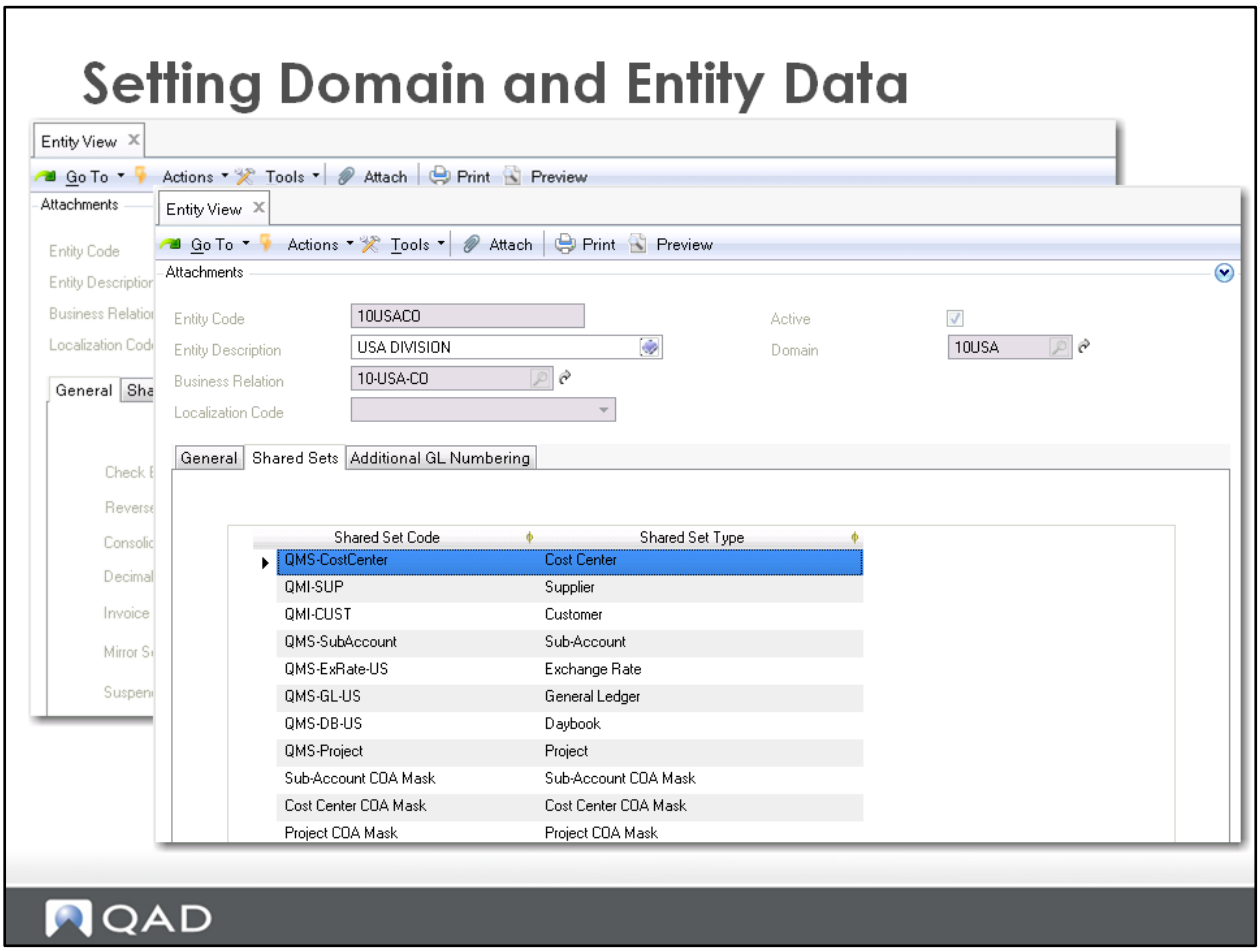
Single-Level Facility



Two Locations



Setting Domain and Entity Data

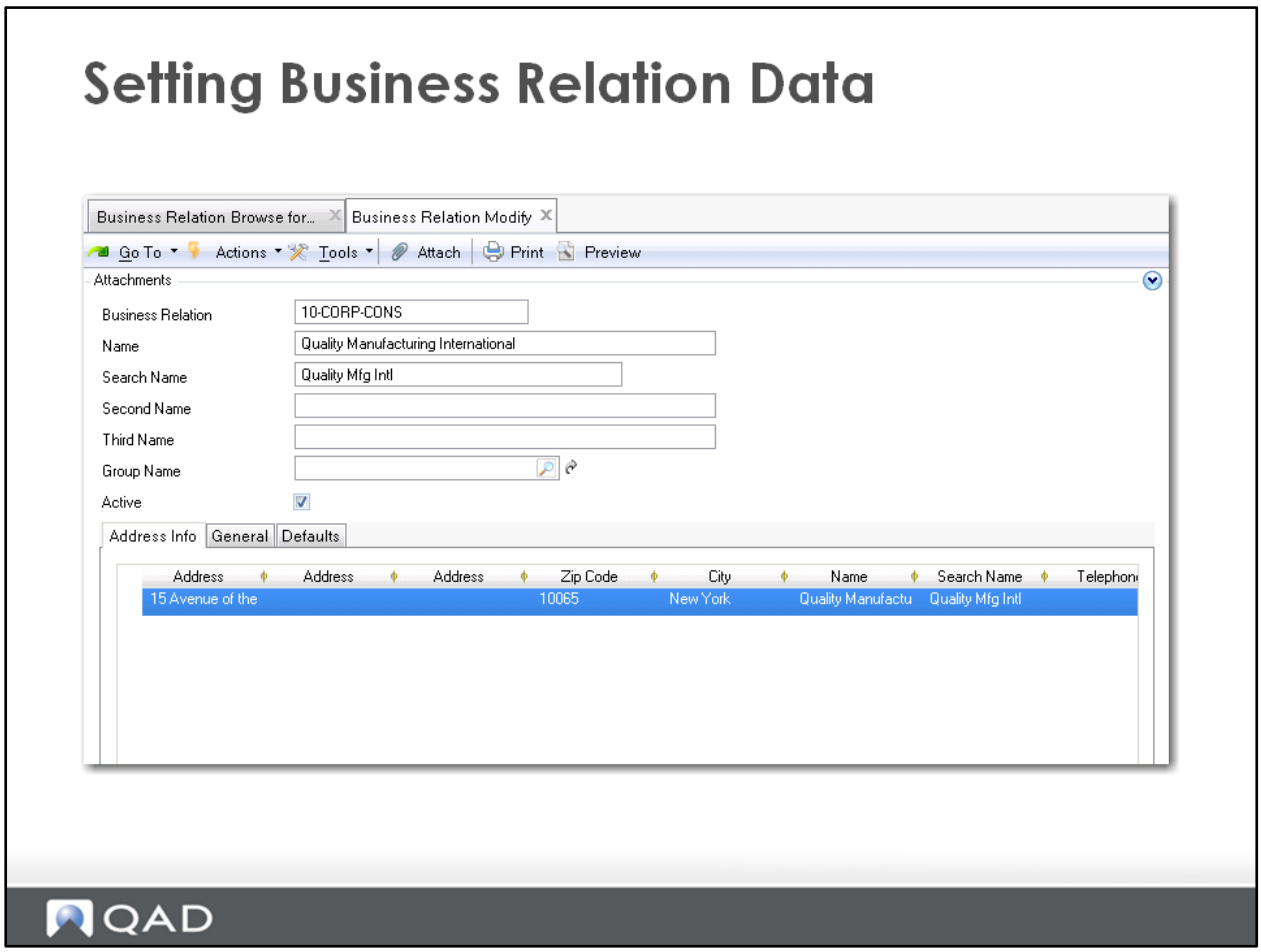


As part of the expansion of its current businesses, basic setup has been completed by the staff of the parent company, QMI. The setup ensures that all accounting and financial reporting functions are set in accordance with corporate procedures.

All of the system-wide data is already available to QMI. Images of the domain and entity setup are shown in the slide. Note that QMI has several shared sets that are common to other QMI divisions and two shared sets(customers and suppliers) that are unique to QMI.

This course uses a domain already set with a base currency of US dollars (USD), a general ledger chart of accounts, and a GL calendar with periods that correspond to the standard 12-month calendar.

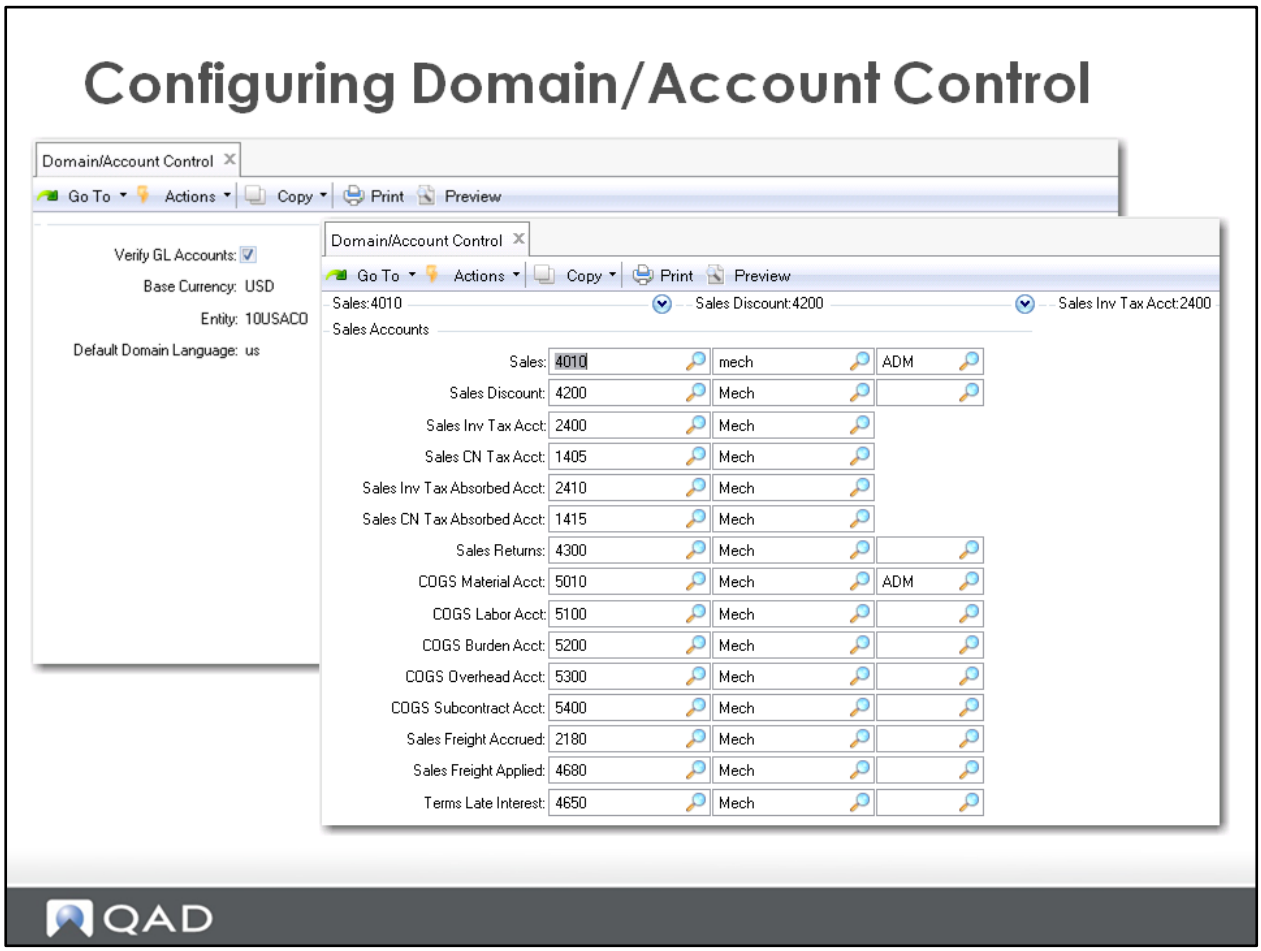
Setting Business Relation Data



The New York address of QMI has been set up in Business Relation Create (36.1.4.3.1).

All addresses for customers, suppliers, and employees are set up as business relationships.

Configuring Domain/Account Control



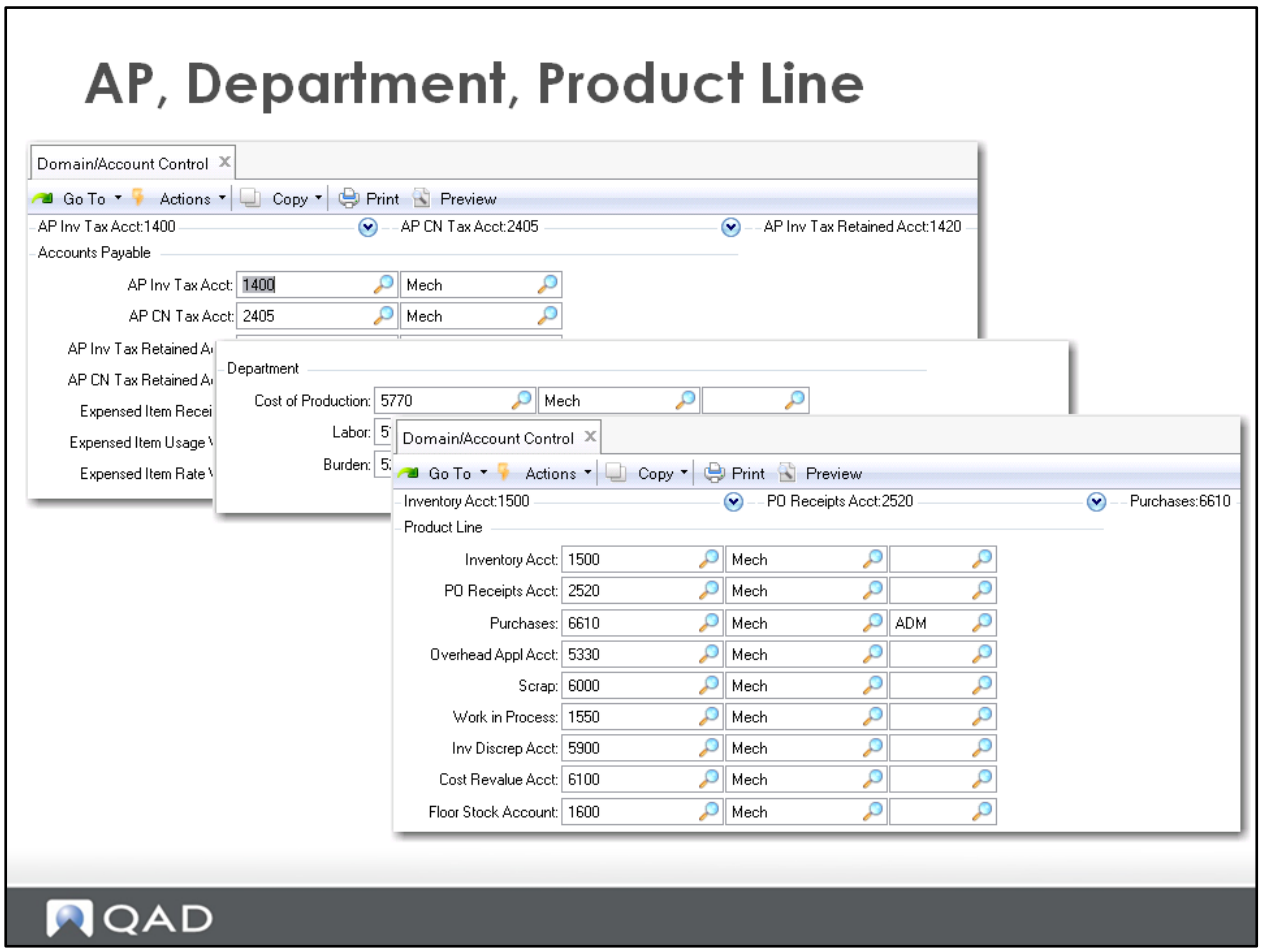
Domain/Account Control (36.9.24) is used to set up default account codes, sub-accounts, and cost centers. These are system-required accounts from the general ledger chart of accounts. Configuring account data in Domain/Account Control ensures that transactions are booked to a valid general ledger account.

The first frame in Domain/Account Control shows that GL accounts are verified, the base currency for the entity is USD, and that audit trails are maintained.

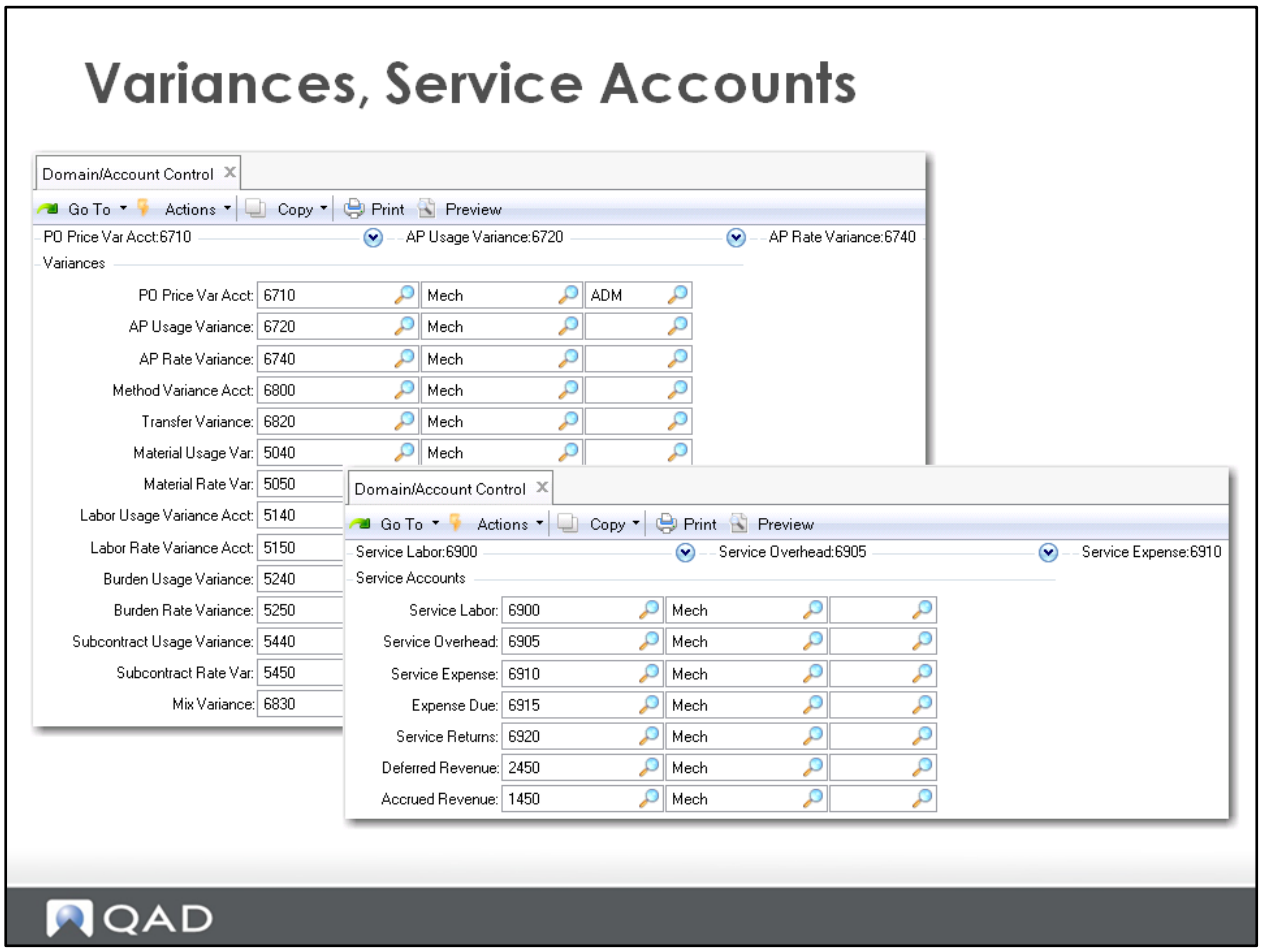
The default accounts are organized by type; sales accounts are shown in the slide.

The following slides show the remaining default accounts organized by the type of account.

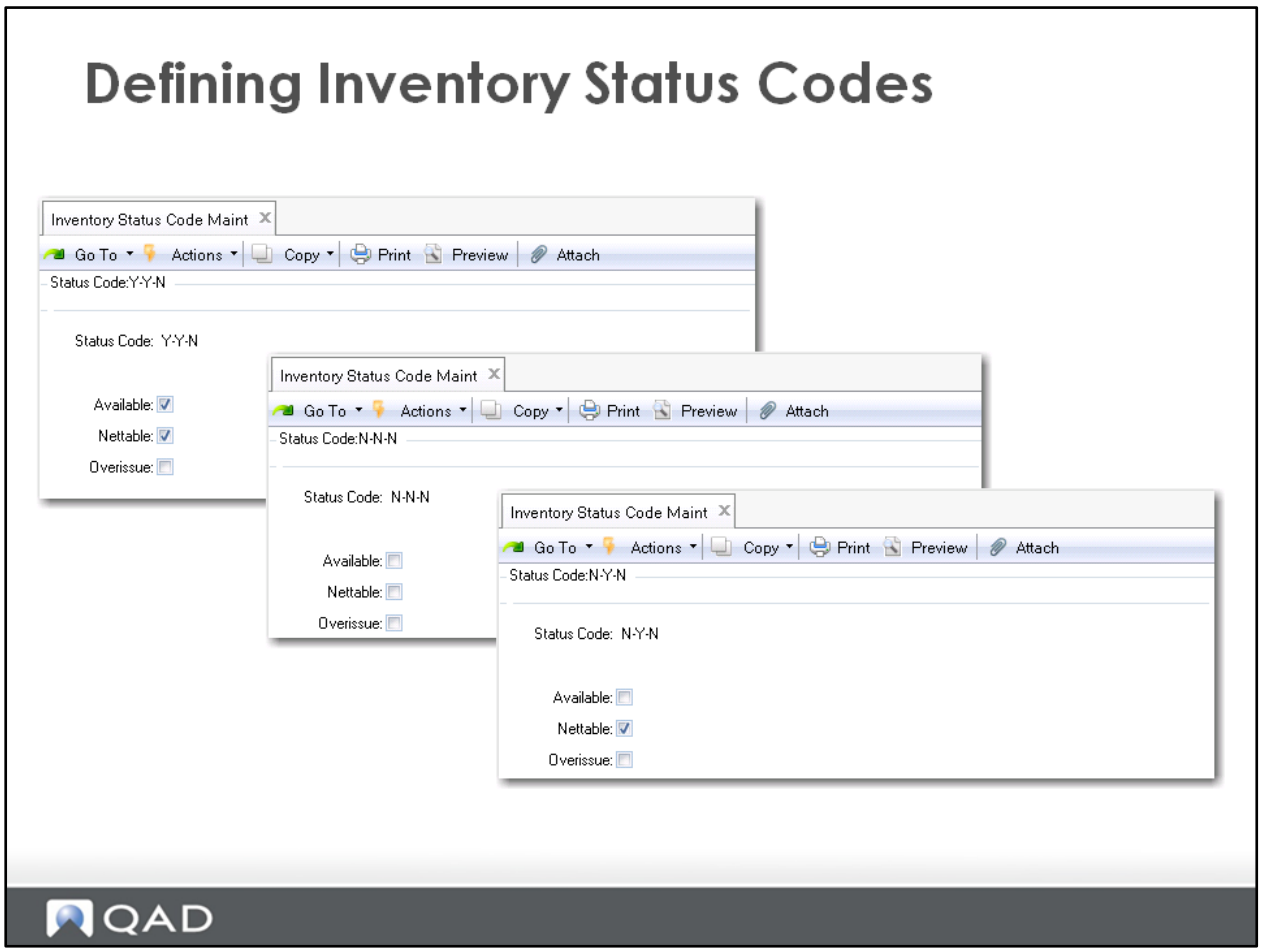
AP, Department, Product Line



Variances, Service Accounts



Defining Inventory Status Codes



Before QMI can enter a site or item, it needs to define at least one inventory status code. These codes have a significant effect on how inventory can be managed.

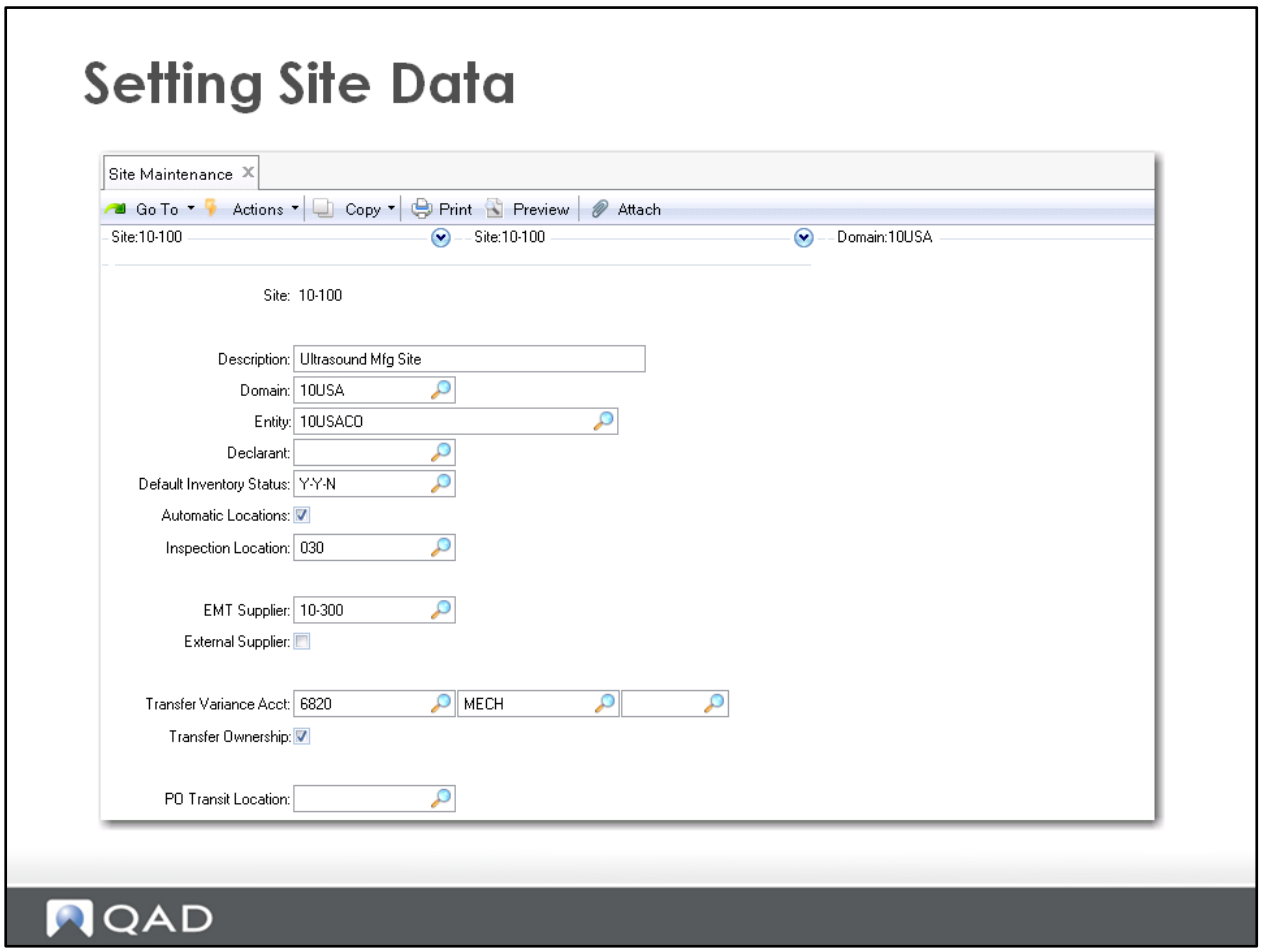
In Inventory Status Code Maintenance (1.1.1), QMI can indicate if the inventory is available to allocate to sales orders and/or work orders, nettable for MRP planning purposes, and whether overissues (items issued even if the current balance is insufficient to meet demand) are permitted from the locations identified by this code. All status codes defined by QMI disallow overissues by leaving the Overissue box unchecked. This prevents inventory transactions that would result in negative balances.

- QMI used code Y-Y-N to indicate parts and items that are OK to use and indicates that they are available to issue and nettable for MRP planning purposes.
- QMI uses the code N-N-N to indicate items that are known to be unusable. These items cannot be issued or used for planning.

- QMI uses the code N-Y-N to indicate items that require review upon receipt or that are suspected of being unusable. These items require further review and are normally sent to an inspection area. They cannot be issued but can be used for planning.

Note: QAD highly recommends that you do not use blank code fields.

Setting Site Data

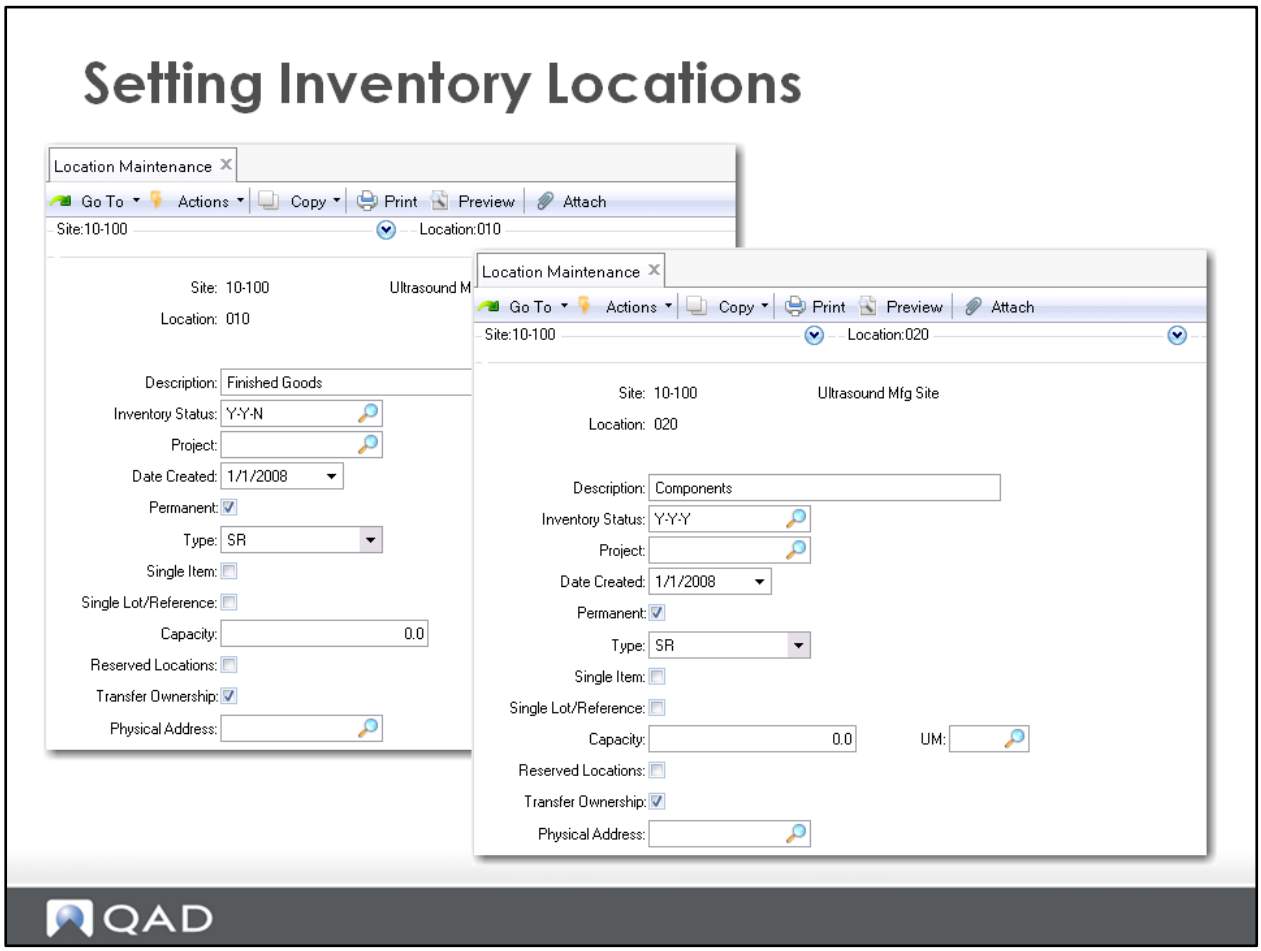


QMI has multiple sites that you can view in Site Maintenance (1.1.13). This example focuses on site 10-100, assigned to domain 10USA and entity 10USACO. Site 10-100 has a default inventory status code of Y-Y-N, which was defined earlier. This code will default to inventory locations created for this site.

The Automatic Locations field is left unchecked, which requires that new inventory locations be set up in Location Maintenance before use. If the field is checked, then inventory transactions can be processed for locations that do not exist, and the system creates them as part of the transaction. Some companies like this way of working because it lets users create new locations as required. The new locations use all defaults from the site record. However, since the input is not verified, locations can be created that are, in effect, typographical errors.

To calculate taxes, set up a corresponding address code for each site in Company Address Maintenance. On taxable transactions, the system uses the site address to select the correct line-item tax environment. On purchase orders, the system retrieves the ship-to address code from the line item site code.

Setting Inventory Locations

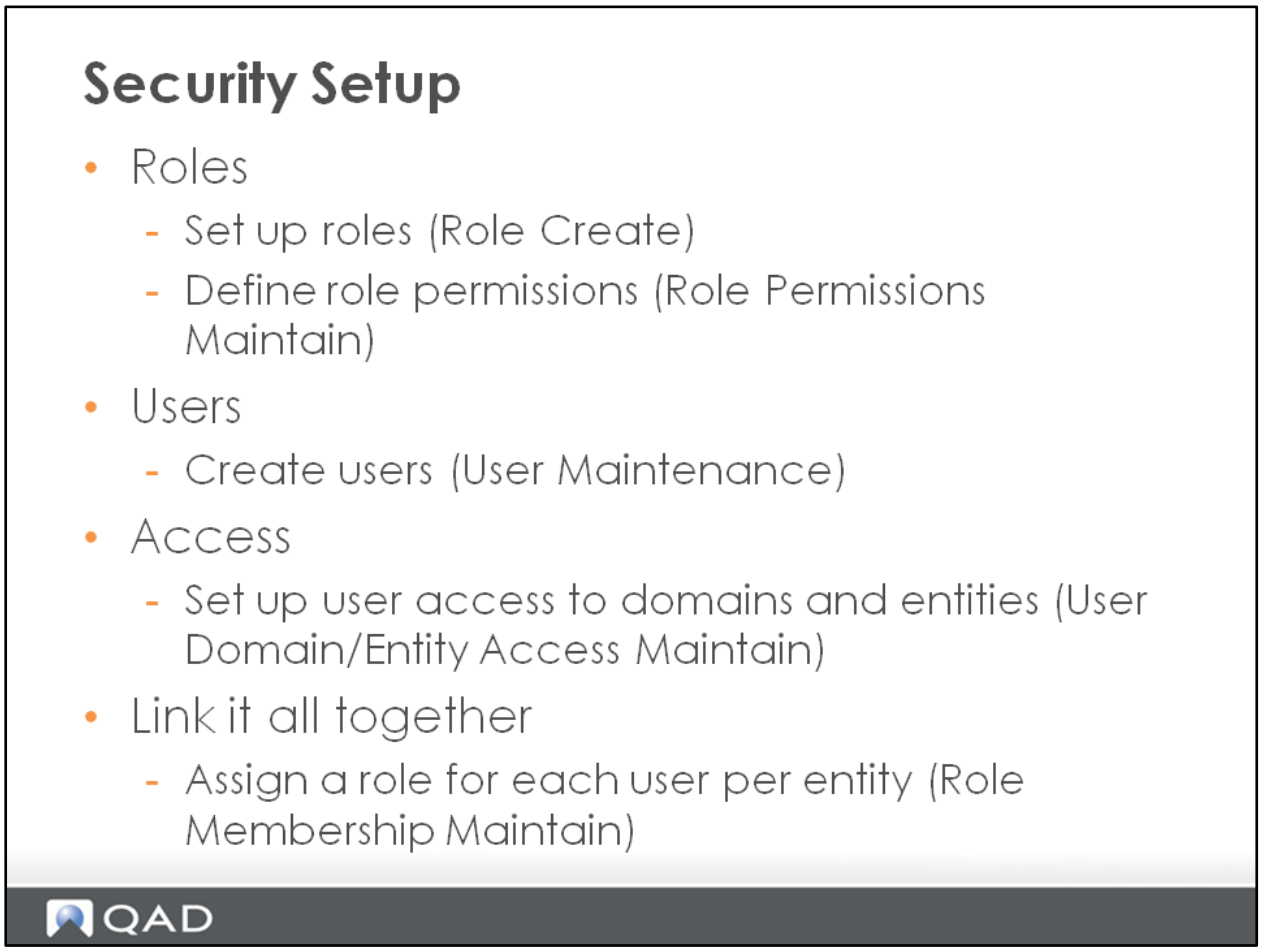


QMI has set up three locations in Location Maintenance (1.1.18) to subdivide site 10-100, two shown in this slide and one in the following:

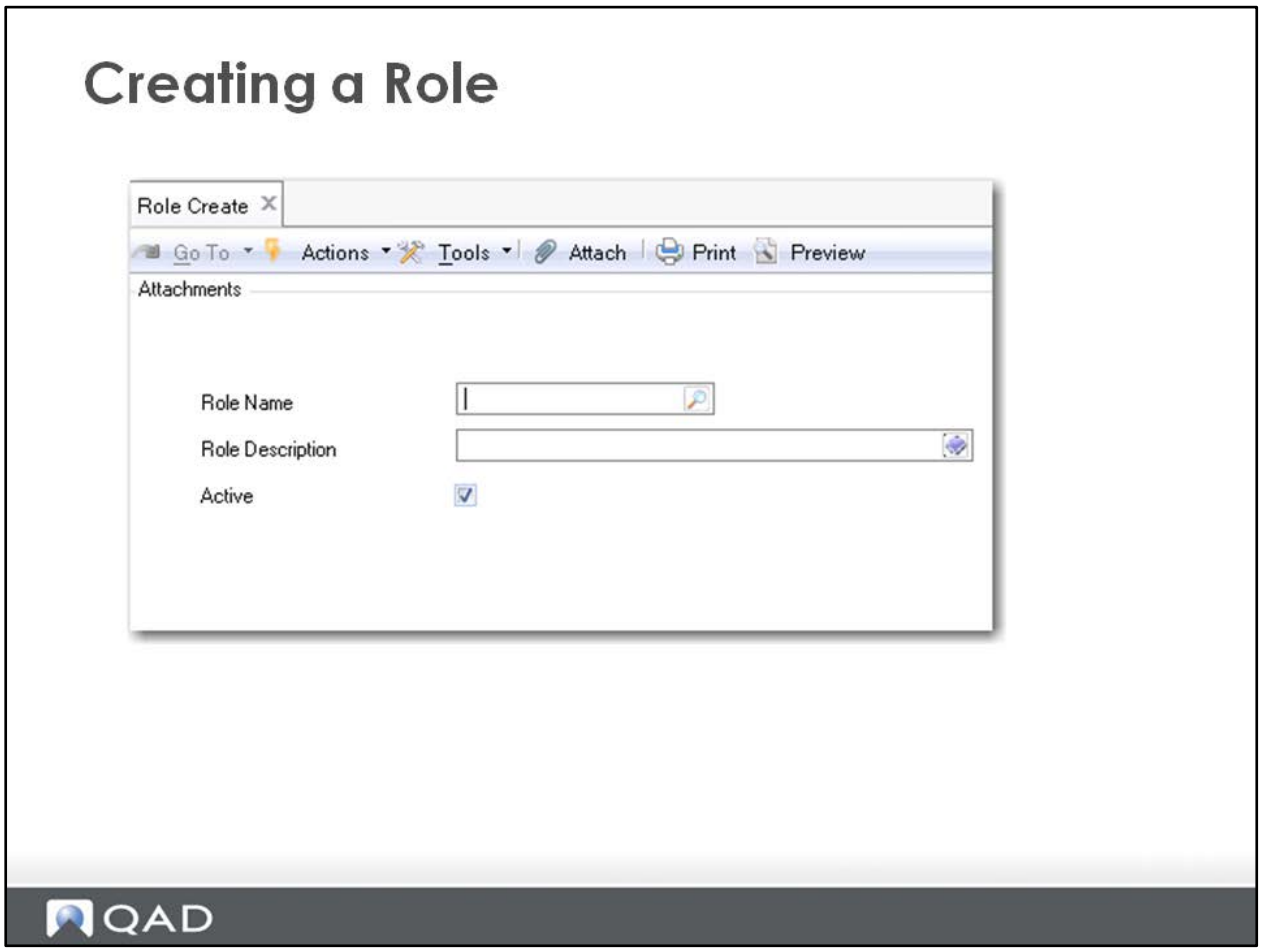
- 010 is for storage of finished goods, The Finished Goods location uses the default inventory status code Y-Y-N from the site record.
- 020 is for components. Its inventory status is Y-Y-Y.

Select the Permanent field to ensure that your locations do not disappear from the records when they are empty.

Security Setup



Creating a Role



In Role Create (36.3.6.1), enter a name and description to create a role. During implementation, you can create inactive roles by clearing the Active field. An inactive role cannot be referenced in any functions other than Role Create.

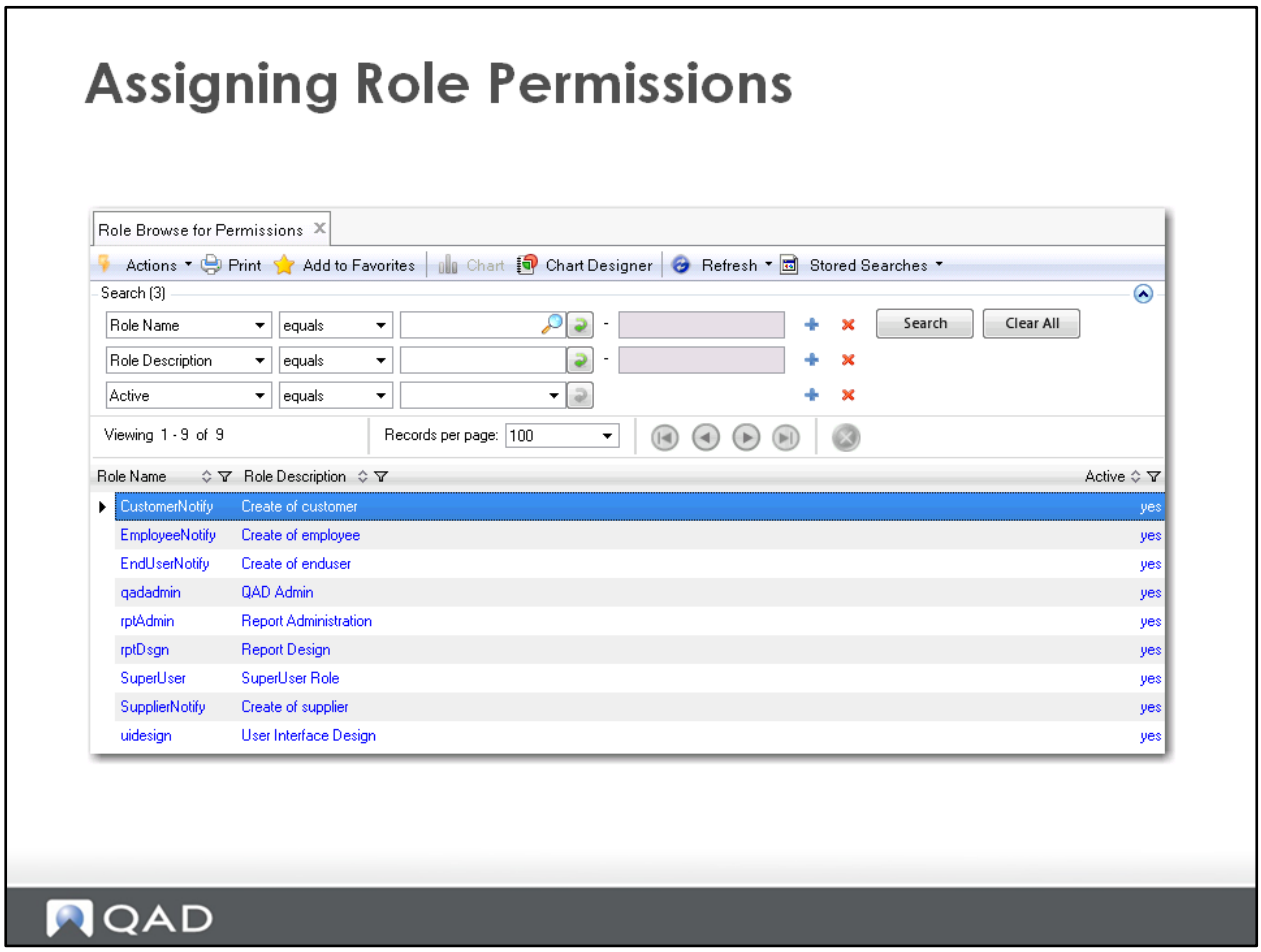
A number of default roles are supplied with the system. Members of these roles are notified by the system when new records are created in finance (customer, employee, end users, suppliers), since additional operation data needs to be specified for these records:

- CustomerNotify
- EmployeeNotify
- EndUserNotify

SupplierNotify Two other special roles are supplied with the system:

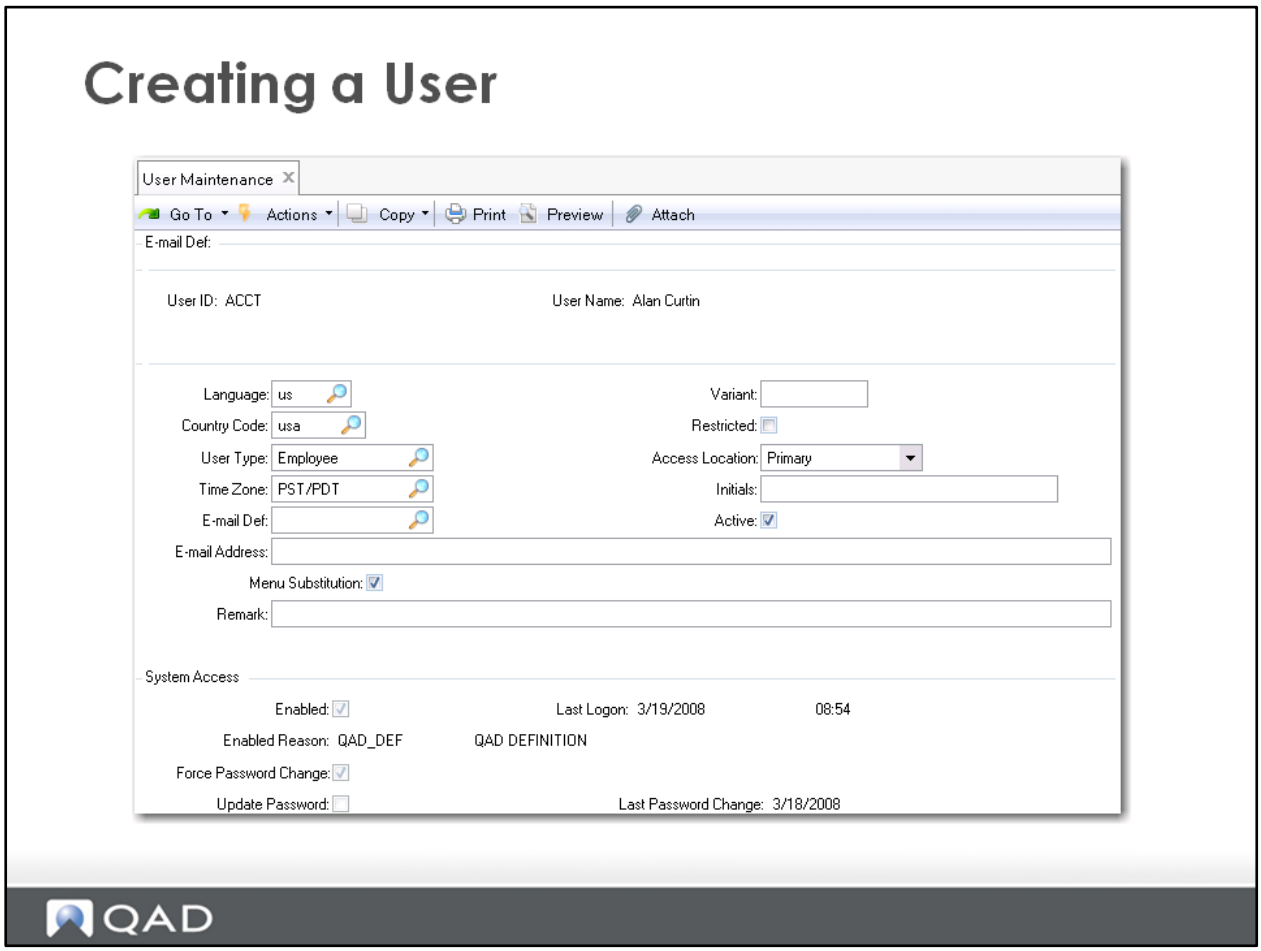
- qadadmin
- SuperUser

Assigning Role Permissions



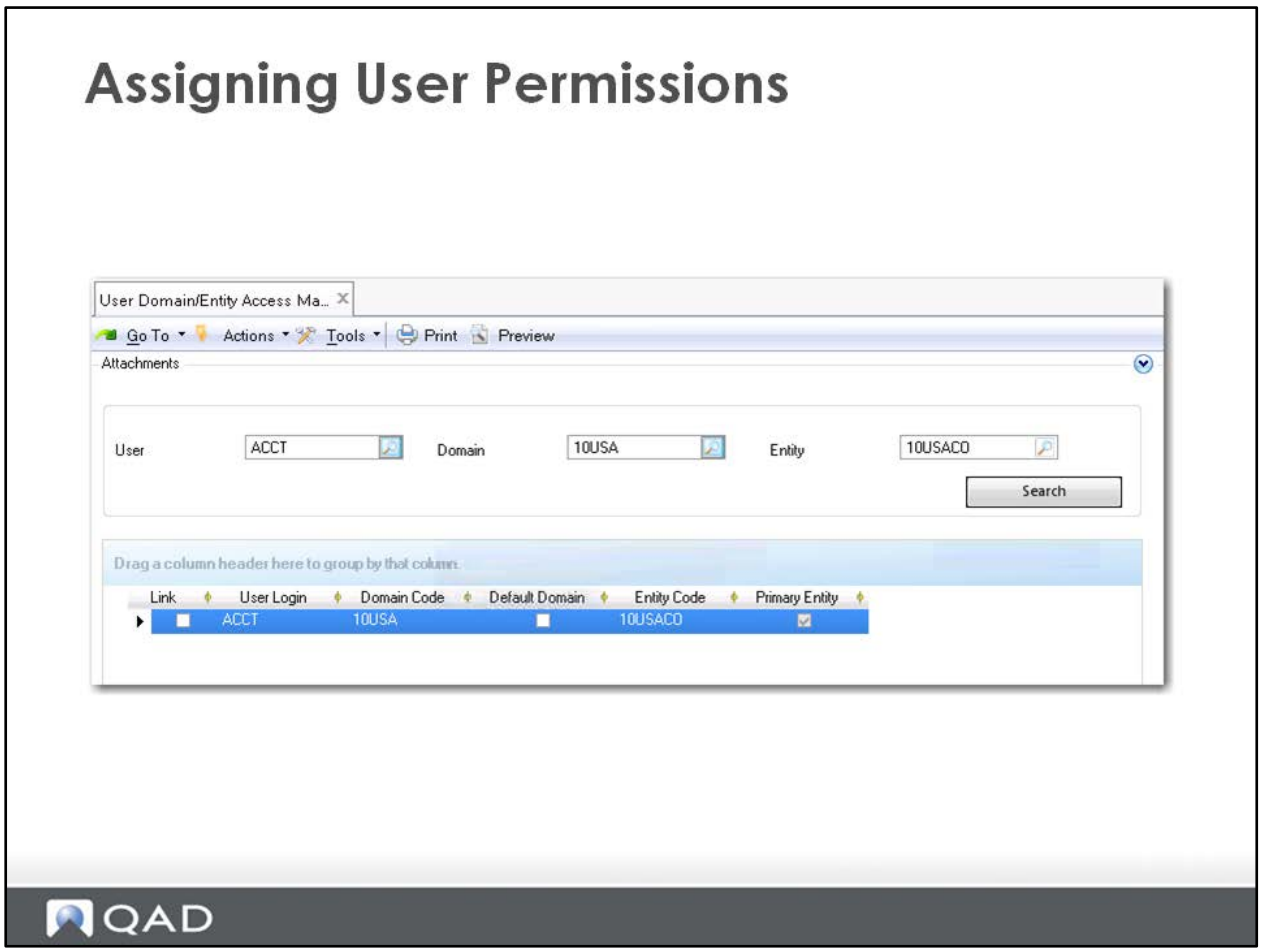
After defining role names, go to Role Permissions Maintain (36.3.6.5) and associate the system activities that you want members of each role to be able to complete.

Creating a User



In User Maintenance (36.3.1), define the IDs for the users in your system, and associate other data with them such as an e-mail address, language, country, and type.

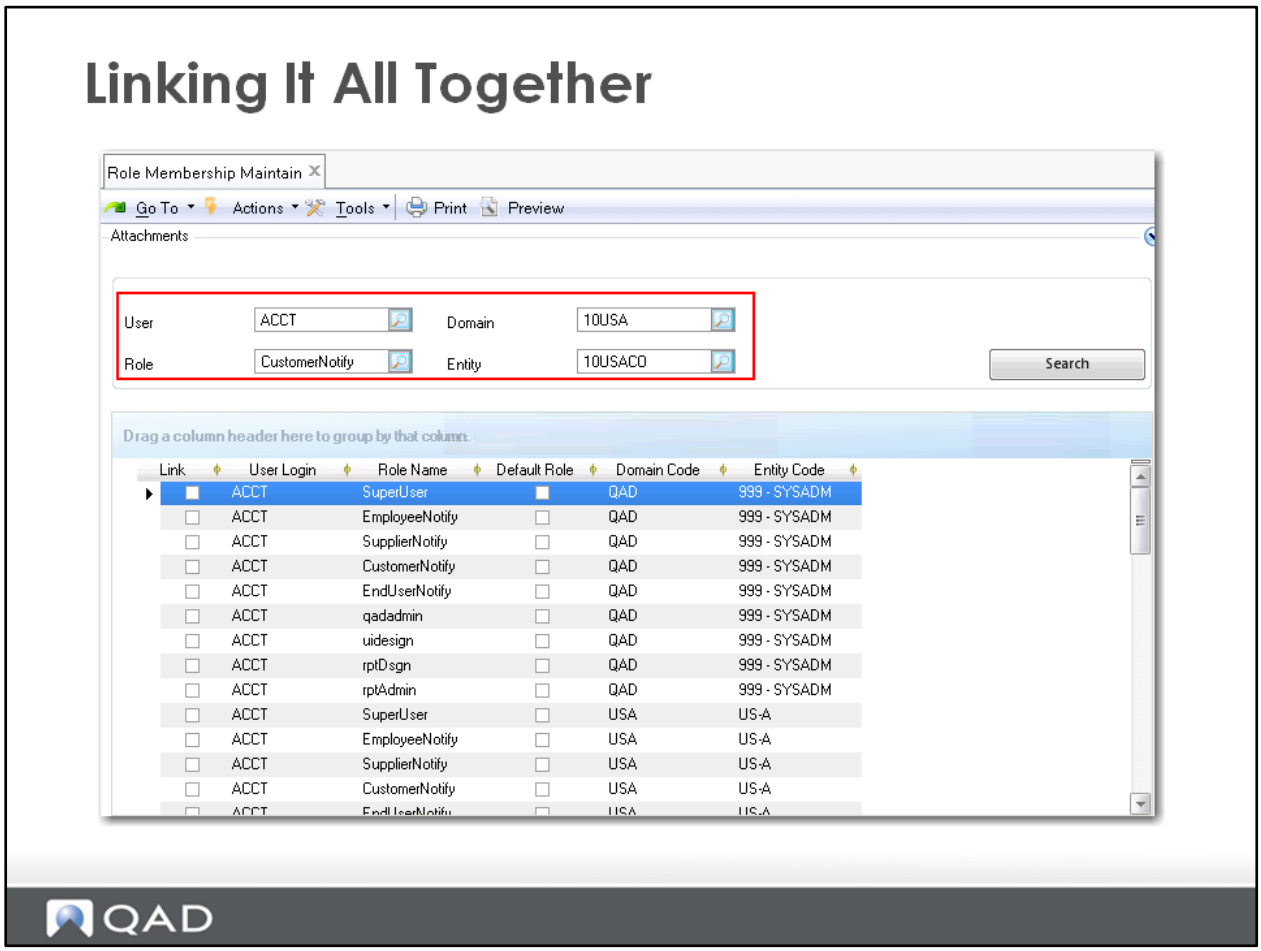
Assigning User Permissions



Go to User Domain/Entity Access Maintain (36.3.4) to set up user access.

Link a user to an entity by selecting the field in the Link column.

Linking It All Together

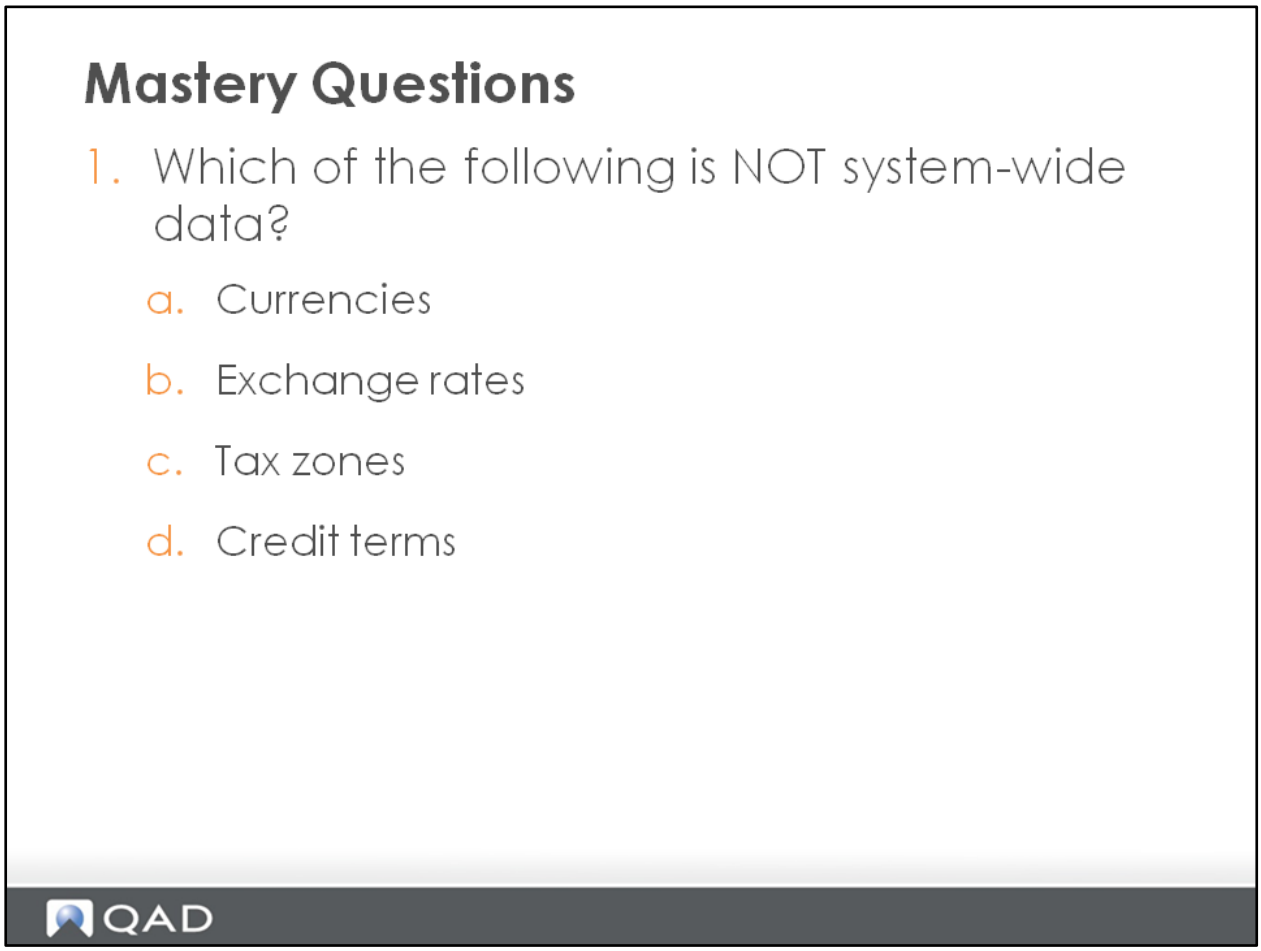


In the final security setup step, you link users, roles, entities, and domains.

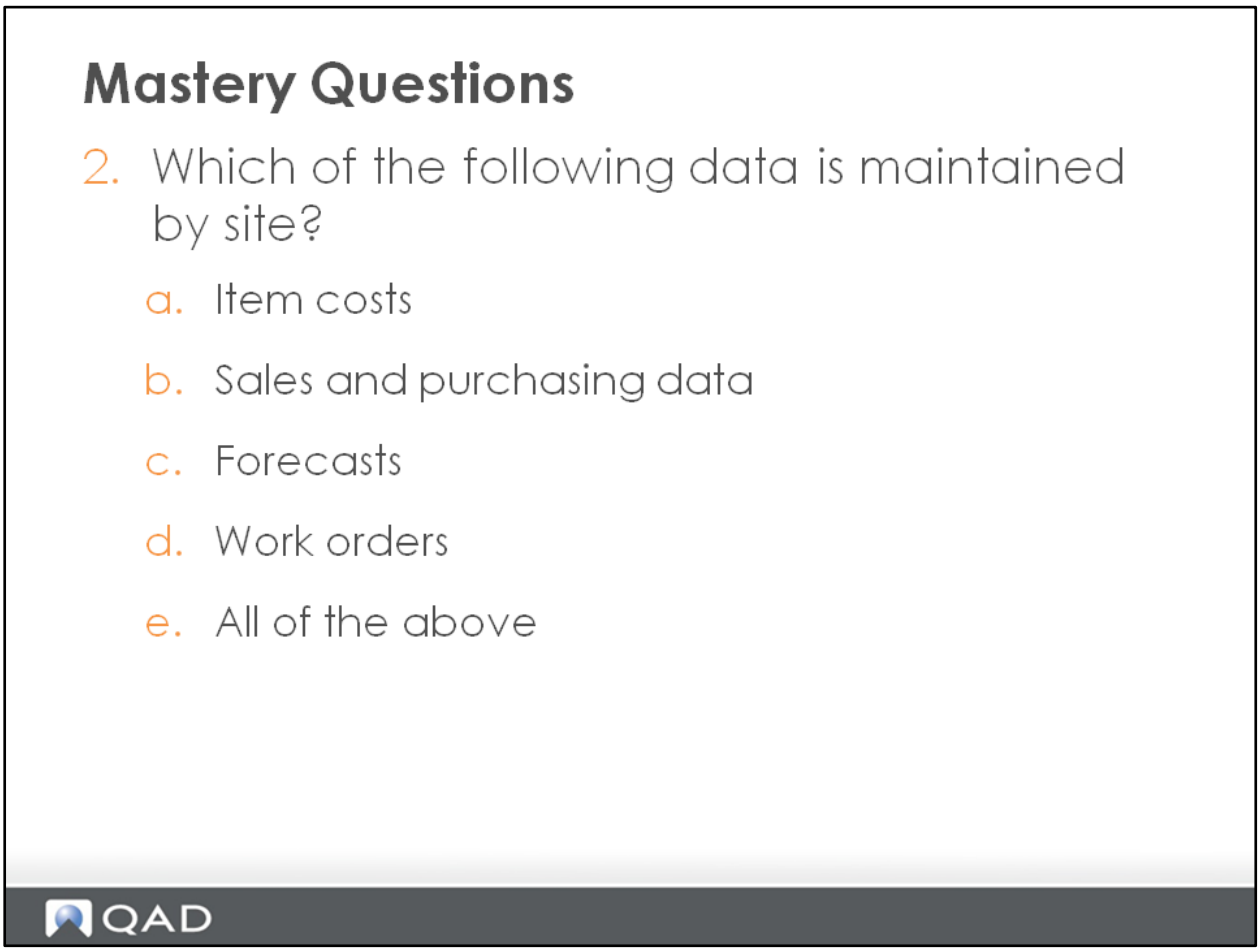
Go to Role Membership Maintain (36.3.6.6). Select a user, role, domain, entity, or a combination of these, then click Apply. Link a user to a role for the entities that the user has access to (entity by entity).

A user can have different roles in each entity.

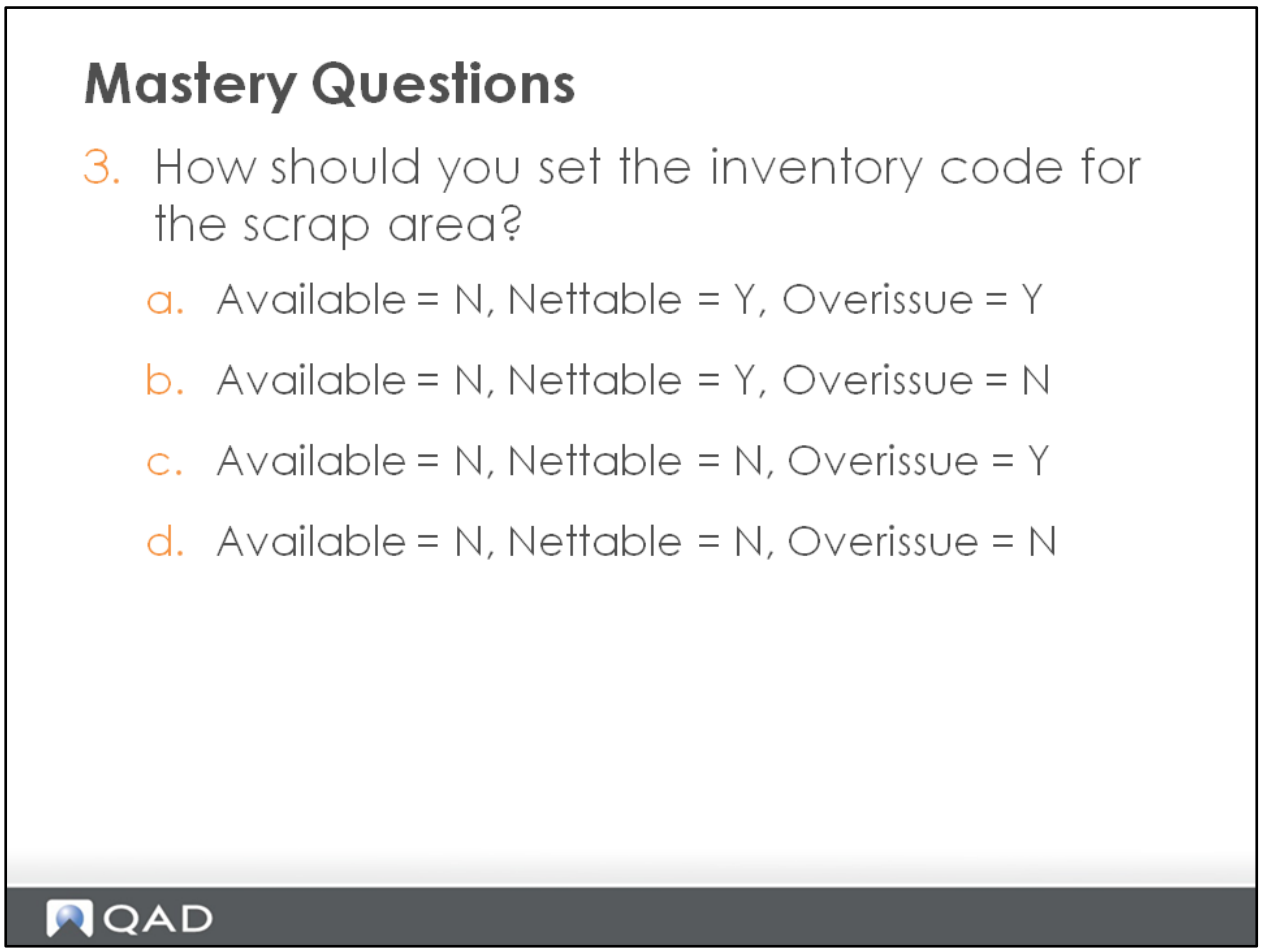
Mastery Questions



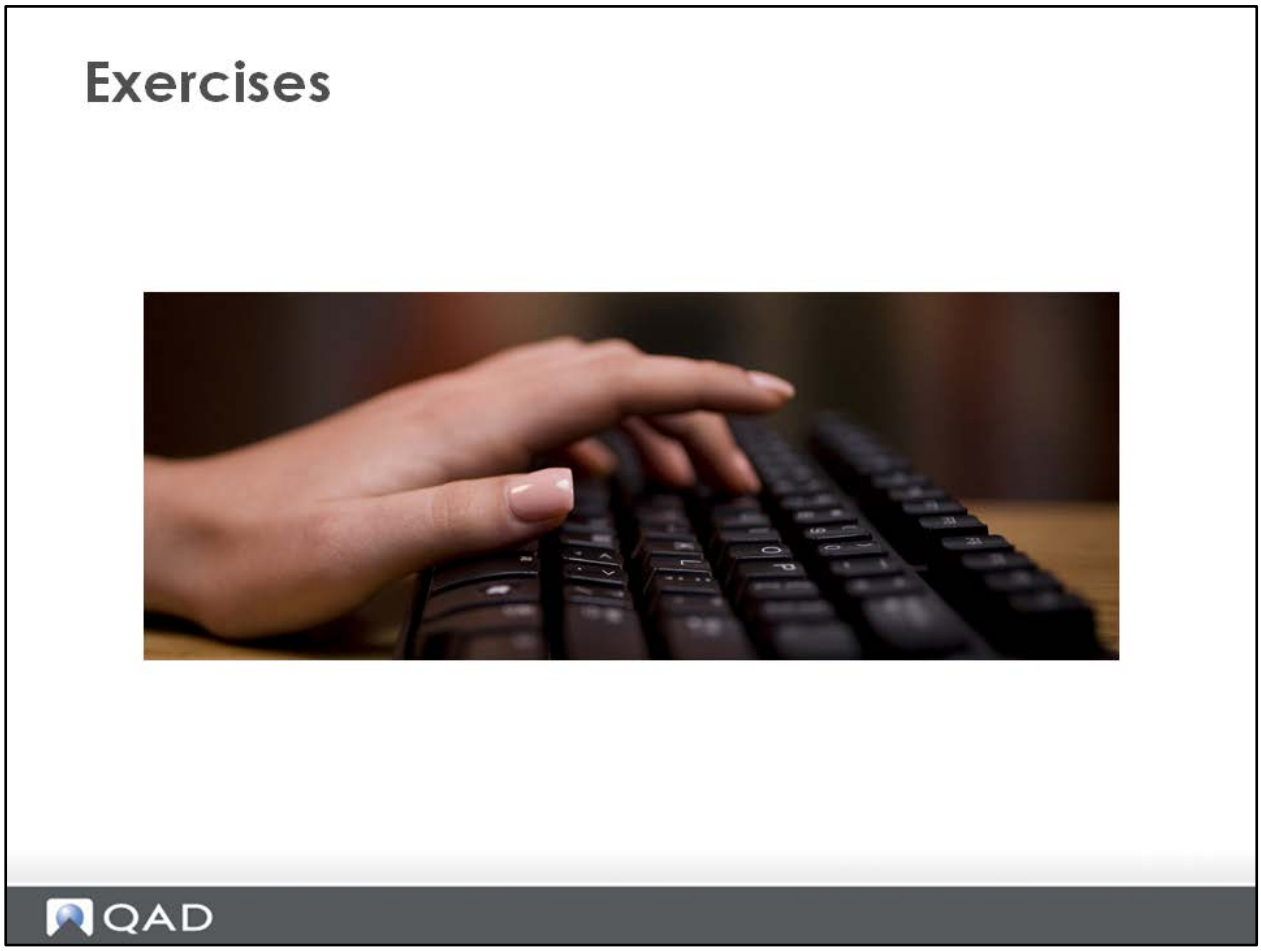
Mastery Questions



Mastery Questions



Exercises



Exercise: Creating a Site

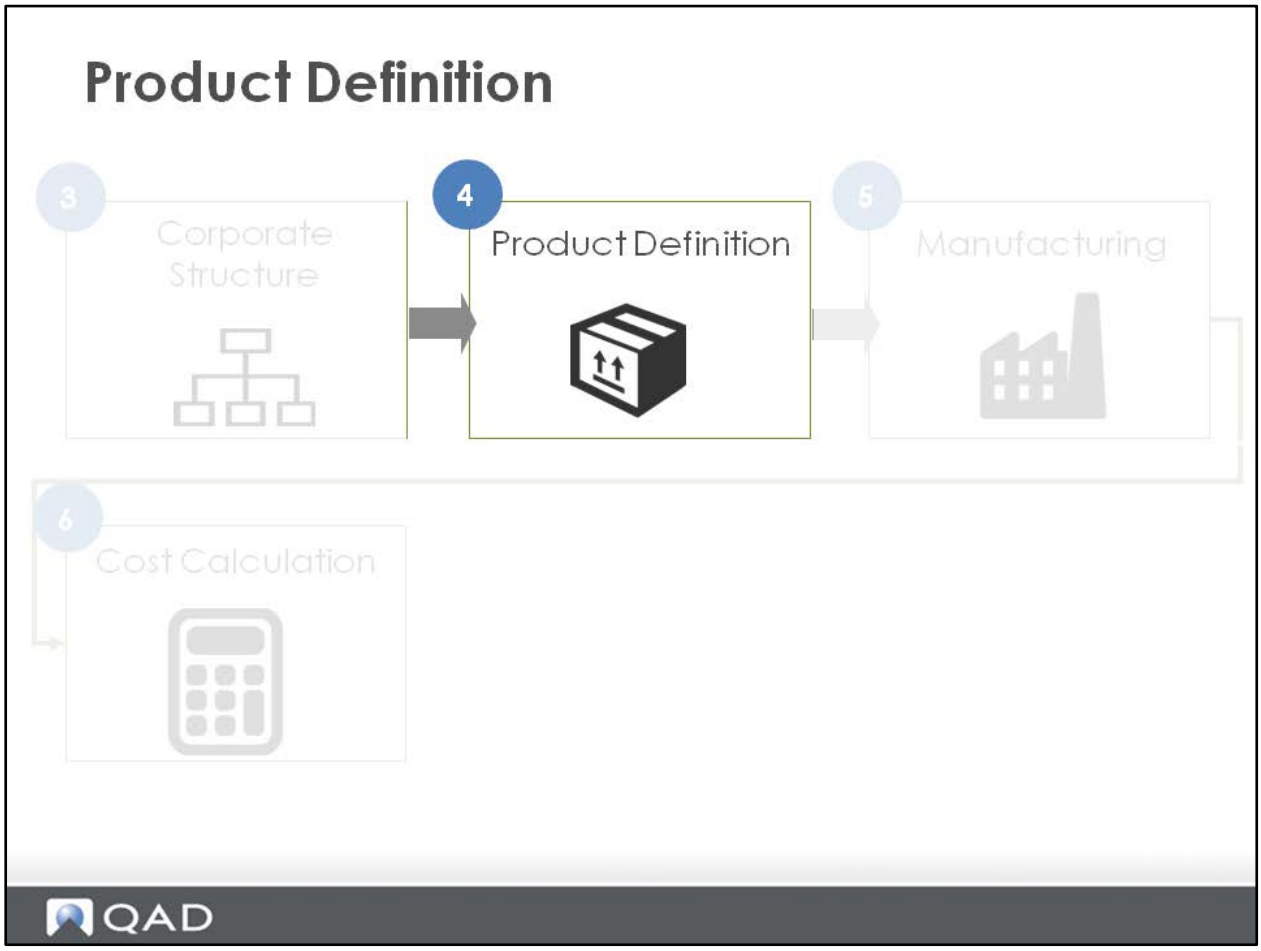
1. Go to Requisition Control and verify that Using GRS is not selected.
2. Use Inventory Status Code Maintenance to add a status as follows:
   Status Code: Y-Y-N
   Available: Yes
   Nettable: Yes
   Overissue: No
3. Use Site Maintenance to enter a record for a manufacturing/distribution site as follows:
   Site Code: 10-101
   Description: Ultrasound Mfg Site
   Domain: 10USA
   Entity: 10USACO
   Default Inventory Status: Y-Y-N

4. Use Location Maintenance to create three inventory locations for site 10-101 using the default inventory status of site 10-101.
   Location 010 for finished goods
   Location 020 for components
   Location 030 for pending inspections

CHAPTER 4

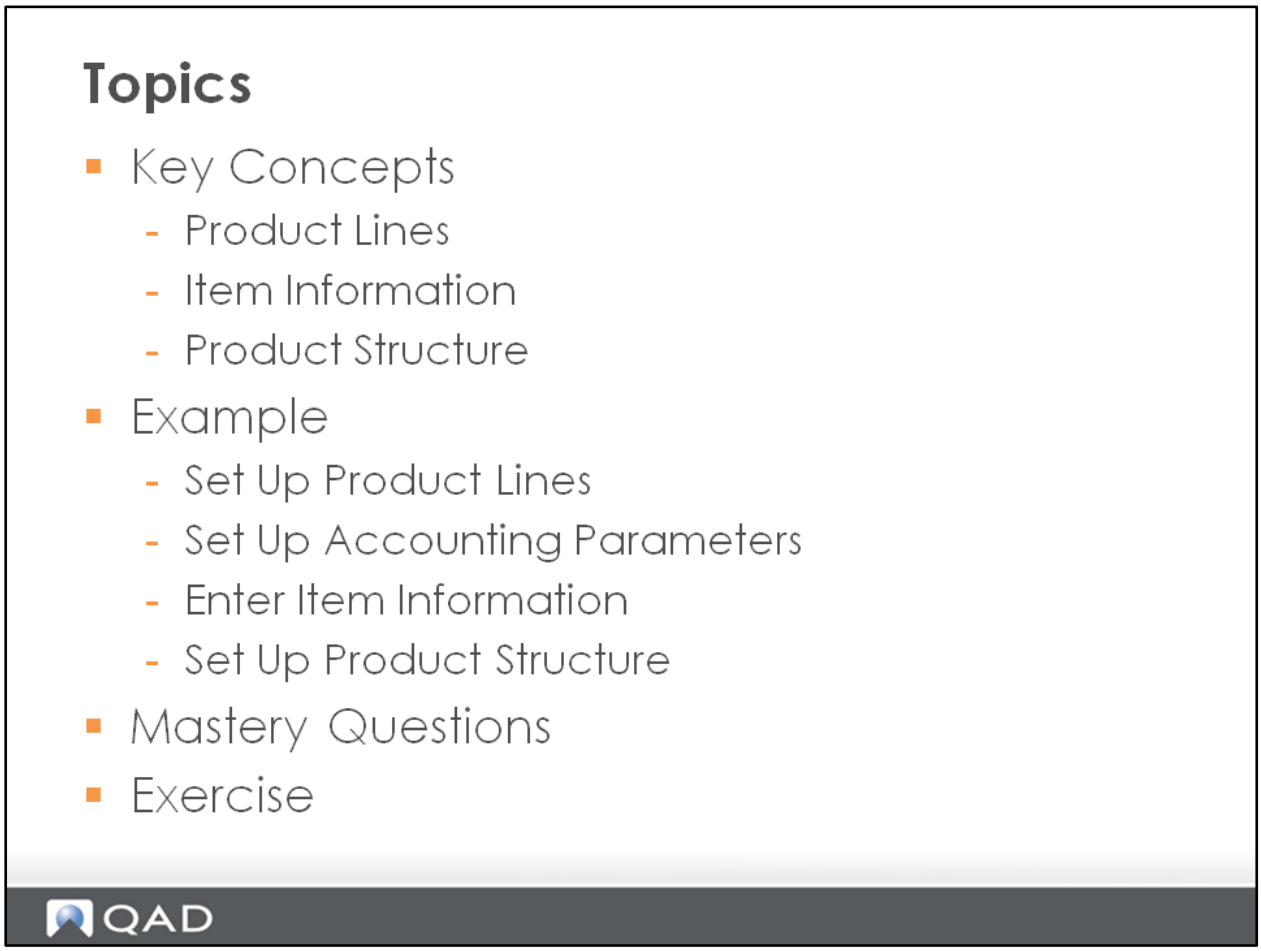
Product Definition

Product Definition

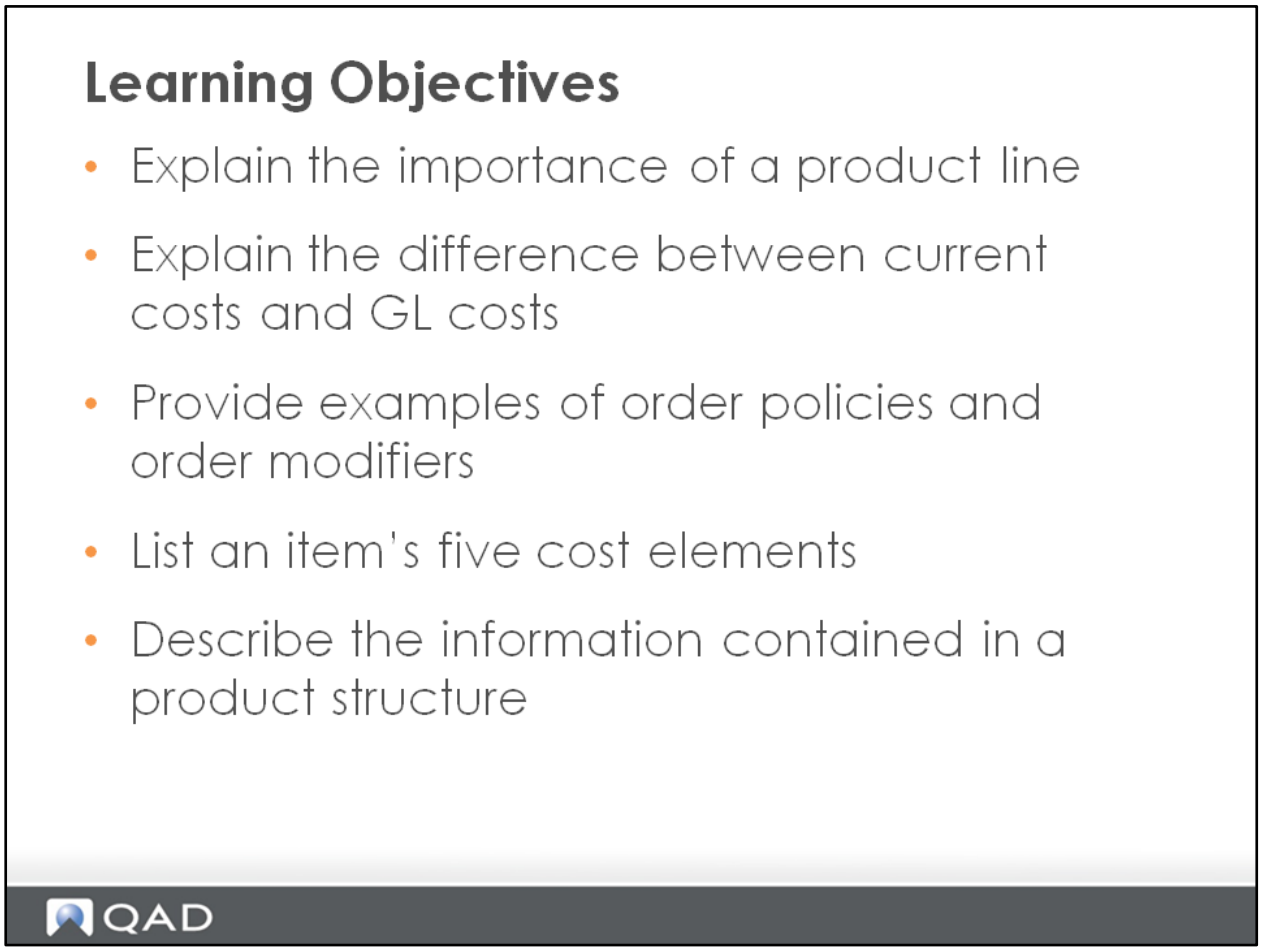


After setting up the basic company structure, you can enter information about company products and how they are made. This section provides information on setting up items and defining the components that are used to build them.

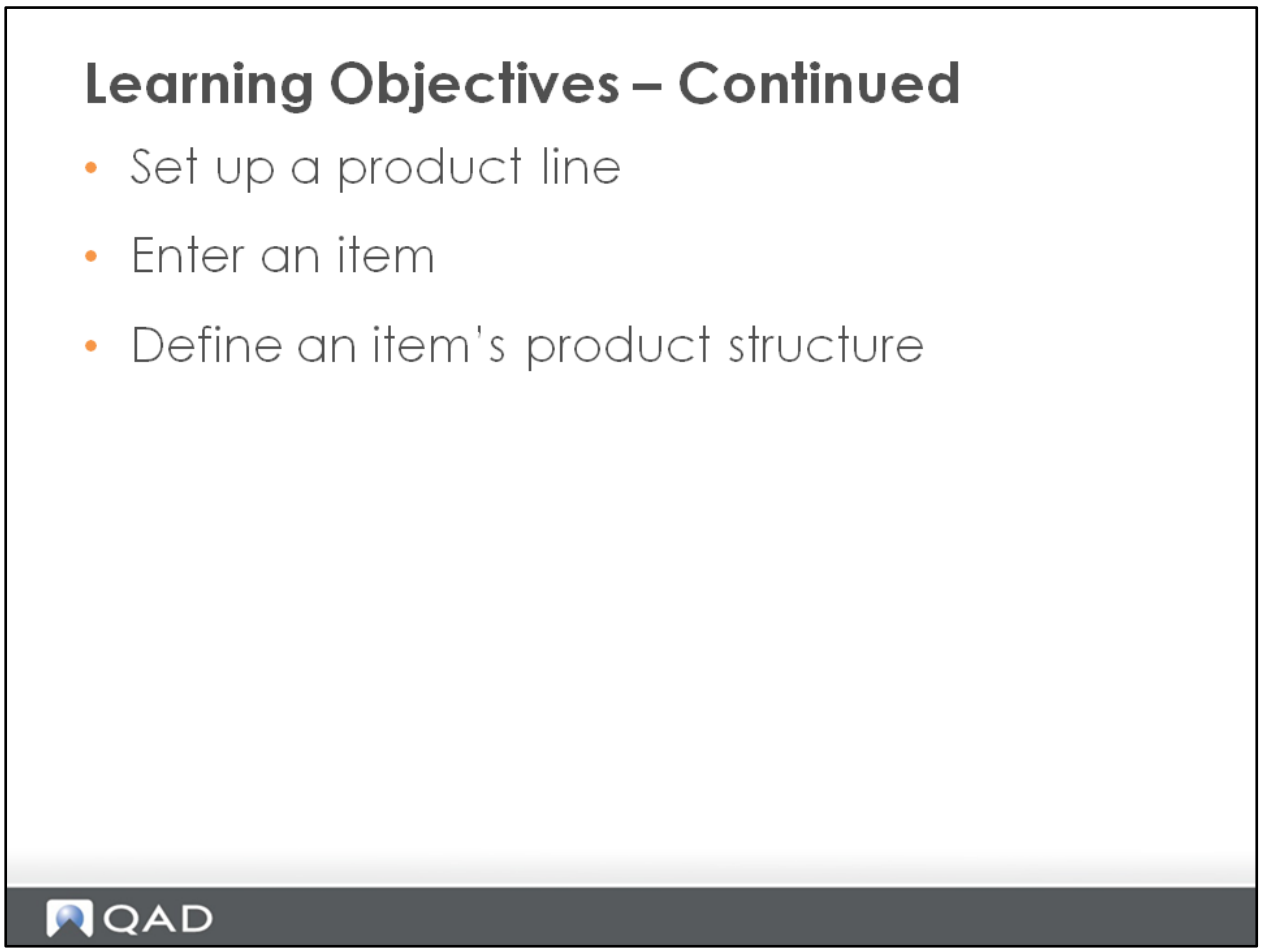
Topics


Topics
Key Concepts
Product Lines
Item Information
Product Structure
Example
Set Up Product Lines
Set Up Accounting Parameters
Enter Item Information
Set Up Product Structure
Mastery Questions
Exercise
QAD

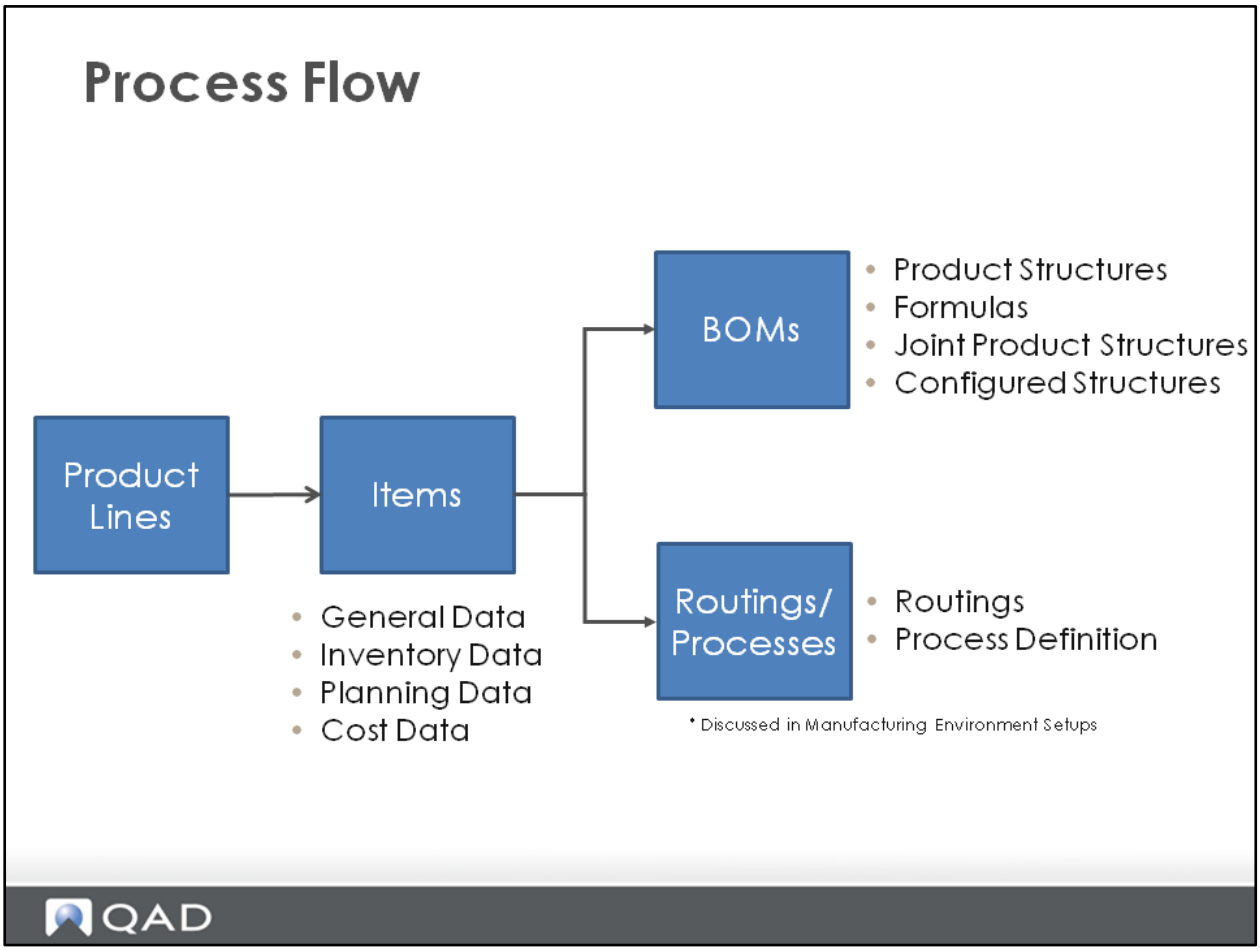
Learning Objectives



Learning Objectives – Continued



Process Flow



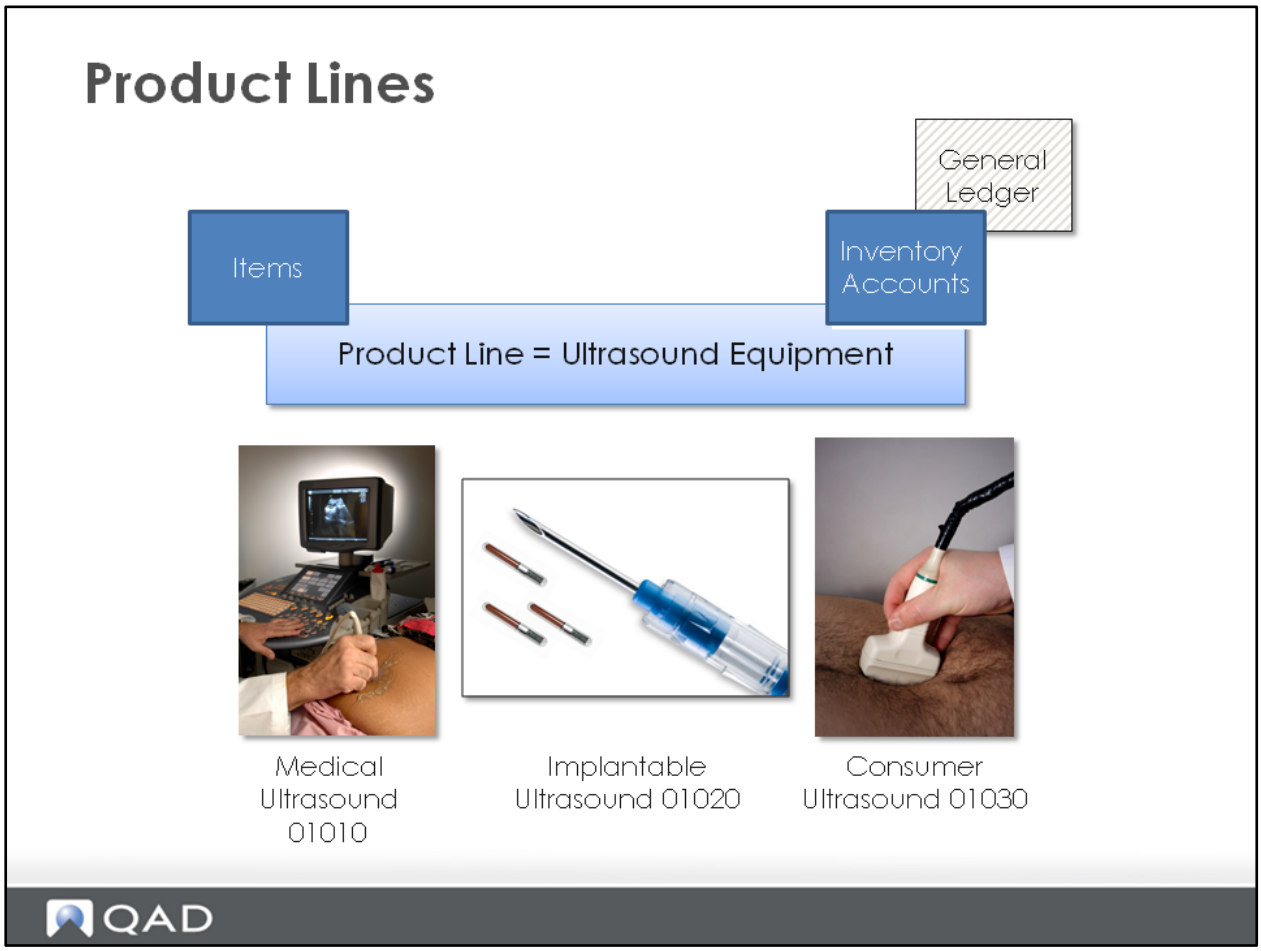
As shown in this slide, to establish a product definition, you first establish product lines, then assign items to them. Although each item needs an associated product line to capture inventory costs and movement, each item does not necessarily have a bill of material (BOM) or routing associated with it. This chapter discusses bills of material; routings are presented later in the course.

- Bills of material specify how much of each component item are required to produce a parent item.
- Routings quantify where and how the product is made and provide the steps used in the process of putting the materials together.

In common terms, bills of material and routings are like a recipe. Most recipes have a list of ingredients (the bill of material) and a list of steps telling you how to combine the ingredients and how to process them (the routing).

The next few pages describe each step in the process flow shown in the figure, beginning with product lines. The guide then describes items and bills of material (product structures). Routings are discussed in the chapter on setting up a manufacturing environment.

Product Lines



In QAD EE, a product line is a group of items or products with similarities in manufacture or application. While product line codes can be related to a marketing concept, they are more accurately considered an accounting concept since the product line code links items to GL accounts. This link is the way that the system ensures that all transactions for an item have GL consequences. All items must belong to a product line; otherwise, no GL transactions associated with them can be recorded.

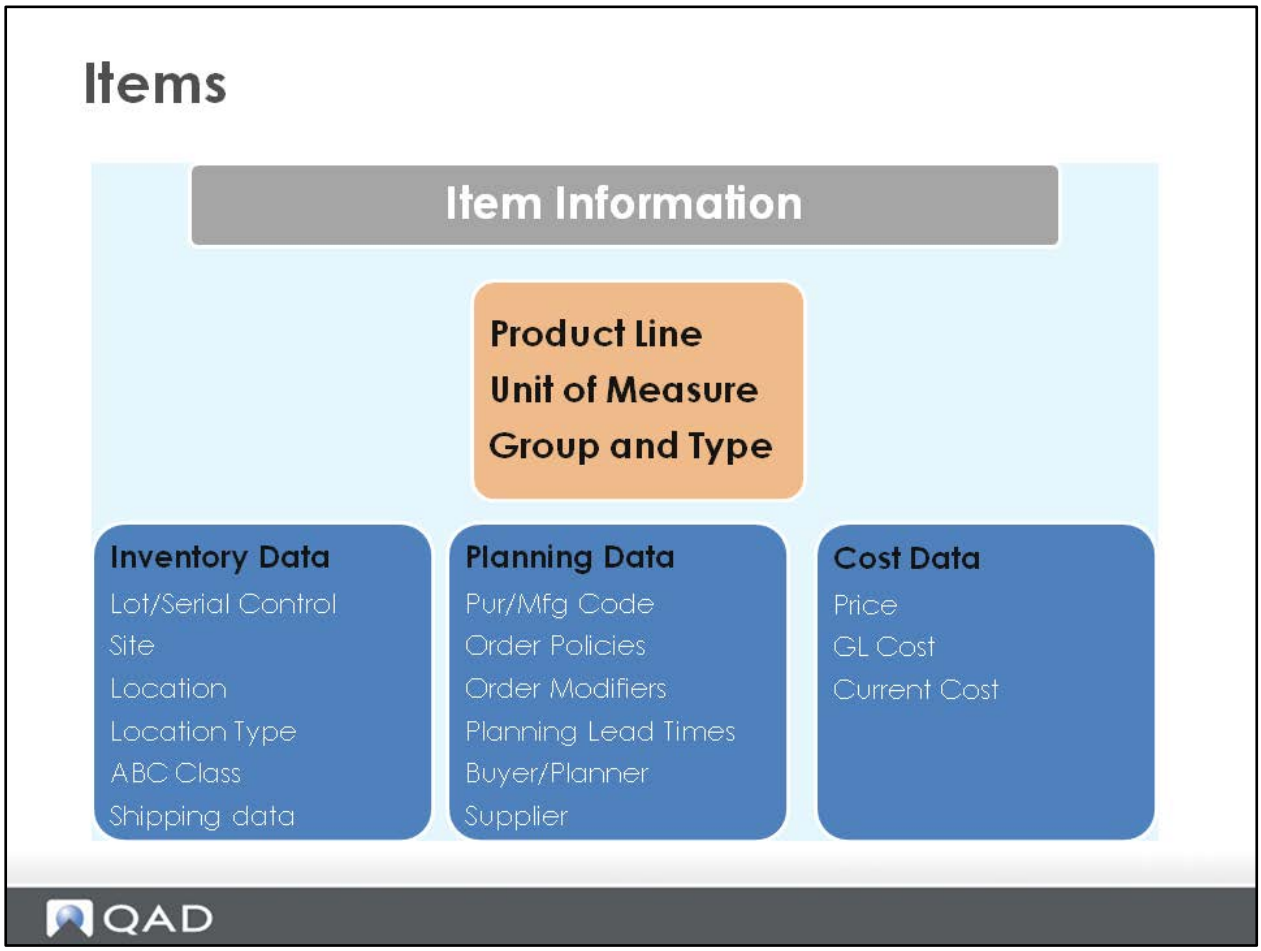
While product lines are primarily a financial construct, do not assign them by finance. While finance plays a role in defining product lines, both manufacturing and marketing want to understand the structure and the ability to track costs and revenues for their items.

Note: Many browses, inquiries, and reports in QAD can be sorted on product line. It is important to give some thought as to how you want to organize various reports.

The example in the slide shows three different types of ultrasound devices in one product line. All costs and revenues for these items are collected in the same set of GL accounts. Your company could decide that the nature of the materials and the manufacturing processes used for these items are different enough to require three product lines. Then, you could use different accounts or sub-accounts to track costs and revenues.

Some companies may want different product lines for purchased materials or for manufactured components. You must have at least one product line code, but you can have as many as you need. After the product line is set up, select the method for updating the current costs of items.

Items

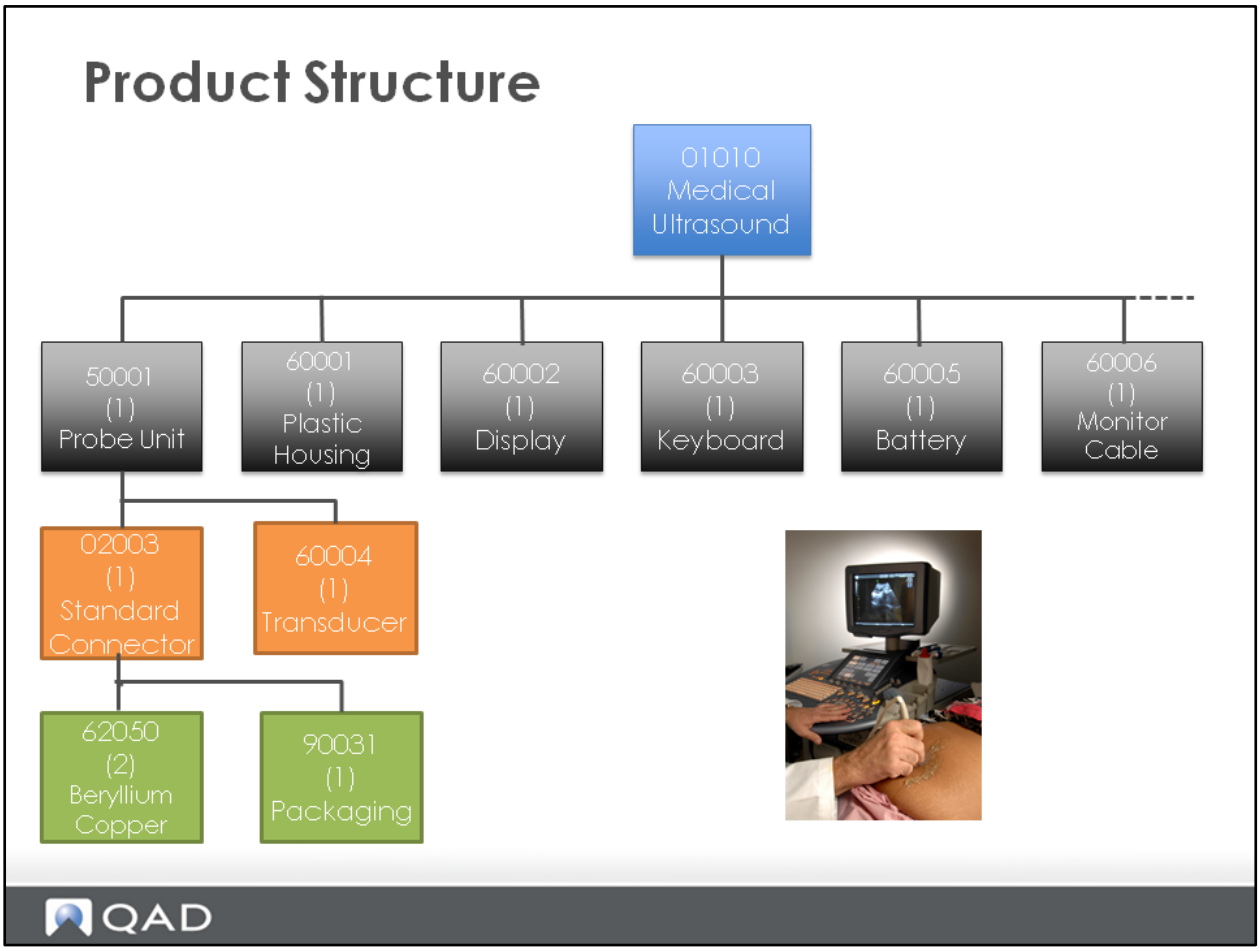


After you set up product lines, you can define specific information about each item.

Enter item information for every item that you use or produce. Item Master Data defaults to all sites in an entity. Later in the course, you will learn that many attributes of an item can be different at each site. An item number identifies every item. This item number is the same for all sites, as is some of the other identifying information such as product line, unit of measure, group, and type.

In Item Master Maintenance (1.4.1), you can enter inventory, planning, and cost data. The slide shows the basic information recorded in each of these areas. You can also use separate functions to add or maintain item data, inventory data, planning data, and cost data. This feature lets different functional areas, such as production planning and cost accounting, to have update access to their data only.

Product Structure



The system uses BOMs, each a collection of parent/component relationships, for the planning and control of manufacturing. This slide illustrates the bill of material for the medical ultrasound device (01010). The BOM shows three levels in the product structure below the end item 01010, the medical ultrasound.

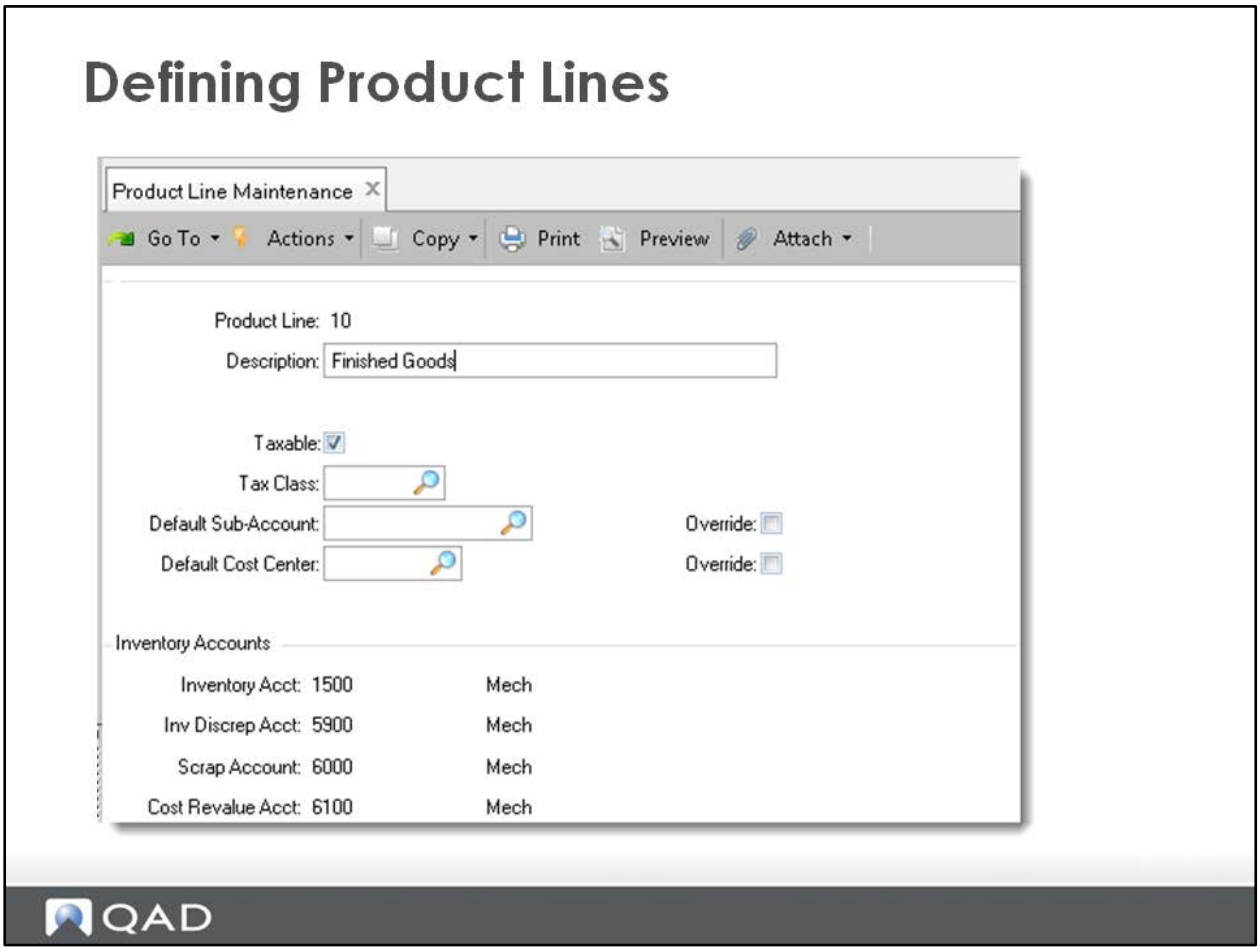
- Not all level 1 components are shown; several more are required to build the end item.
- The probe unit has two components: a standard connector and a transducer.
- The standard connector also has two components.

Alternate Product Structure or Formula

If you use different formulas for producing different batch sizes or if you need to use alternate product structures in different circumstances , you will then require multiple BOMs for the same item. To use multiple BOMs for the same item, add a BOM code in Product Structure Code Maintenance or Formula Code Maintenance. Then, use this BOM code as the parent in Product Structure Maintenance or in Formula Maintenance. A BOM code uniquely identifies a product structure or formula. The normal situation is for the BOM code to be the same as the item number. When several alternate structures are available, they are given

other identifiers. You can link your most frequently used alternate BOM to the item number in Item Planning Data Maintenance.

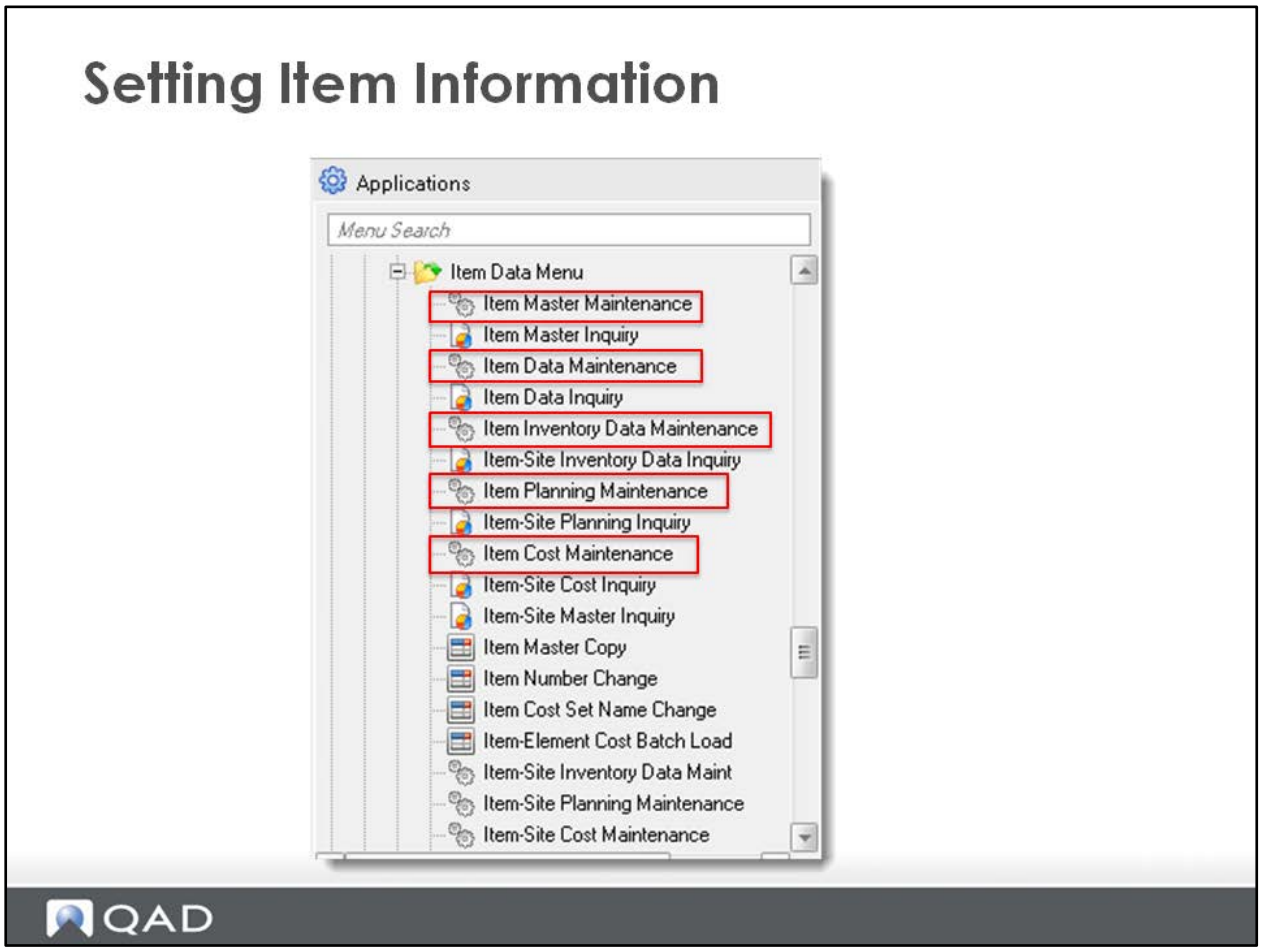
Defining Product Lines



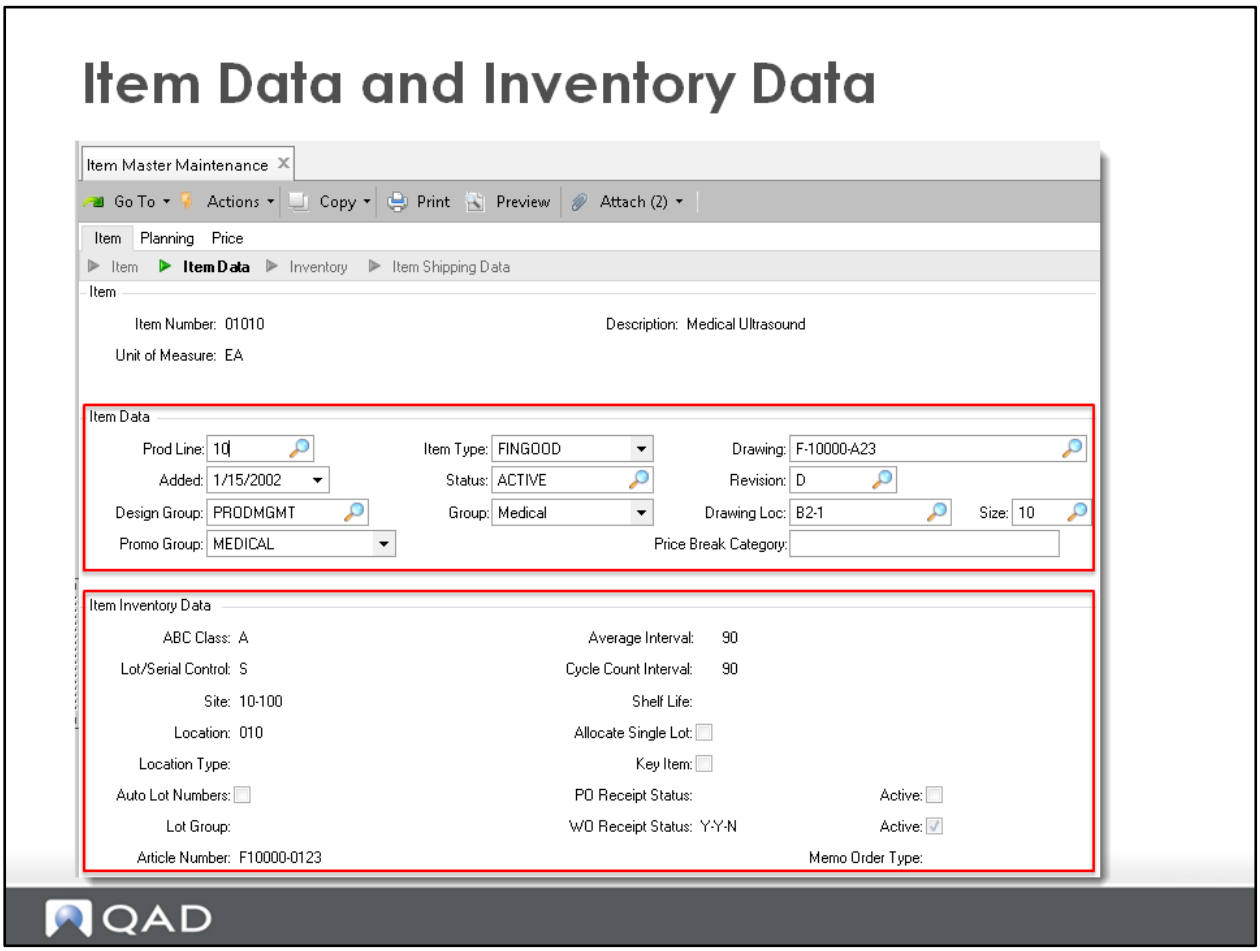
The Manufacturing Department of QMI has set up product line 10 with the description, Finished Goods. The sales and operations of all ultrasound components are planned, reported, and analyzed based on this product line. Additionally, the inventory accounts set up in Product Line Maintenance (1.2.1) track costs.

Note: If your cursor is in the bottom frame (Inventory Accounts) and you continue to click Next, the system displays four more frames of account code data. These accounts default from Domain/Account Control (36.9.24) and you can accept them as-is.

Setting Item Information



Item Data and Inventory Data



Use Item Master Maintenance (1.4.1) to add information for the QMI medical ultrasound and its components. This function, at the top of the menu shown in the slide, is a series of linked frames labeled:

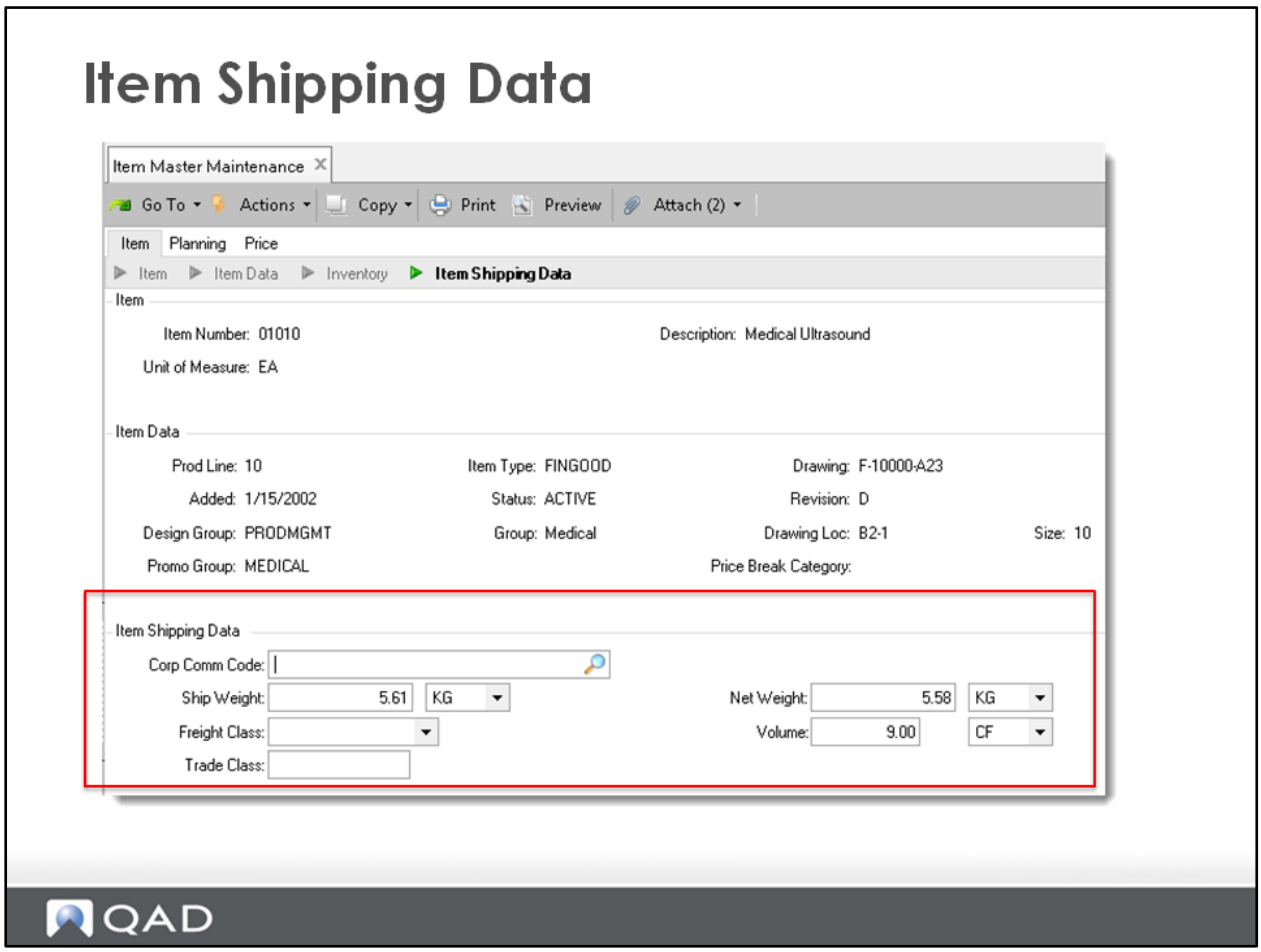
- Item Data
- Item Inventory Data
- Item Planning Data
- Item Cost Data

As highlighted in the menu, each of these frames can be accessed with its own separate menu selection. This functionality is often useful for job separation. You can use system security to limit access to a particular function to those users authorized to add or maintain that data.

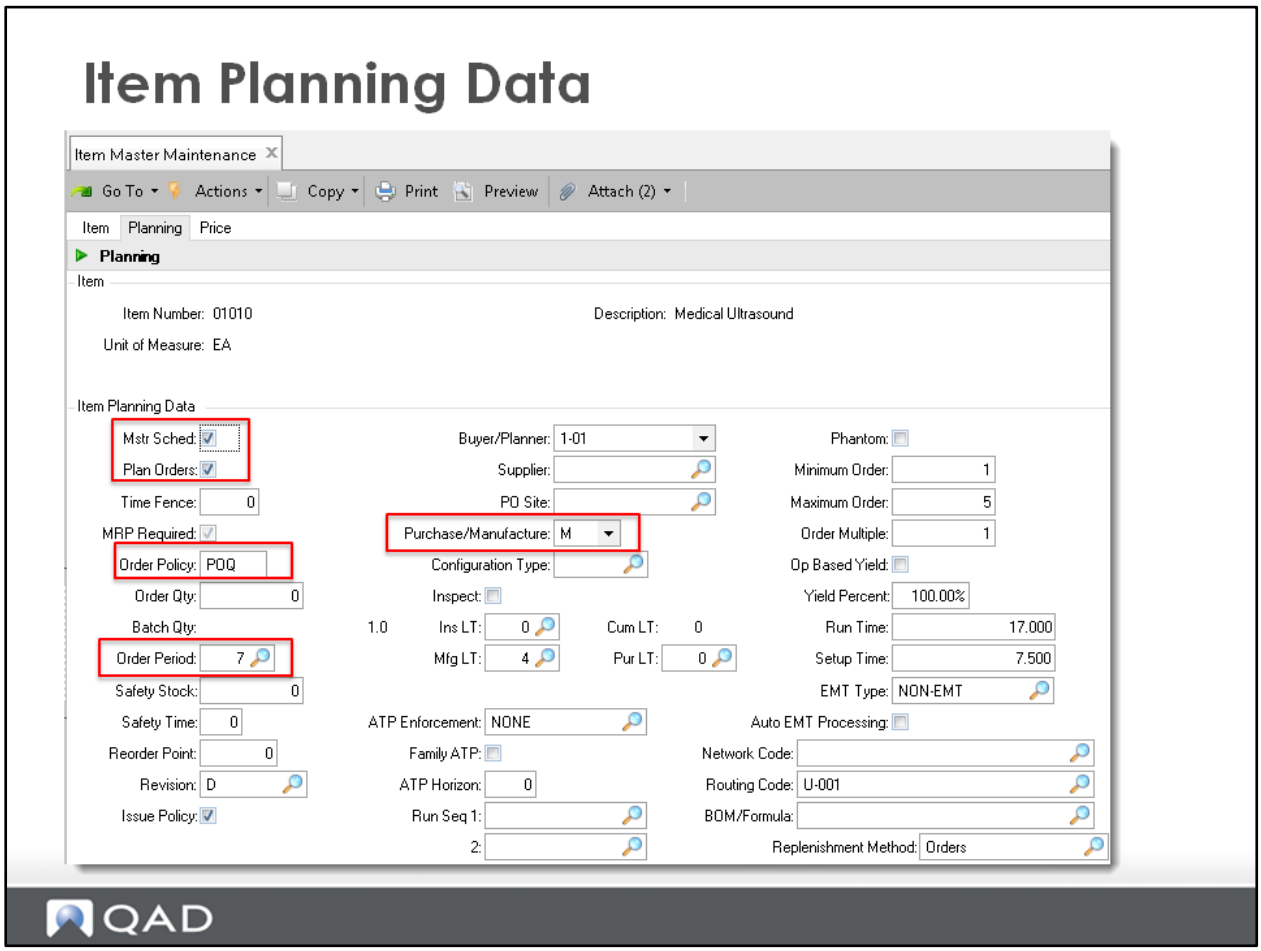
Note: In the exercise, it may be more convenient to use one of the separate functions.

The menu also has separate functions for the same data at different sites. In this example, you only use one site, 10-100. If additional sites are used, each item can have different data at each site.

Item Shipping Data



Item Planning Data



The Material Planning Department uses item planning data to determine how and when to replenish inventory. The planners want to let material requirements planning (MRP) automatically create planned orders for this item, based on demand, so the Plan Orders field is selected. When Plan Orders is selected and a value is specified in the Order Policy field, as it is in this example, MRP generates planned purchase and work orders to satisfy net requirements for this item. Since this is an end item, Mstr Sched is also selected.

Important: The Mstr Sched field is normally selected only for items that need forecasting or other planning. These items are usually the end items the company sells. Reports, inquiries, and browses can be selected for master schedule items only, providing an excellent high-level filter.

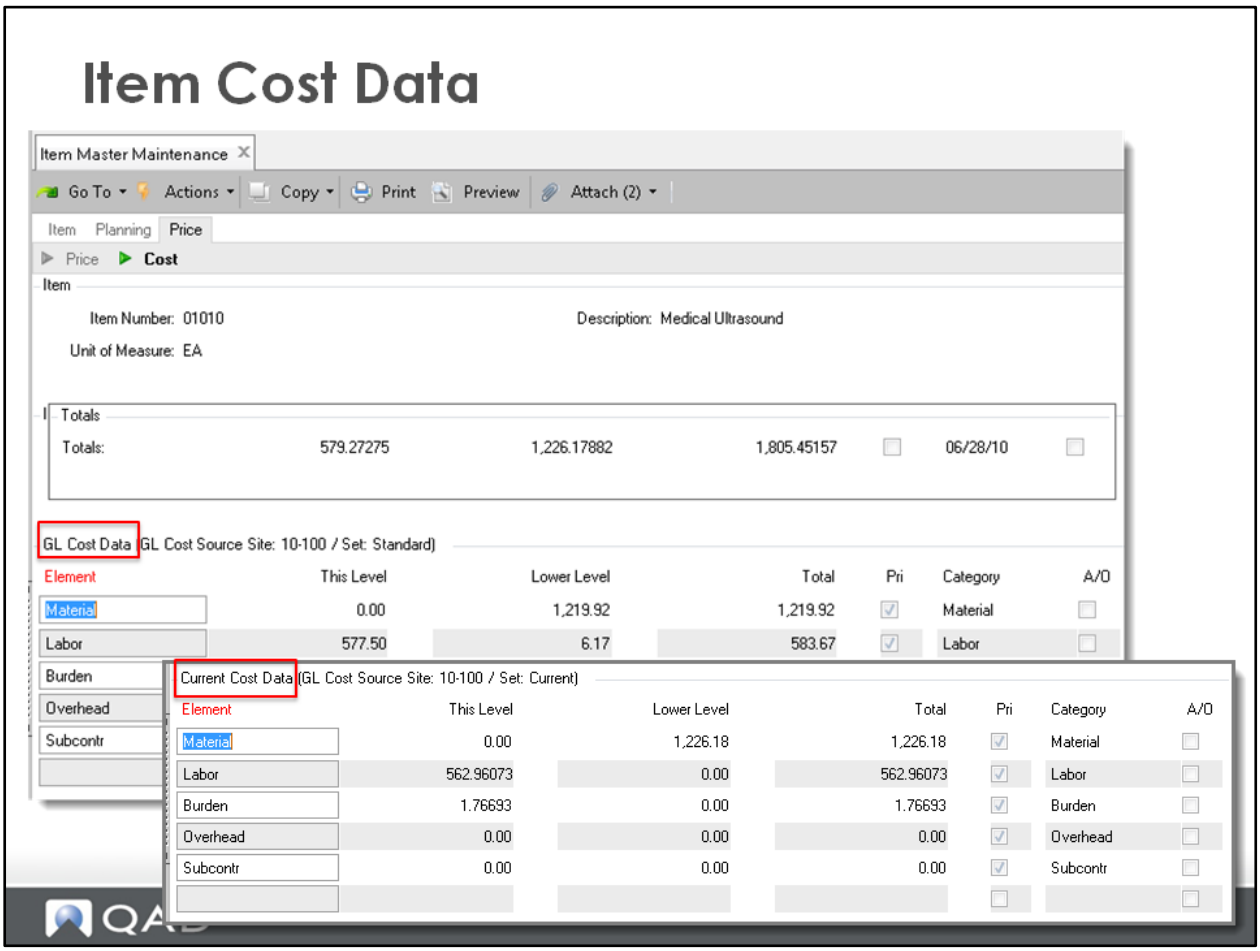
The Order Policy determines the rules for planning orders. The ordering rule that QMI applies to item 01010 is Period Order Quantity (POQ). It means that MRP calculates demand for this item over the number of calendar days specified as the order period (seven in this example) and creates one order to satisfy all demands in a seven-day period.

Note: Order policies and their use in calculating order quantities are covered later in this course.

Another key field is Purchase/Manufacture. Item 01010 is manufactured, as indicated by a code of M. The manufacturing lead time is four days, which is the number of days it takes to complete the manufacturing

cycle for this item. Use the Purchase/Manufacture field to define the source for this item at this site. The other values and how they work are covered in detail later in the course.

Item Cost Data



The item cost section is divided into three sections: price, general ledger cost, and current cost. The three frames appear sequentially after repeated clicks of the Next button.

In the first frame, the Marketing Department has set a price of $2,500 for each unit. Two cost frames display: GL costs display first and then current costs.

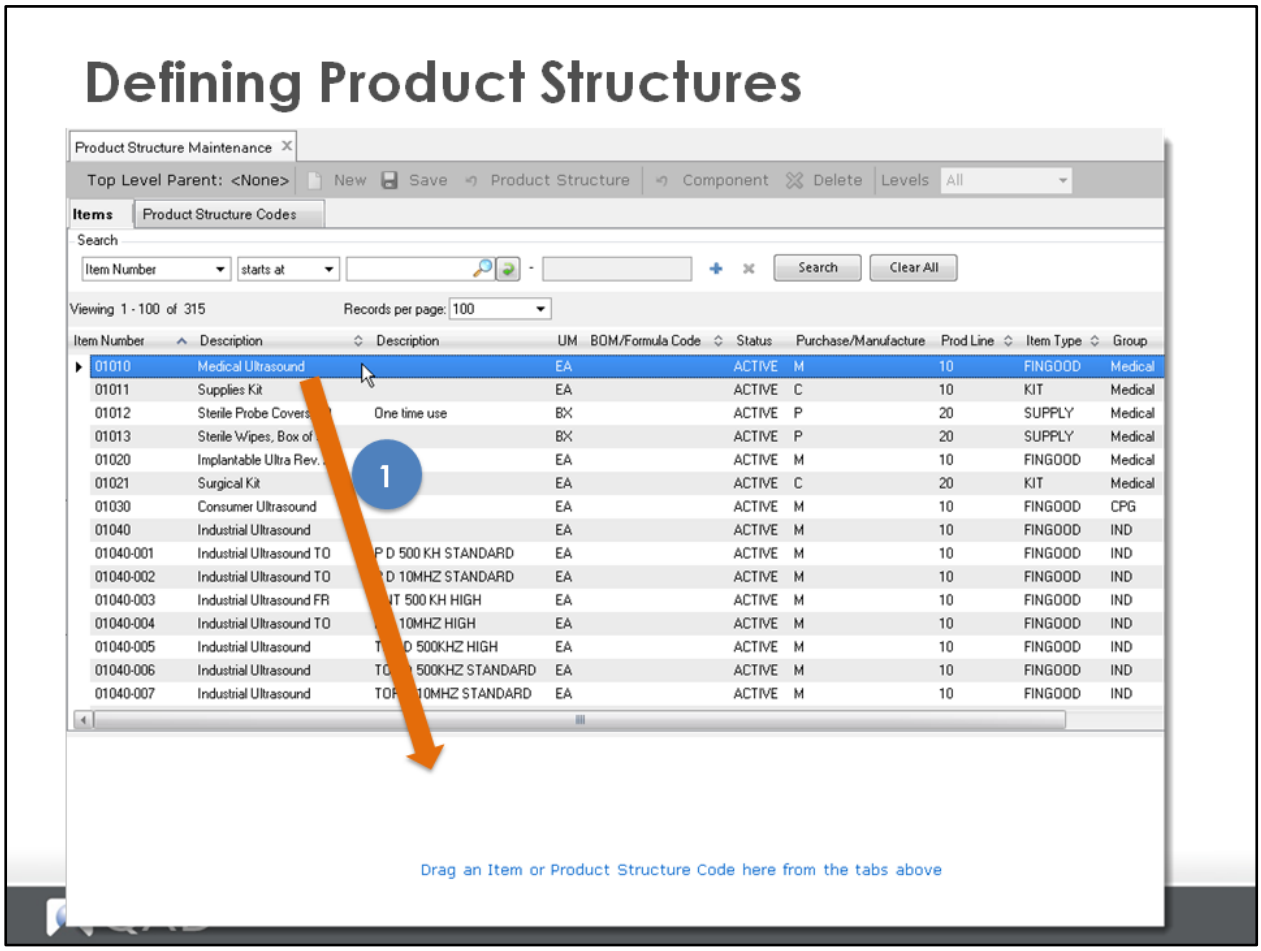
- It is recommended that you initially enter costs in the current cost set so that the GL is not affected.
- When the GL cost set assigned to a site is updated using this function, inventory is revalued to reflect the new costs.

Each cost set has five cost categories: Material, Labor, Burden, Overhead, and Subcontract.

- For manufactured items, material costs are calculated based on actual costs recorded in the system. Do not manually enter cost for manufactured items.
- For a purchased item, the material cost is the purchase cost. A purchased item has no lower-level costs; only this-level costs.

Note: Two cost set frames are displayed in Item Master Maintenance. The relationship between cost sets is explored in a later chapter.

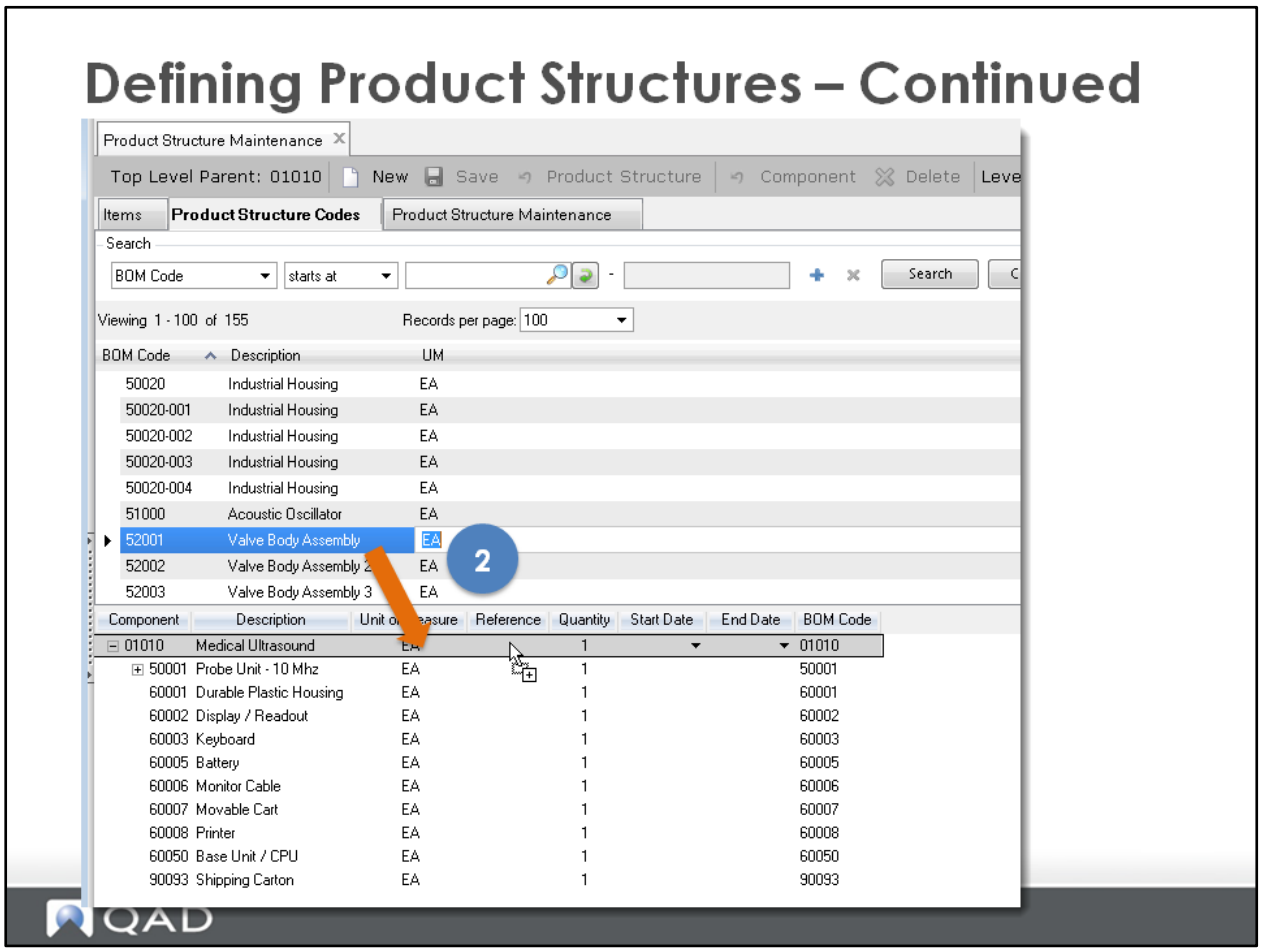
Defining Product Structures



In Product Structure Maintenance (13.5), click New to begin creating a product structure. You can create a structure using either of the following ways:

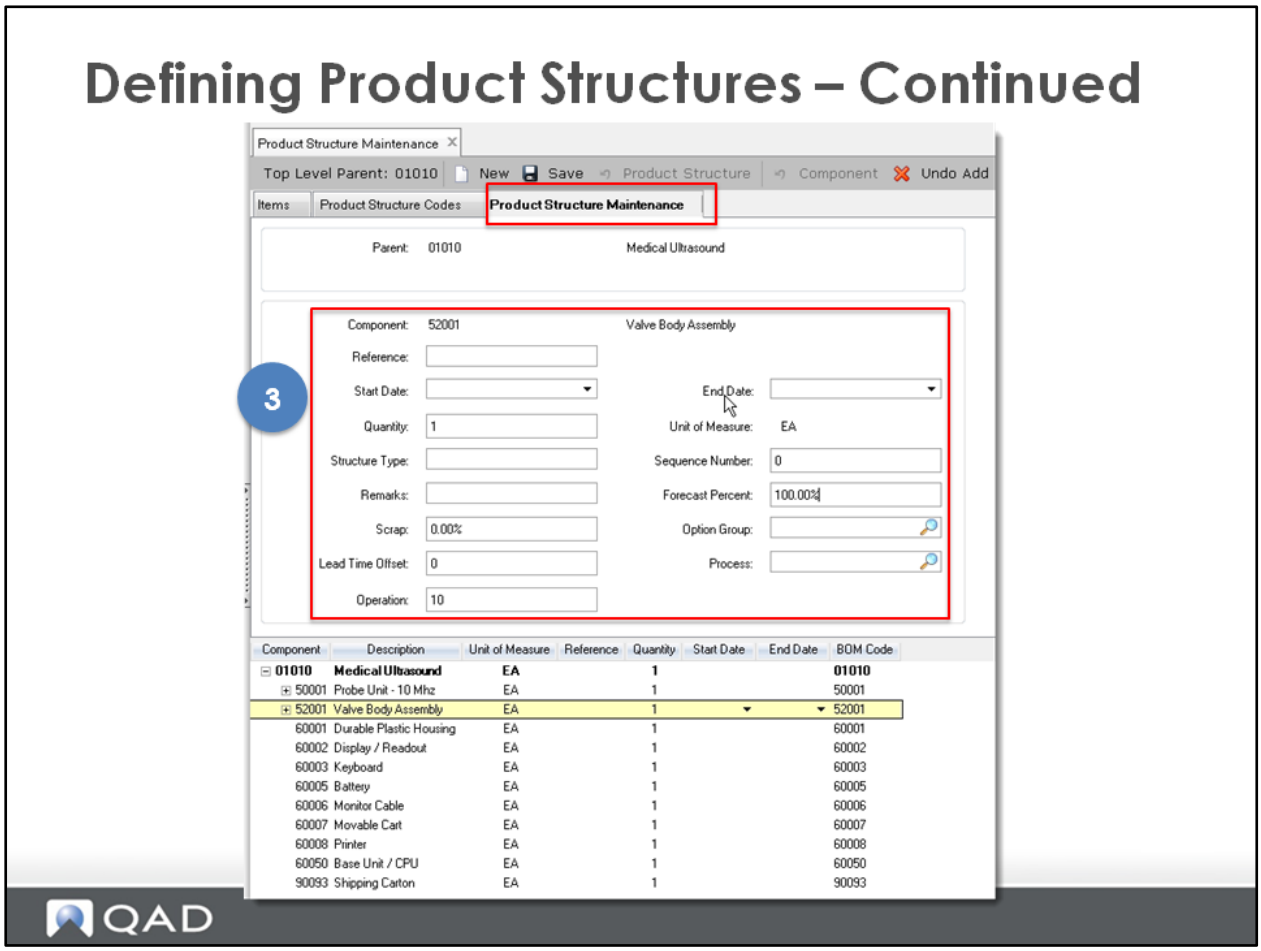
- Drag and drop an item or product structure code to the bottom frame
- Double-click an item or product structure

Defining Product Structures – Continued



- To add a component to an item, you can also use double-click or the drag and drop action.
- To change component level, drag and drop a component within the structure.
- To delete a component from the structure, right-click the component and choose Delete from the context menu.

Defining Product Structures – Continued



To modify the Quantity Per field, enter the quantity of a component item required to make one of the parent items.

You can also add the operation number from the routing where this component is used. This item is used at operation 10. When data entry is complete for the first component, double-click the next component item that you want to modify.

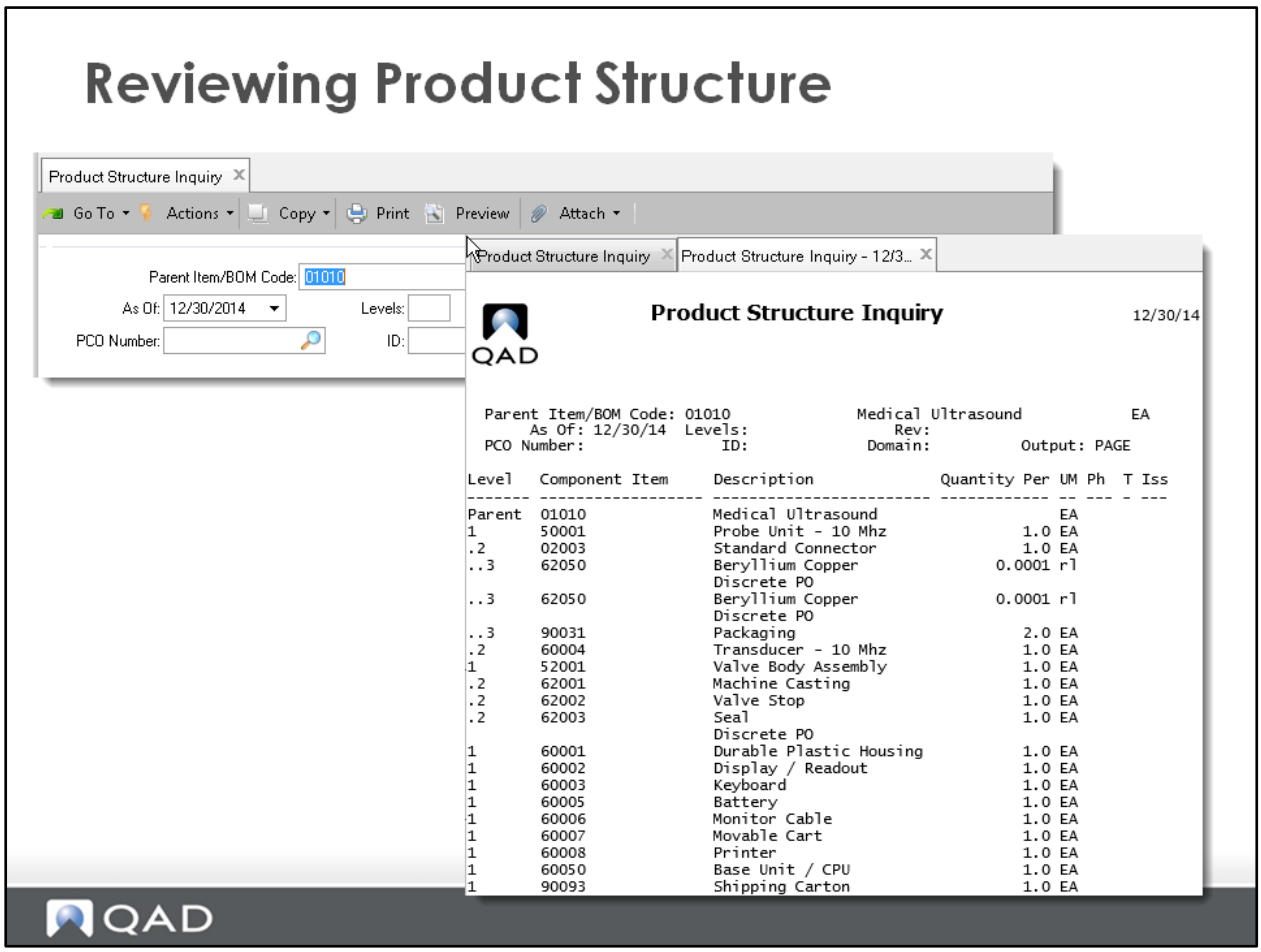
Component Scrap

The field labeled Scrap can be used to account for component scrap. For example, the beryllium copper component in the product structure is a small item that is easily dropped and lost, and is sometimes found to be damaged. In this case, based on actual experience, you can choose to add a small scrap value to the product structure at this operation. Later, you see how the planning systems adjust the purchase requirements (and the item cost) to account for this loss.

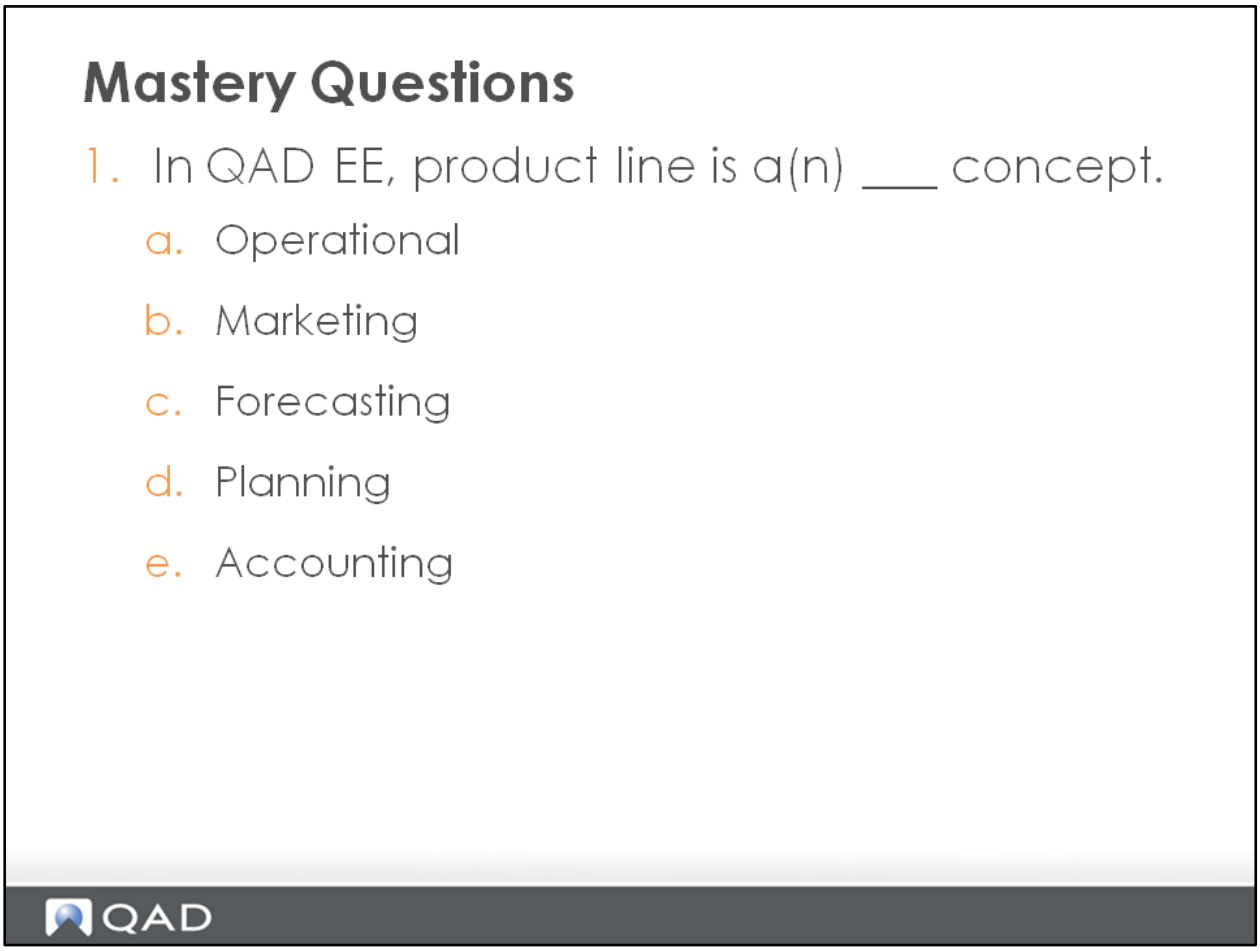
Effective Dates

The elements that make up a product structure have a range of effective dates, so new components can be phased in and others phased out. The Start Date defaults to the system date. By leaving the End Date blank, the item remains effective until that date is changed.

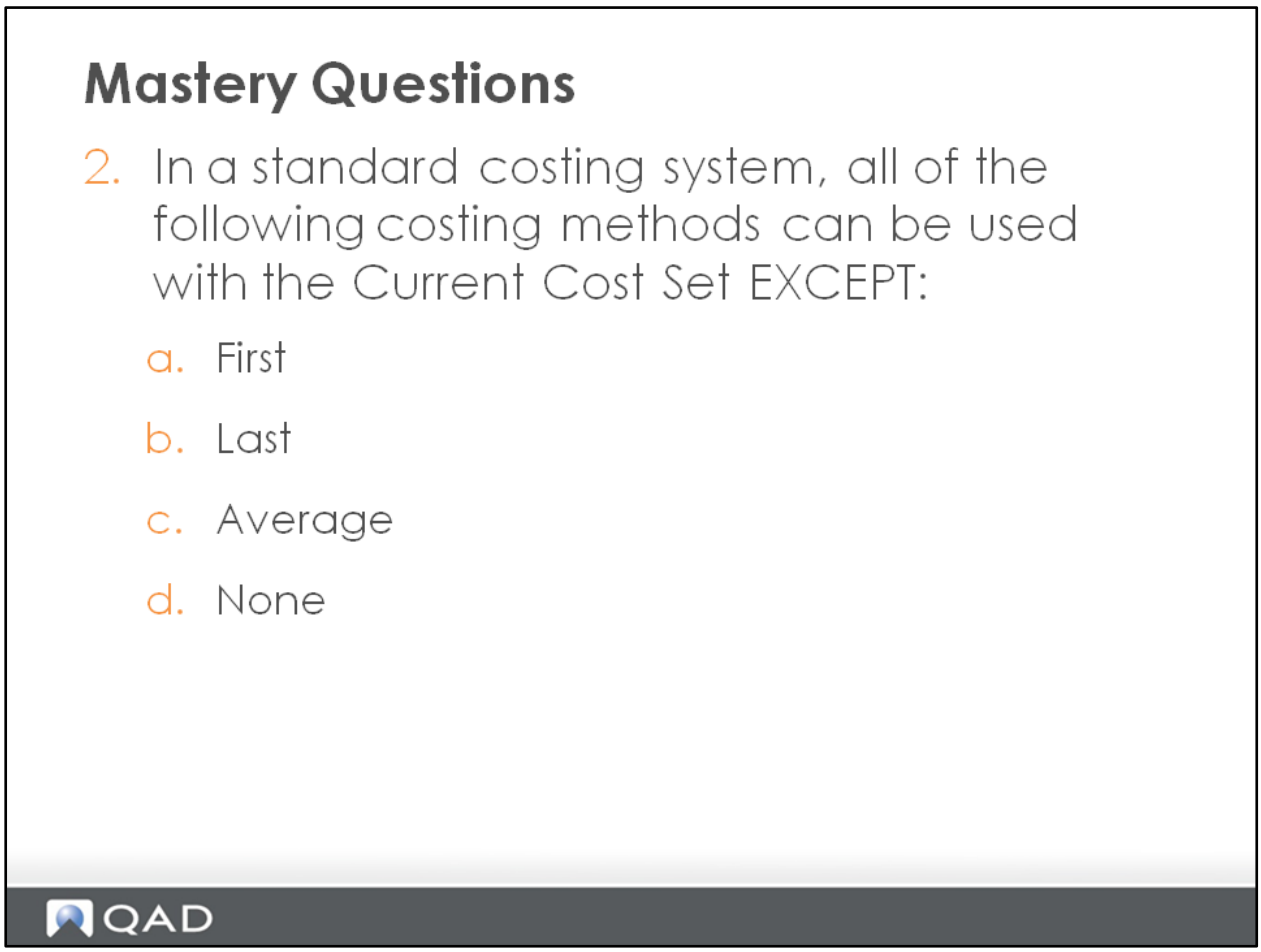
Reviewing Product Structure



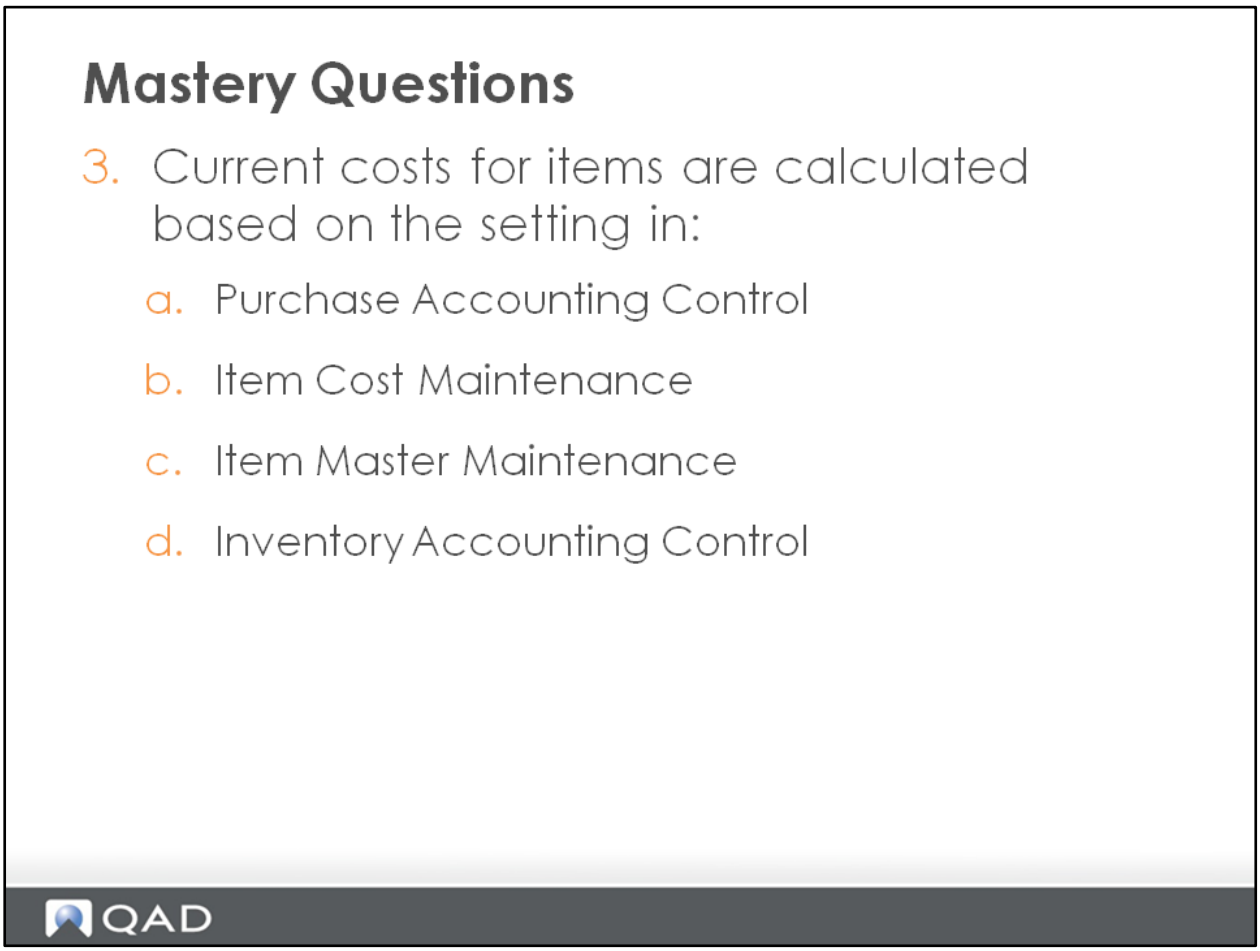
Mastery Questions



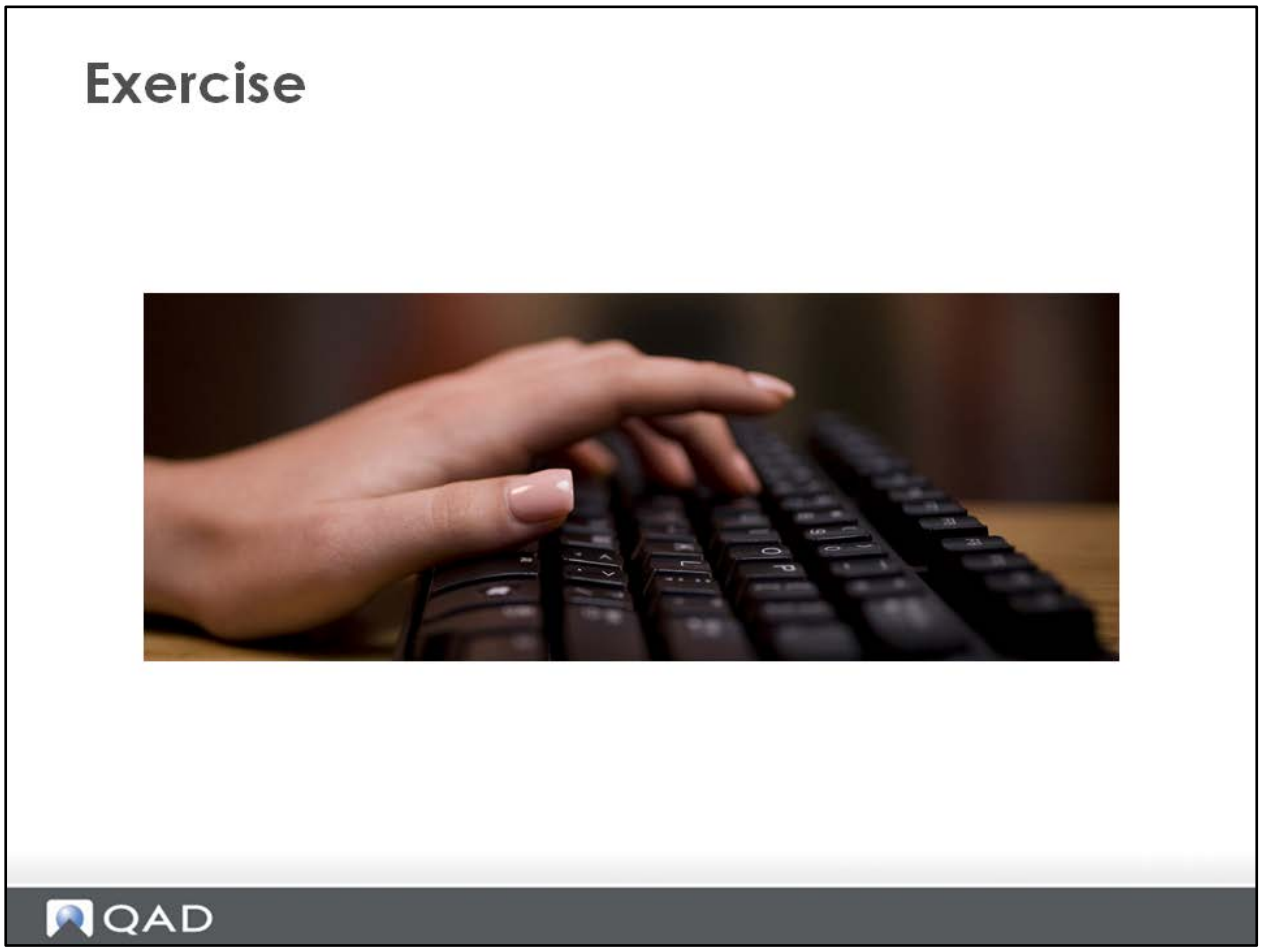
Mastery Questions



Mastery Questions



Exercise



Exercise 1: Creating a Product Line

Use Product Line Maintenance to create product line 15 for ultrasound quality check. Accept the default values for the accounting information and review the accounts.

Exercise 2: Creating Items

1. Create two items, 60028 and 60029, using Item Data Maintenance and the following item data. Use default values for the rest of the fields, which you will update later in succeeding exercises.

   Item 60028
   Description: Example Item 1
   Prod Line: 10
   Item Type: COMP
   Status: Active
   Group: ULTRA

Item 60029
Description: Example Item 2
Prod Line: 10
Item Type: COMP
Status: Active
Group: ULTRA

2. Enter the following inventory data for the two items using Item Inventory Data Maintenance.
   ABC Class: B
   Site: 10-100
   Location: 020

3. Enter the following planning data for these two items using Item Planning Data Maintenance.
   Mstr Sched: No
   Plan Orders: Yes
   Order Policy: POQ
   Order Quantity: 50
   Purchase/Manufacture: P
   Pur LT: 3
   Minimum Order: 1
   Order Multiple: 1

4. Enter the following price and GL cost data for these two items.

   Price: 8.99 for item 60028; 12.30 for item 60029
   This Level Materials: 4.99 for item 60028; 5.20 for item 60029

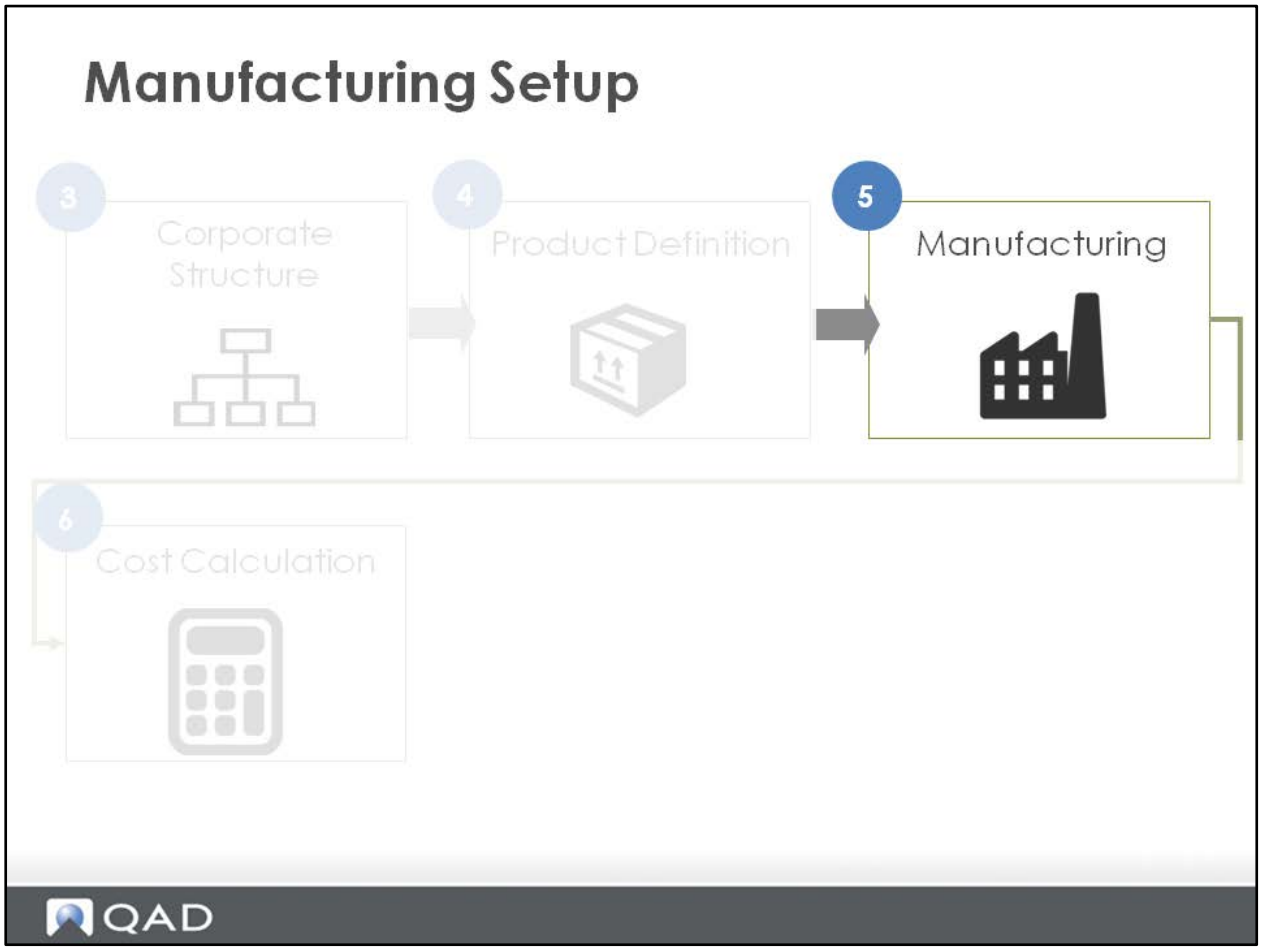
Exercise 3: Maintaining a Product Structure

1. Use Product Structure Maintenance to open the structure of item 01010.
2. Add item 60028 as a component of 01010. Two units of 60028 are required to make one unit of 01010.
3. Add item 60029 as a component of 01010. One unit is required to make one unit of 01010.
4. Save the changes.
5. Use Product Structure Inquiry to review the product structure of 01010.

CHAPTER 5

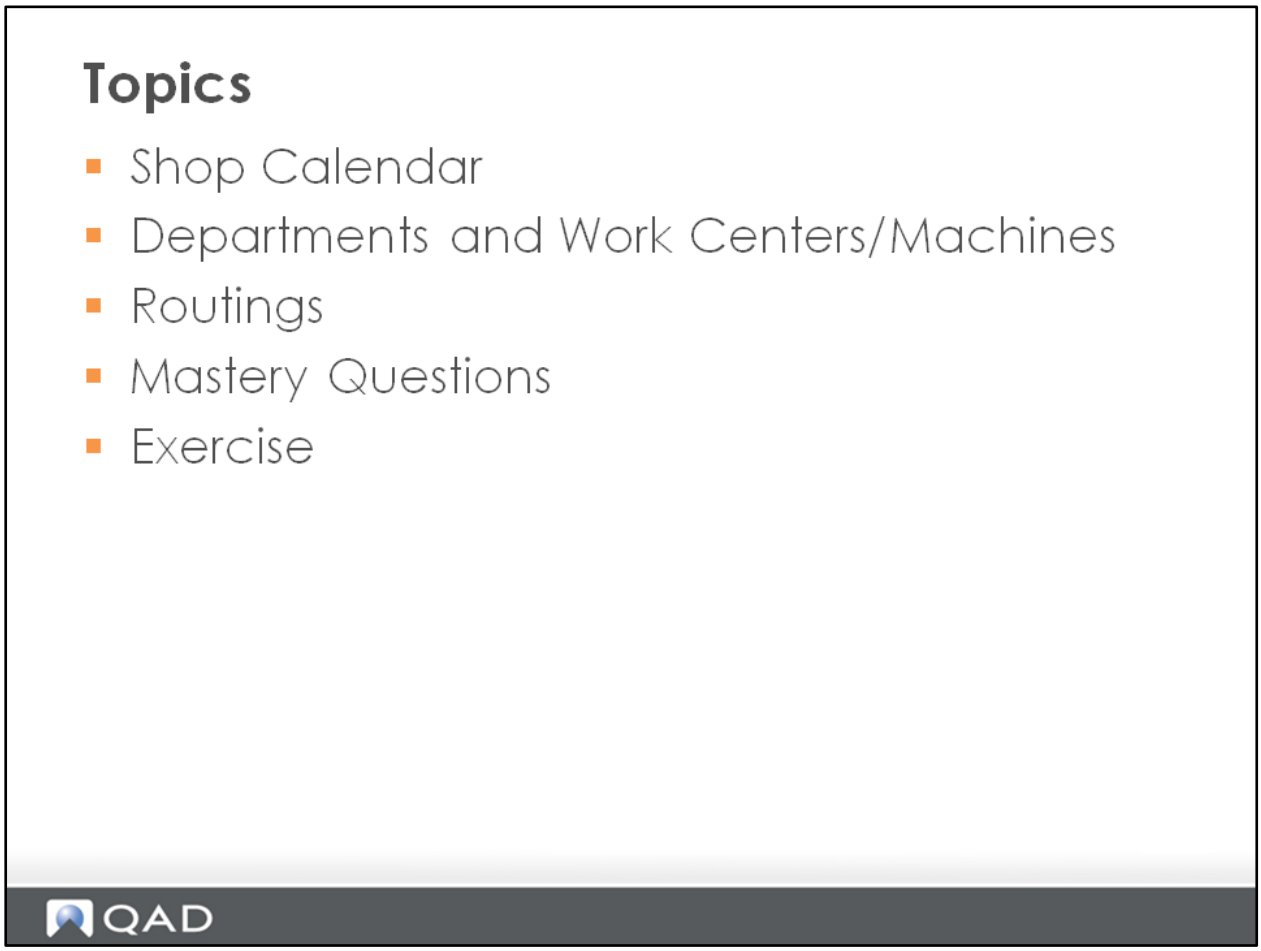
Manufacturing Setup

Manufacturing Setup

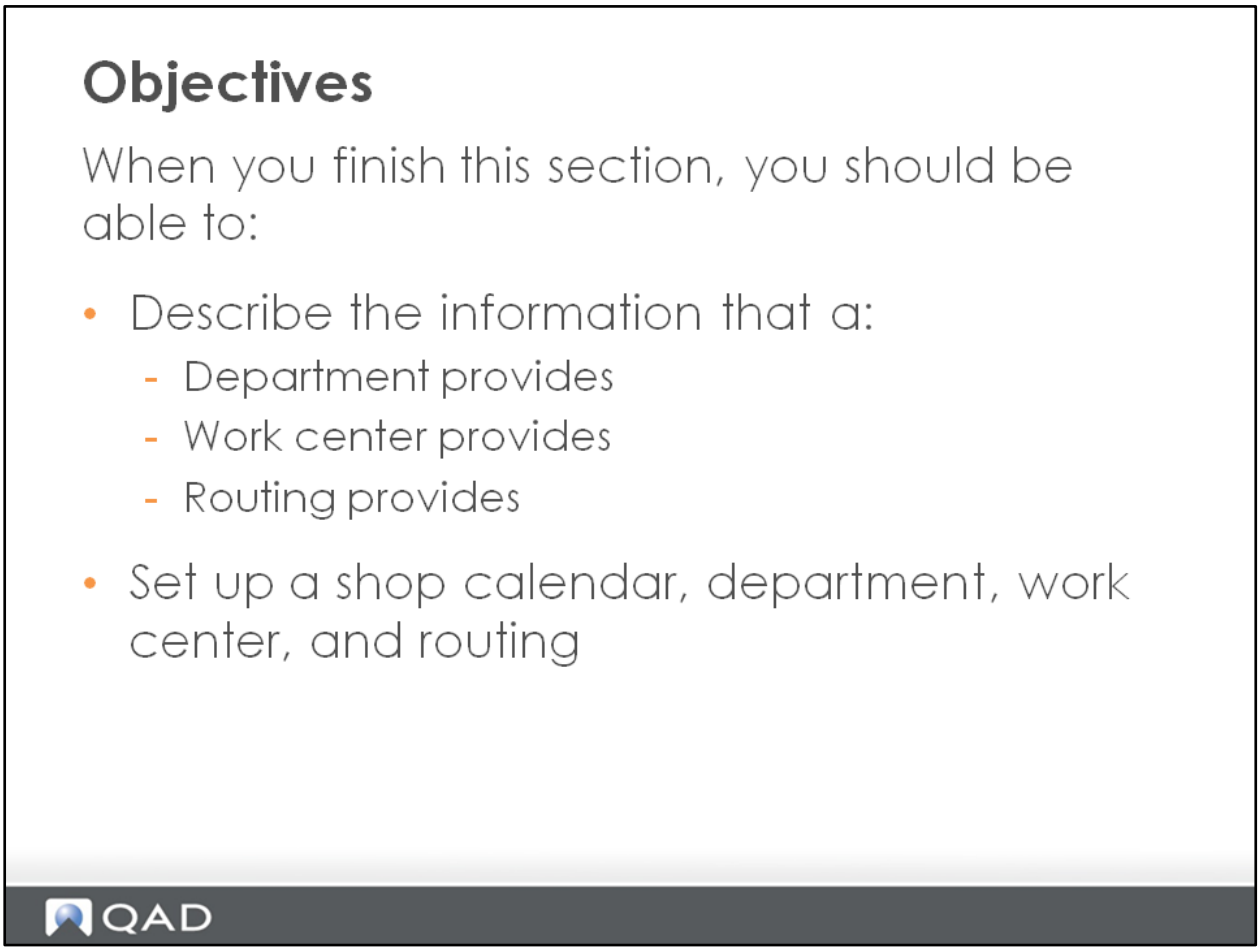


This section describes the basic elements required for manufacturing activities to take place, including shop calendars, departments, work center, machines, and routings.

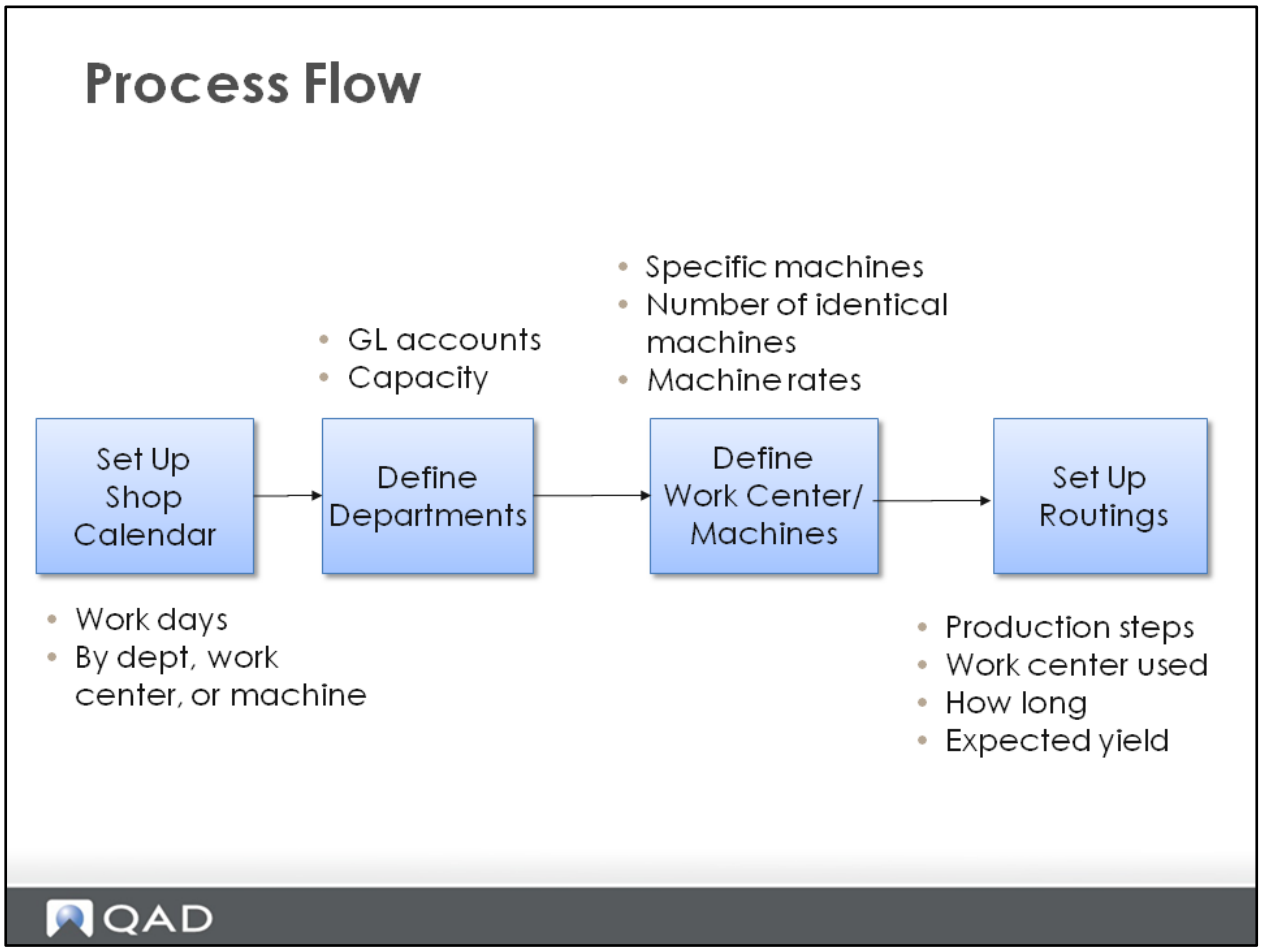
Topics


Topics
Shop Calendar
Departments and Work Centers/Machines
Routings
Mastery Questions
Exercise
QAD

Objectives


Objectives
When you finish this section, you should be able to:
• Describe the information that a:
- Department provides
- Work center provides
- Routing provides
• Set up a shop calendar, department, work center, and routing
QAD

Process Flow

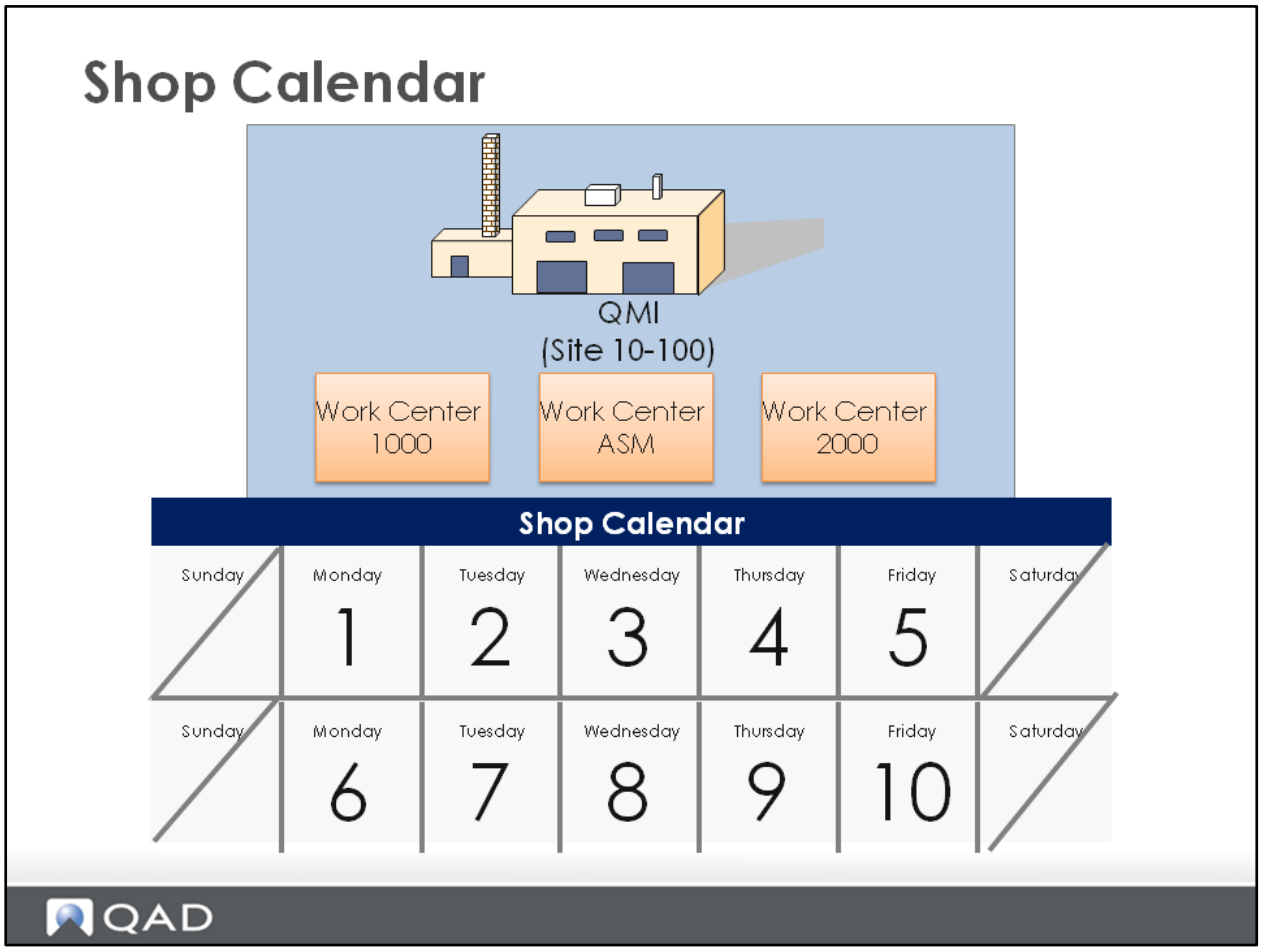


Once you have set up items in Item Master Maintenance, you identify where and how they are manufactured. You perform these tasks by:

- Setting up shop calendars
- Setting up manufacturing departments and work centers/machines
- Defining the manufacturing operations required to produce each of the items

The following pages use the order shown in the process flow; the shop calendar is discussed next.

Shop Calendar



The shop calendar is required for planning, manufacturing, and distribution functions. The calendar indicates what days the plant is open and how many hours are worked each day. The calendar determines the hours a work center is available to do work. Capacity requirements planning also uses this information.

If no hours are assigned to the calendar on a particular day, it is a non-work day. An order cannot be due on that day. None of the planning functions in QAD schedules an order to be due on a non-work day.

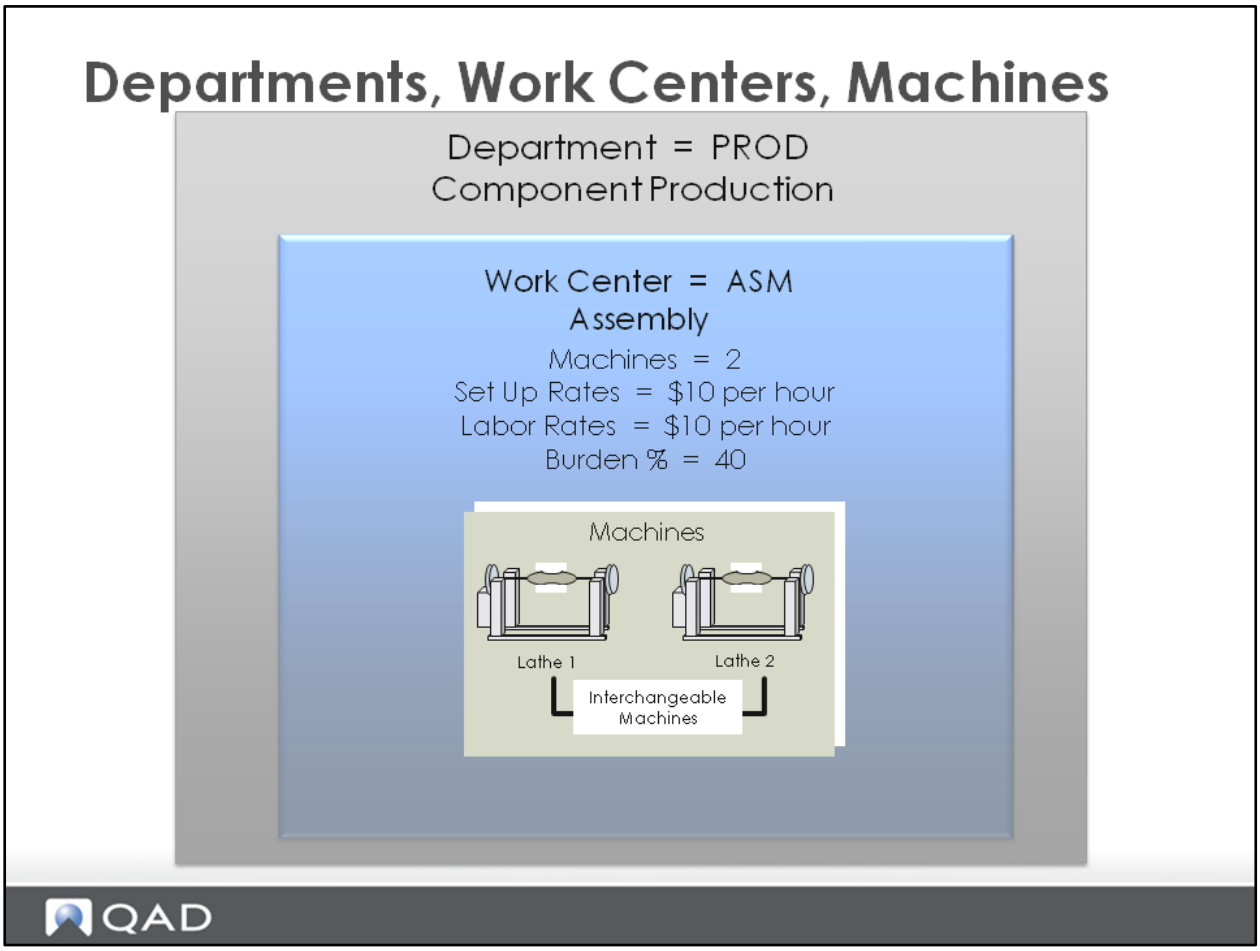
Calendar information is used to schedule:

- Start and due dates for MRP planned orders, master schedule orders, and work orders
- Operations for work orders and repetitive schedules
- The procurement or shipment of materials through association with suppliers and customers

Use Domain Calendar Maintenance to maintain the default calendar for all sites, or Site-Calendar Maintenance for specific sites. Use Holiday Maintenance to turn off a normal work day, that is, make it a non-work day for all work centers. Use calendar exceptions programs to modify a calendar for the short term. For example, add extra hours for a peak season, or indicate a two-week shutdown.

Calendars are also defined in Work Center Calendar Maintenance for work centers that have different schedules than the default calendar and can be defined for any machines within a work center that have different schedules.

Departments, Work Centers, Machines



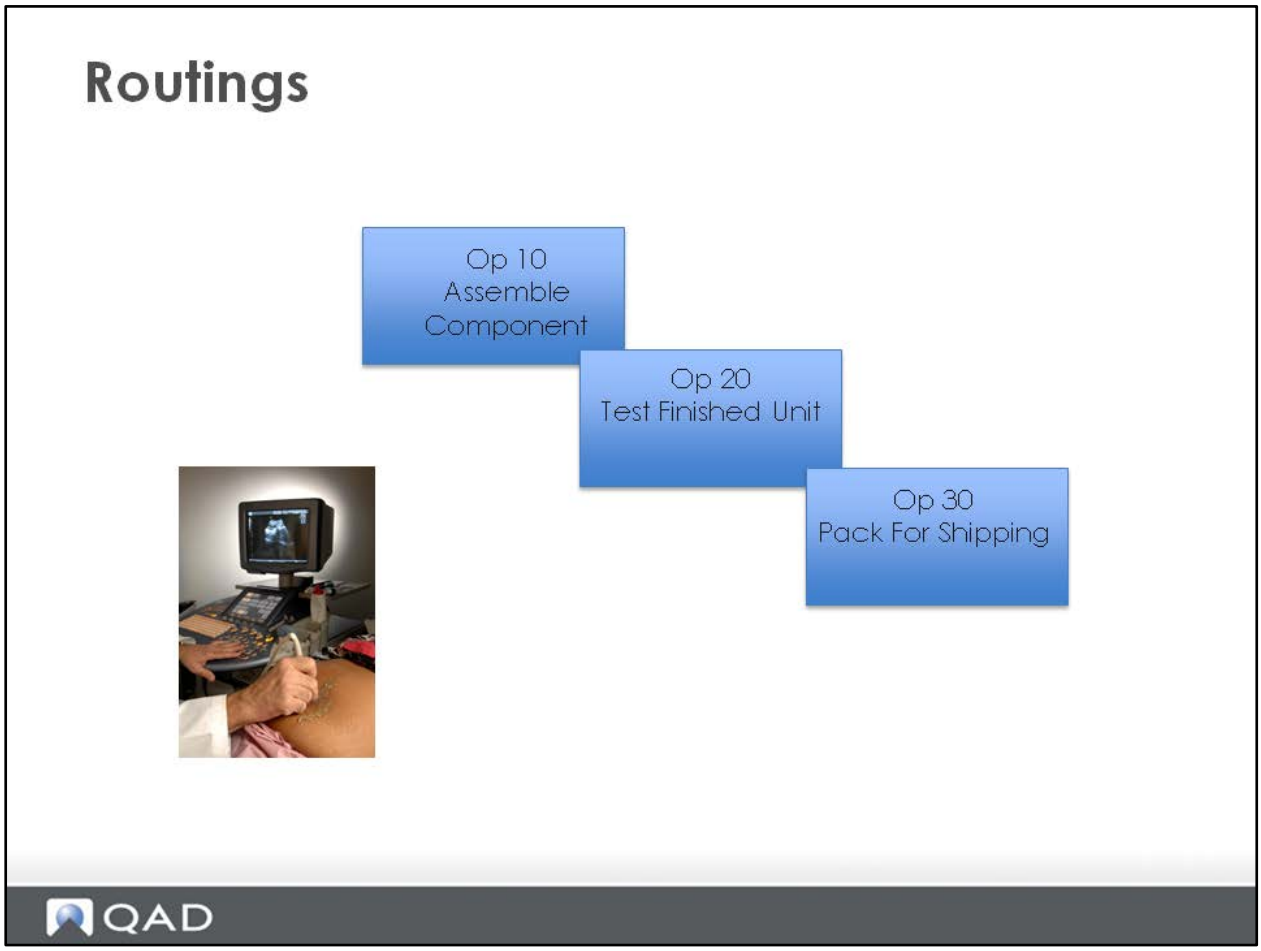
Work areas in a manufacturing plant are defined in QAD EE using departments, work centers, and machines.

- **Departments**
  A manufacturing plant is split into departments for control purposes. Each production unit (work center) must belong to one, and only one, department. This grouping is used primarily for capacity planning and accounting. GL accounts are attached to each department. You define at least one department before you can enter work centers or routings.
- **Work Centers**
  A work center is a specific production unit within a department consisting of one or more people and/or machines. In QAD EE, work centers are the most basic units for operation scheduling, capacity requirements planning, and cost determinations for GL transactions. You must have at least one work center to set up routings and to report labor.
- **Machines**
  You can set up a work center with multiple identical machines by leaving the Machine field blank and

entering the number of machines in the Machines field. Then you can specify the number of machines that can be used for each operation (parallel production) in the route operation. If the machines are not interchangeable, identify each one with a distinct code. For example, you have multiple similar machines but they run at different rates. Or perhaps an older machine has a higher rate of rejects. In this case, each machine must have a unique machine code. The combination of the work center and the machine identifies a specific machine.

Note: Defining unique work center/machine combinations supports more precise costing and scheduling. However, it limits the ability of the work center supervisor to decide which machines to schedule work on without generating method variances.

Routings



To manufacture an item or product, you complete one or more activities or operations. The list of required operations is called a routing, which defines the process for making the item. If a product structure is the list of ingredients in a recipe, a routing is the directions or instructions for processing the ingredients to achieve the desired end product. The routing describes:

- The steps required to make the item (operations)
- Where the steps are performed (work center)
- How long they take (queue time, setup time, run time, wait time, and move time)
- The expected yield percentage at each operation (yield %)

Note: Queue time, setup time, run time, wait time, and move time are all elements of lead time. The routings section discusses these topics.

For example, the manufacture of a medical ultrasound could require a routing with several operations with instructions to assemble the various components. How the business sets up the process and how they plan to

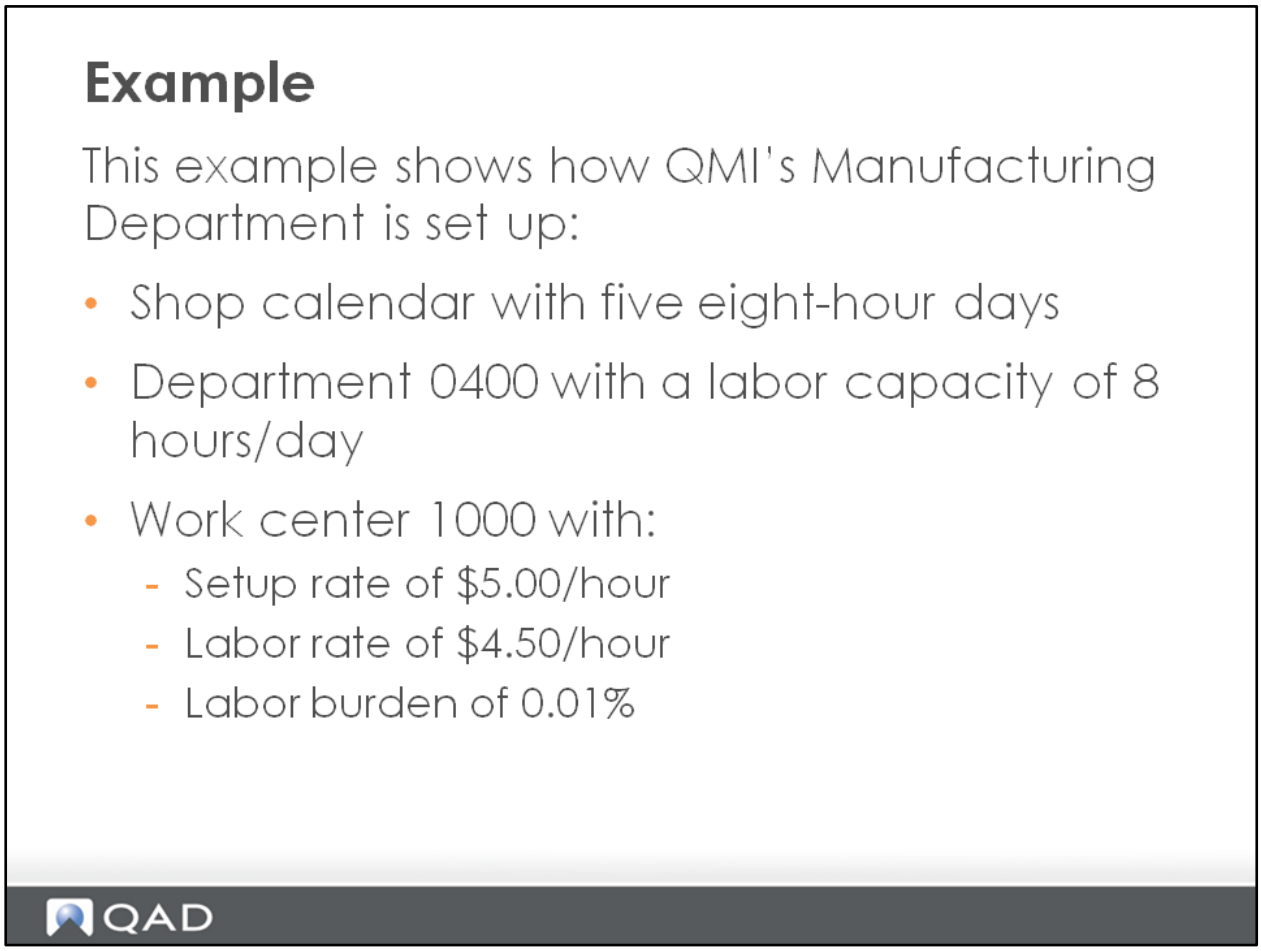
manage it determines the number of operations, how they are sequenced, and how much detail to include with each. A highly automated process could have only one operation that says simply “assemble components.” A manual assembly process could have many detailed steps.

The department and work center codes associated with routing operations link actual production results with capacity planning, cost accounting, and other programs.

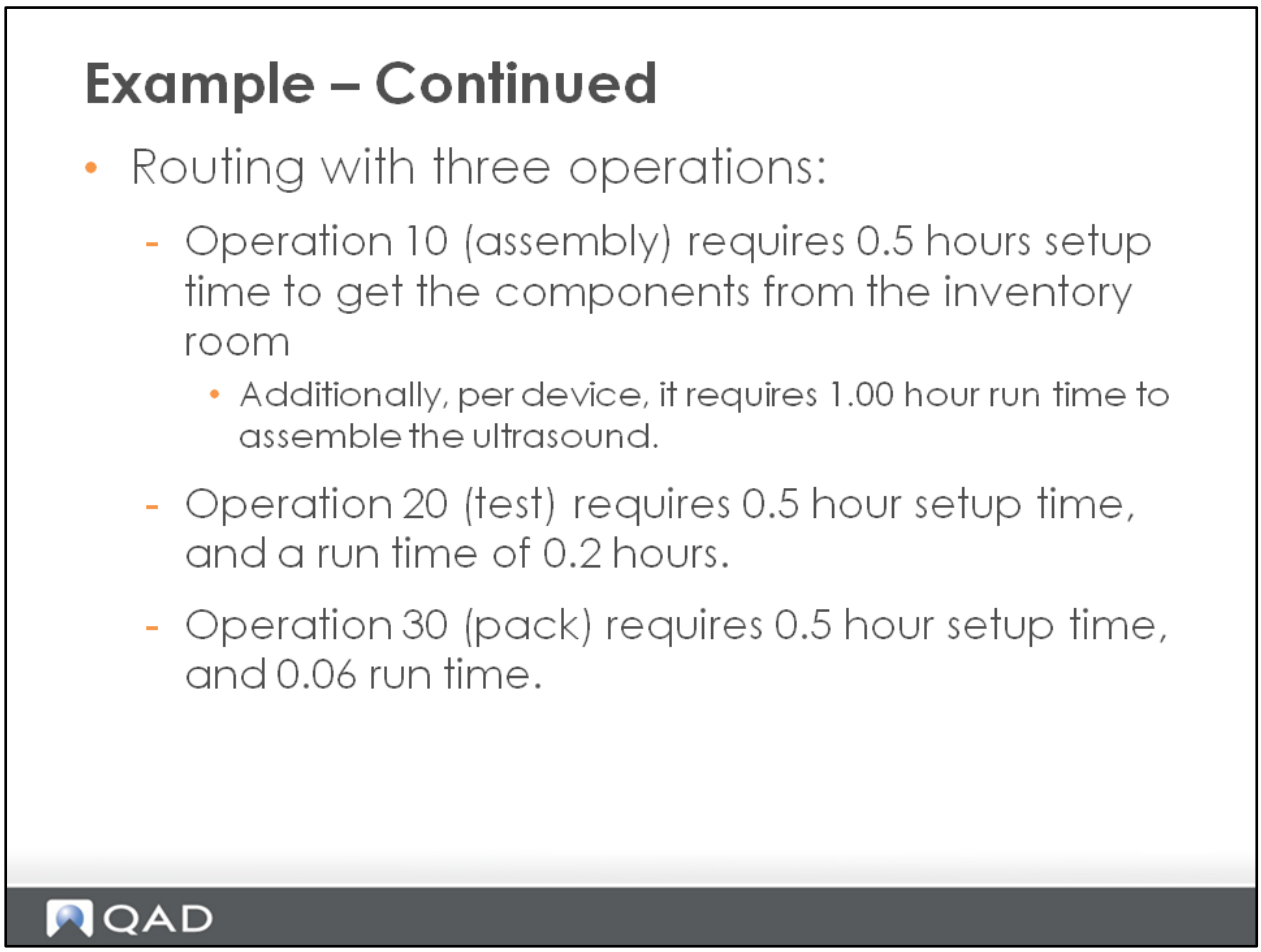
Alternate Routings

The normal situation is to have the route code be the same as the item number. When several routings are used to produce the same item, you can define alternate routes with different routing codes. The primary route, or the route you use most frequently, can be linked to the item number in Item Site Planning Maintenance.

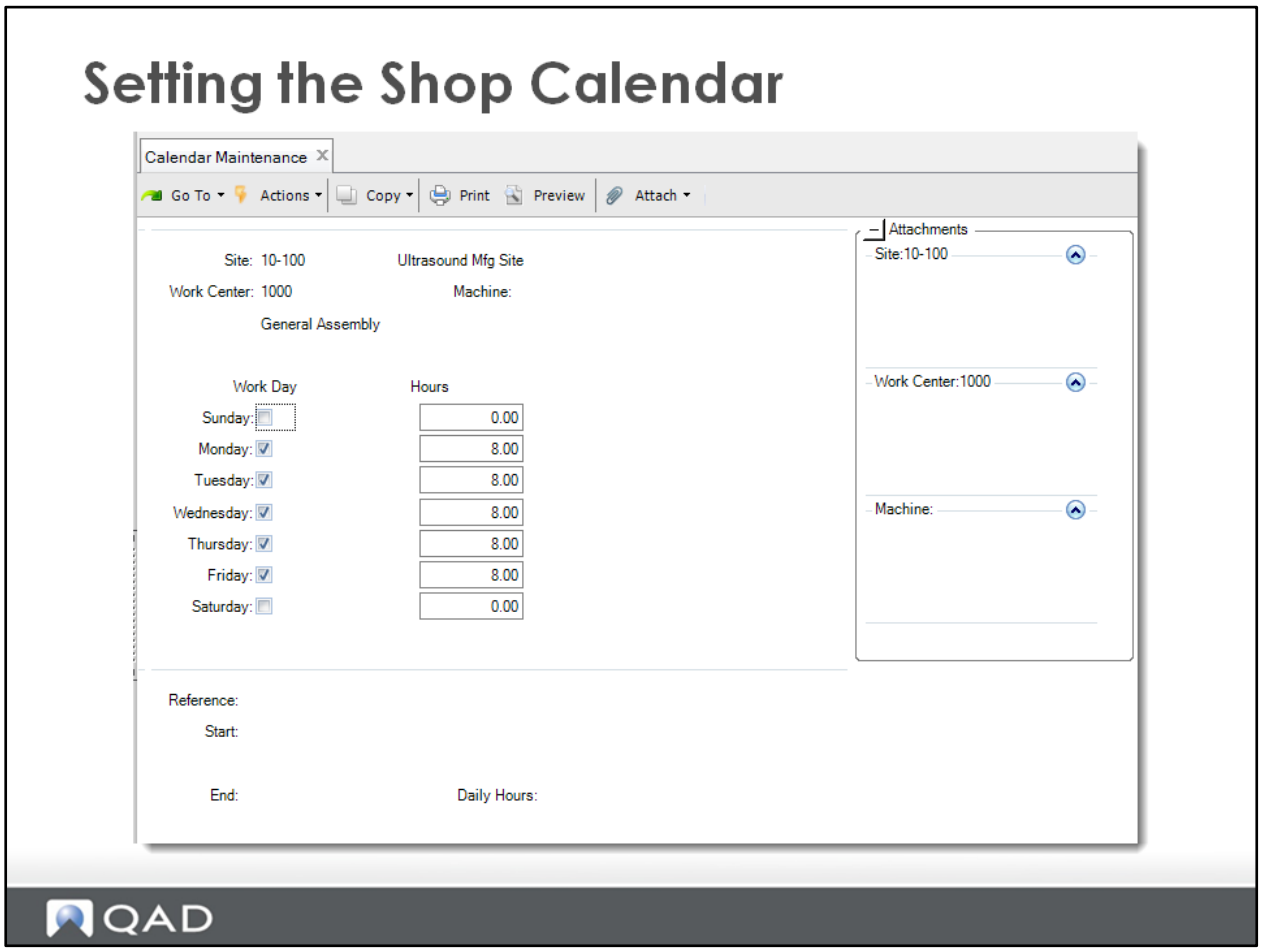
Example


Example
This example shows how QMI's Manufacturing Department is set up:
• Shop calendar with five eight-hour days
• Department 0400 with a labor capacity of 8 hours/day
• Work center 1000 with:
- Setup rate of $5.00/hour
- Labor rate of $4.50/hour
- Labor burden of 0.01%
QAD

Example – Continued



Setting the Shop Calendar

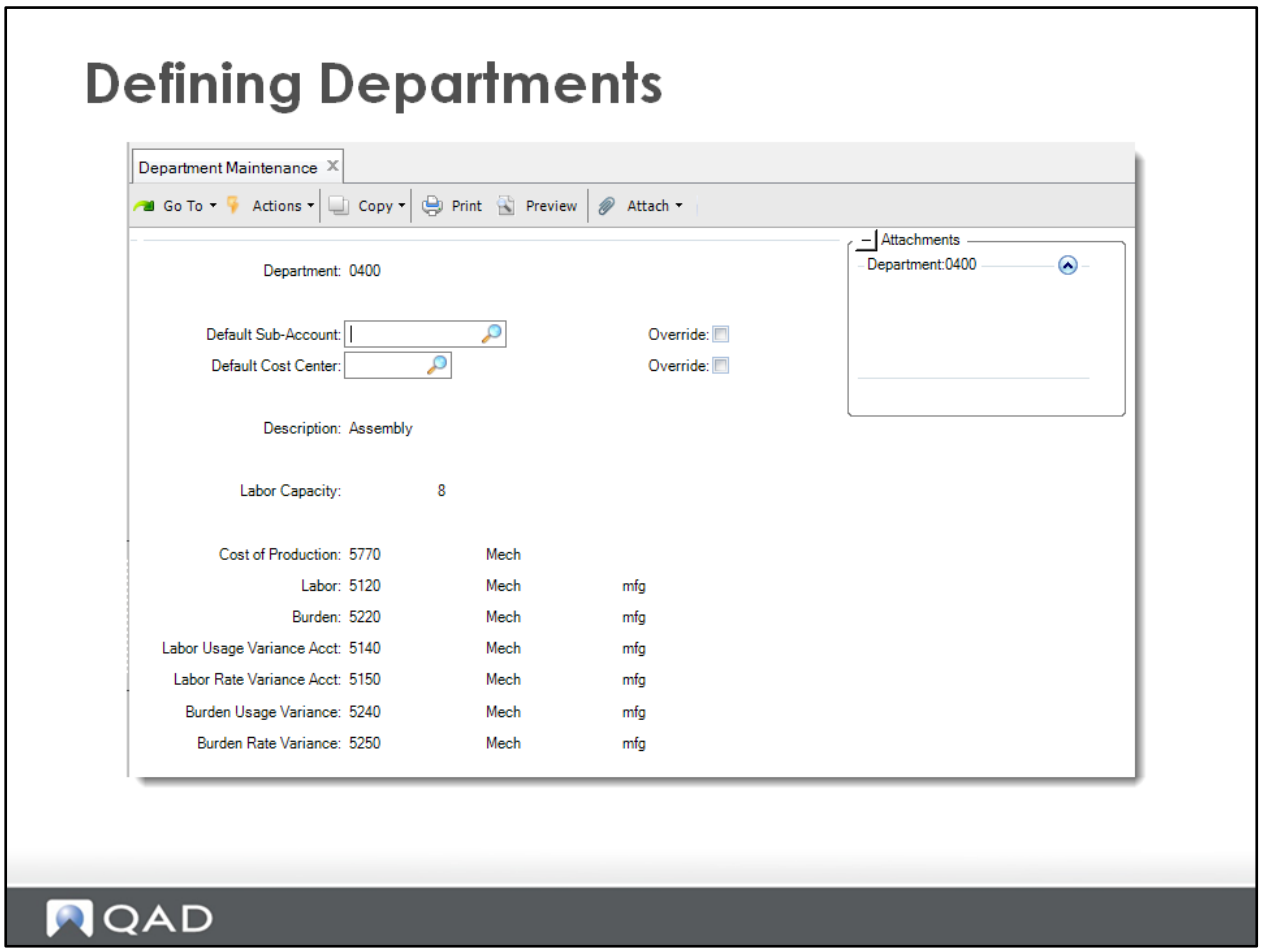


The shop calendar is set up in Domain Calendar Maintenance (36.2.4.1). This calendar shows a five day week, Monday through Friday, with eight hours available for each day.

If additional sites and or work centers/machines are created, they use this calendar as a default, but you can then change to site- or work center/machine-specific calendars.

Note: The system supports the ability to define separate shop calendars for each site, work center, or machine that you create. Each can have its own work days and work-day duration entered in Calendar Maintenance. Enter holidays that affect all calendars in Holiday Maintenance, but record work-center-specific holidays in Calendar Maintenance using the Reference field.

Defining Departments



QMI has set up department 0400 using Department Maintenance (14.1). A department is used primarily for capacity planning and accounting purposes ,and a labor capacity of 8 is defined. This means that the department has eight hours of labor capacity per day, Monday through Friday, based on the shop calendar. The labor capacity of 8 implies that only one person works in the department since the calendar shows eight hours per day. If the department had five people, the labor capacity would be 40.

Labor capacity is the total number of hours of work that can be performed within a department per day (day length is defined in Calendar Maintenance). The department labor capacity is entered manually as the sum of the capacities of all work centers and machines in the department. Capacity Requirements Planning (CRP) uses labor capacity to calculate capacity and load by department.

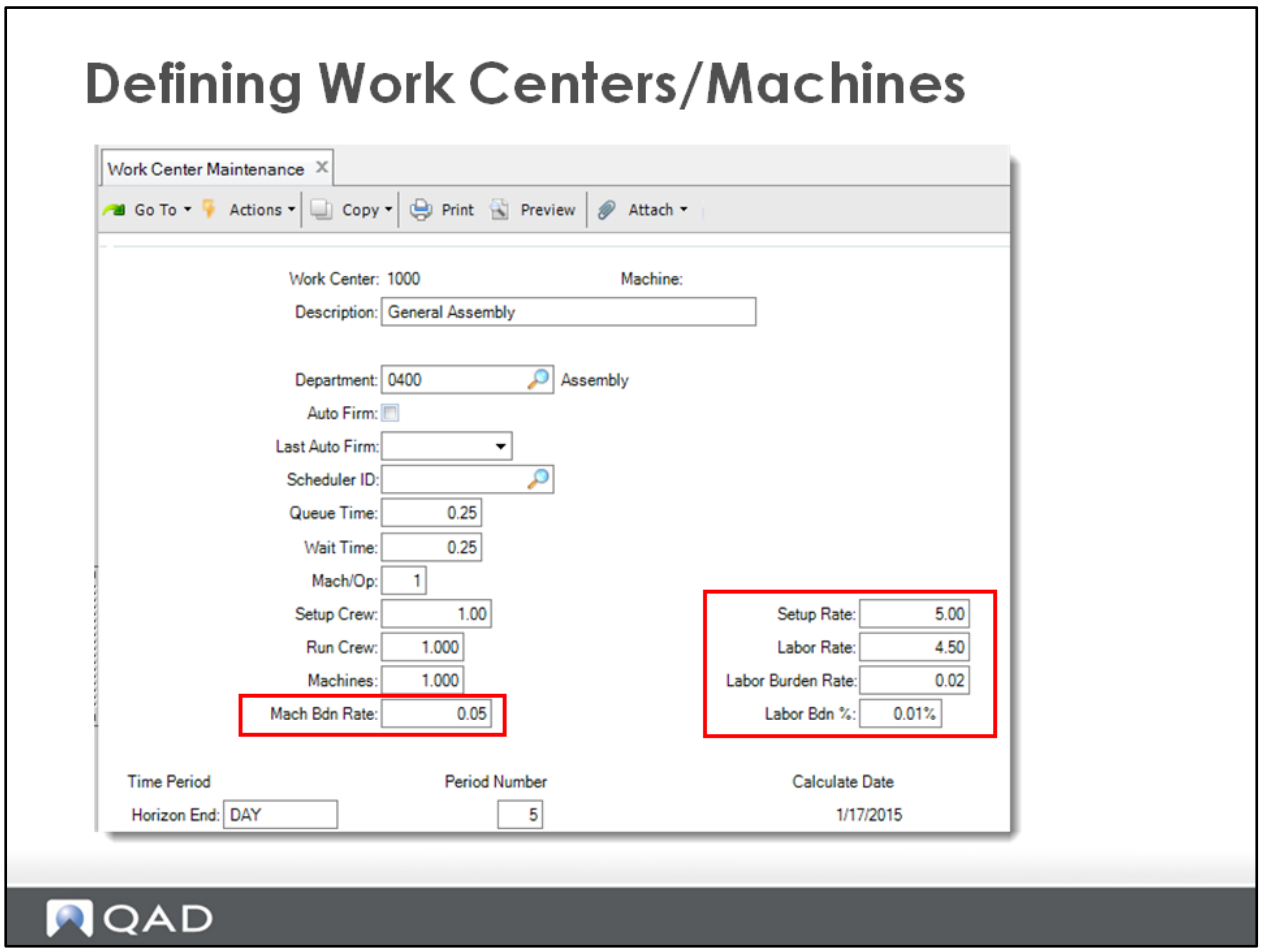
Important: Use care when setting labor capacity because the system assumes that all labor in the department can be used in any work center in the department. This scenario is seldom the case and can lead to the need to set up more departments.

Also, notice the account codes that default from Domain/Account Control; all are manufacturing related. In this case, sub-accounts default also, and the variance accounts have a default cost center code of mfg to indicate that these variances are manufacturing related. These account codes are used when:

- Reporting labor and downtime in the Shop Floor Control and Repetitive modules
- Backflushing inventory and closing the accounting for completed work orders

Important: If a given work center requires that you book the cost of production to a different account or sub-account, set up a new department for that work center.

Defining Work Centers/Machines



QMI has set up work center 1000 (General Assembly) using Work Center Maintenance (14.5). Because this work center has only one machine (actually, just a work bench), QMI does not need to specify a machine in the Machine field so it is left blank. If the work center had two or more machines that were not interchangeable, then QMI would need to enter a machine code to indicate each machine. If the machines are interchangeable, QMI can leave the machine code blank and specify the number of machines in the Machines field.

Notice that this work center belongs to the department 0010, which QMI set up in the previous step.

Machines

If a work area has multiple identical machines, you can define one work center and leave the Machine (code or number) field blank. Enter the number of machines in the Machines field. When a work center has several identical machines, you can specify the number of machines that can be used for each operation (parallel production) in the route operation.

If the machines are not completely interchangeable, identify each one with a distinct code. For example, you have several similar machines, but they run at different rates. Or perhaps an older machine has a higher rate of

rejects. In this case, each machine must have a unique machine code. The combination of the work center and the machine identifies a specific machine.

This example has only one machine per operation and the Machines field shows only one machine in the work center. If two machines were used per operation, then the processing time for an operation that uses that work center/machine combination is cut in half. Any setup time is then doubled.

Cost Calculations

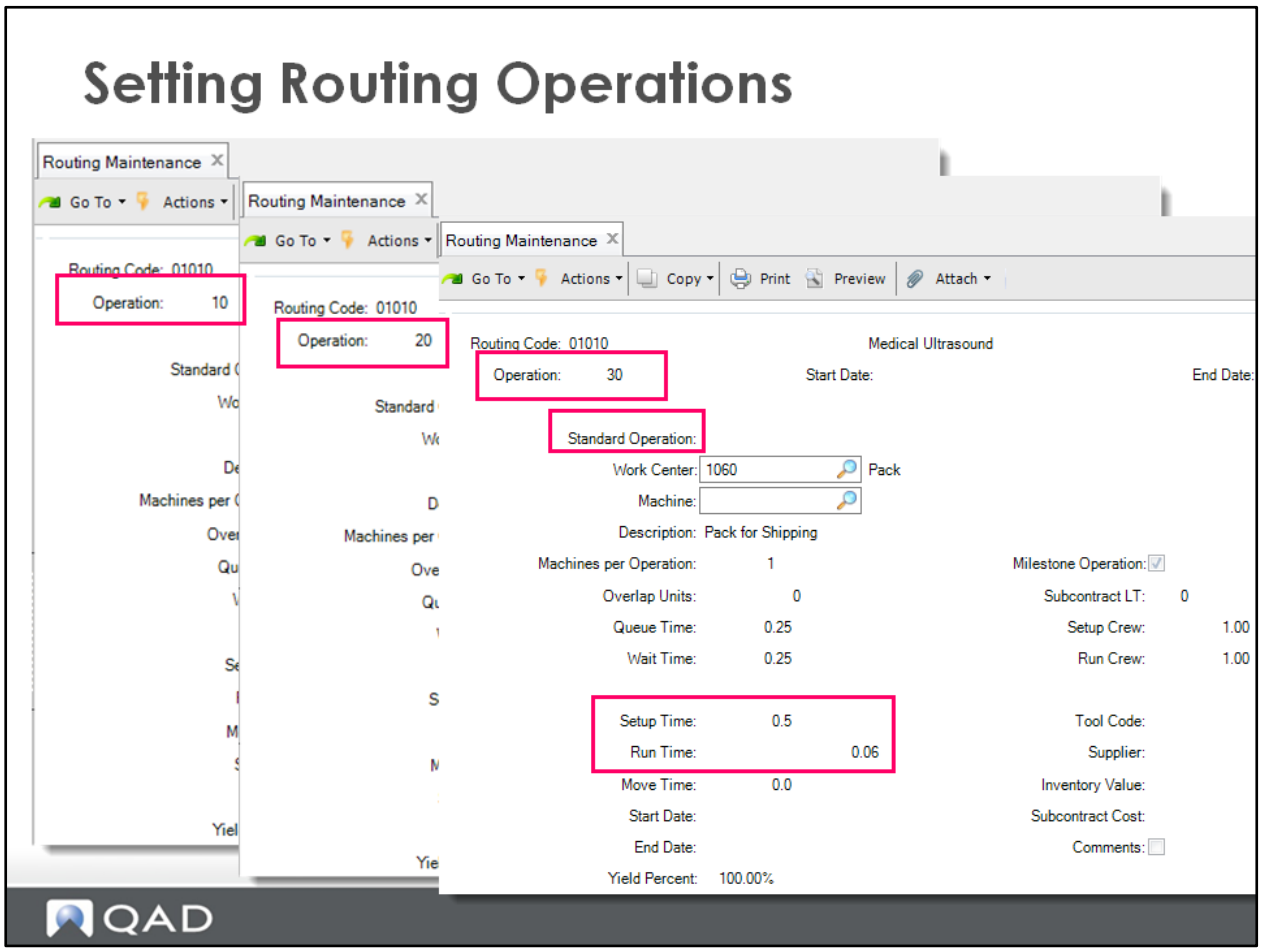
Specify important information for cost calculations in the Rate fields. Machine Burden Rate, Setup Rate, Labor Rate, Labor Burden Rate, and Labor Burden Percent all feed into item cost calculations and labor feedback functions to determine actual costs and cost variances.

Note: In a work center, either the number of machines or the number of people limits capacity. The Machines field contains the number of machines or people. Capacity is then calculated by multiplying the total hours (from the work center calendar) by the number of machines.

Field Definitions

- Machine Burden Rate: The burden rate per hour applicable to machine run time and setup at this work center.
- Setup Rate: The average hourly rate paid to set up this work center.
- Labor Rate: The average rate paid per labor hour to run this work center.
- Labor Burden Rate: The labor burden rate per hour applicable to both setup and run time at this work center.
- Labor Burden Percent: The labor burden percentage applicable to the total labor cost at this work center.

Setting Routing Operations



The Production Manager of QMI has set up the routing in Routing Maintenance (14.13.1). Notice that the routing code is the same as the item number for the completed device (01010). This case is a typical case.

This example has three operations involved in assembling a medical ultrasound:

- Operation 10 (shown here) requires 0.5 hours setup time to get the jig from the tool room; additionally, per device, it requires 1.0 hour run time to assemble the medical ultrasound.
- Operation 20 requires 0.5 hours setup time and 0.2 hours run time to test the device.
- Operation 30 requires 0.5 hours setup time and 0.6 hours run time to pack the ultrasound for shipment.

These times are converted into decimal hours for the routing standard times by dividing the minutes by 60. You can also use Rate Based Routing Maintenance (14.13.2), which uses pieces per hour rather than decimal hours per piece to set the time standard for the operation.

Important: Be careful not to use the Standard Operation field by mistake. This field has a special use that is covered in detail in the course on Routings and Work Centers. This feature is not described in this course.

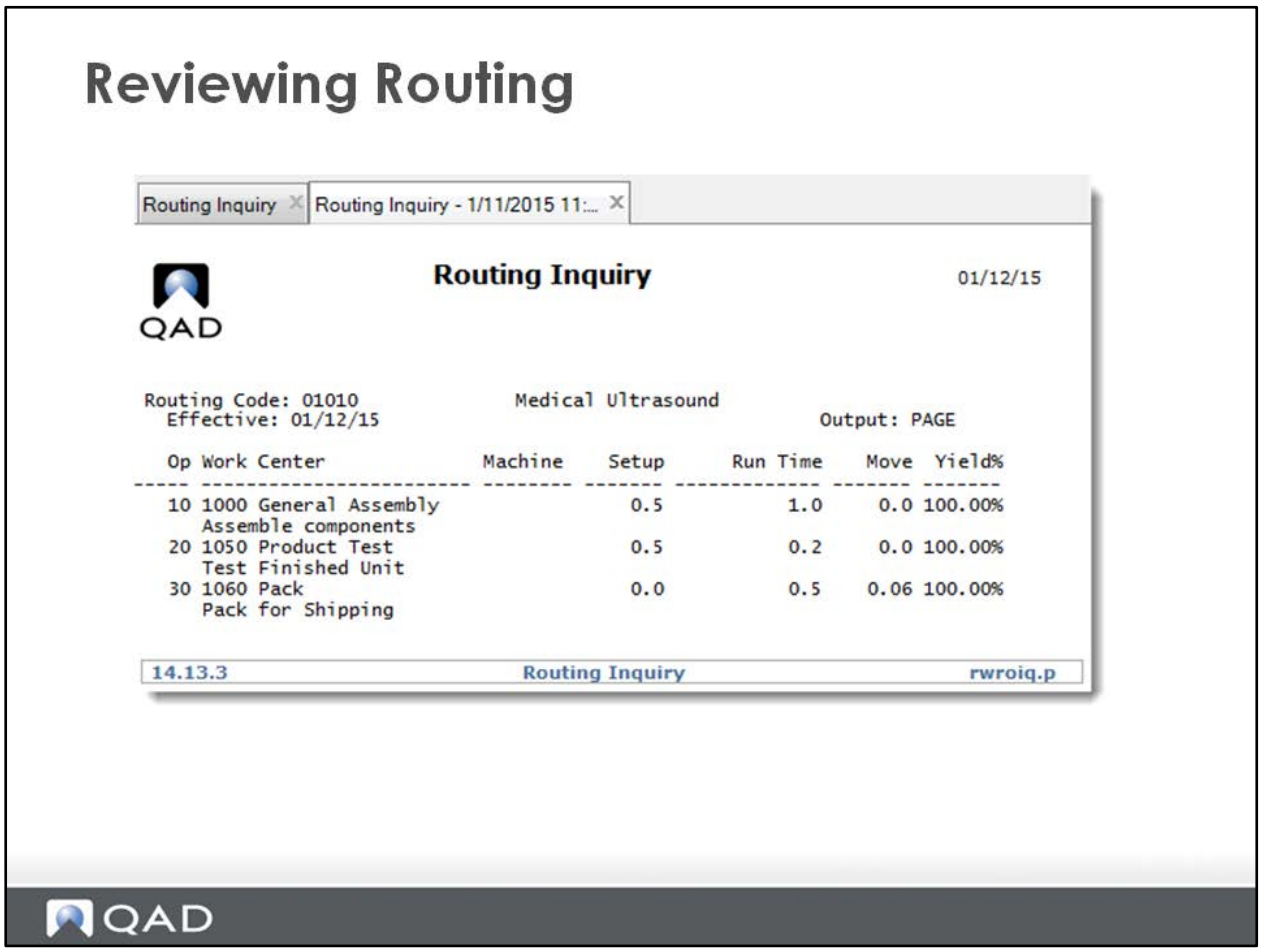
Field Definitions

- **Queue Time:** The time work normally waits at a work center before the operation begins.
- **Setup Time:** The time required to prepare the work center/machines for processing. It is independent from batch size.
- **Run Time:** The standard amount of time required to process a single unit of this item. It can be entered as the units per hour or run time per batch, but internally, this is converted to a run time per unit.
- **Wait Time:** The time spent waiting after the operation is done; for example, drying, curing, cooling. It is based on a 24-hour clock, not the shop calendar.
- **Move Time:** The time a work order is in transit from one operation to the next. This value is calculated per order and is independent of order size.
- **Subcontract Lead Time:** A routing operation can be a task of an outside vendor or subcontractor. In that case, it is the number of calendar days it takes to process the standard order quantity at the subcontractor's site, including any transit time.
- **Yield Percent:** The normal yield percentage for this operation. The percentage of any order expected to be in usable condition after this operation (used to calculate costs).

Yield in the operation route is intended to be used for scrap that occurs at a specific operation because of some aspect of that operation. It consumes all of the components that have been issued up to that point.
Yield is, in contrast to scrap, in the product structure, which is associated with a specific component at a specific operation. It is important in setting up structures and routings to account for scrap and yield as accurately as possible and in the correct place. Use this rule:

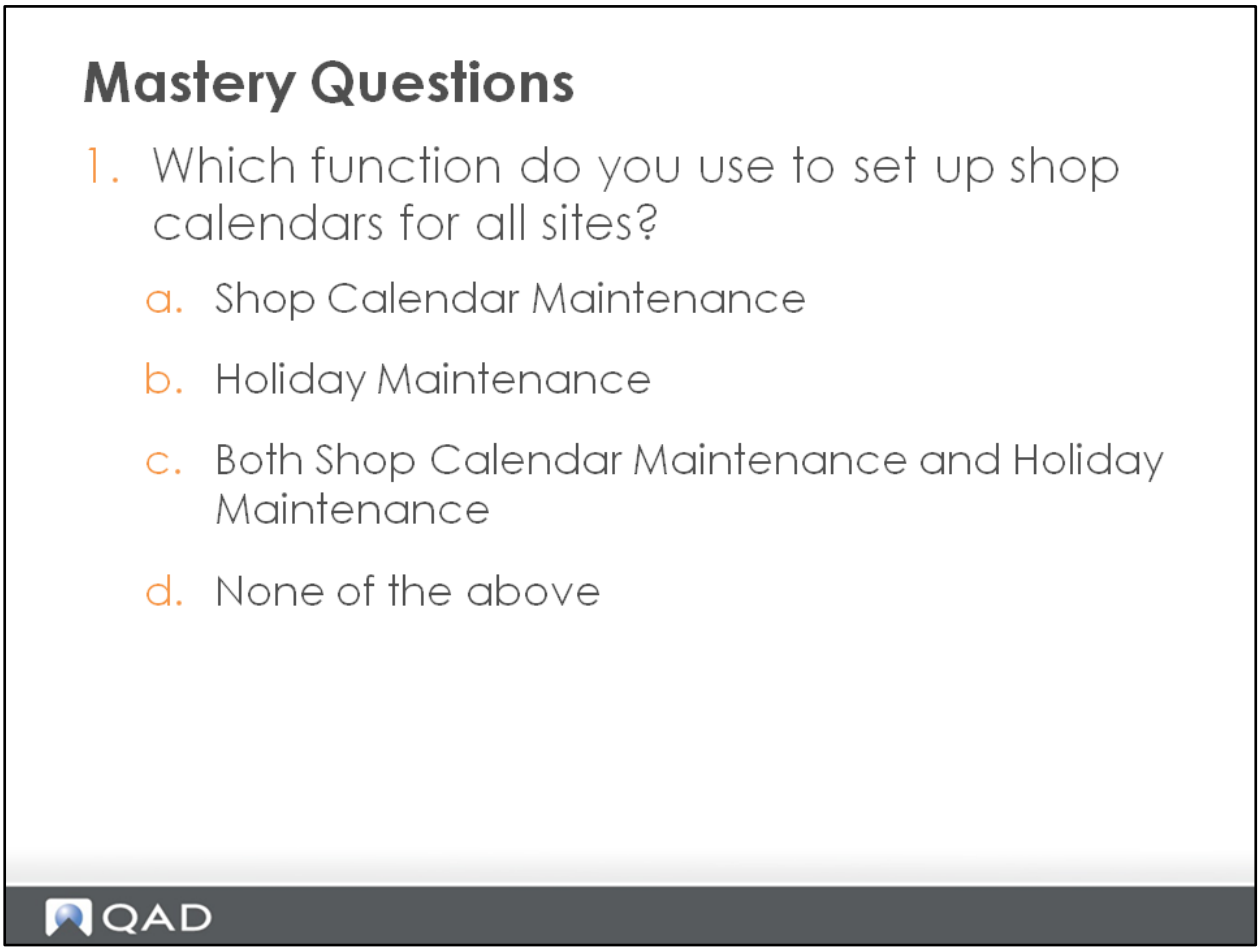
- At the given operation, is the component scrapped before being assembled? It is a component scrap in the structure.
- Is the assembly scrapped after the component is assembled? The yield is in the route.

Reviewing Routing

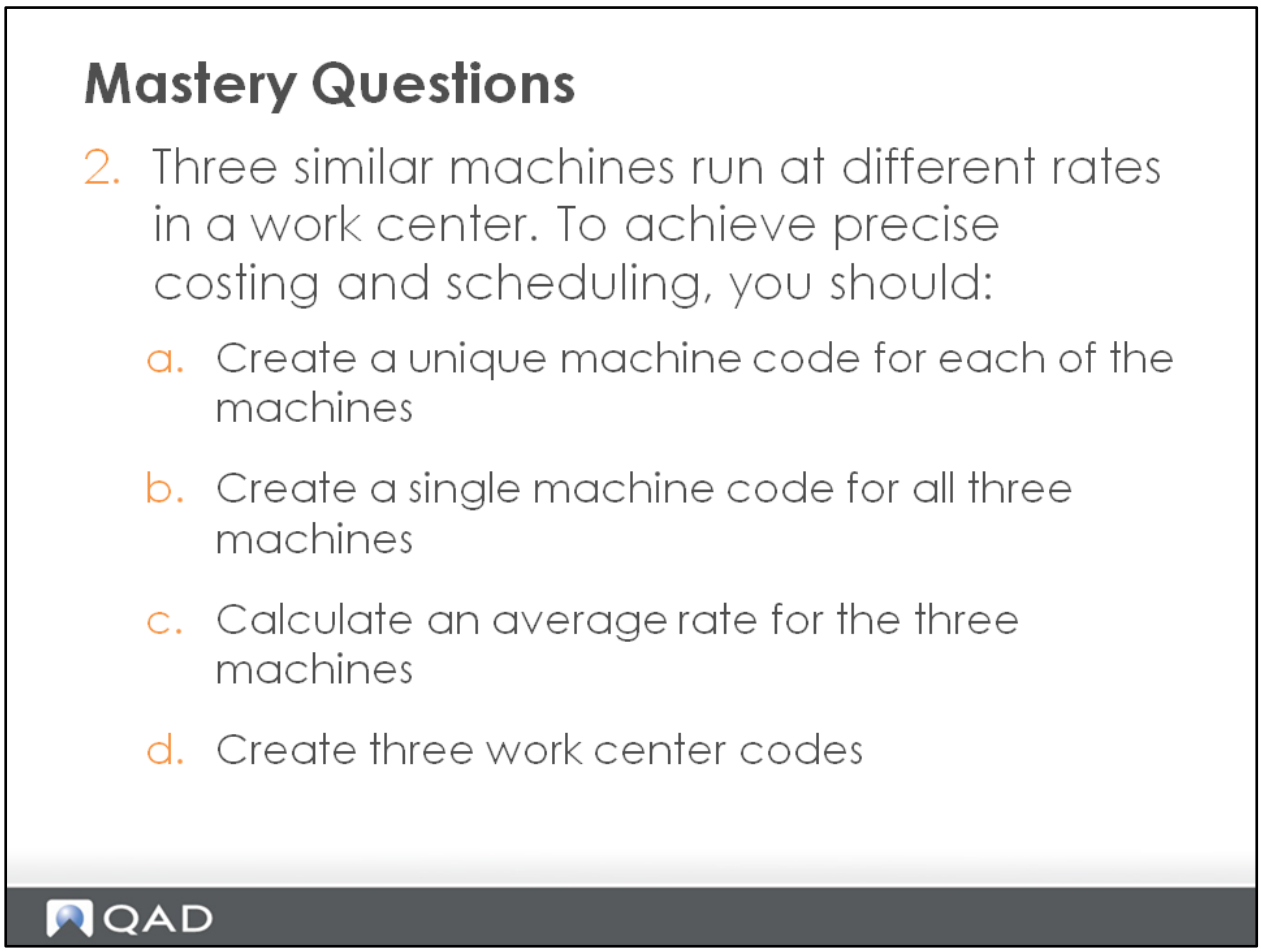


The Production Planner reviews the routing in Routing Inquiry (14.13.3) to ensure that the information is accurate.

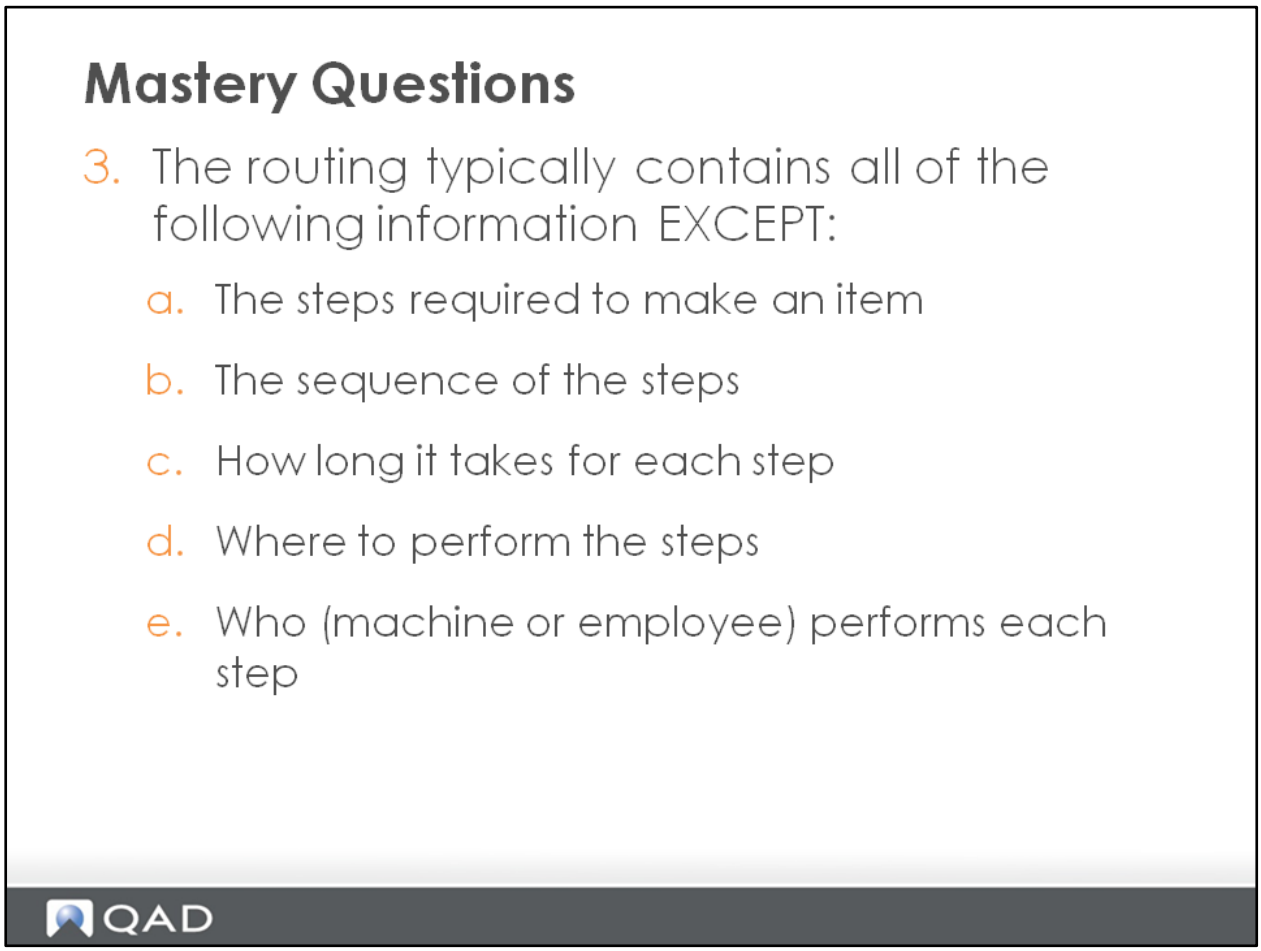
Mastery Questions



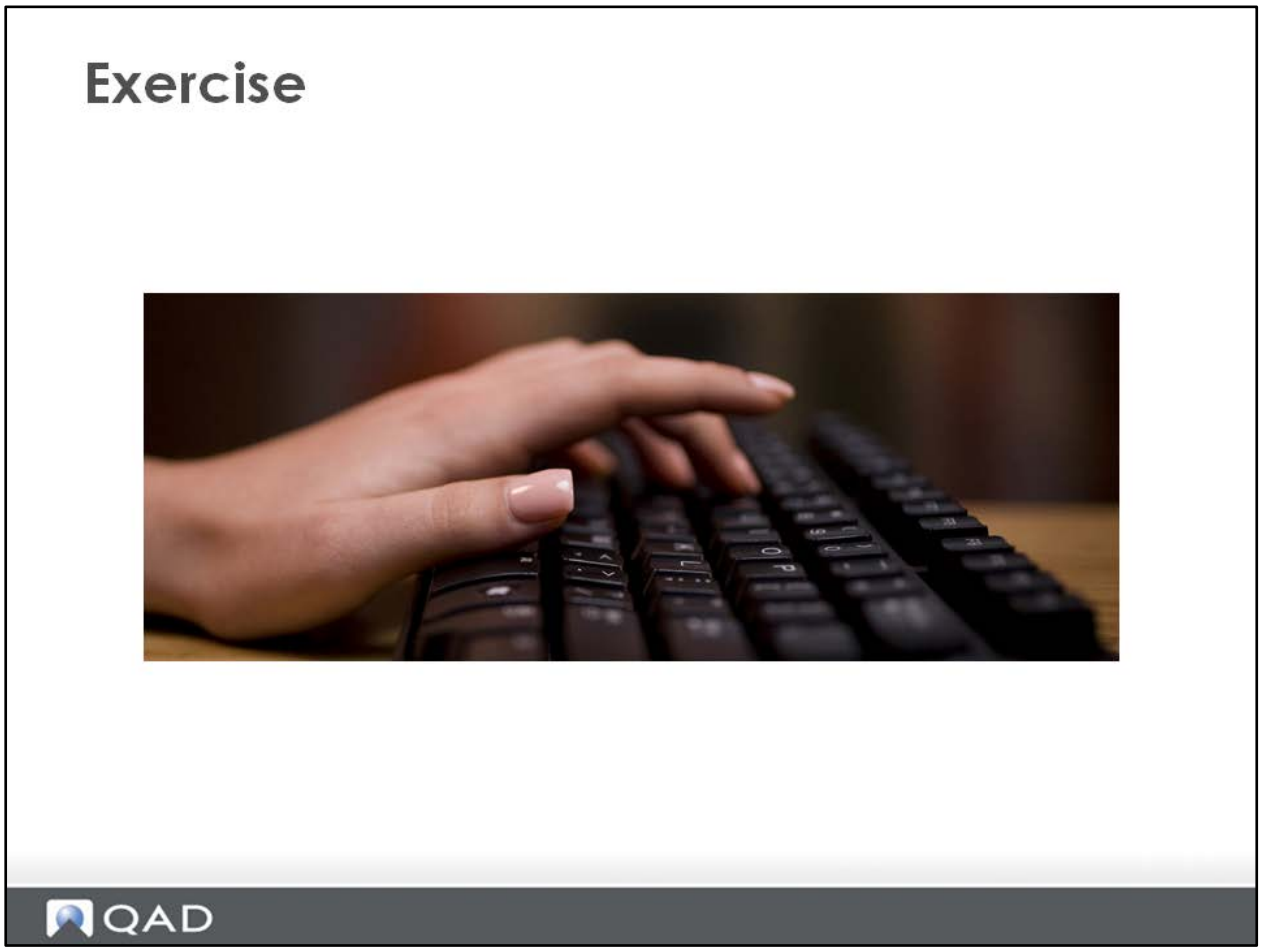
Mastery Questions



Mastery Questions



Exercise



1. In Department Maintenance (14.1), add a department record, 050, for assembly.
   Department: 050
   Description: Assembly
   Labor Capacity: 8
   Accept the remaining defaults.

2. Use Work Center Maintenance (14.5) to add a work center record. The key values to enter or verify are:
   Work Center: 1005
   Machine: <blank>
   Department: 050
   Mach/Op:1
   Machines: 1
   Setup Rate: 5
   Labor Rate: 4.5

Labor Burden Rate:0.02
Labor Bdn%: 0.01%

3. Use Routing Maintenance (14.13.1) to add a routing code that is the same as the manufactured item number. The key values to enter and verify are:
   Routing Code: 01010
   Operation: 10
   Work Center: 1005
   Machine: <blank>
   Description: Assemble Components
   Setup Time: 0.5
   Run Time: 1.0

4. Enter the following two operations:

   Operation : 20
   Work Center: 1050
   Machine: <blank>
   Description: Test Medical Ultrasound
   Setup Time: 0.5
   Run Time: 0.02

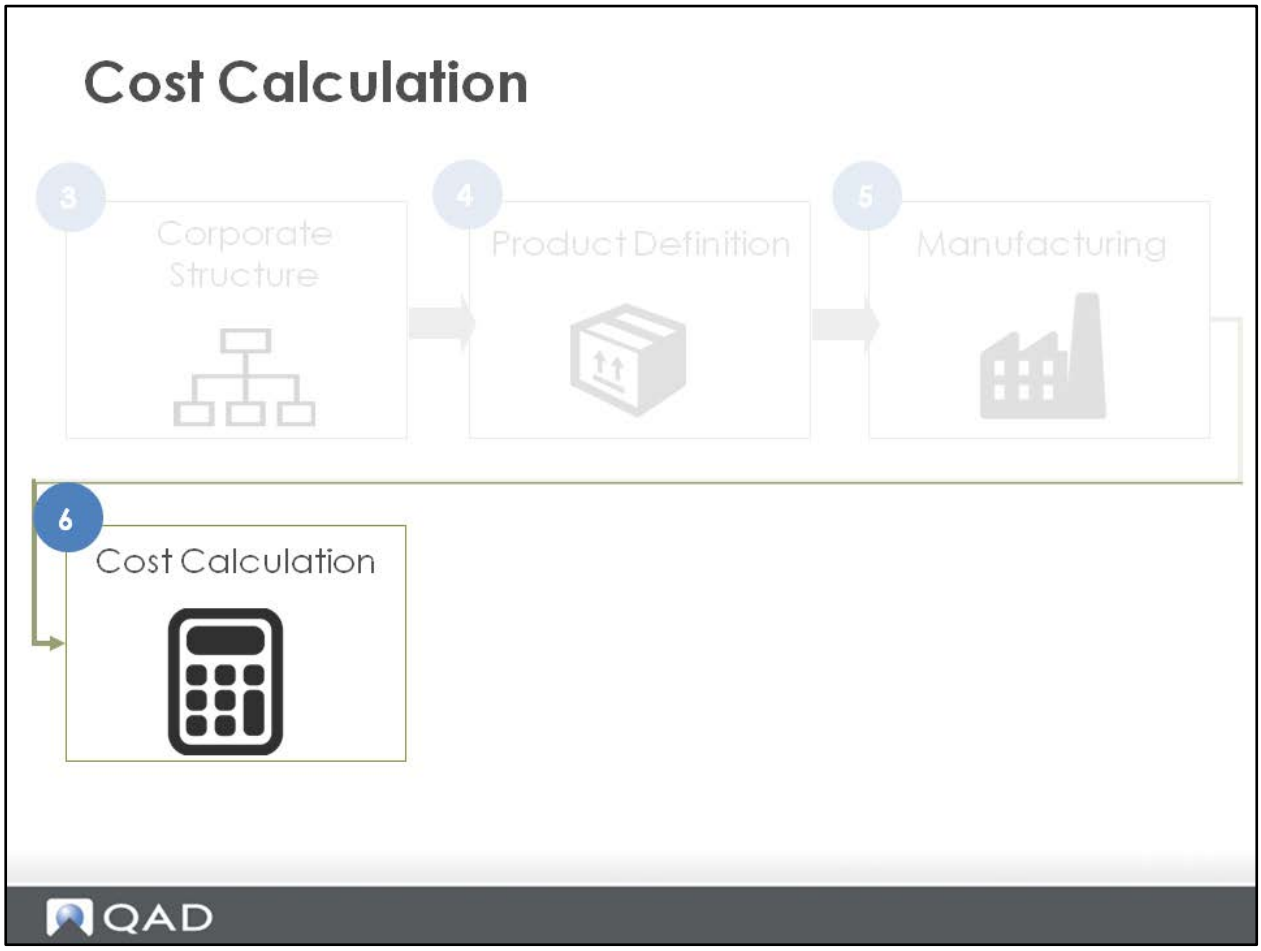
   Operation: 30
   Work Center: 1060
   Machine: <blank>
   Description: Pack Medical Ultrasound
   Setup Time: 0.5
   Run Time: 0.06

5. Use Routing Inquiry (14.13.3) to review the routing.

CHAPTER 6

Cost Calculation

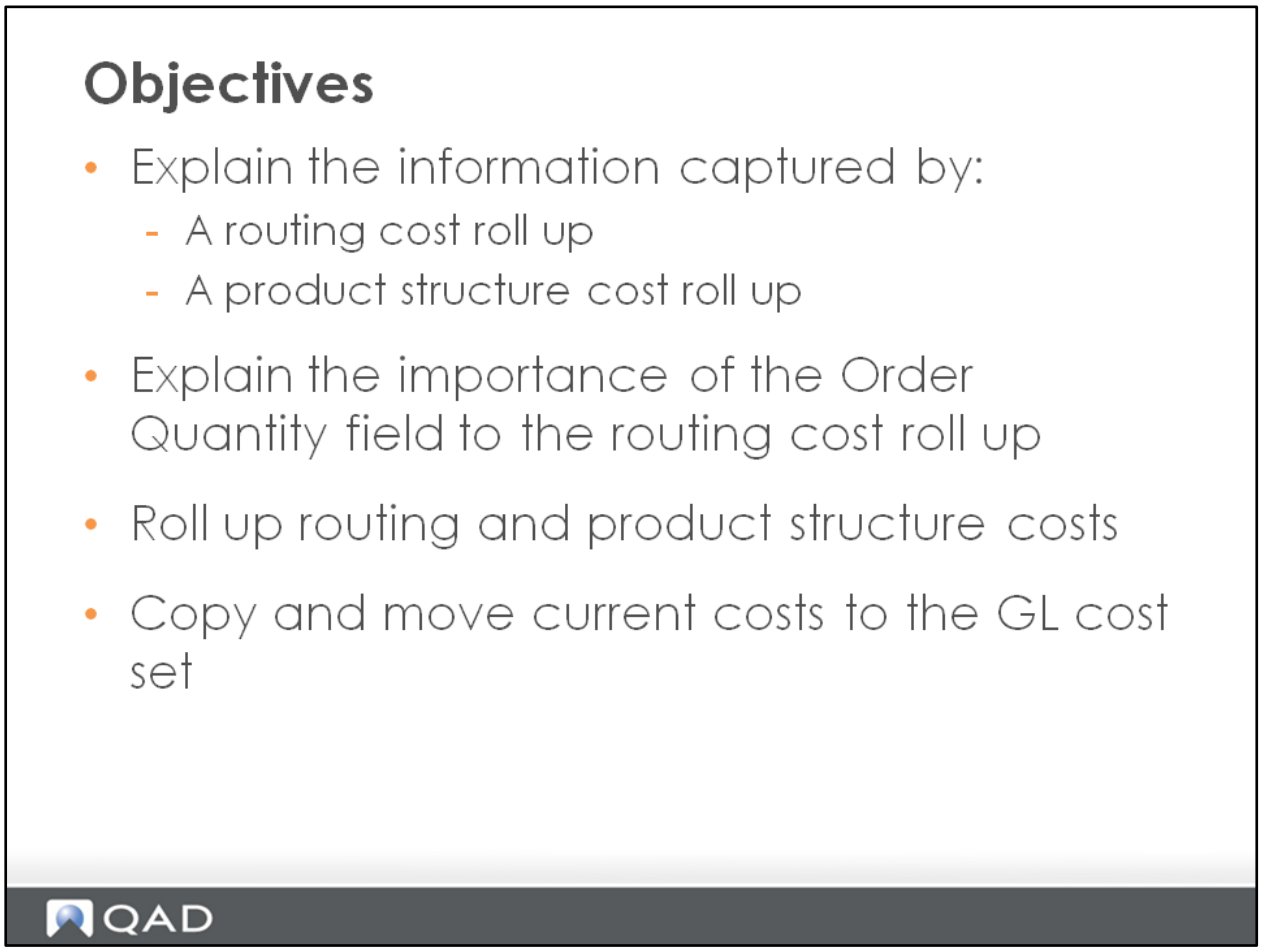
Cost Calculation



This section discusses how the system rolls up lower-level manufacturing costs and how they are managed in the general ledger. Based on information set up in product definition and manufacturing, item costs can be calculated.

This section shows how cost information contained in the routing and product structure is “rolled up” to calculate total cost. It begins with a discussion of routing and product structure cost rollups, followed by a discussion of the update of the GL cost set using costs collected in the current cost.

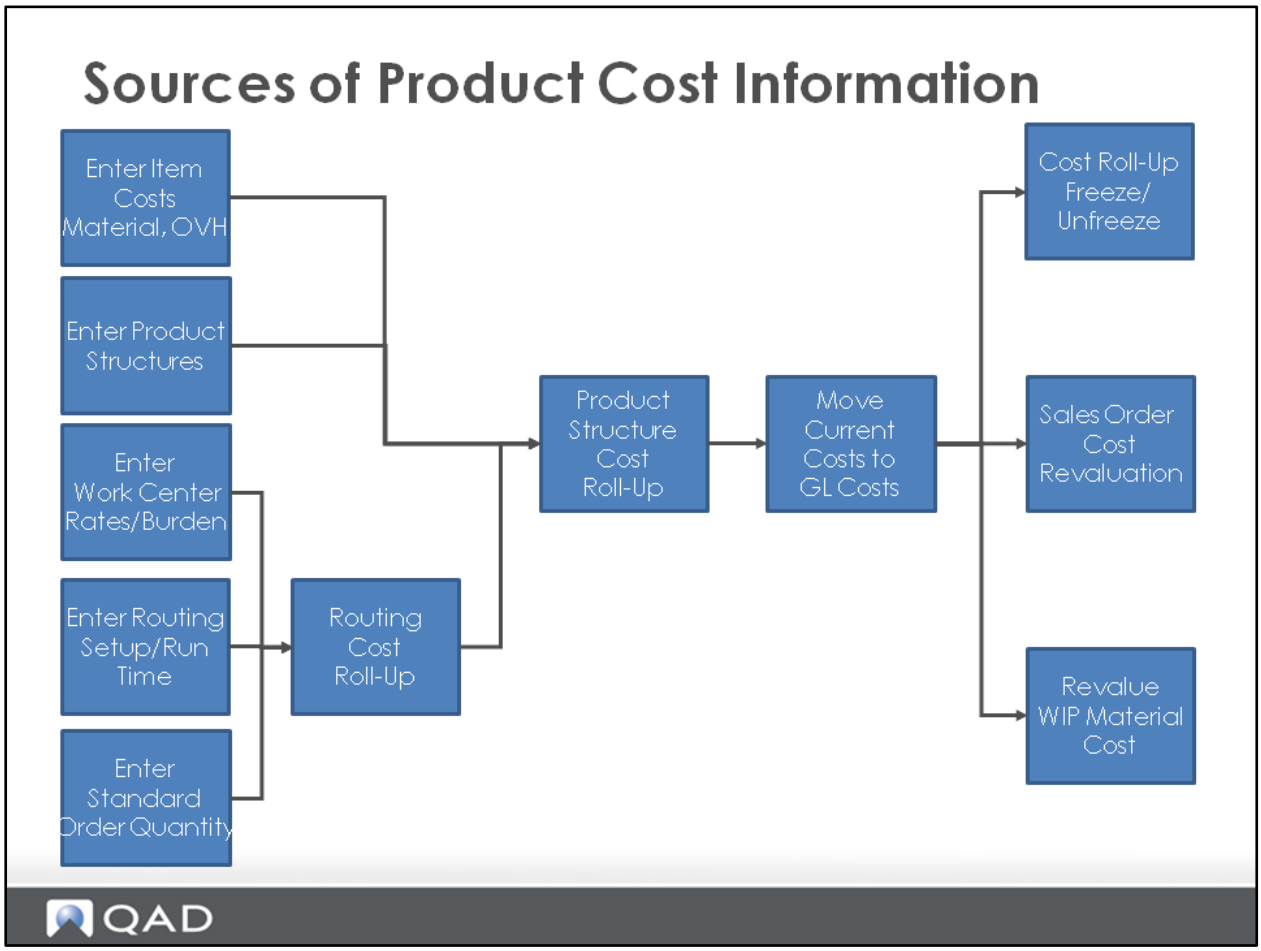
Objectives


Objectives
Explain the information captured by:
A routing cost roll up
A product structure cost roll up
Explain the importance of the Order Quantity field to the routing cost roll up
Roll up routing and product structure costs
Copy and move current costs to the GL cost set
QAD

Topics


Topics
Key Concepts
Routing Cost Roll Up
Product Structure Cost Roll Up
Current Cost Set Move to GL Set
Example Scenario
Review Standard Order Quantity for Item
Roll Up Routing Costs
Roll Up Product Structure Costs
Move Current Cost Set to GL Set
Mastery Questions
Exercise
QAD

Sources of Product Cost Information



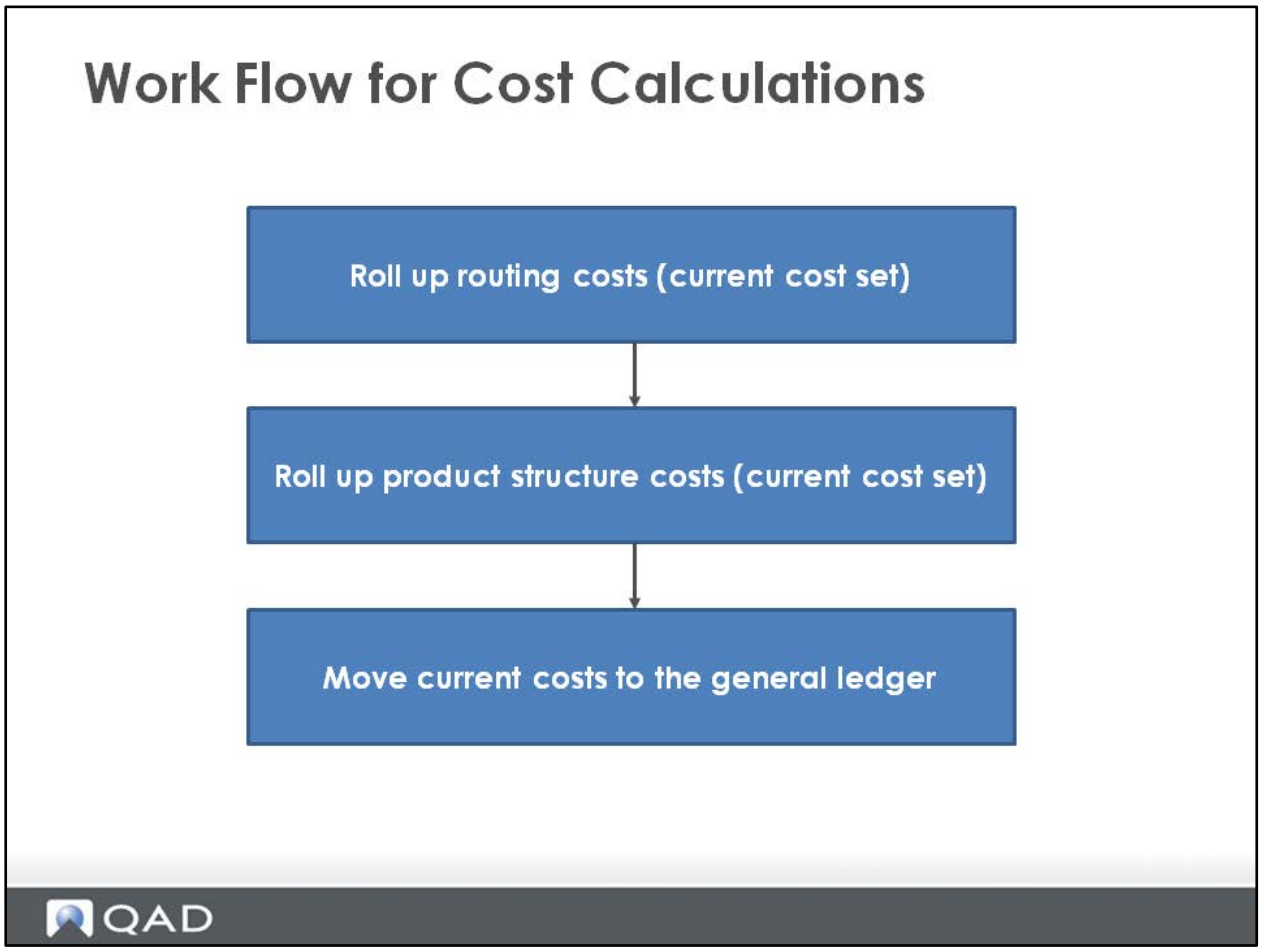
Product cost calculations are based on information from various sources. Some of the key pieces are:

- Purchased material, overhead, and other costs entered manually in Item-Site Cost Maintenance for purchased items
- Component quantity per and scrap rates entered in the product structure (BOM)
- Labor and setup rates entered for each work center
- Variable burden at each work center
- Manufacturing setup and run times entered on each routing operation
- Yield at each operation
- Subcontract cost per unit entered on each subcontracted operation
- Item order quantity entered in Item Planning Maintenance

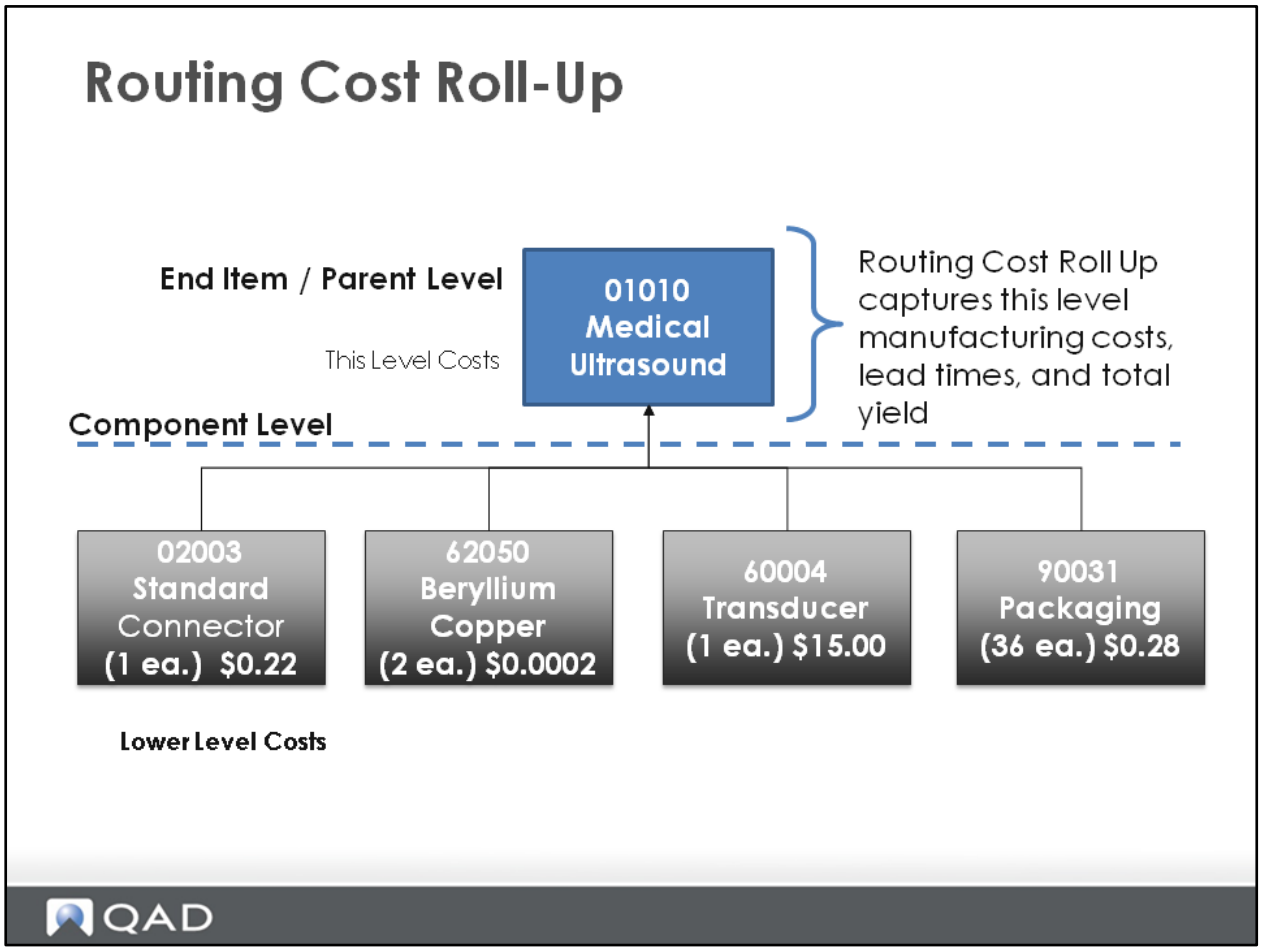
- BOM and routing code entered in Item Planning Maintenance

Most of this information was described in the previous chapter and shown in the previous examples and exercises. The next steps are to roll up the routing and product structure costs, and to move the current cost set to the GL cost set. These three steps are covered on the following pages.

Work Flow for Cost Calculations



Routing Cost Roll-Up



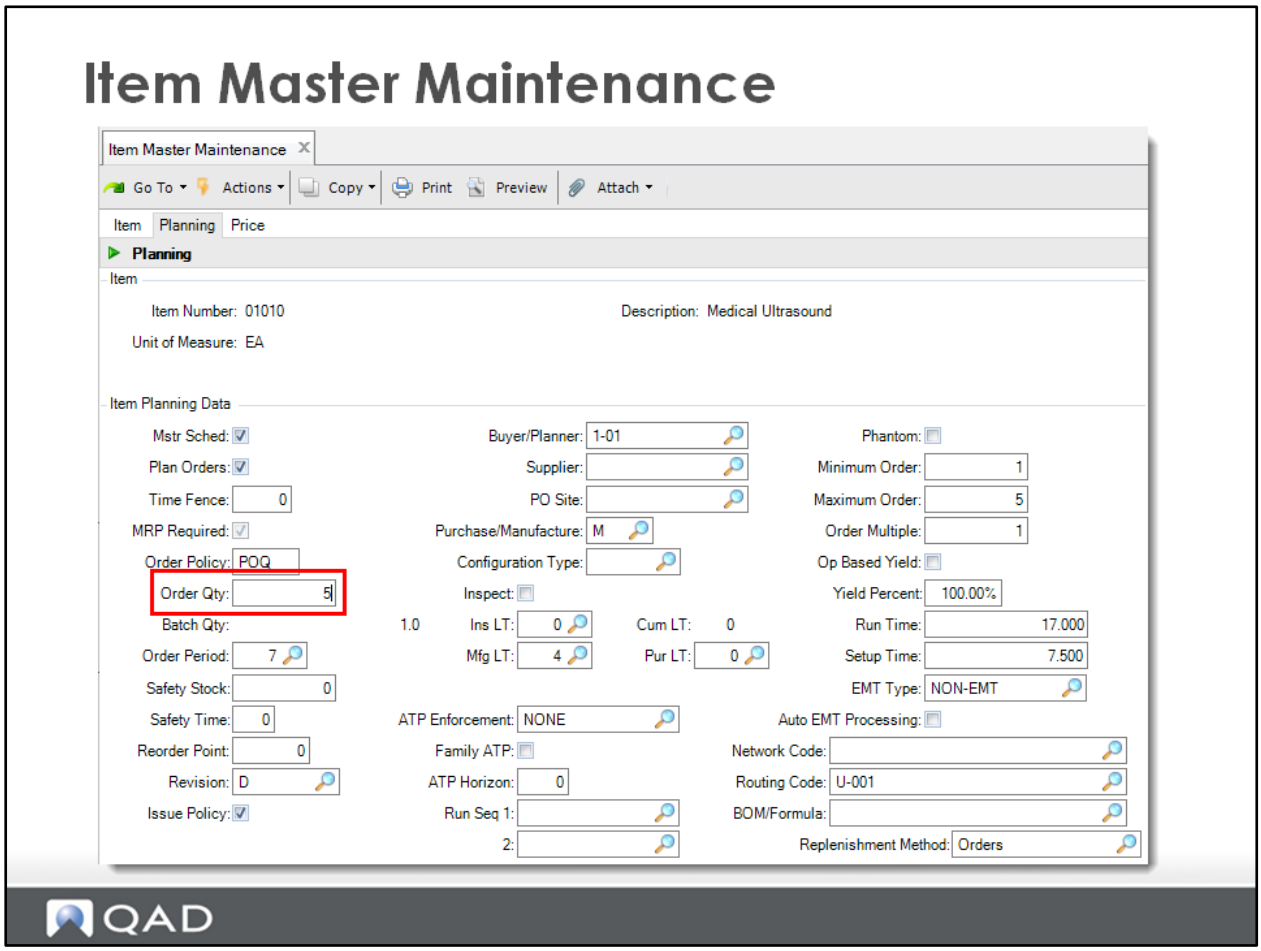
Routing Cost Roll-Up calculates the manufacturing costs, lead times, and total yield for one or more items at a particular site. Costs are calculated for each operation after accessing the item master, work center, routing, and standard operation data.

The roll-up uses data defined in:

- **Item Master Maintenance**
  The item (site) planning record provides the order quantity value, which is used to amortize setup cost over a standard or normal order size to obtain a realistic cost per unit value.
- **Routing Maintenance**
  The routing records provide the setup and run times (standard), as well as the machines per operation and operation yield percent.
- **Work Center Maintenance**
  The work center data is used to obtain hourly rates for setup and run labor. The work center also

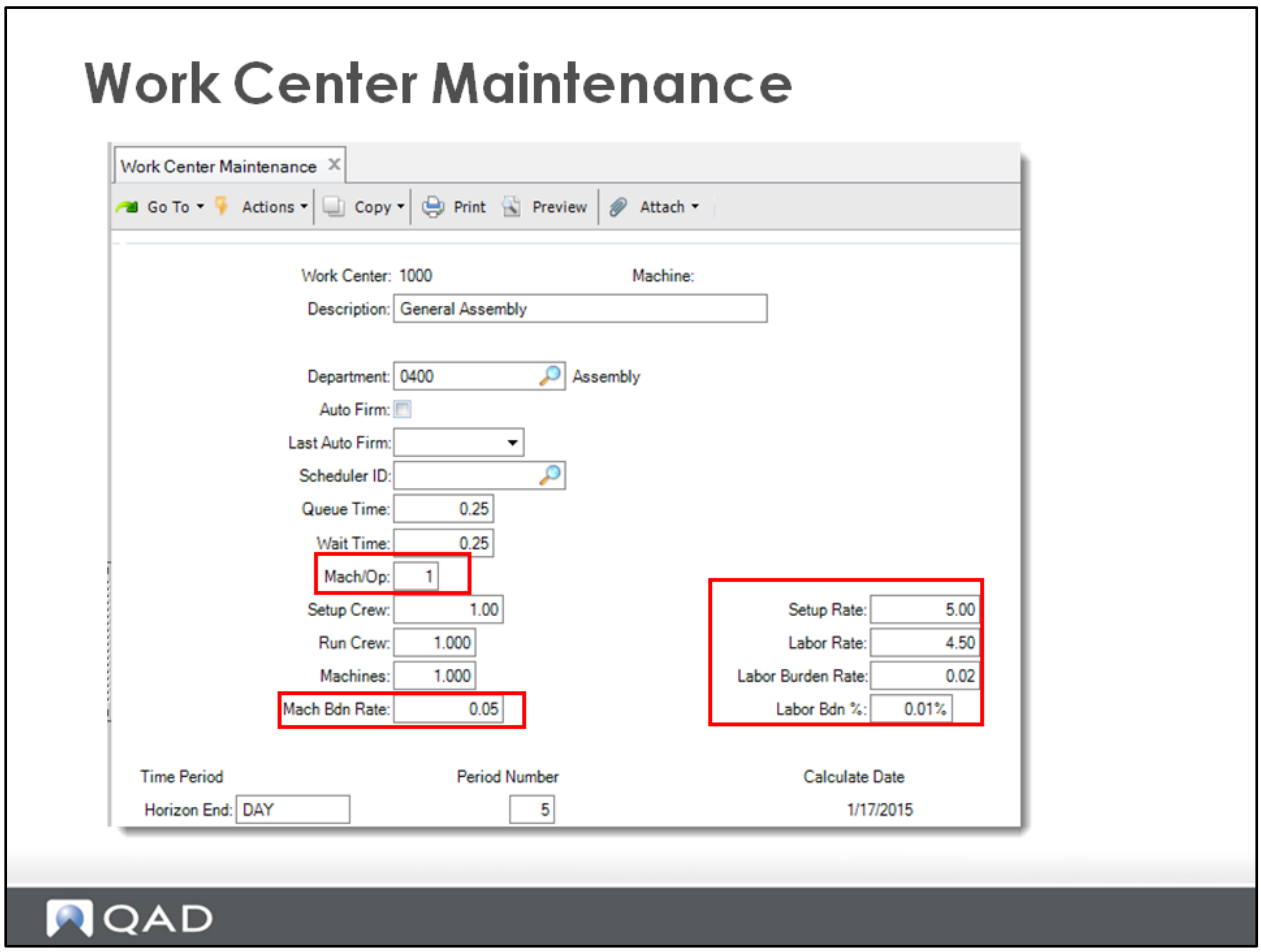
provides the burden rates as cost per hour for labor and machine burden, as well as a labor burden percent.

Item Master Maintenance



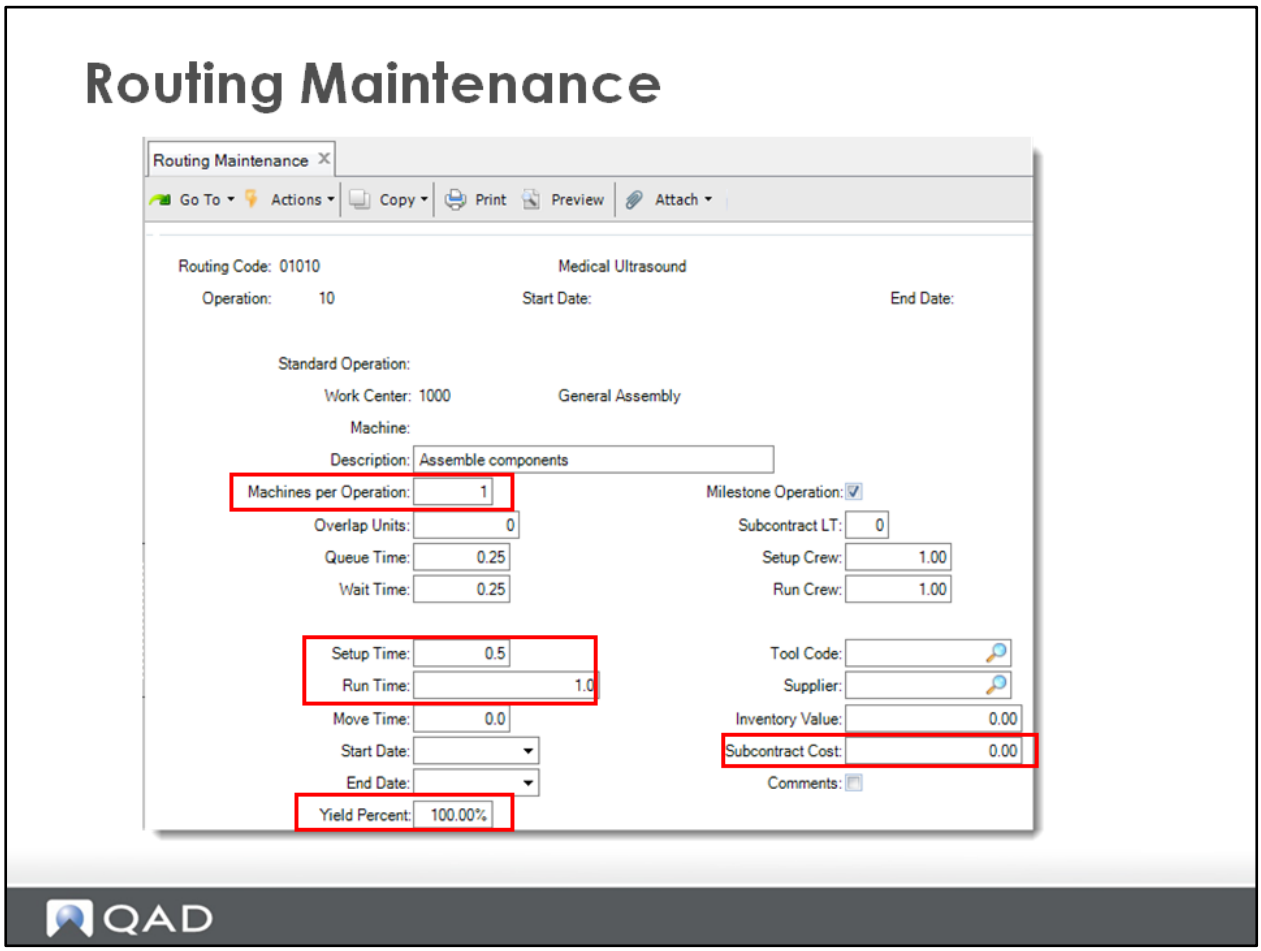
Order quantity is used to amortize setup cost over a standard or normal order size to obtain a realistic cost per unit value

Work Center Maintenance



Routing cost calculations are based upon work center data for hourly rates for setup and run labor. The work center also provides the burden rates as cost per hour for labor and machine burden, as well as labor burden percent.

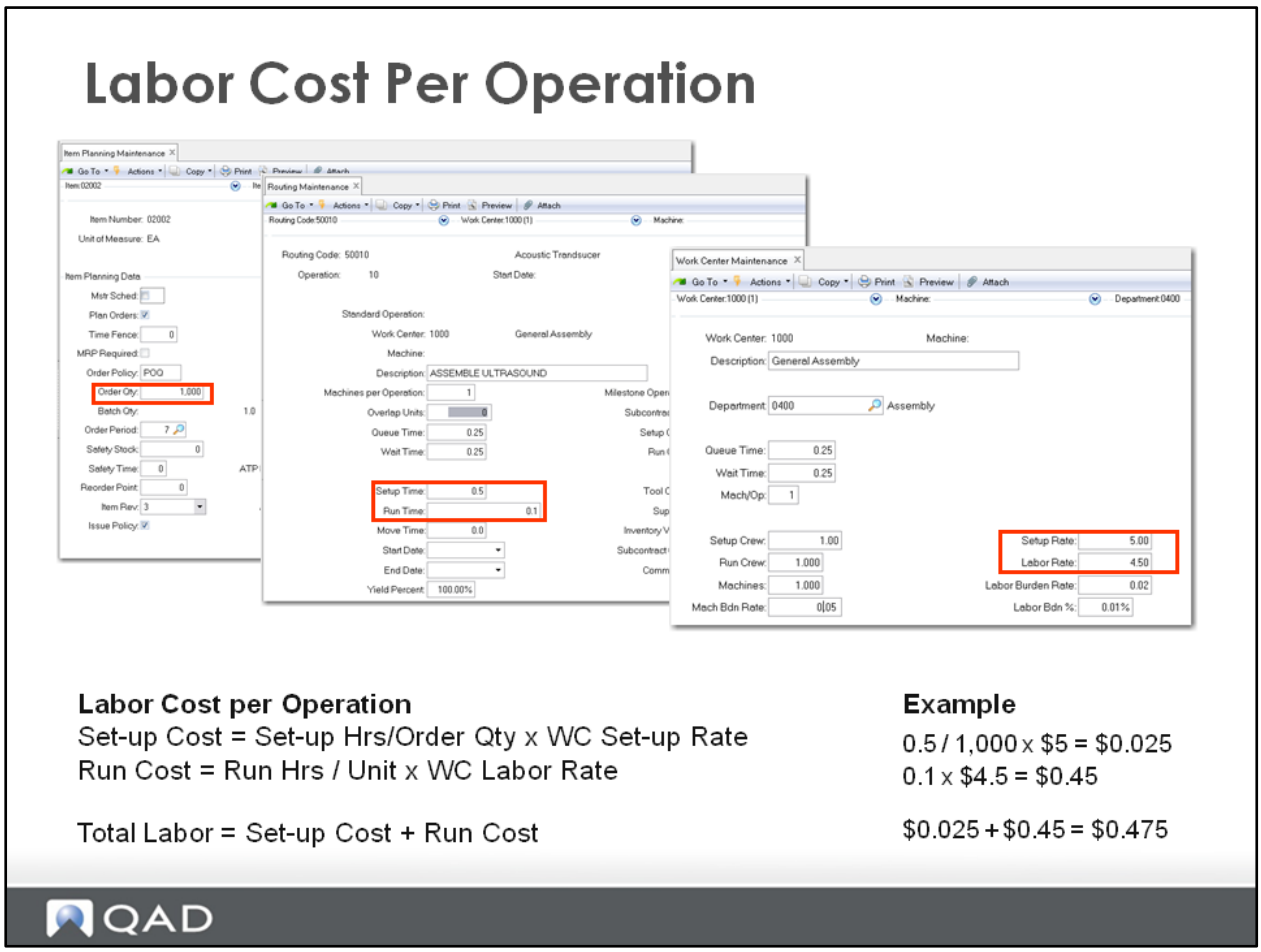
Routing Maintenance



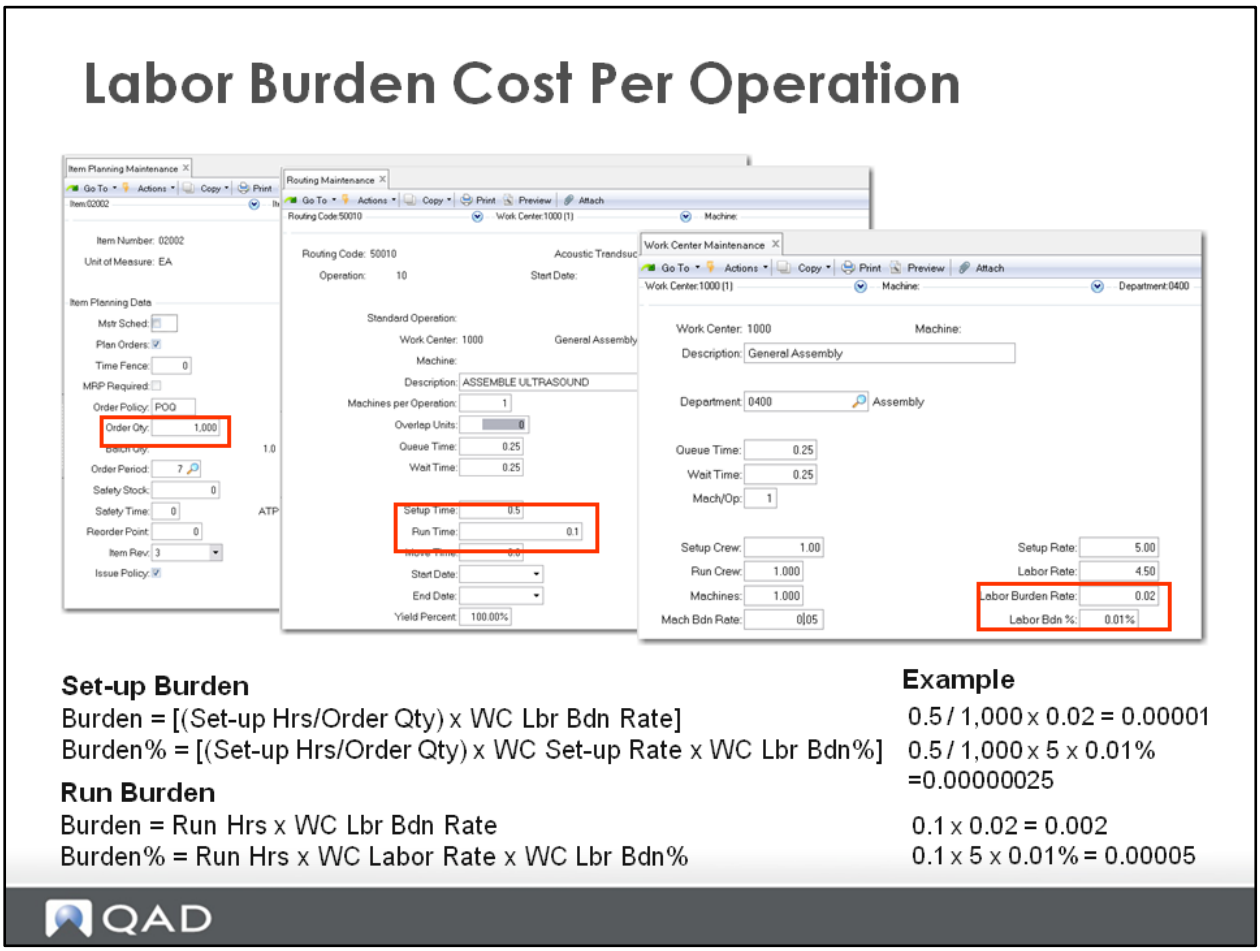
Routings are used to define the steps that a product passes through during the manufacturing process. More importantly, from a costing perspective, routings provide manufacturing setup and run times per operation, machines per operation, and operation yield percent or yield at each operation. Subcontract cost per unit is entered for each subcontracted operation.

Each routing operation is associated with a particular work center, so it is not necessary to enter labor or burden rates for each operation.

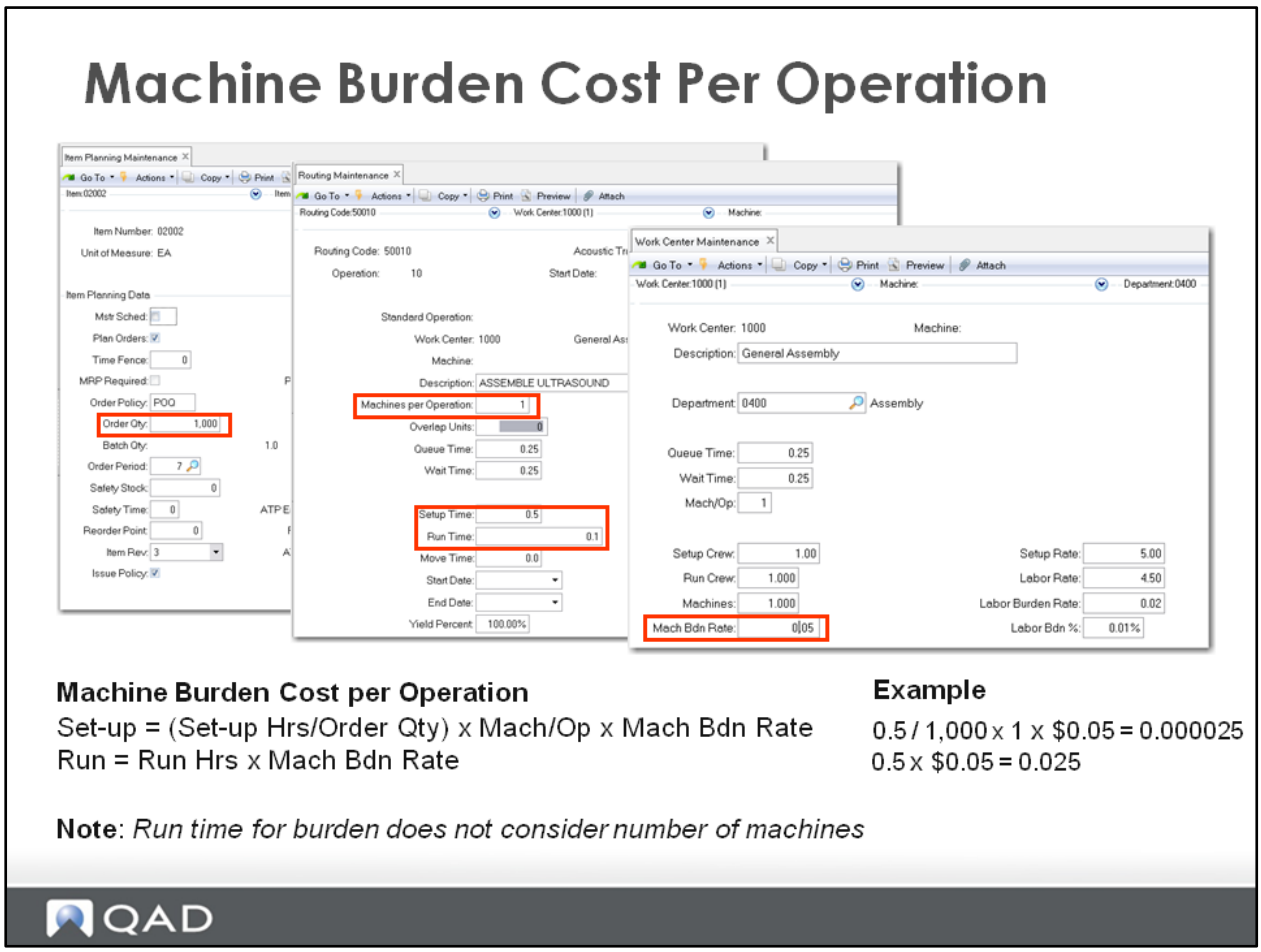
Labor Cost Per Operation



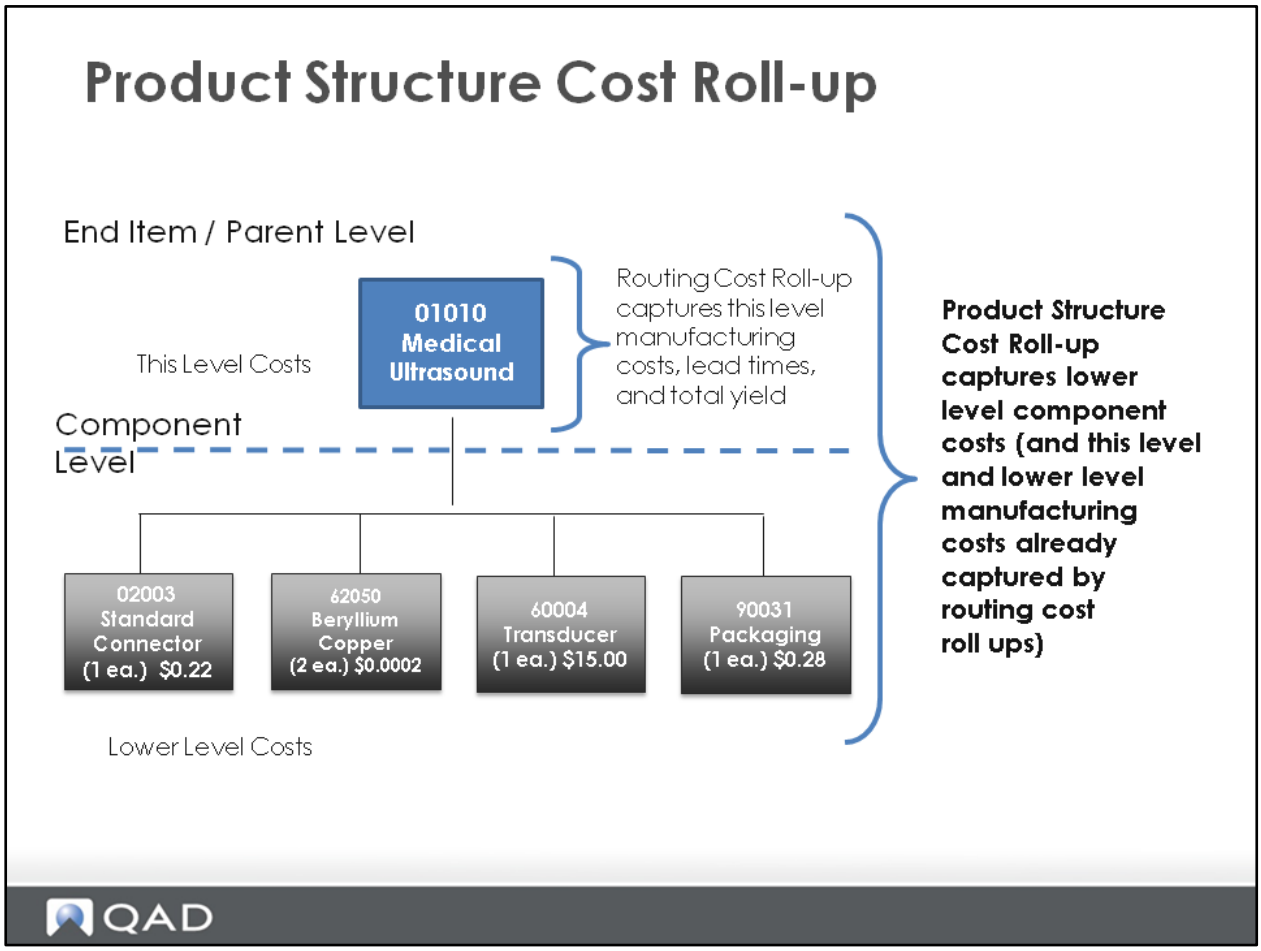
Labor Burden Cost Per Operation



Machine Burden Cost Per Operation



Product Structure Cost Roll-up

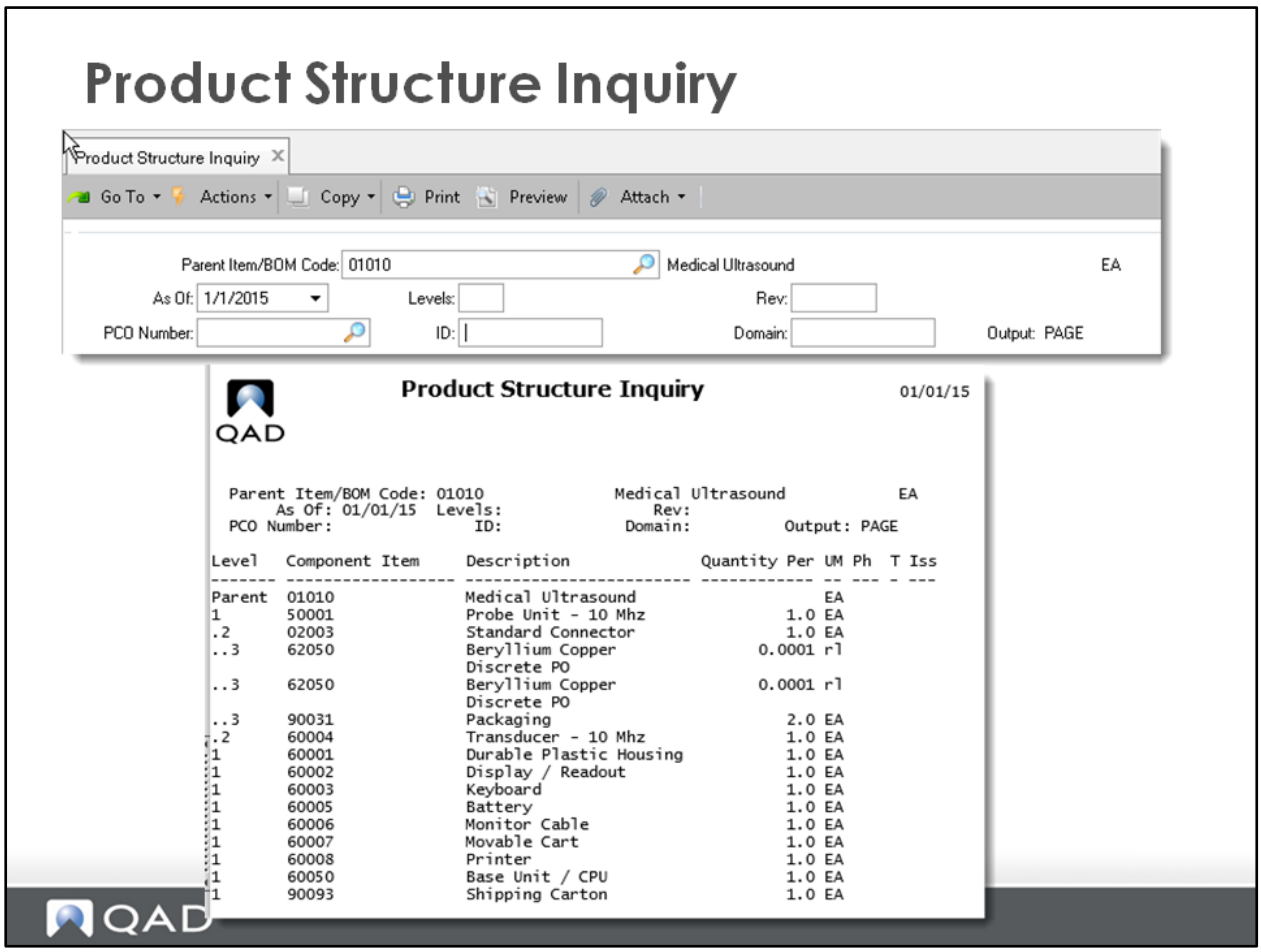


Product Structure Cost Roll-Up (13.12.13) updates the costs of parent items based on the costs of their lower-level components.

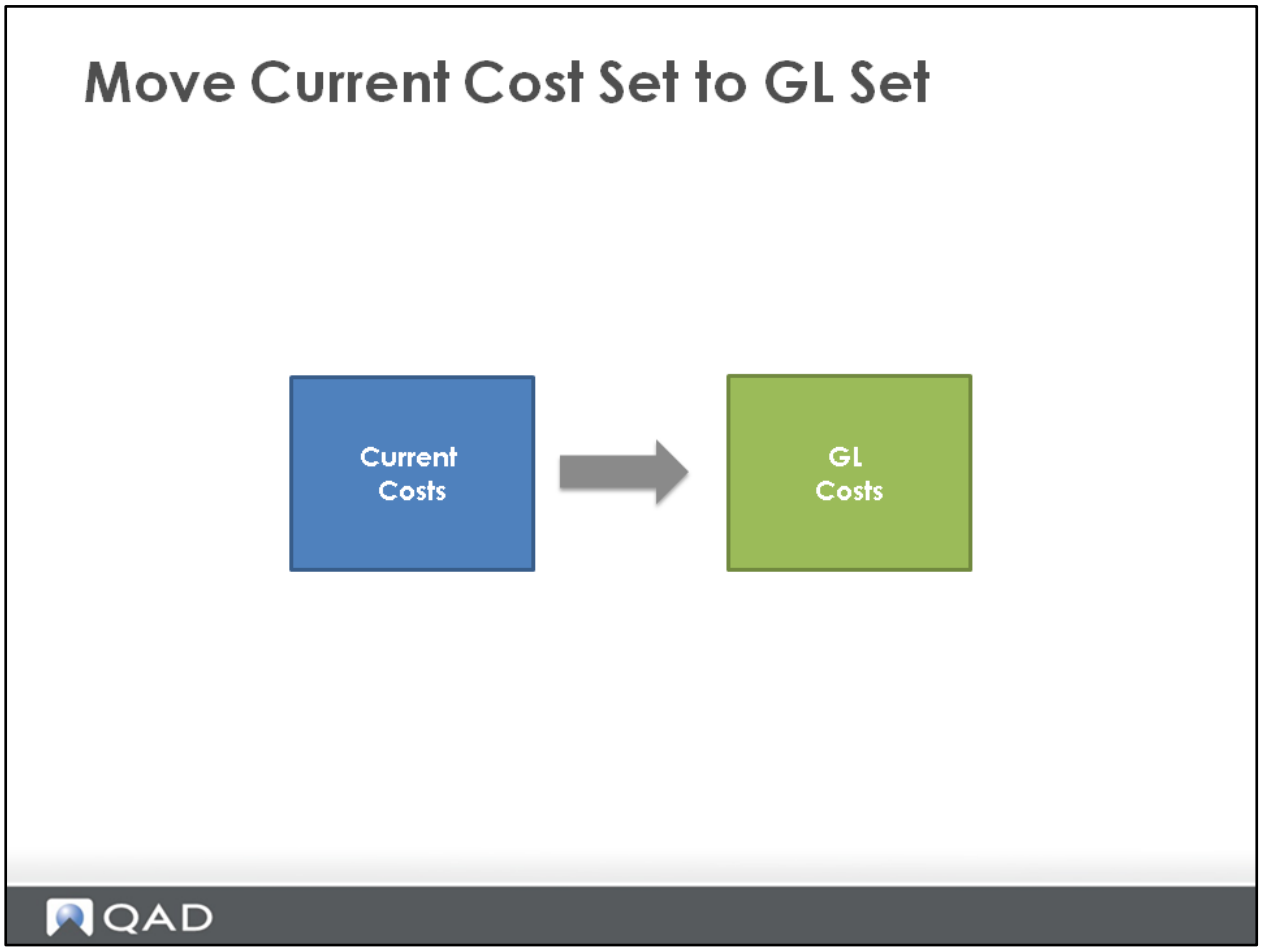
Components have information for the quantity required, expected scrap percentage, and the operations where they are required. Purchased items have material and can have overhead costs.

Manufactured items also have labor, burden, and subcontract costs. Product Structure Cost Roll-Up uses these costs to calculate the total cost by item, and lower-level run and setup times.

Product Structure Inquiry



Move Current Cost Set to GL Set



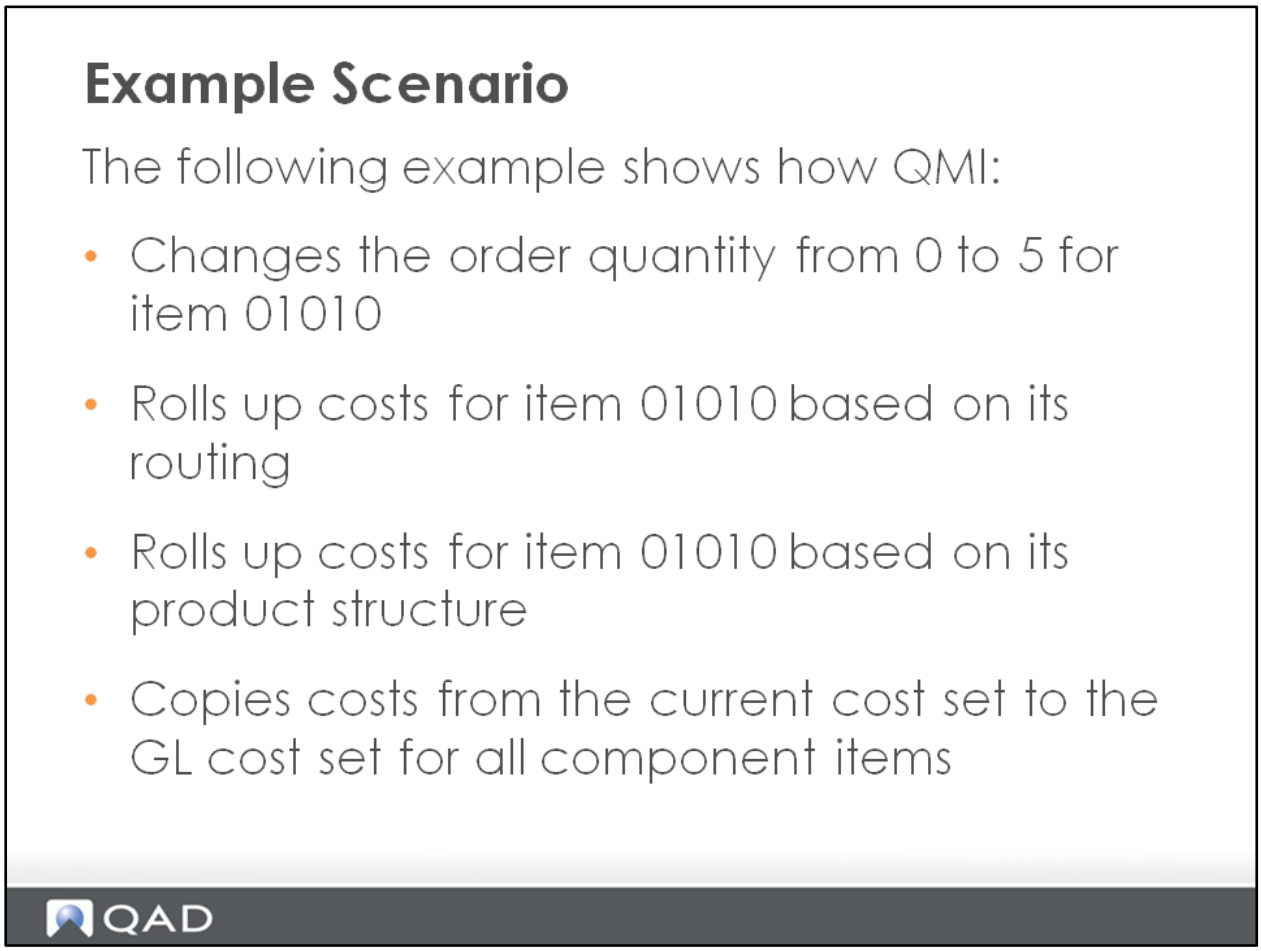
QAD Enterprise Applications maintains at least two cost sets for each item-site pair:

- Current cost, which reflects today's cost for an item
- GL cost, which is used for all general ledger transactions

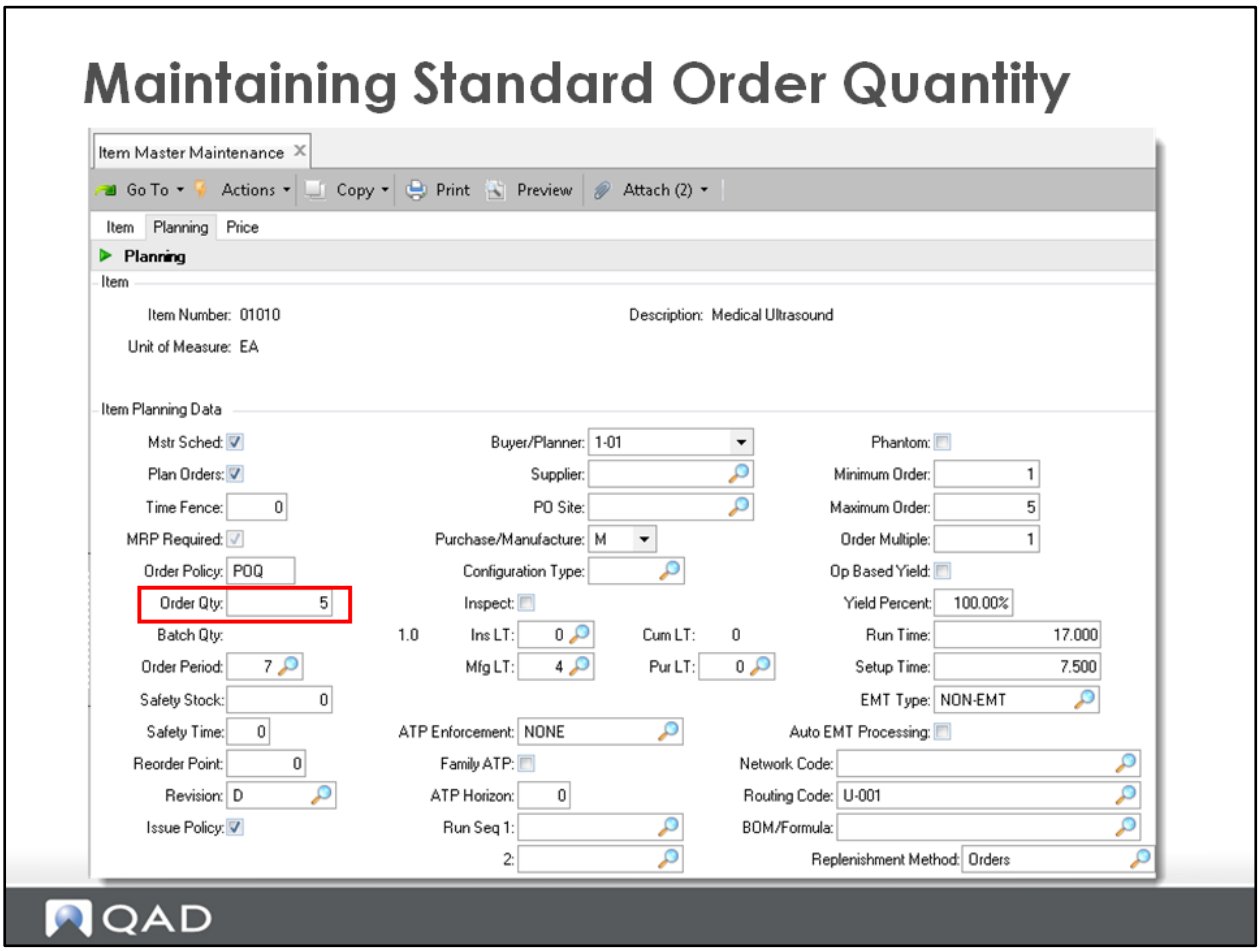
At the beginning of the year, many companies set current and GL costs to be equal. You can do so with Current Cost Set Move to GL Set (1.4.22).

When costs change, update and verify the change in the current costs first, then use Current Cost Set Move to GL Set to reflect the change in the GL cost set. Current Cost Set Move to GL Set is most commonly used only at regular, widely spaced intervals; typically annually.

Example Scenario



Maintaining Standard Order Quantity

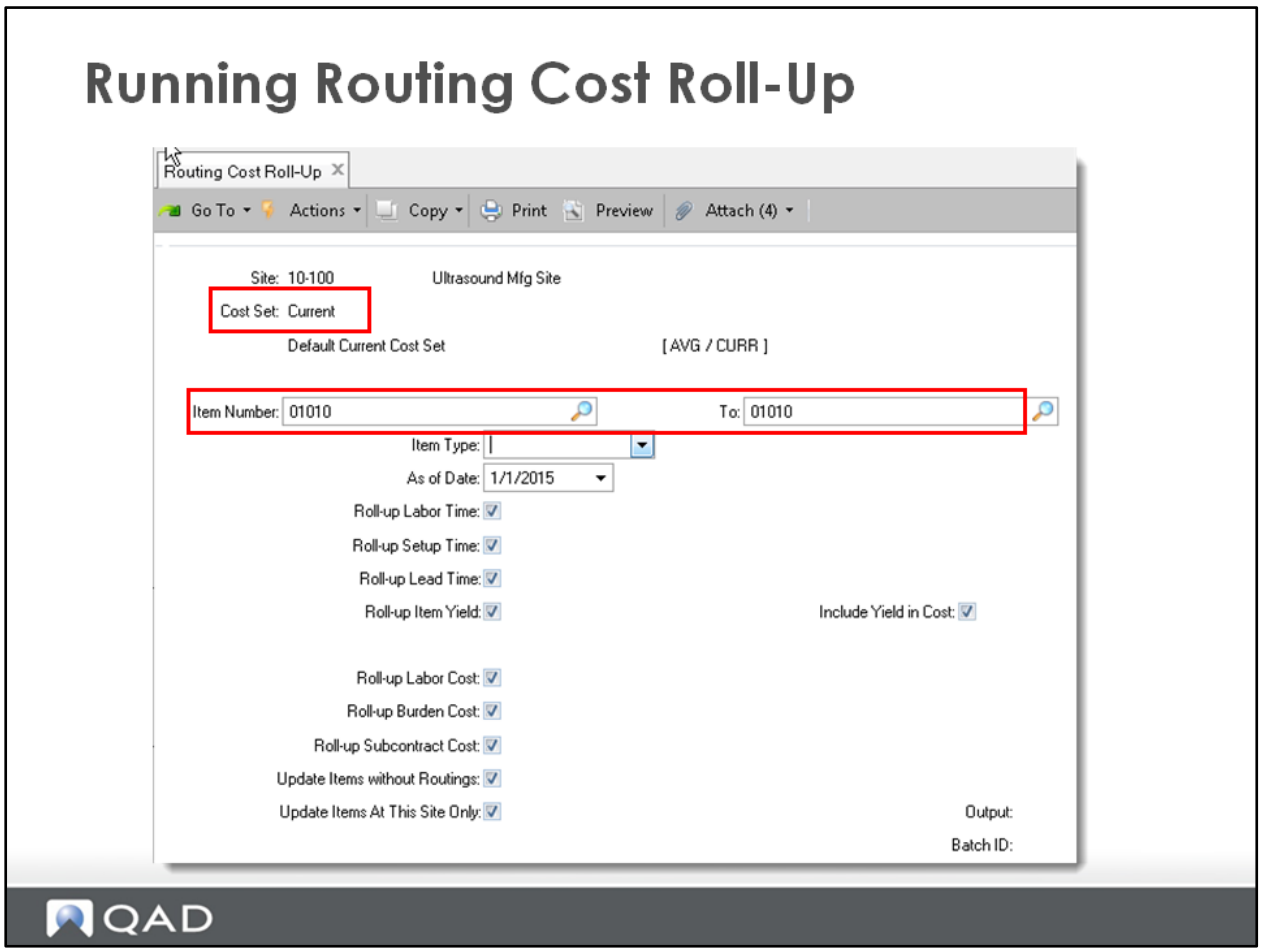


QMI has changed the standard order quantity of item 01010 from 0 to 5. Enter this information before rolling up the routing costs. The standard order quantity is entered in Item Planning Maintenance, or in the Item Planning Data frame of Item Master Maintenance (1.4.1).

The standard order quantity is what you normally produce in a single lot, batch, or work order. In this case, the setup cost is spread over the production of five units. The order quantity for each item is typically based on some aspect of production that is important to the company. A multiple of the units produced in an hour or a shift is common.

Some firms with high setup costs want large standard order quantities to spread the setup cost over many units of production. A just-in-time (JIT) environment typically invests in dedicated capacity to keep the order quantity or Kanban low.

Running Routing Cost Roll-Up

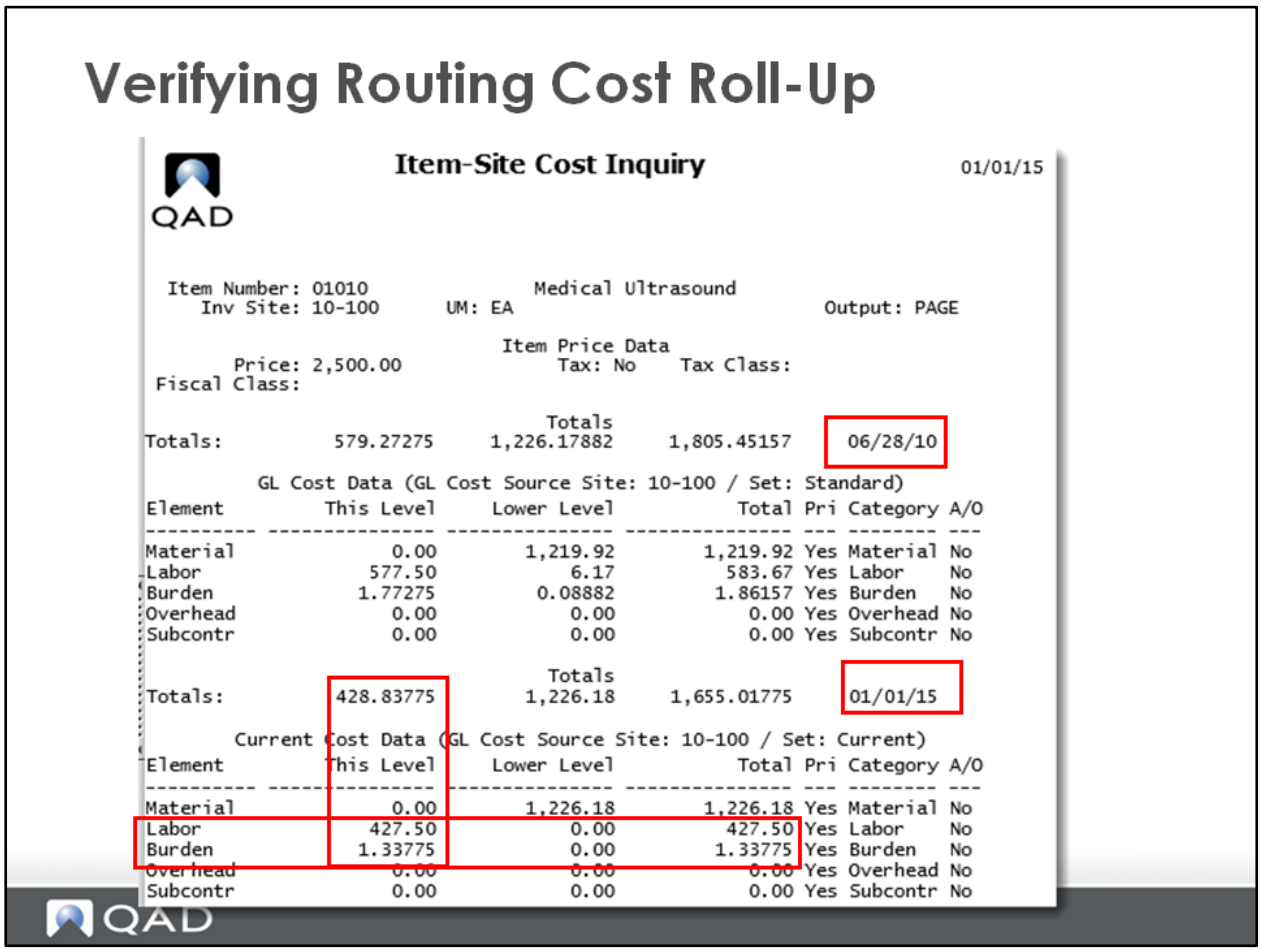


Using Routing Cost Roll-Up (14.13.13), QMI is ready to roll up the routing costs for item 01010 medical ultrasound at site 10-100. The rollup is for the current cost set, not the GL cost set. Notice all the check boxes that can be used to leave out some elements of cost for unique or special purposes. Use care when leaving out any element of cost.

You can roll up either current or GL costs. The default is to roll up current costs. Although you can roll up GL costs when they change, it is safer to roll up current costs and then copy them to the GL.

After rolling up the routing costs, it is a good idea to verify that the rollup was successful. You can verify the outcome in Item-Site Cost Inquiry, shown next.

Verifying Routing Cost Roll-Up

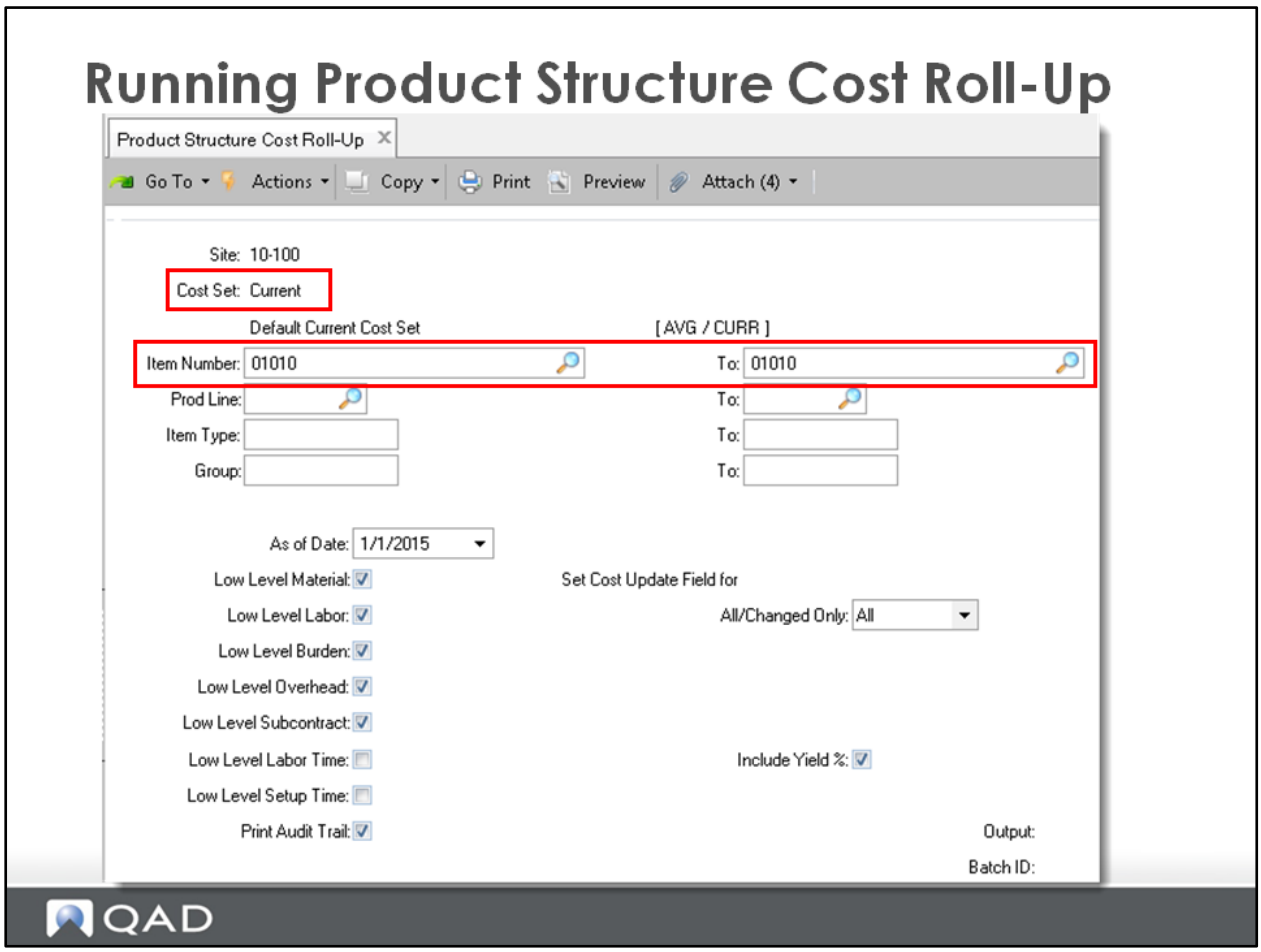


Using Item-Site Cost Inquiry (1.4.10), QMI verifies that the current cost set routing costs (labor and burden) were rolled up for item 01010 at site 10-100.

- The columns on the cost screens total up. The total cost for labor and burden at this level (in this example, 428.83775) is displayed above the column.
- Since only the current cost is calculated after the change of order quantity, the GL cost remains the legacy cost until the current cost is moved to GL cost.
- Since the product structure rollup has not been done, the item has no material costs yet. There are also no GL costs yet.

After completing and verifying the routing cost rollup, the product structure cost rollup can be initiated.

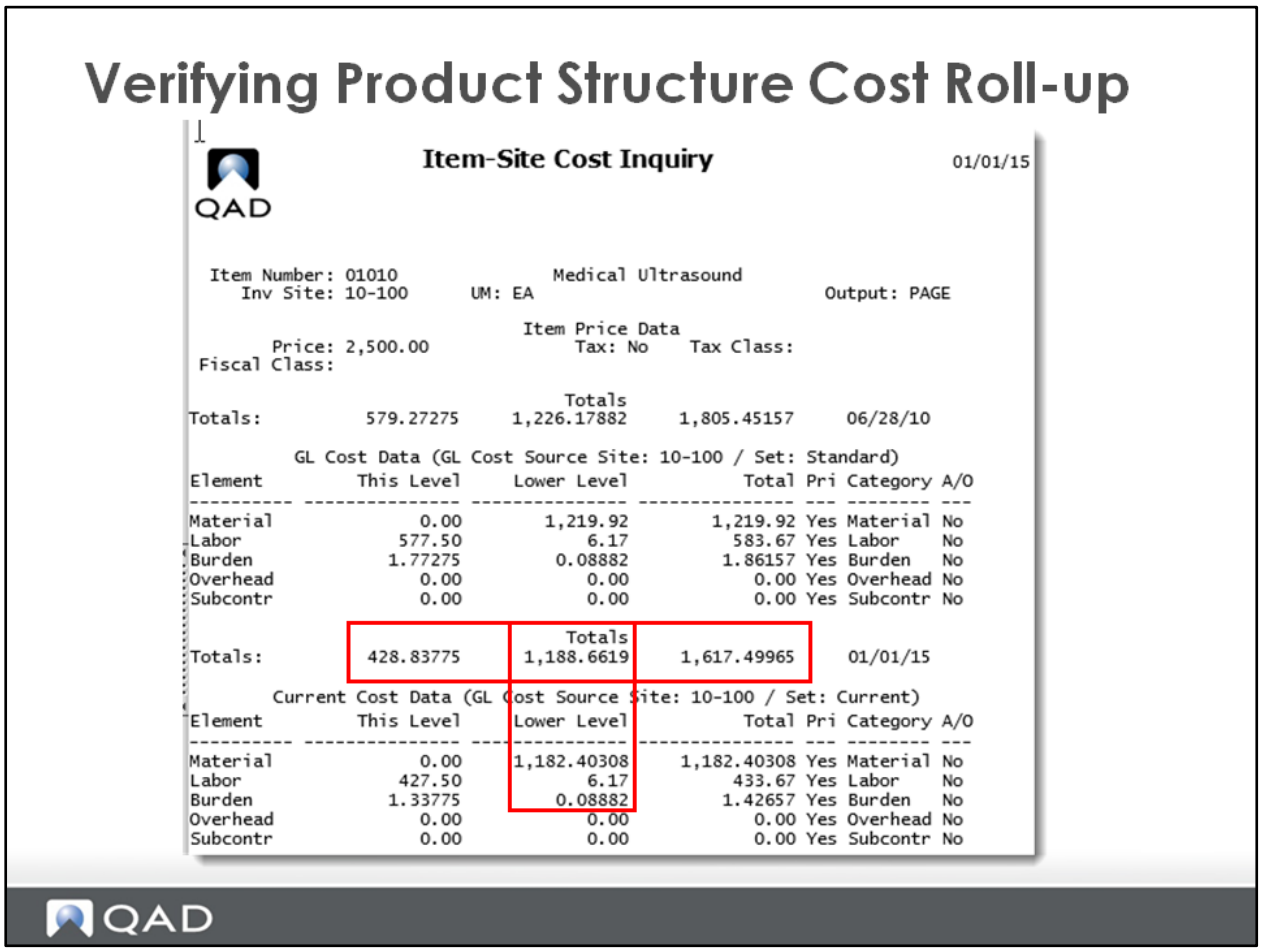
Running Product Structure Cost Roll-Up



Using Product Structure Cost Roll-Up (13.12.13), QMI rolls up its product structure costs for item 01010 at site 10-100. The costs include the material costs for the lower-level components such as the material and overhead costs at this level.

Again, notice that QMI is rolling up the current cost set, not the GL cost set.

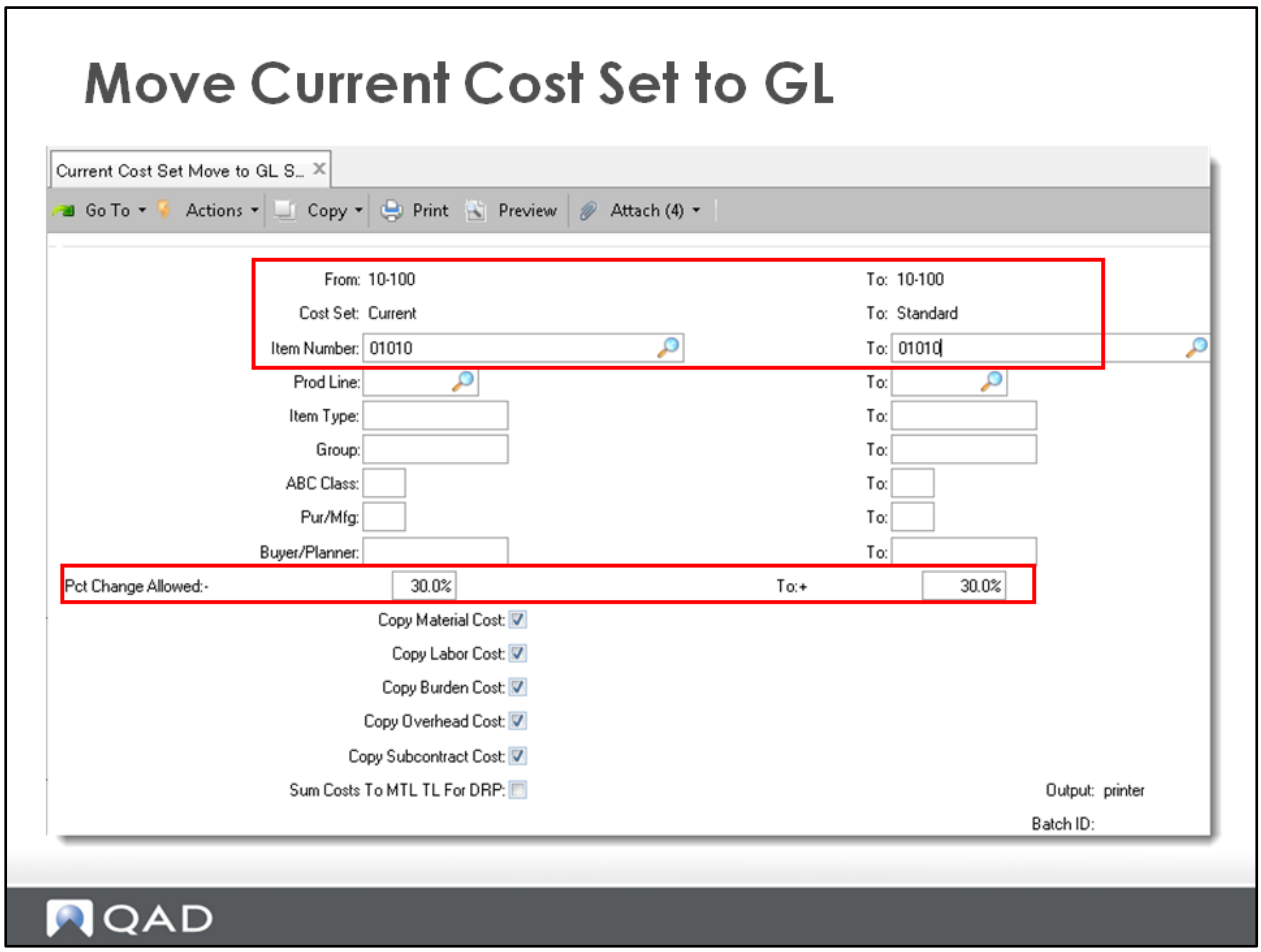
Verifying Product Structure Cost Roll-up



Using Item-Site Cost Inquiry (1.4.10) again, QMI verifies that the current cost set product structure costs (lower-level components) were rolled up correctly for item 01010 at site 10-100. The total cost is $1188.6619 per unit.

Notice that the GL cost remains unchanged.

Move Current Cost Set to GL



QMI now wants the general ledger to reflect the cost information entered in the current cost set for all component items in 01010 at site 10-100. The company is ready to copy and move current costs into the GL using Current Cost Set Move to GL Set (1.4.22).

In this example, QMI wants to copy all costs (material, labor, burden, overhead, and subcontract cost).

Percent Change Allowed

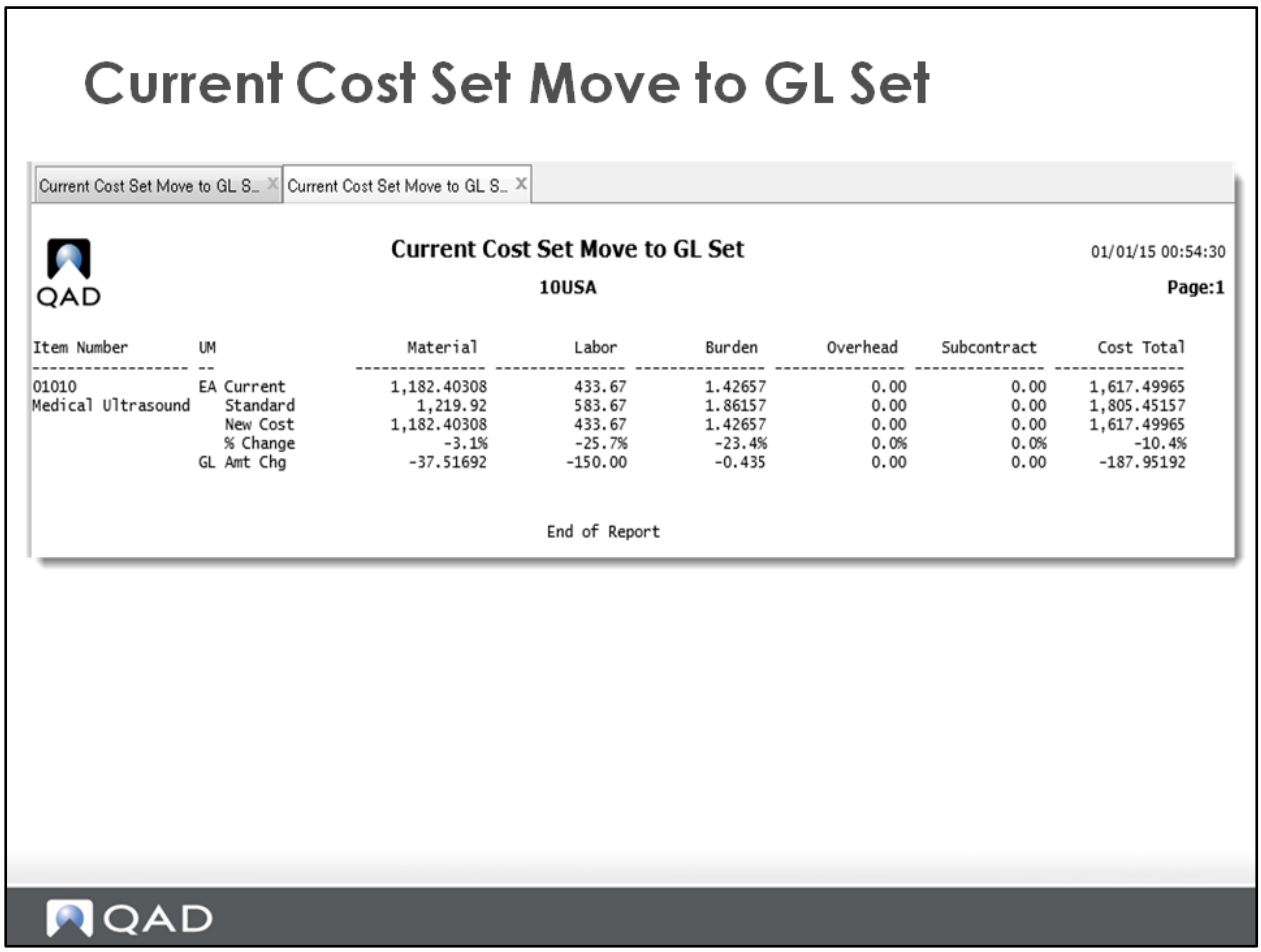
This field restricts the cost movement to items whose GL costs change only within the indicated range. To accept the movement of all costs, regardless of the difference from the previous GL costs, enter all 9s in the .NET UI.

You can look at the potential consequences before actually moving the current costs to GL costs.

To perform this action, set Pct Change Allowed to 0%. The proposed changes are displayed on the output device you have chosen, but not copied to the GL costs.

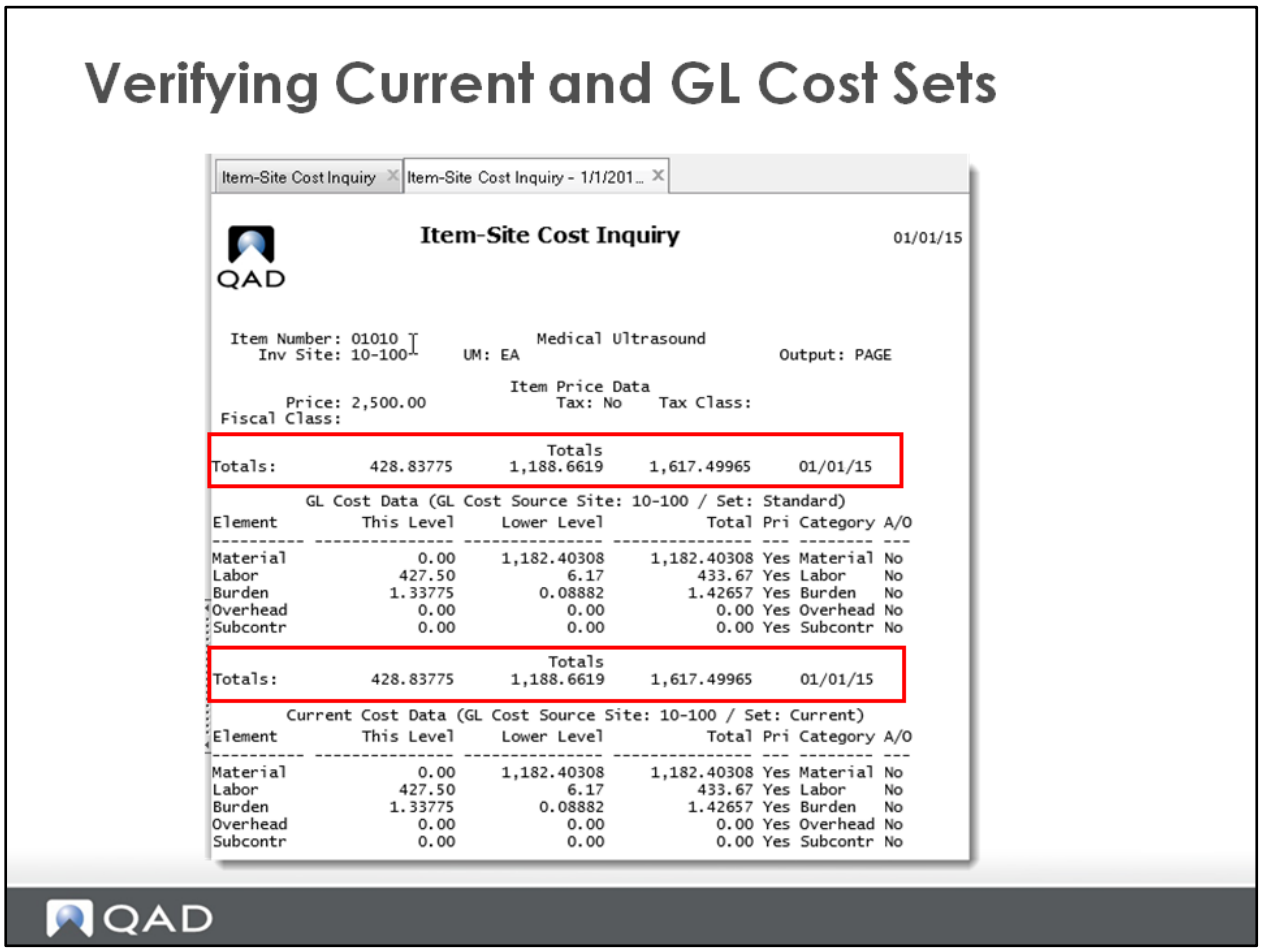
Note: When you first establish costs for new items or in a new system, the present GL cost is zero. The percent change from zero to a non-zero value is mathematically undefined since it would require division by zero.

Current Cost Set Move to GL Set

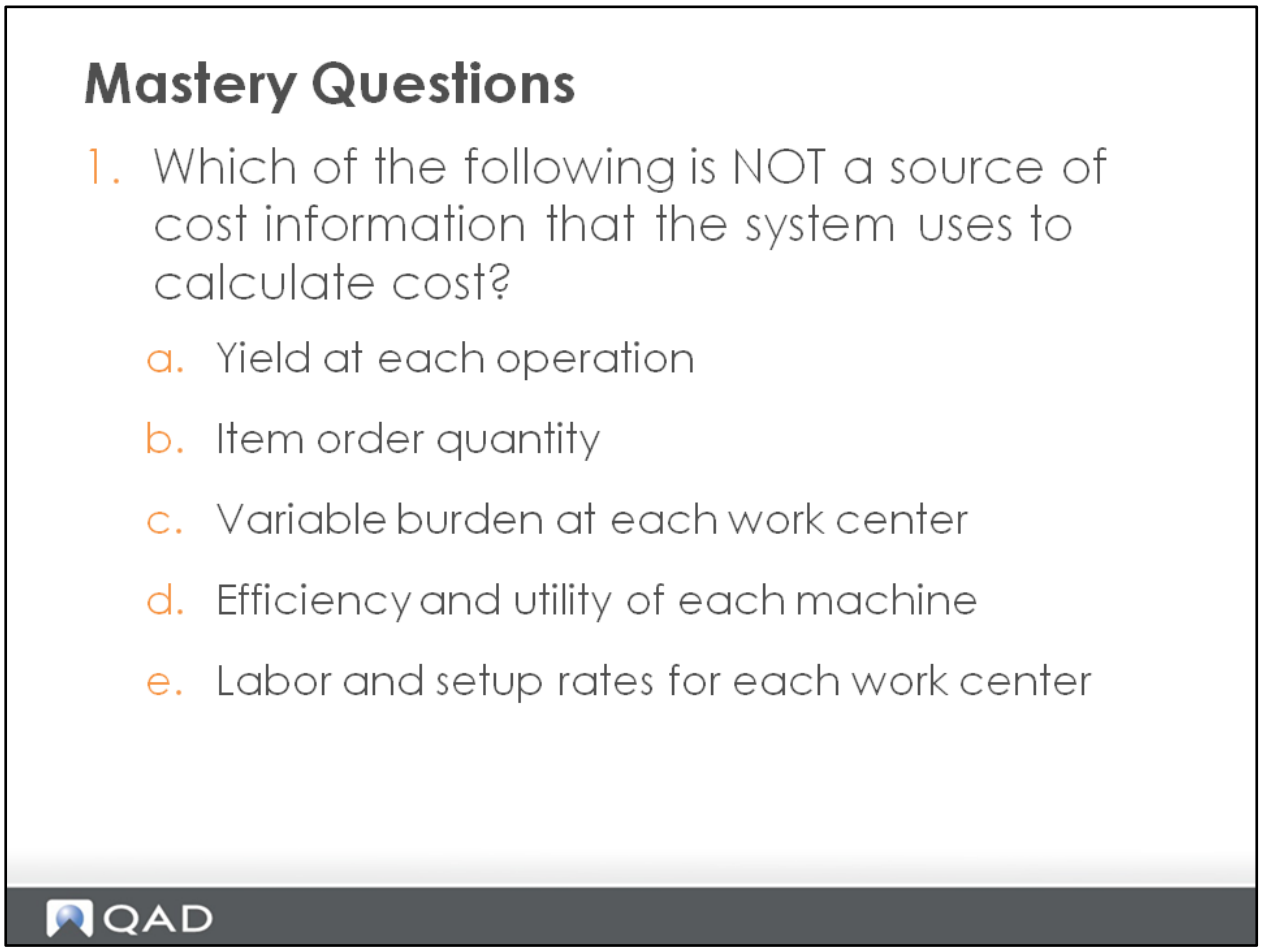


Executing Current Cost Set Move to GL Set produces a report that can be output to Page and looks like the report shown in the slide.

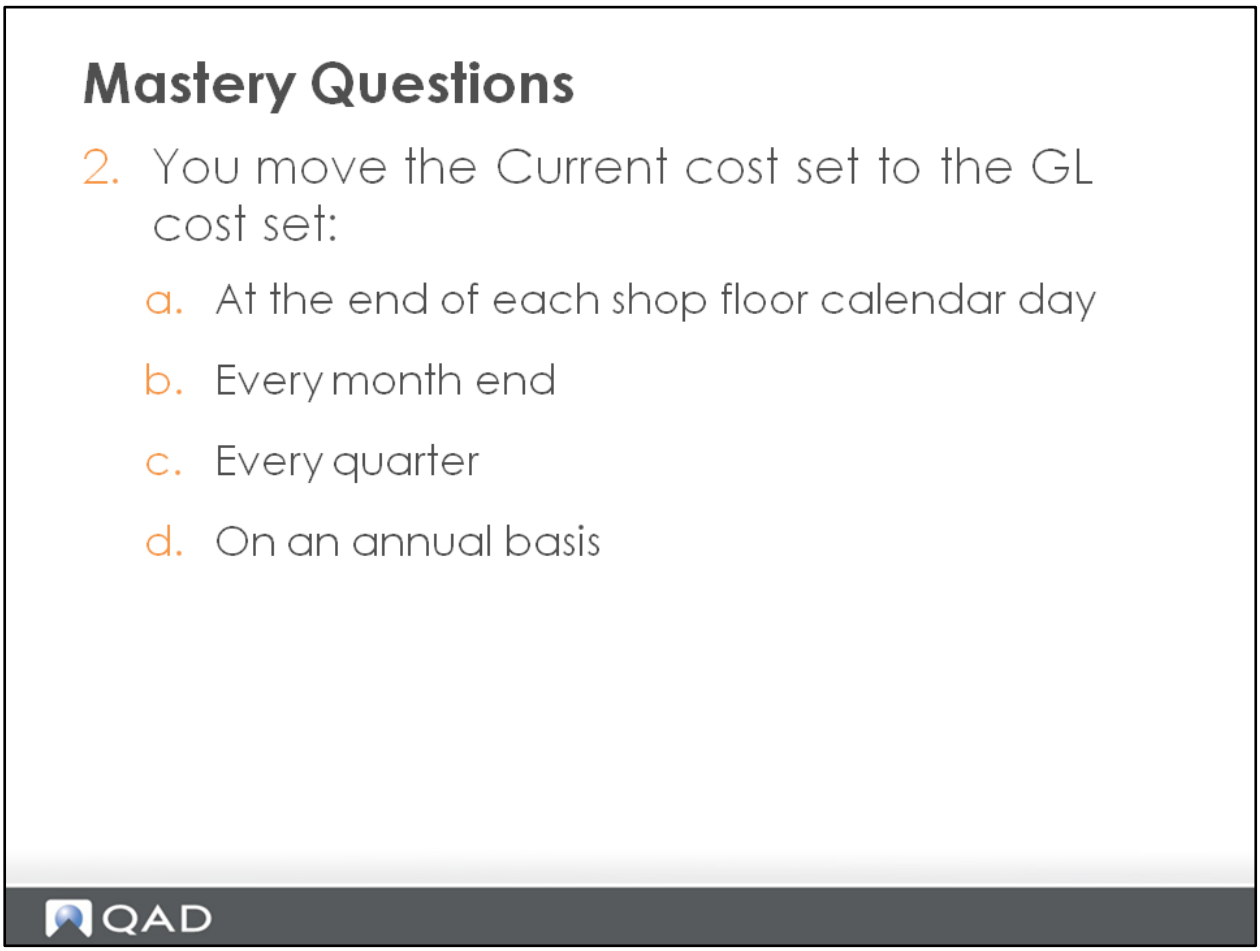
Verifying Current and GL Cost Sets



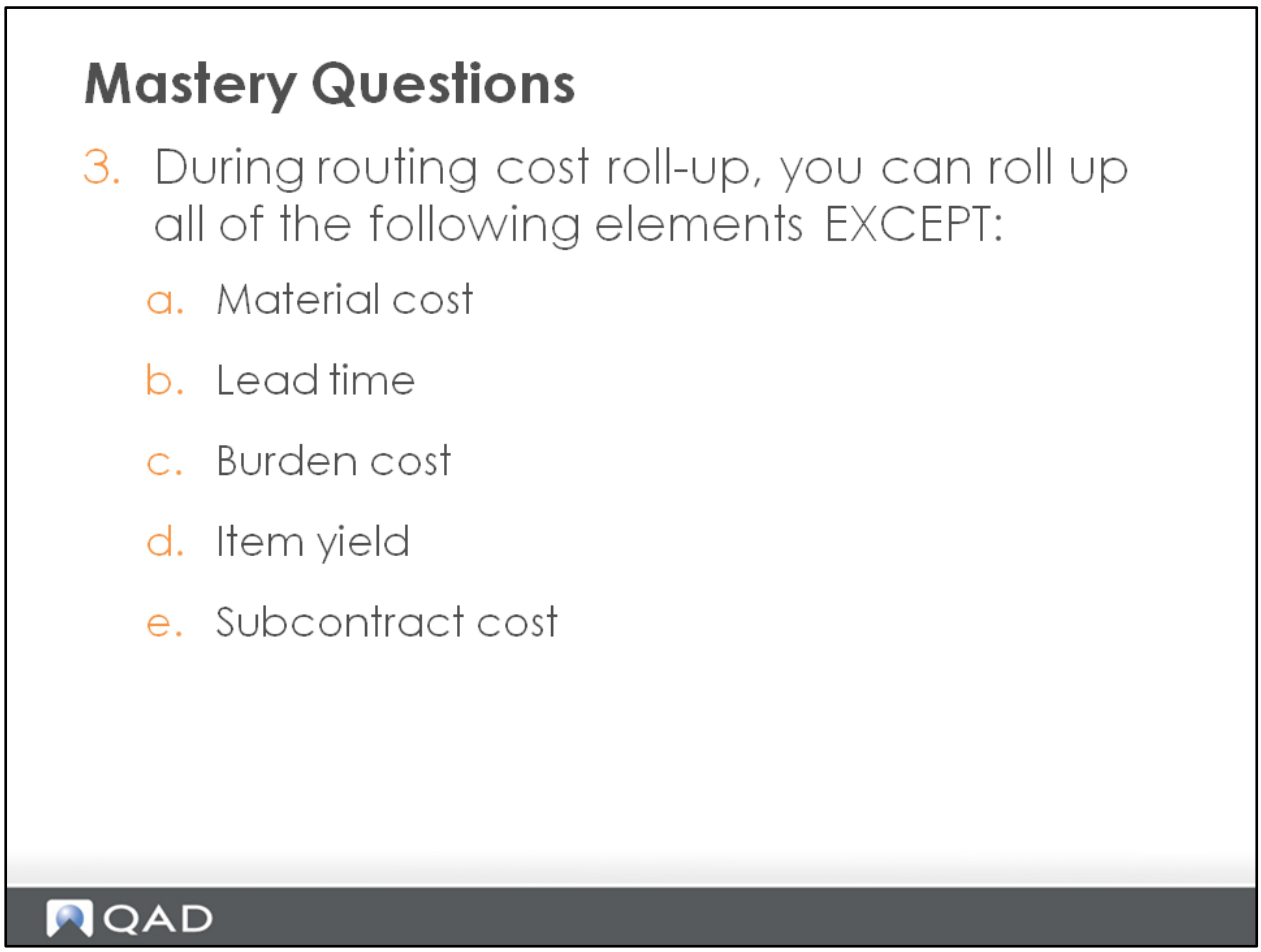
Mastery Questions



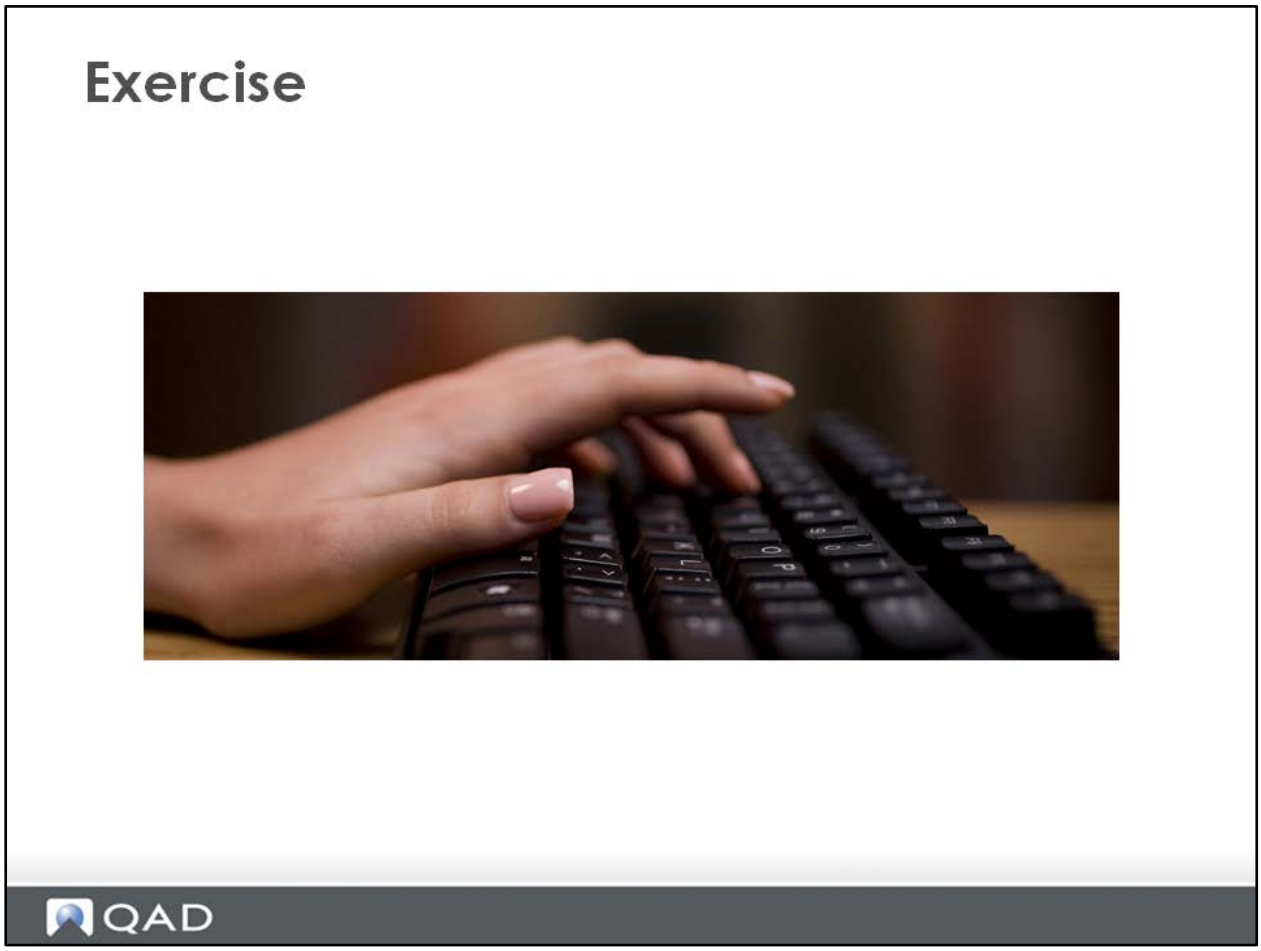
Mastery Questions



Mastery Questions



Exercise



In this exercise, you will run cost roll-up for two items at site 10-100: item 50001 and item 01010. You need to change the order quantity first for item 01010.

1. Use Item Planning Maintenance to change the order quantity of item 01010 at site 10-100 to 10.
2. Run Routing Cost Roll-Up for both of the items to roll up the current costs.
3. Use Item-Site Cost Inquiry to verify if the routing costs are correctly calculated.
   Note: There should be no variance between the current cost and GL cost for item 50001 because there is no cost-relevant change for this item. Since the order quantity value of item 01010 is changed, there is a cost variance for item 01010.
4. Run Product Structure Cost Roll-Up for both of the items to roll up the product structure costs.
5. Use Item-Site Cost Inquiry to verify if the material cost is correctly calculated.
6. Use Current Cost Set Move to GL Set to move the current cost to the GL cost.
   Note: There should be no output for item 50001.

7. Use Item-Site Cost Inquiry to verify the cost in the current and GL cost sets for item 01010.

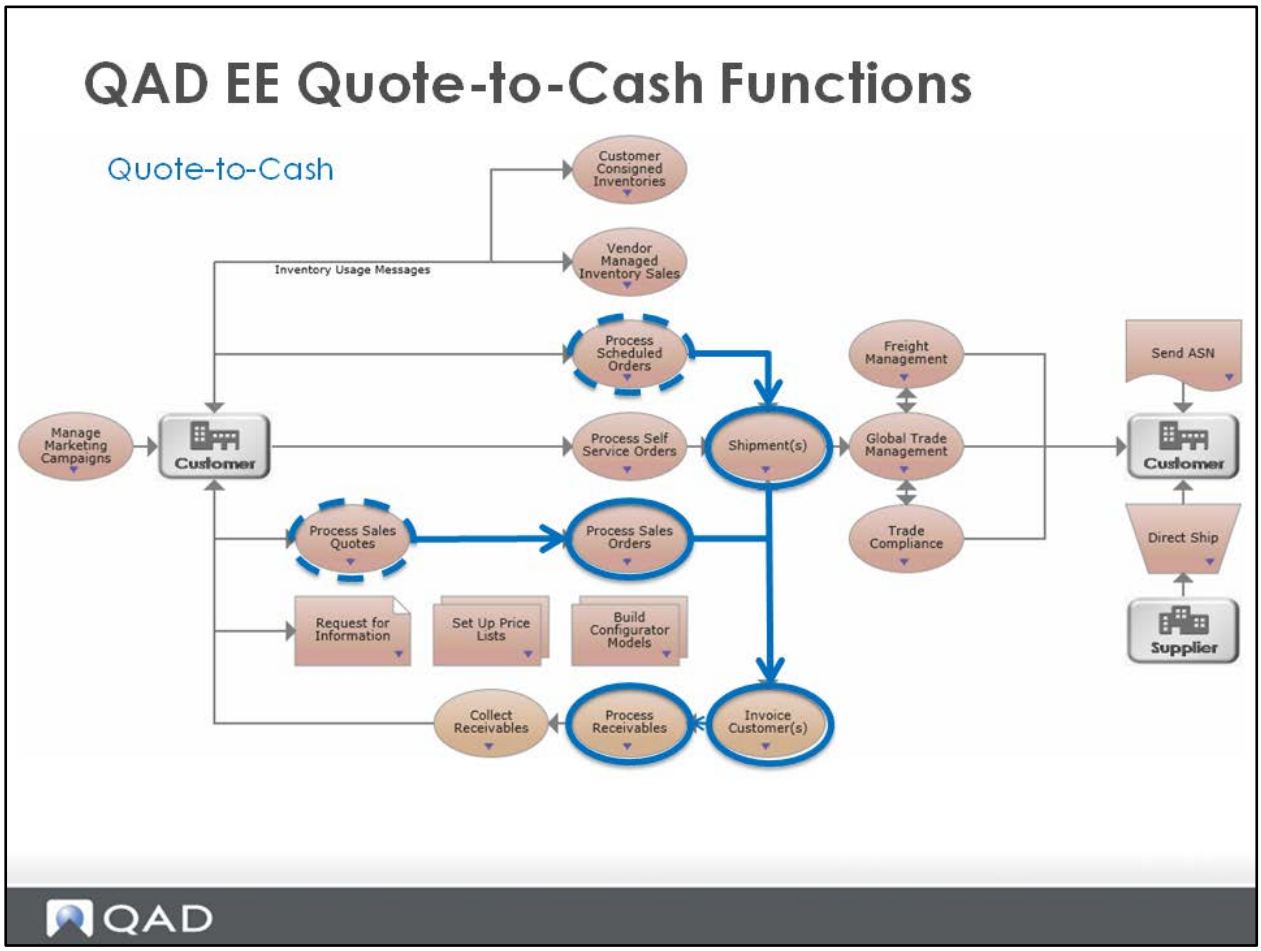
CHAPTER 7

Quote-to-Cash Process

Quote-to-Cash Process

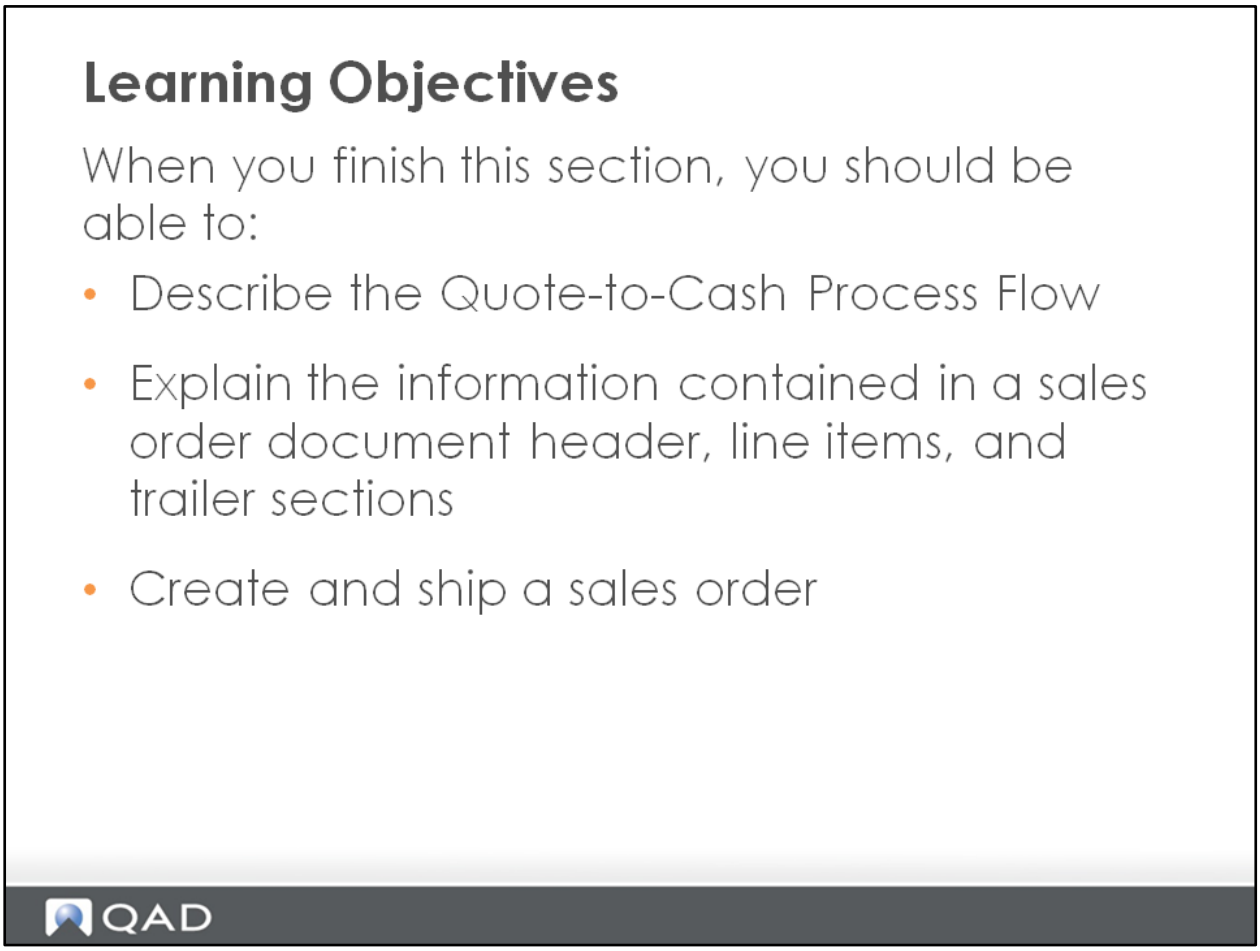


QAD EE Quote-to-Cash Functions

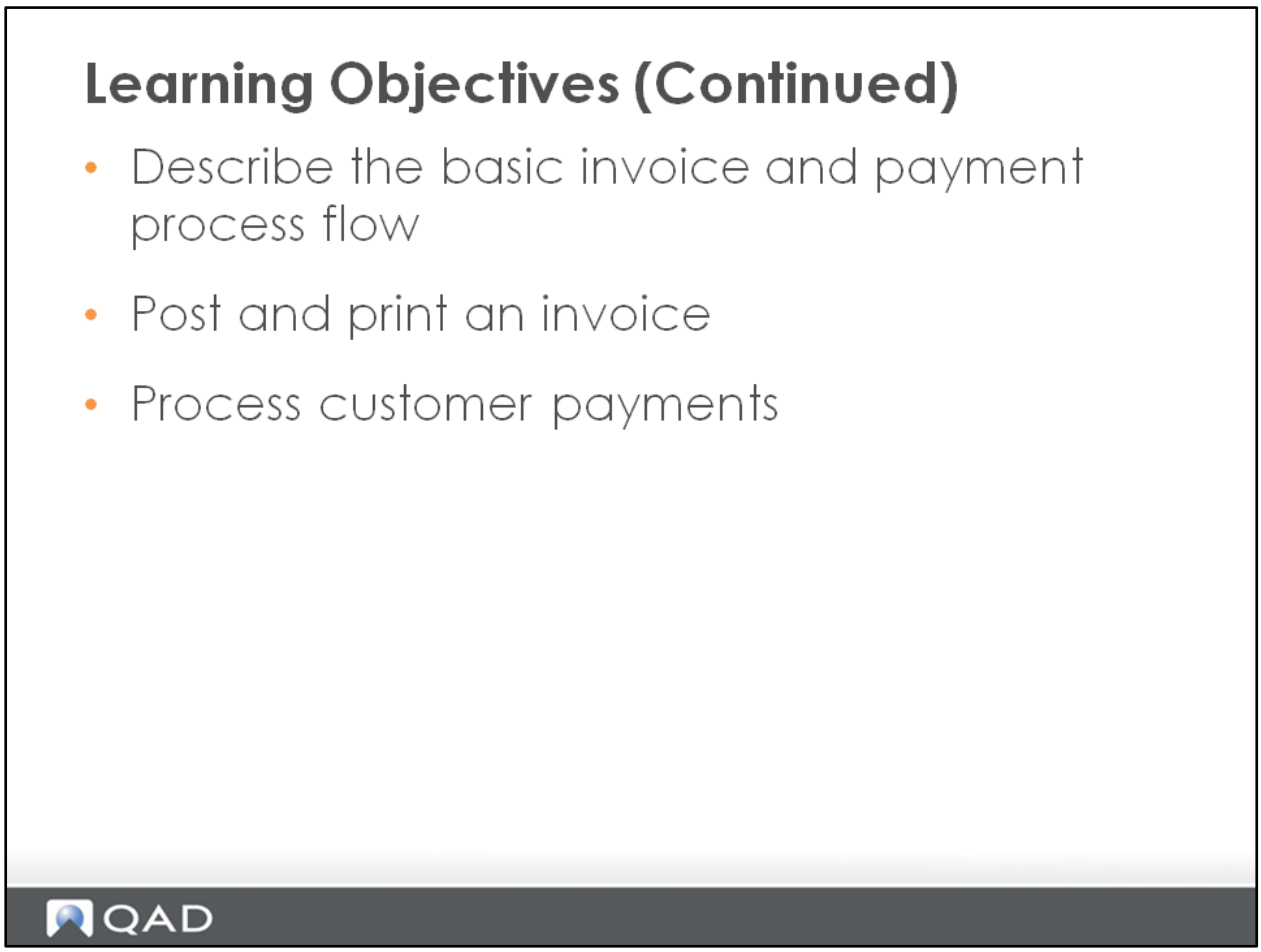


QAD EE Quote-to-Cash provides multiple possible processes. This training course focuses on the highlighted steps.

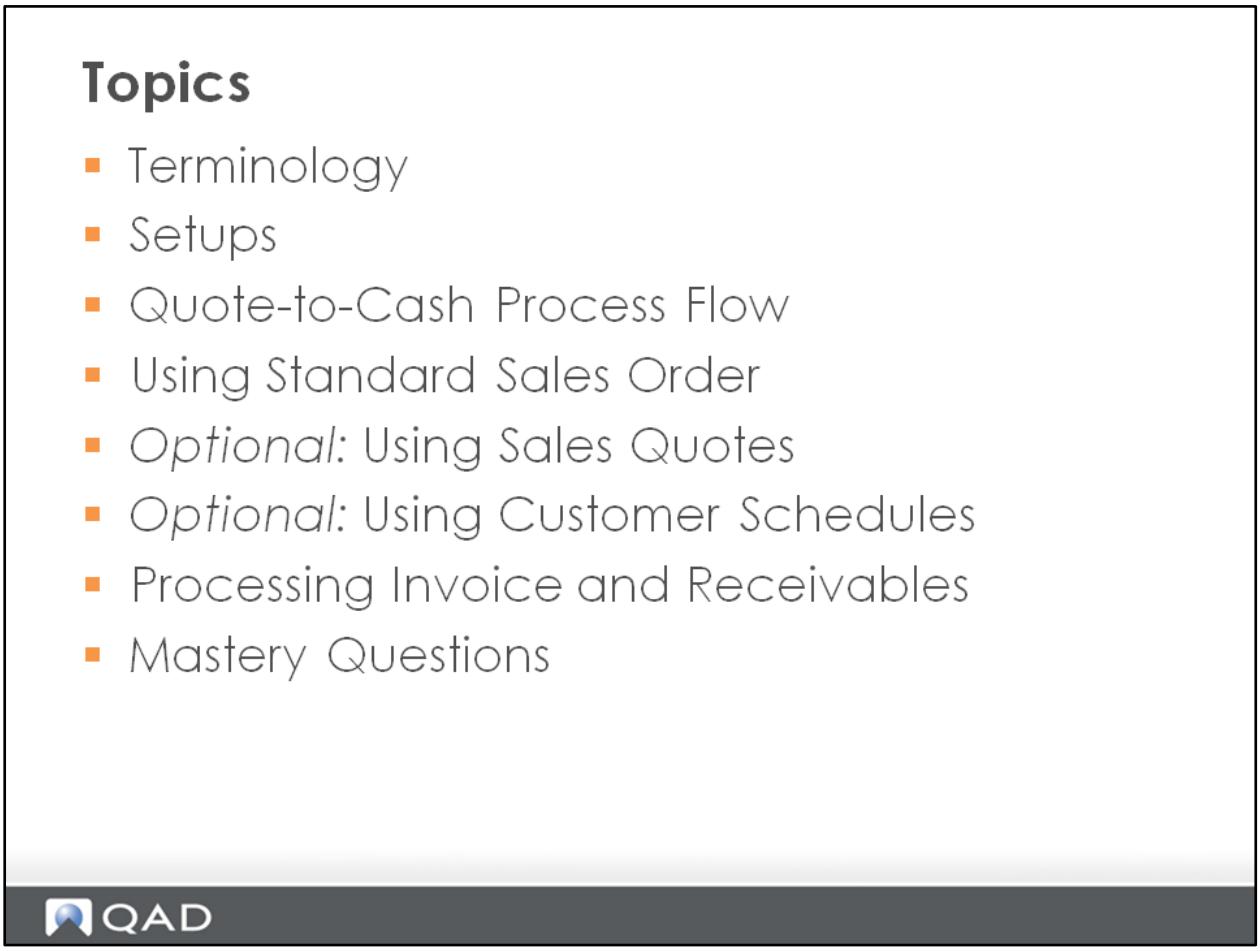
Learning Objectives



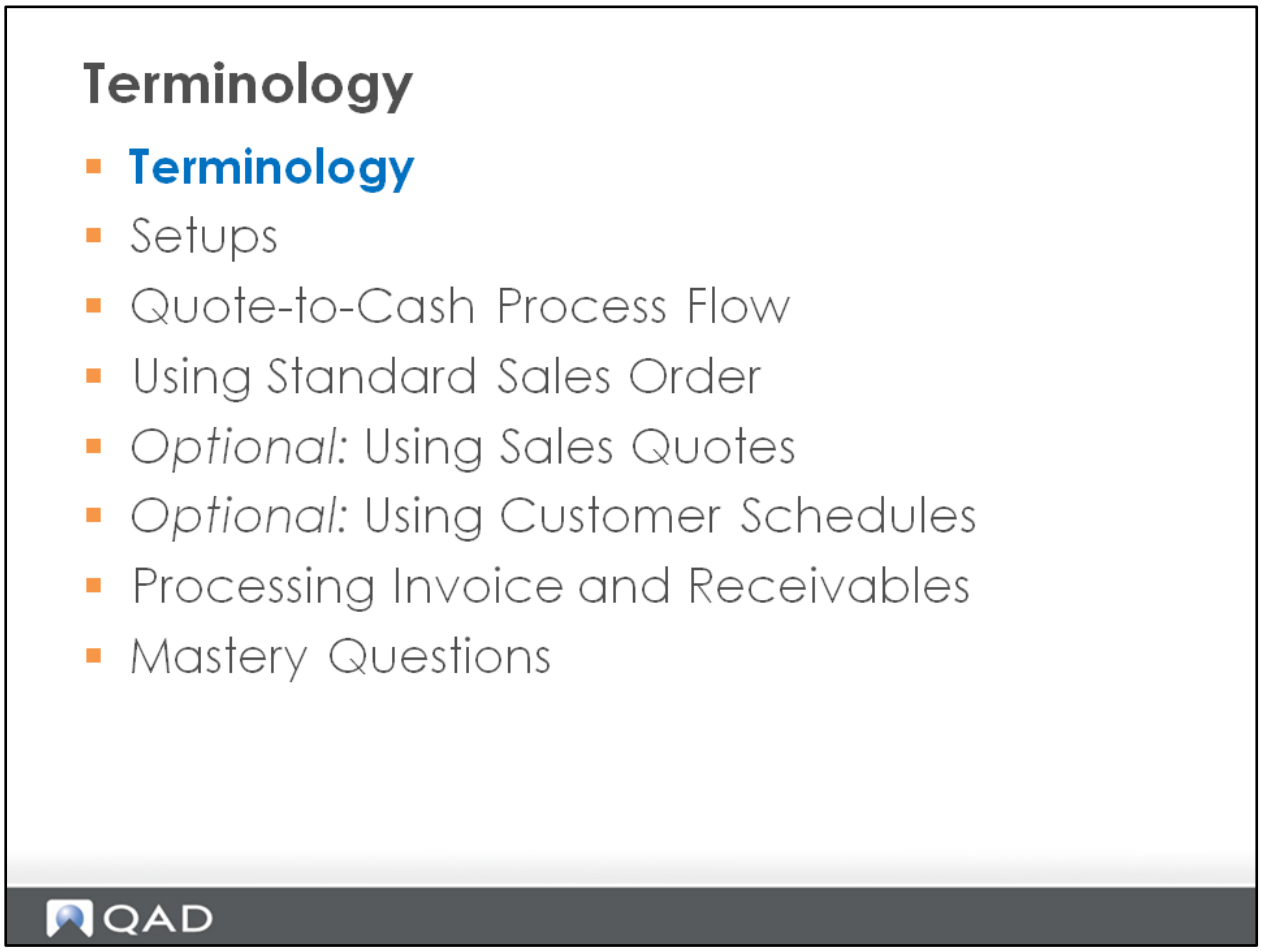
Learning Objectives (Continued)



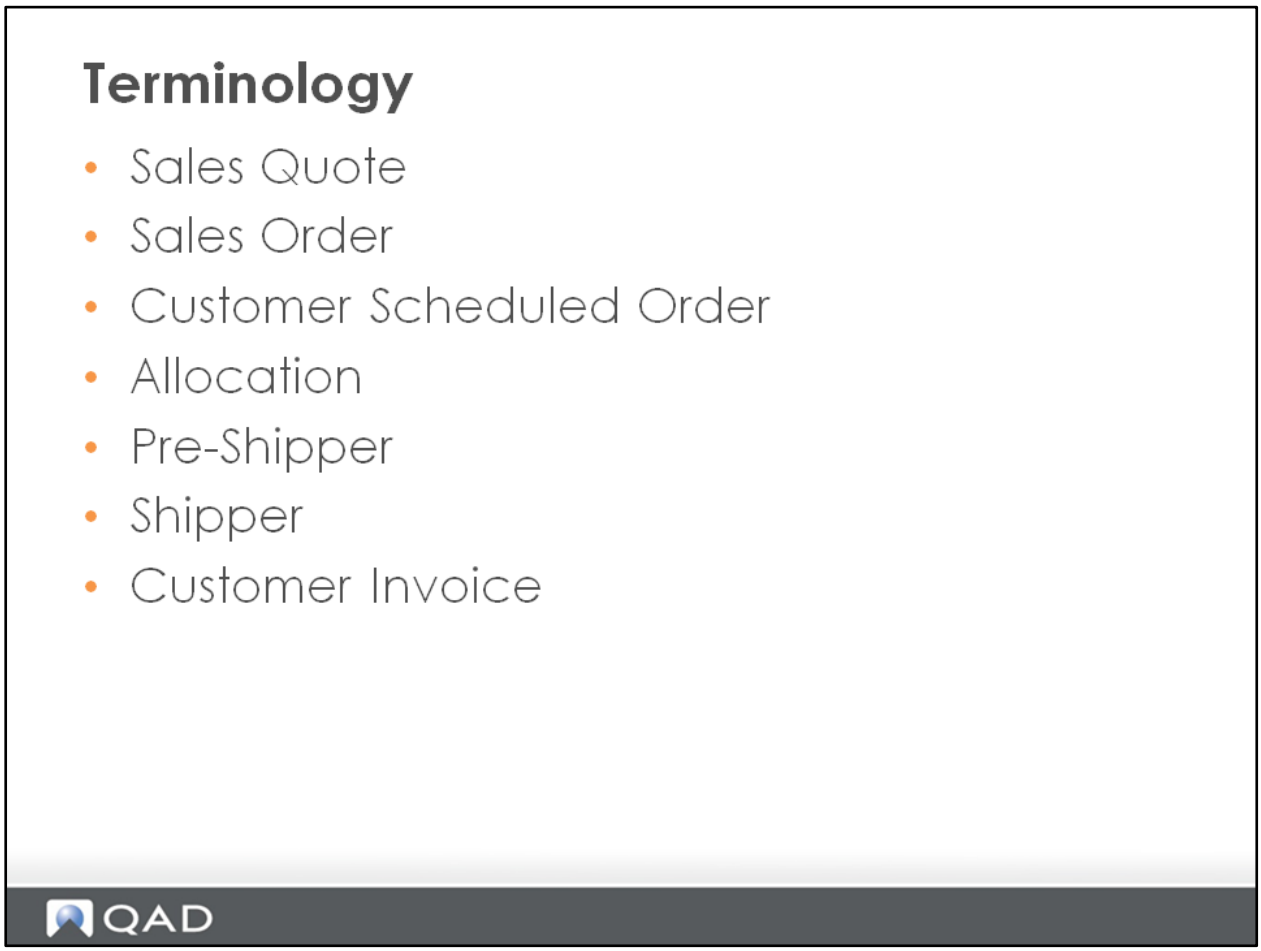
Topics


Topics
Terminology
Setups
Quote-to-Cash Process Flow
Using Standard Sales Order
Optional: Using Sales Quotes
Optional: Using Customer Schedules
Processing Invoice and Receivables
Mastery Questions
QAD

Terminology



Terminology



Sales Quote: Also called sales quotation, is a commitment to sell a customer certain items at a certain price.

Sales Order: An agreement to provide a customer with a quantity of a certain item or items at a set price by a set date.

Customer Scheduled Order: A cumulative, schedule-driven sales order from a customer with multiple line items from which releases of shipments are issued.

Allocation: The act of reserving inventory for a specific purpose. It does not name specific inventory, and no physical movement of inventory takes place.

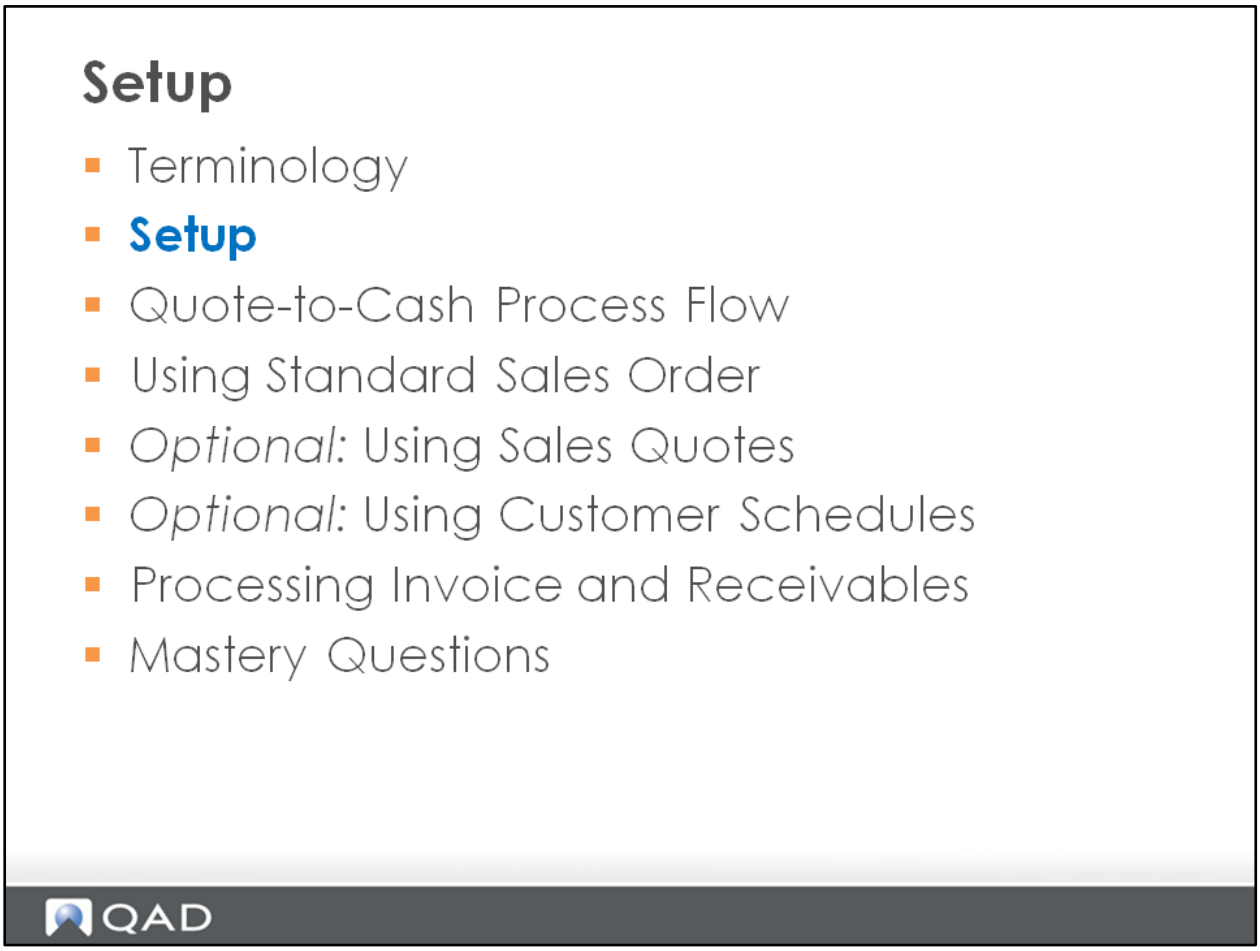
Pre-Shipper: A preliminary and temporary shipper created either automatically from detailed allocation, or manually using the Pre-Shipper/Shipper Workbench. Pre-shippers are also referred to as *picklists.*

Shipper: A supplier document that issues and structures shipments. It is sent to the customer as an ASN. It identifies items and, optionally, all containers by individual shipment. The shipper constitutes the master container.

Customer Invoice: The accounting record for an invoice that was generated in the Sales Orders/Invoices module, or was manually entered in the Accounts Receivable module. You must define different daybook codes to ensure that separate numbering is used for manually entered invoices as opposed to invoices posted from the Sales Orders/Invoices module.

Note: For more terminology, see QAD Glossary in the QAD Document Library.

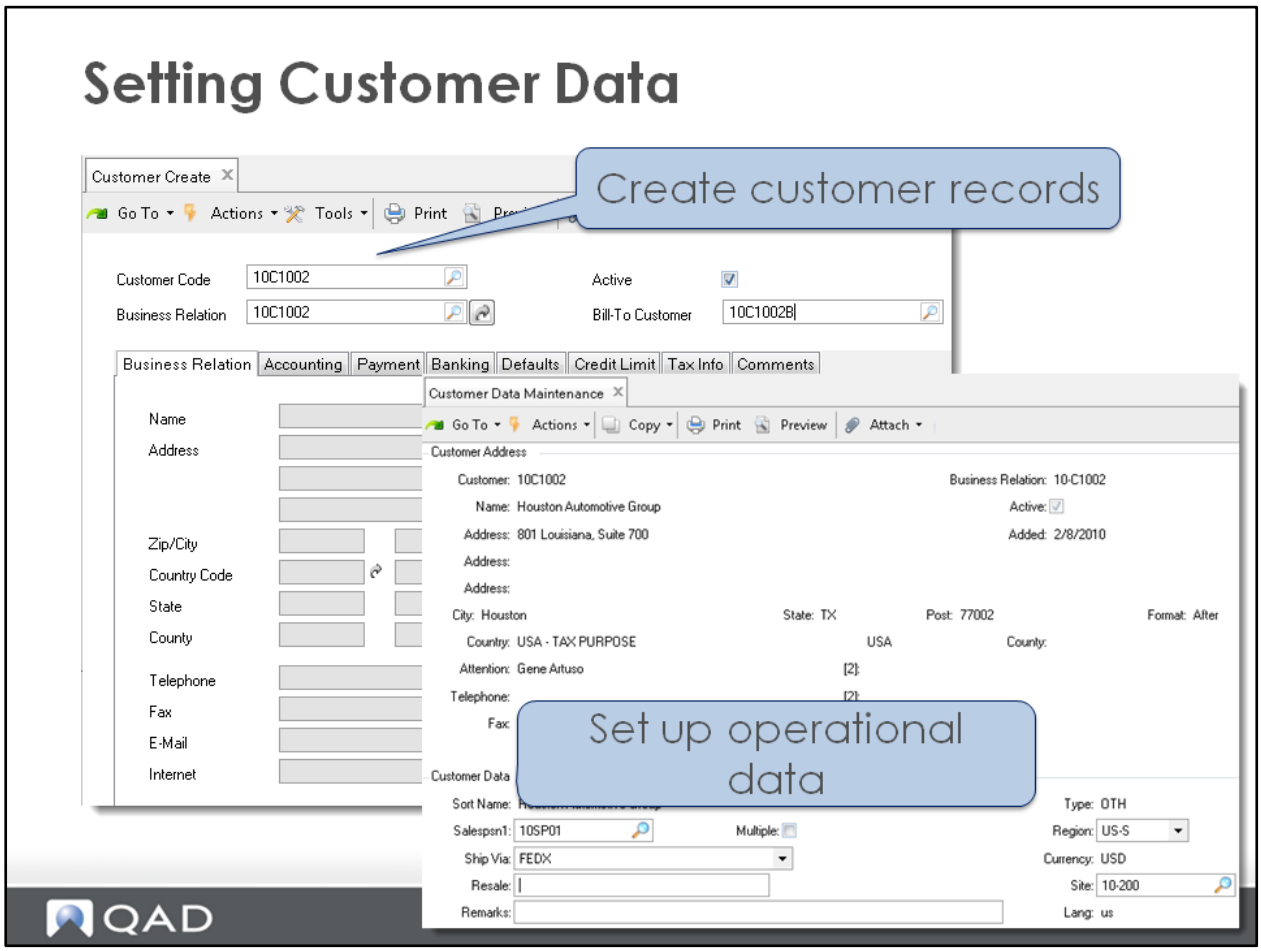
Setup


Setup
Terminology
Setup
Quote-to-Cash Process Flow
Using Standard Sales Order
Optional: Using Sales Quotes
Optional: Using Customer Schedules
Processing Invoice and Receivables
Mastery Questions
QAD

Setup


Setup
Setting Customer Data
Adding Customer Item
Setting Sales Order Control
Setting Sales Order Accounting Control
QAD

Setting Customer Data



Customer Create

Use Customer Create to create customer records in the system. Financial related data related to customers, such as credit limits and accounts, are defined by designated users with access to financial functions. The Customer Create function contains header fields and a number of tabs.

- The Business Relation tab displays the address information defined for the associated business relation. You cannot modify this data in Customer Create.
- Use the Accounting tab to set up control accounts and other accounting information.
- Use the Payment tab to set details on how to manage payments from the customer.
- Use the Banking tab to set up the process for handling payments from the customer. The details you enter here are automatically retrieved for customer payments and payment selections.
- Use the Defaults tab to specify default values for concepts within a SAF structure.

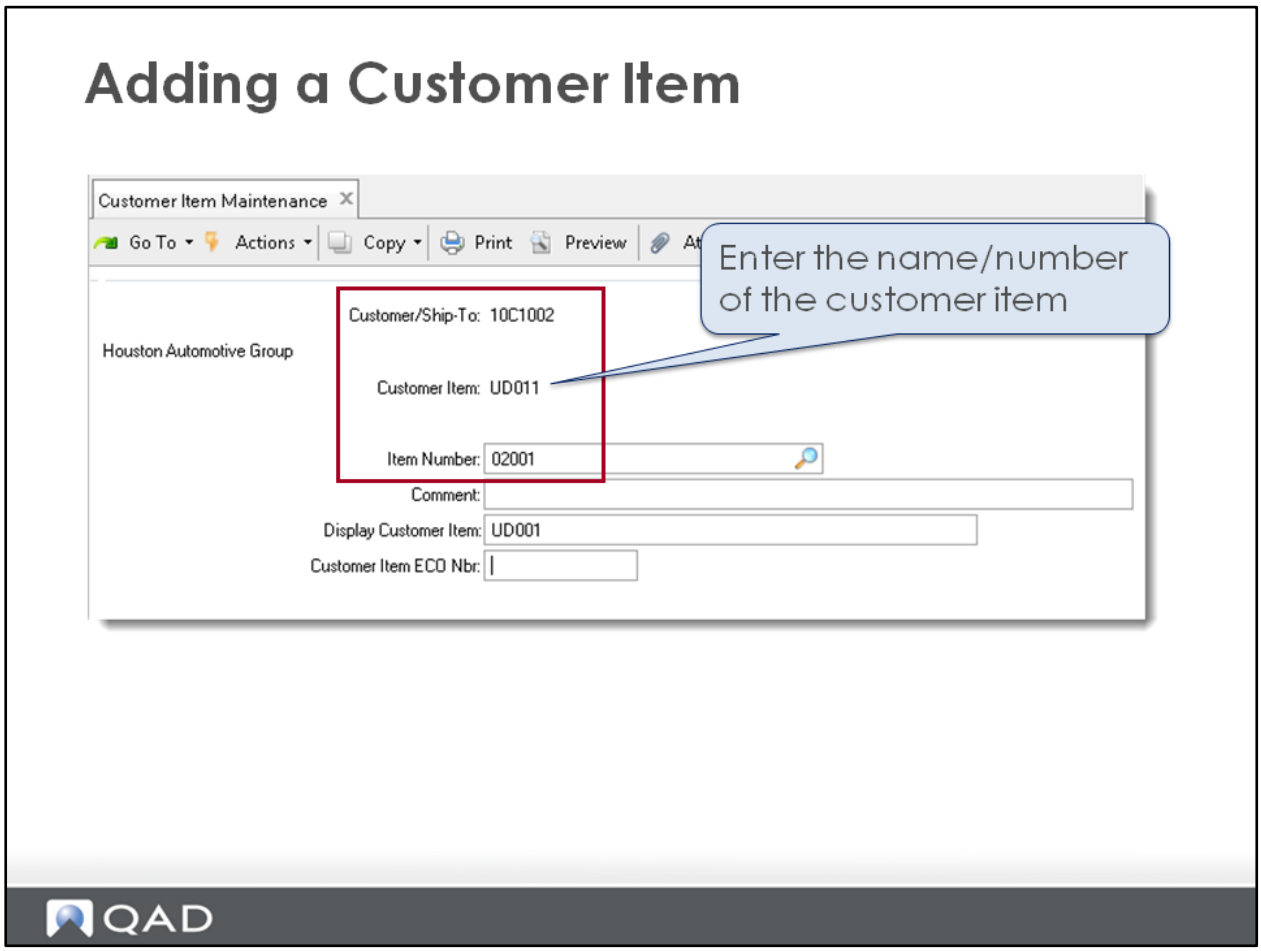
- Use the Credit Limit tab to apply credit limits to customers. You can also maintain credit data as a separate activity in Customer Credit Limit Maintain, which displays the same tab as the one in the Customer Create and Modify activities.
- Use the Tax Info tab to specify tax values that default to documents created for the customer. You can modify these tax values during transaction processing.

This course uses existing customer records in the training environment. Use Customer Data Maintenance to set up operational data.

Customer Data Maintenance

Use Customer Data Maintenance to record operational data for customers. After the customer record is created in AR, you must complete the customer setup in Customer Data Maintenance before you can reference the customer in sales quotations, sales orders/invoicing, Service/Support Management, or in AR functions.

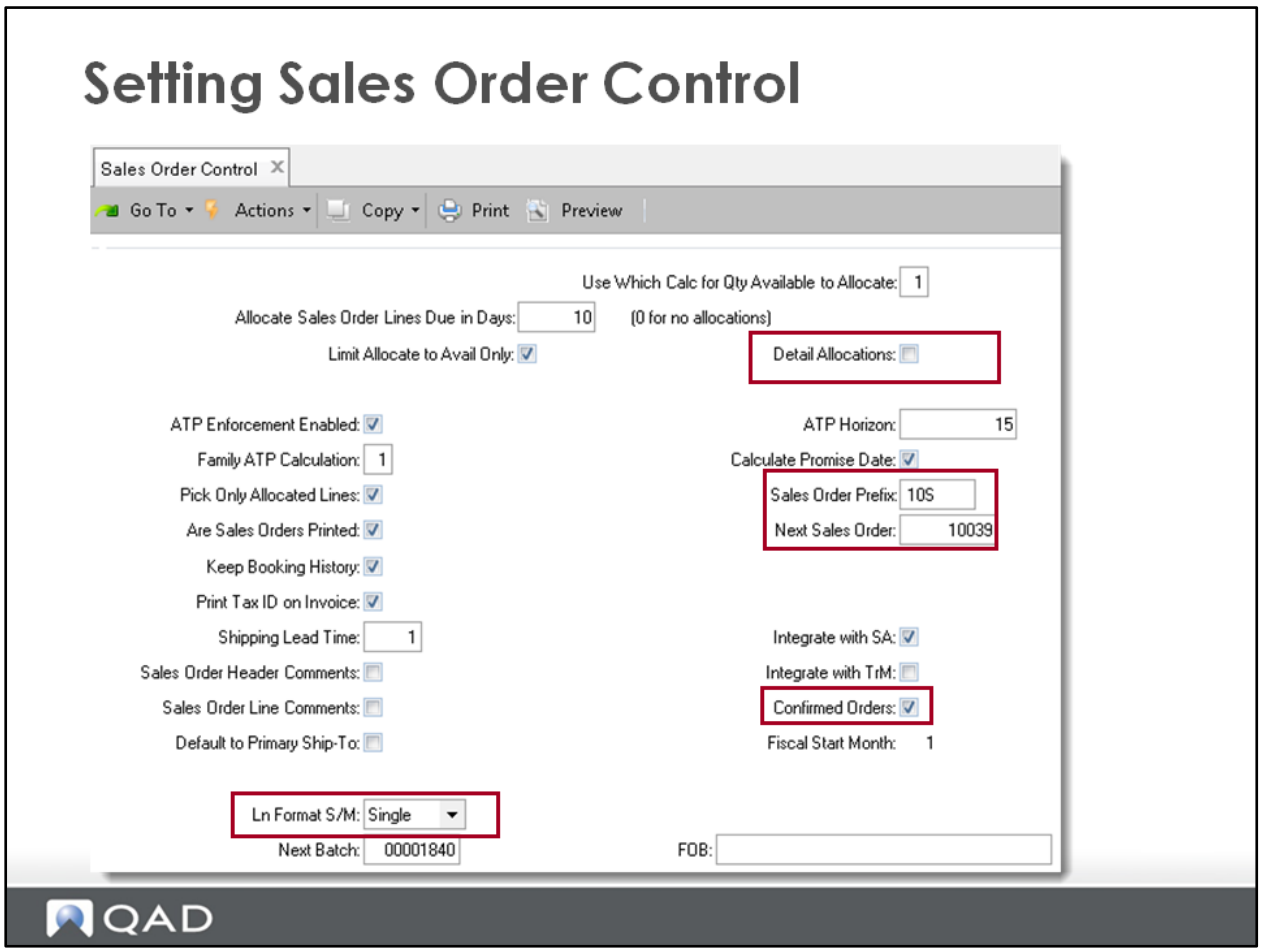
Adding a Customer Item



Customers usually use their own item numbers instead of the supplier's item numbers. Use Customer Item Maintenance to create a customer item and to associate it with an internal item number in your ERP system.

When you specify customer item numbers on sales quotes, sales orders, invoices, and customer schedules; the associated internal item number automatically displays on the order line. Both the customer and the internal item number display on printed orders and invoices.

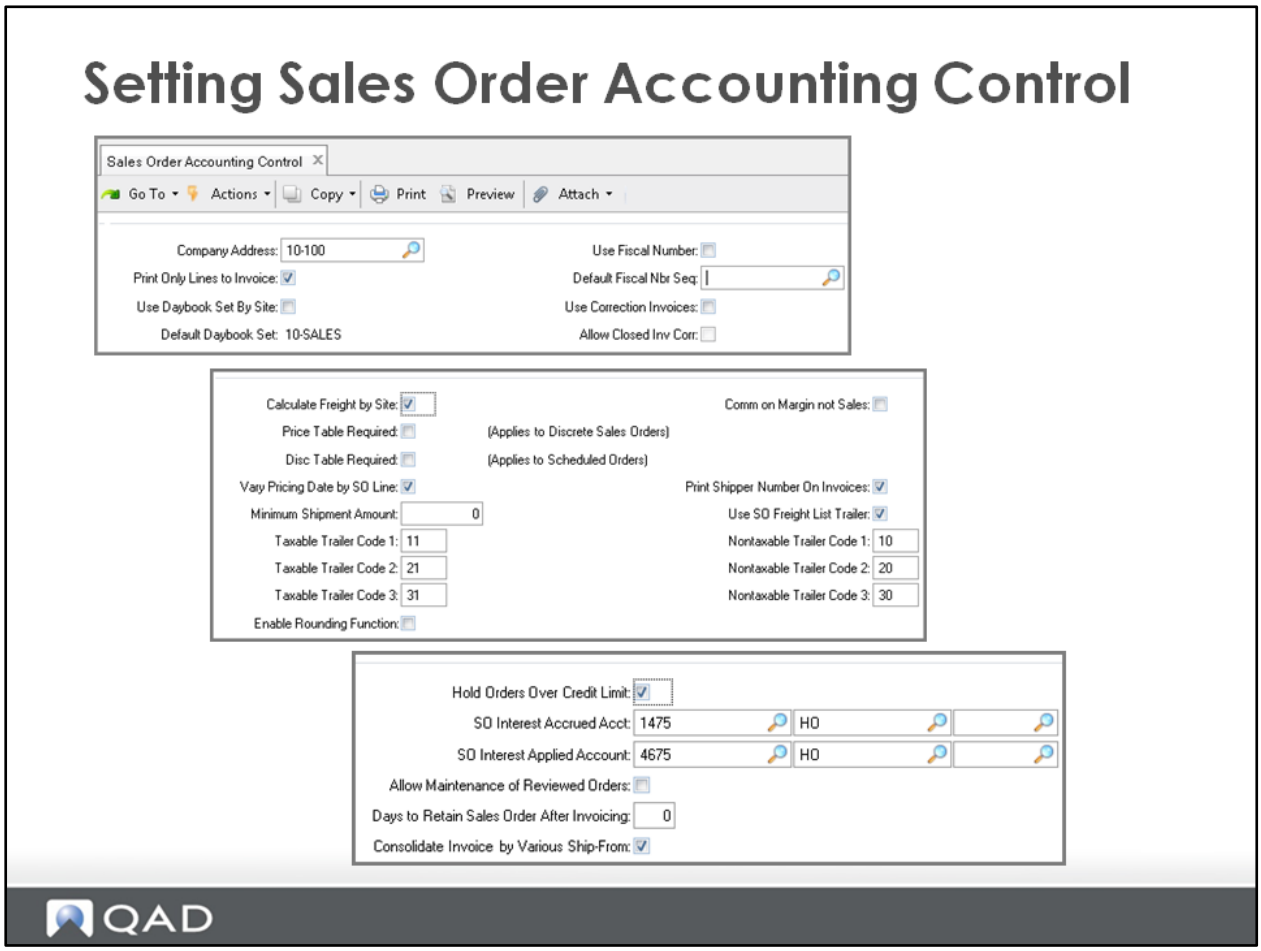
Setting Sales Order Control



In Sales Order Control includes several standards and default settings for sales orders. The slide shows the relevant settings in QMI, the QAD training data set.

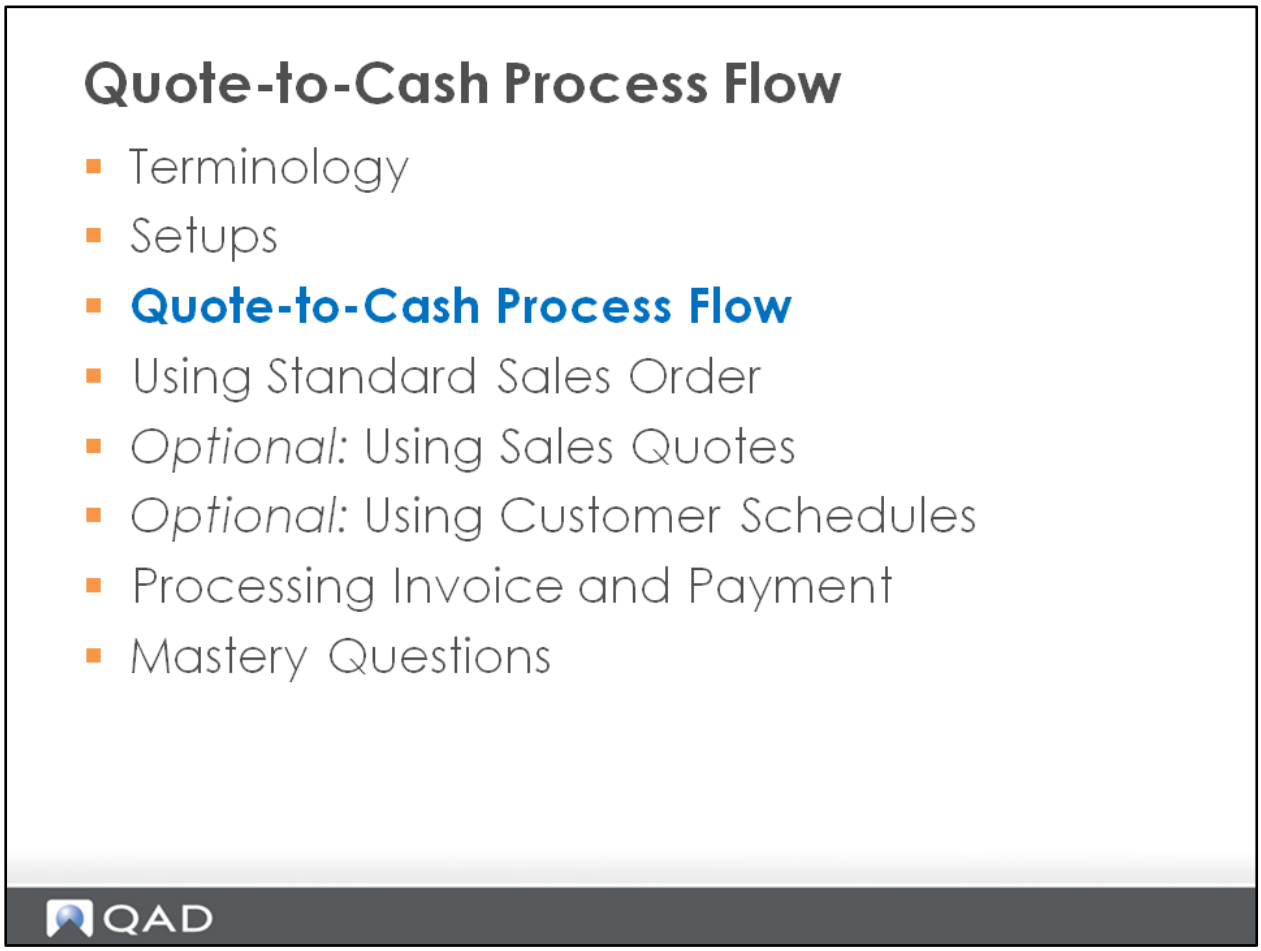
- The default value for allocations in Sales Order Maintenance is general because the Detail Allocations field is not selected. (See *Training Guide: Allocations and Shipping* for allocation functionality.)
- Sales orders have a prefix of 10S and the next number to issue is 10039.
- On new sales orders, the default value is confirmed for shipment because the Confirmed Orders field is selected.
- The default format for sales order line item entry is Single (instead of Multiple), which lets QMI users customize due dates, sites, tax status, and other information for each line item.

Setting Sales Order Accounting Control

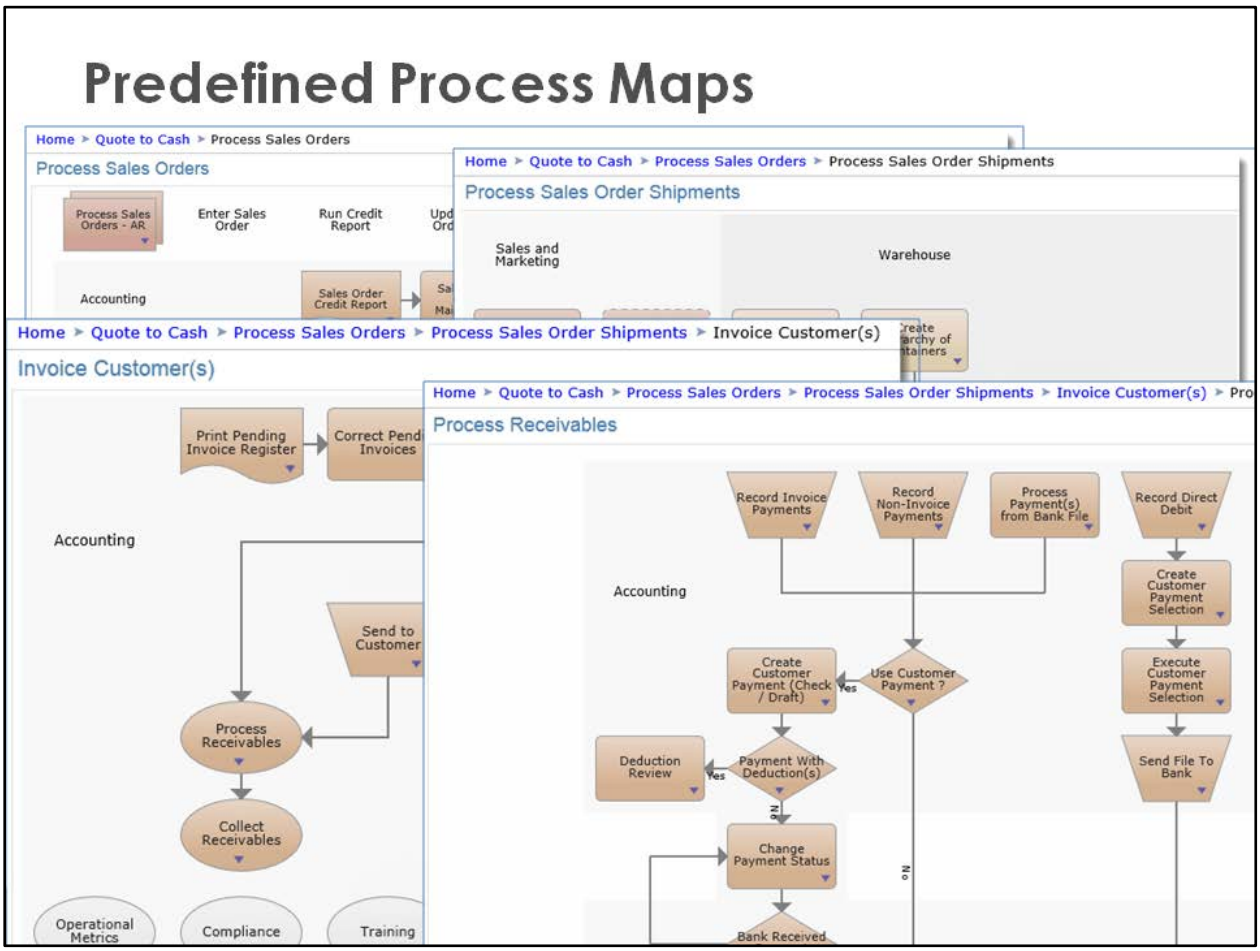


Sales Order Accounting Control is used to set the default values for sales orders such as invoice print and consolidation, freight calculation method, and taxable trailer codes.

Quote-to-Cash Process Flow



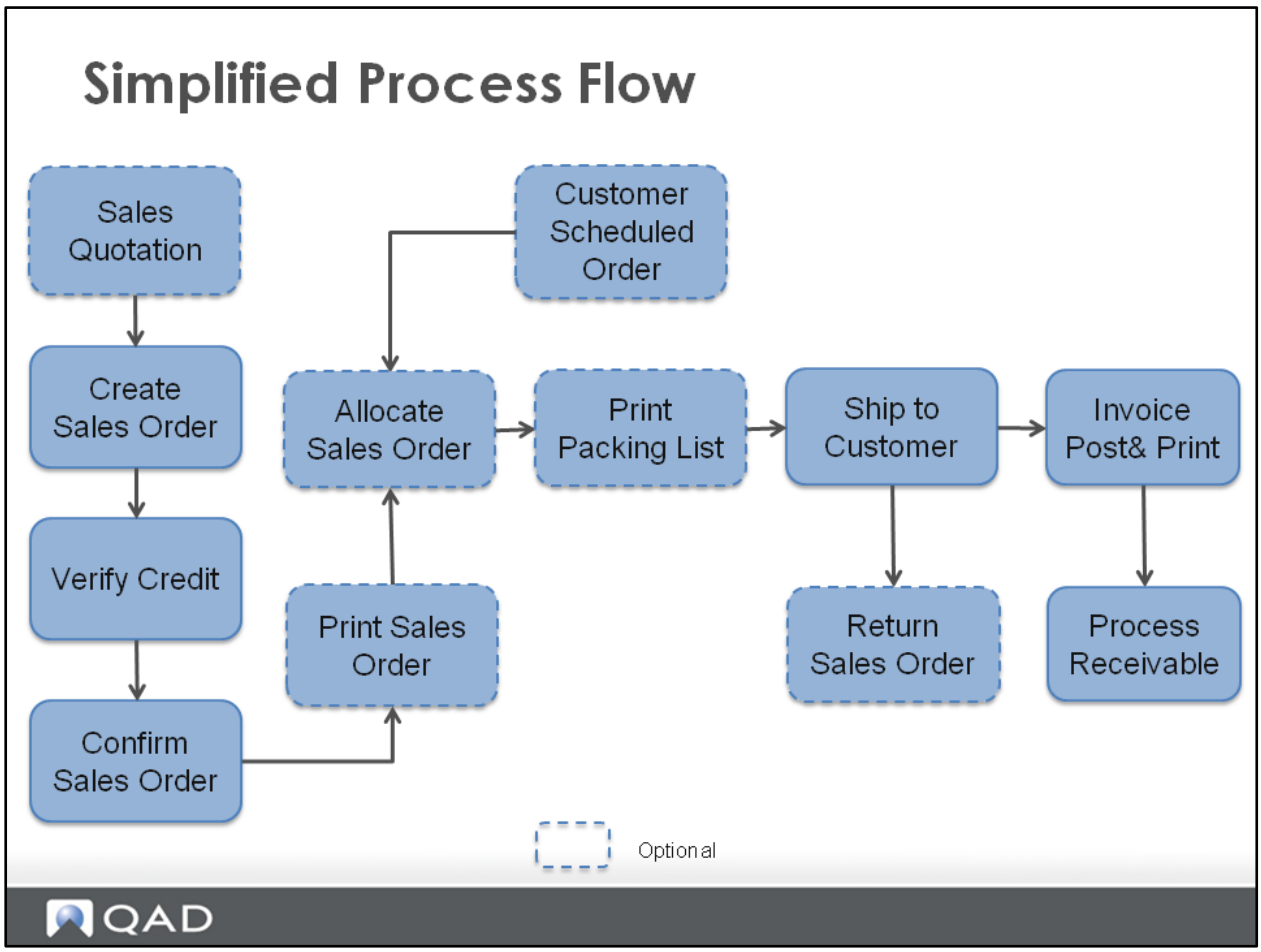
Predefined Process Maps



QAD Enterprise Applications includes predefined process maps, which reflect real world business processes. QAD EE divides the sales process into four sub-processes: Process Sales Orders > Process SO Shipments > Process Customer Invoices > Process Receivables. You can also create process maps that fit your business environment.

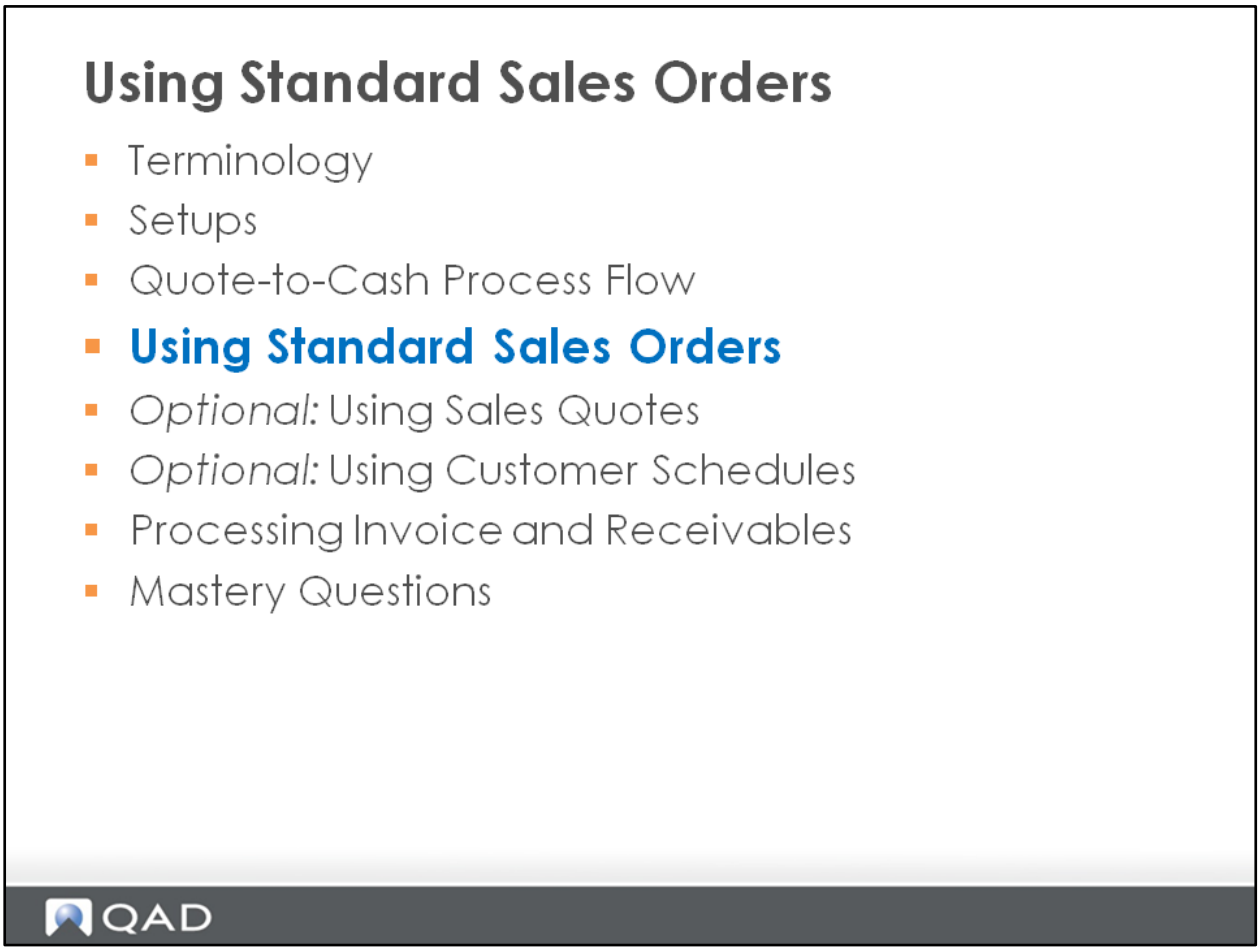
In this training course, we only discuss the fundamental steps, as the simplified process flow in the next slide shows.

Simplified Process Flow

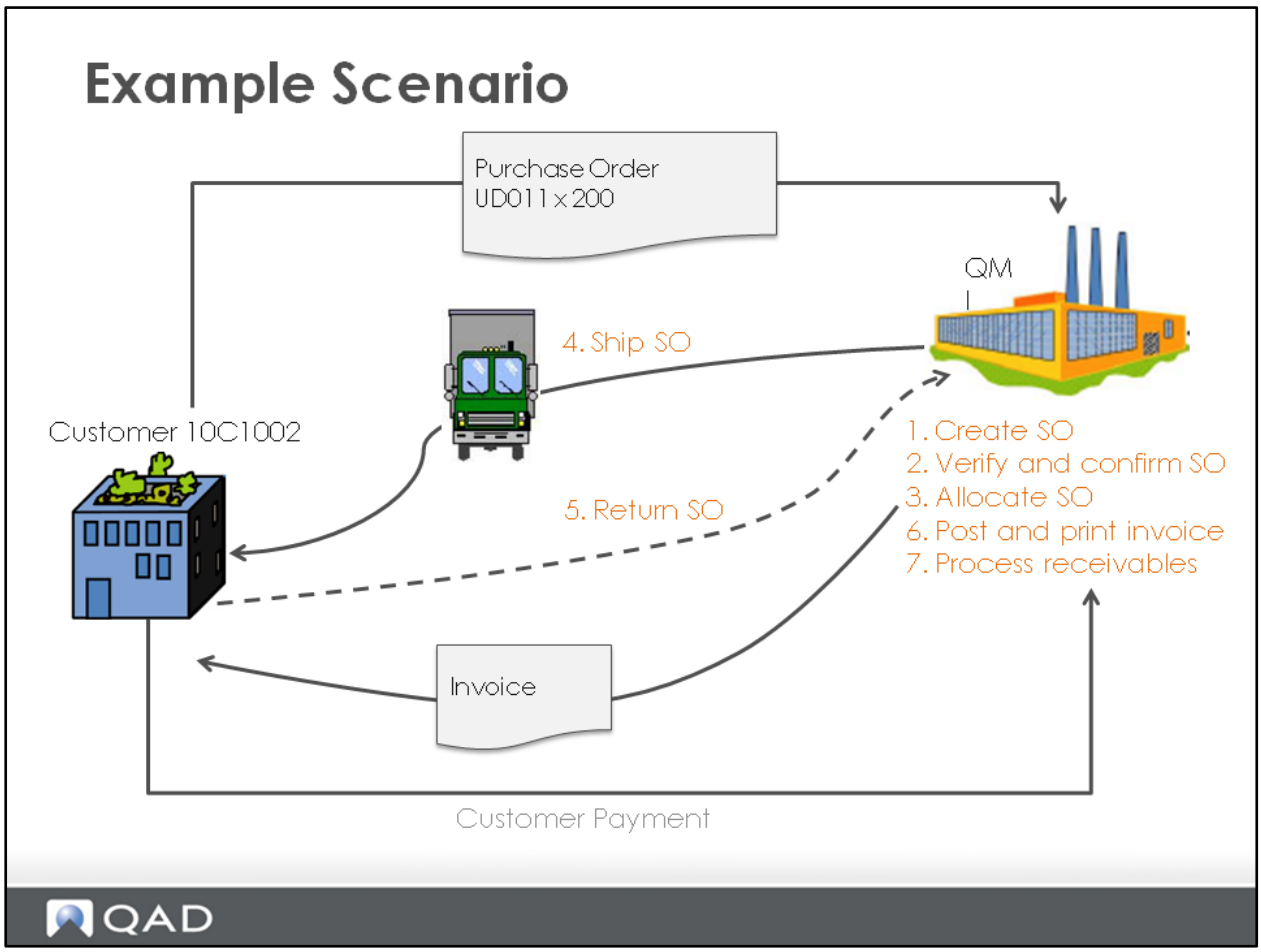


The simplified process flow depicts the focus of this training course.

Using Standard Sales Orders

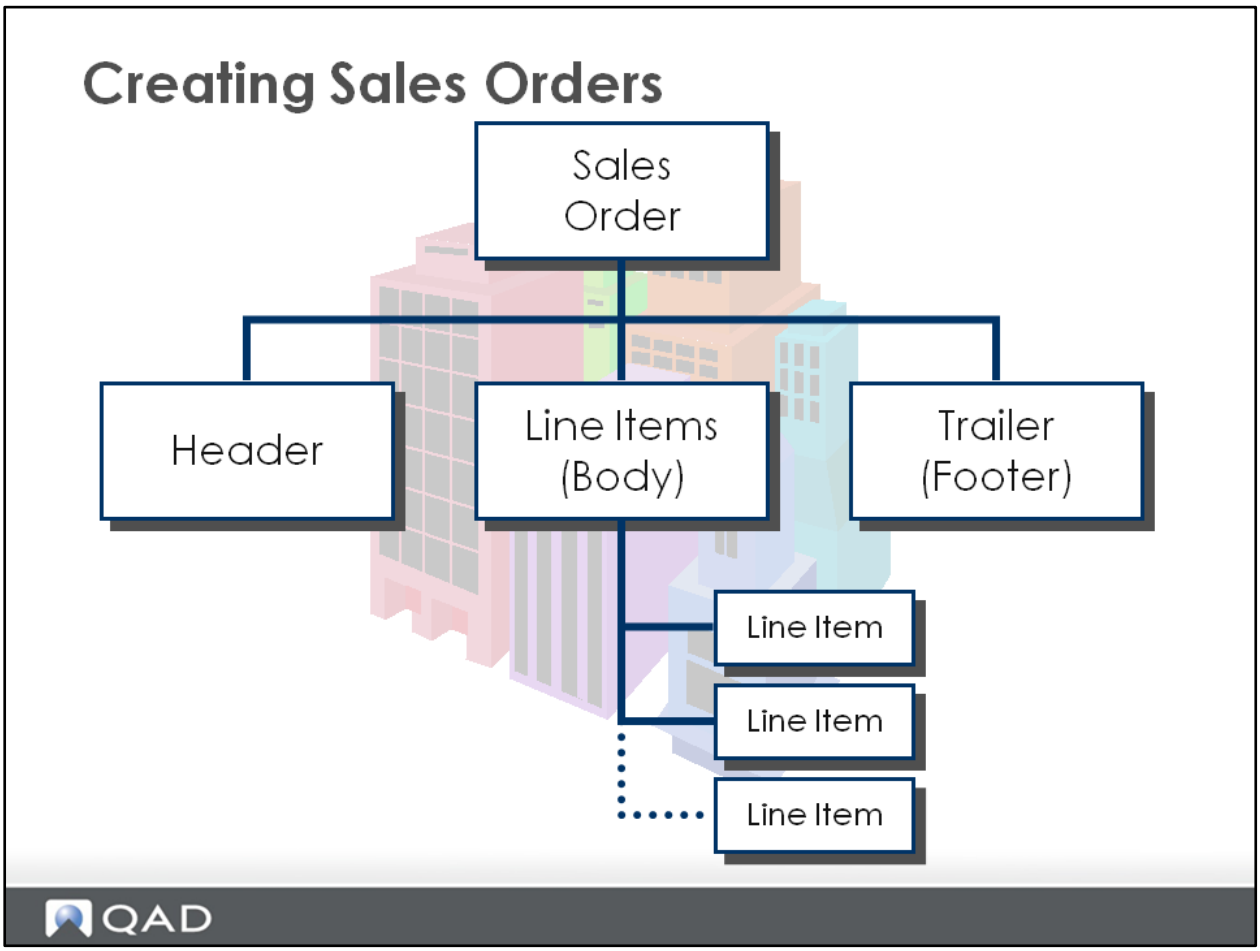


Example Scenario



Note: The customer invoice and receivables processes are discussed in the later topic, Processing Invoices and Receivables.

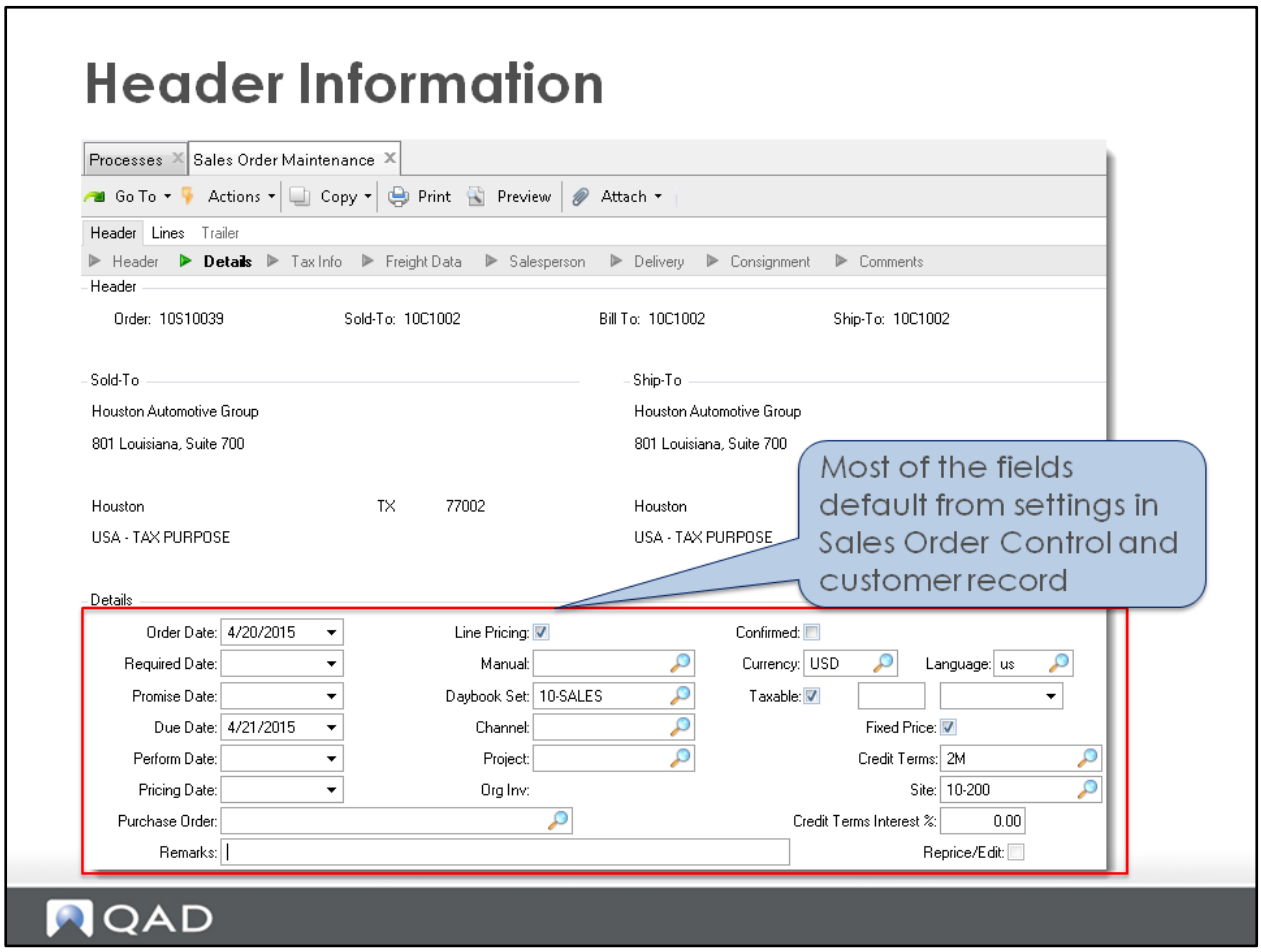
Creating Sales Orders



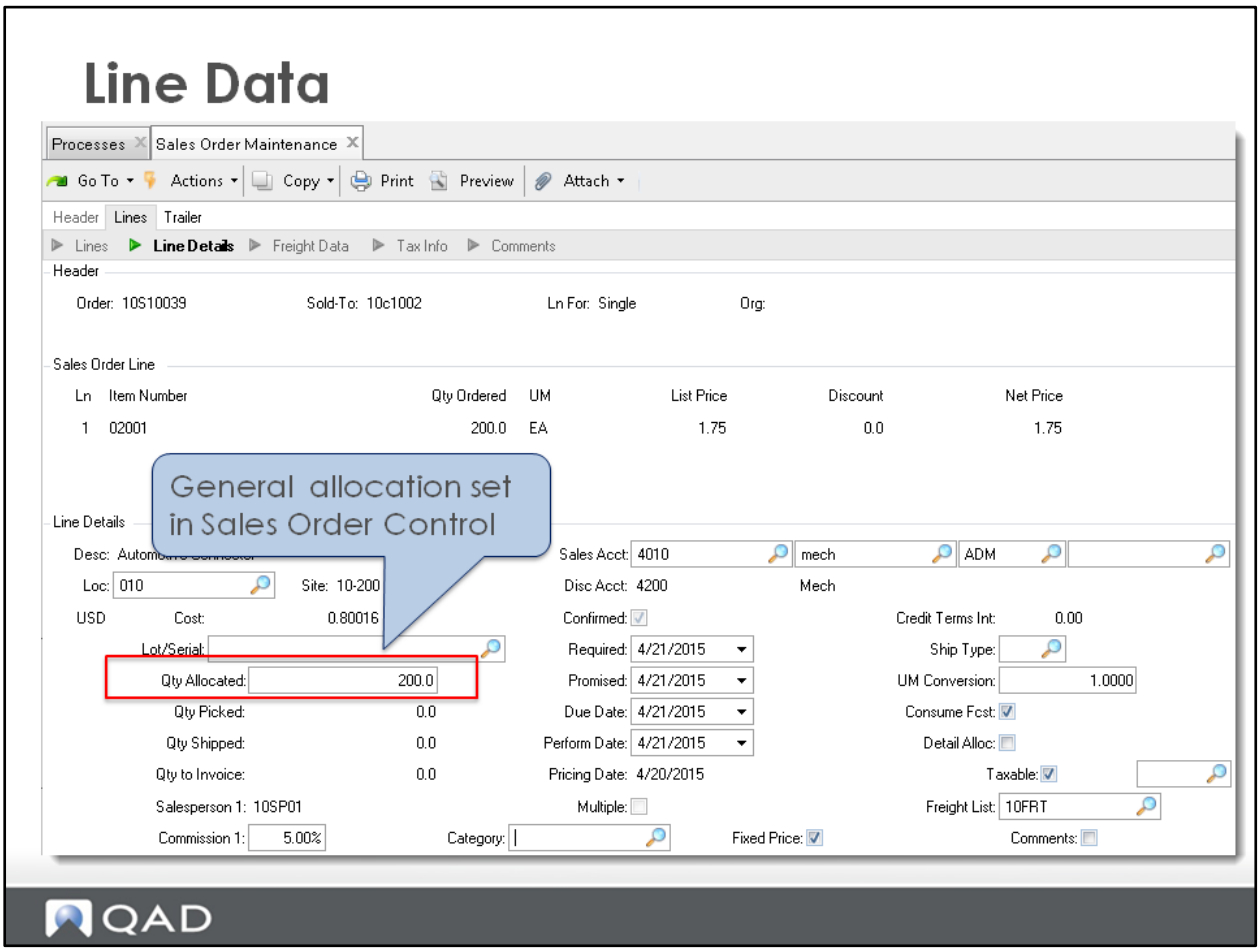
Three elements of a sales order:

- Header: The header frames include the sales order generic information that defines customer information and applies to the entire order
- Line Items: The line item frame includes all items on the order. Each item line includes information on the item number, quantity ordered, unit of measure, and pricing information.
- Trailer: The trailer frame includes details on the total of item lines, tax information, discount information, freight charges, and the total value of the sales order.

Header Information

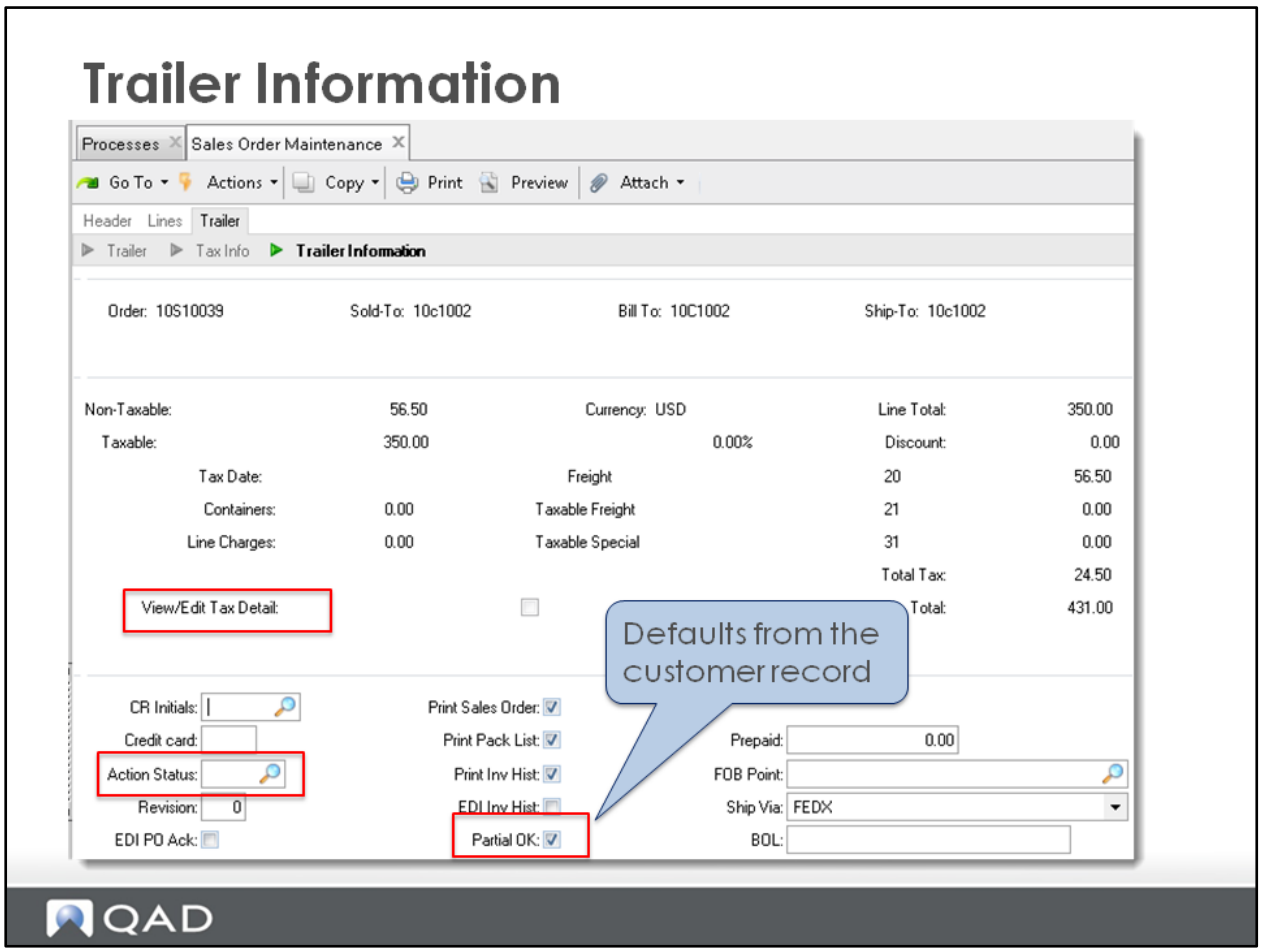


Line Data



Because the Detail Allocations field is not selected in Sales Order Control, the system uses general allocation by default. Qty Allocated is automatically occupied with the required quantity for this order.

Trailer Information



The Trailer Information frame is where the system calculates taxes and freight when these apply. You can also add any special service or other charges that apply to the entire order rather than to a line item.

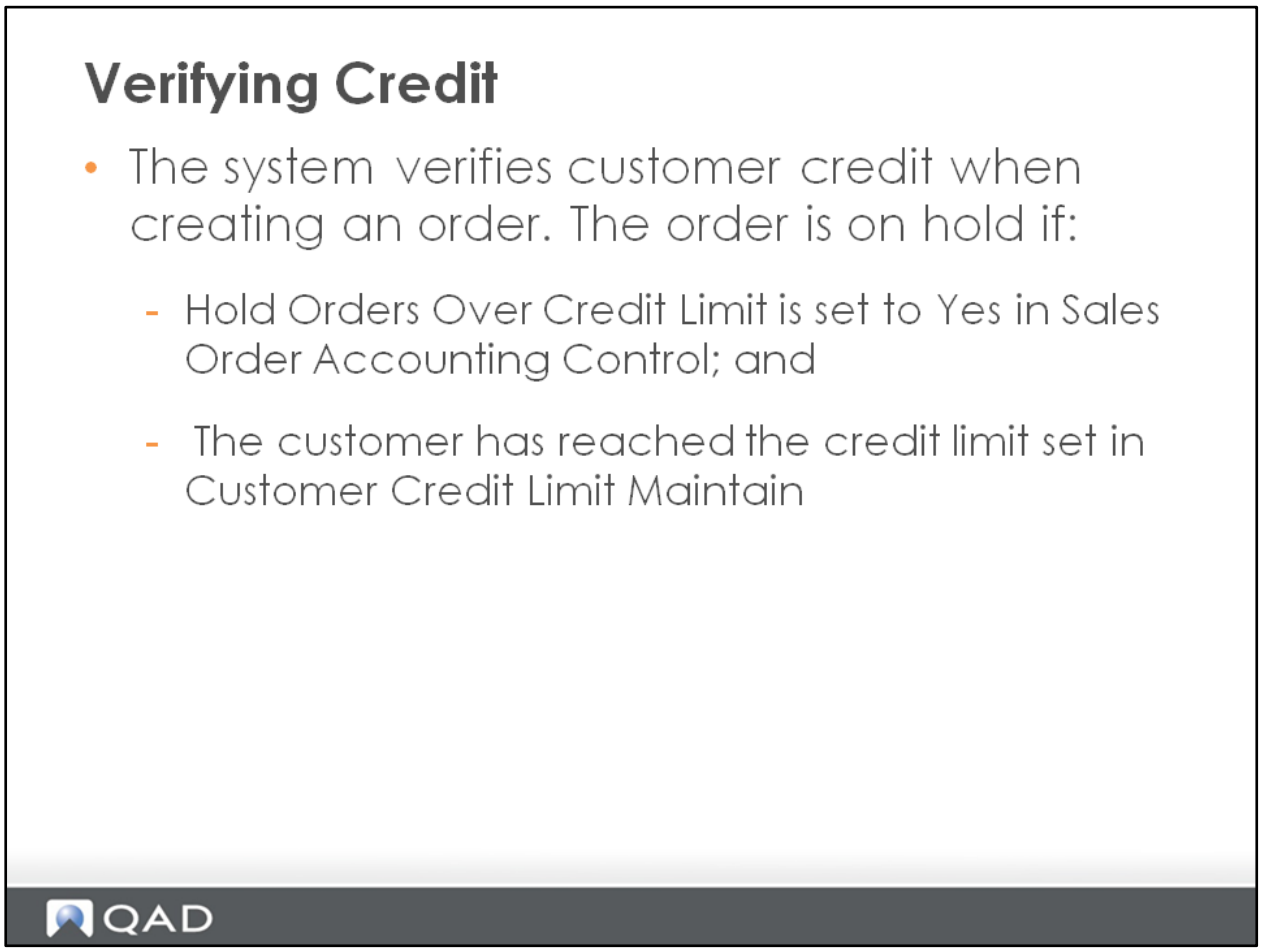
The lower frame of the trailer record has check boxes that let you print the sales order and the packing list. You can also maintain the revision level of the sales order to track customer changes to the order.

Action Status. You can still allocate inventory for an order on hold, but you cannot print a picklist. If the field is blank, you can release the order.

Note: If there is any value other than blank in the Action Status field, the order is on hold.

View/Edit Tax Detail. You can record additional tax information on sales orders and pending invoices; this feature lets you review (and, optionally, change) tax amounts.

Verifying Credit

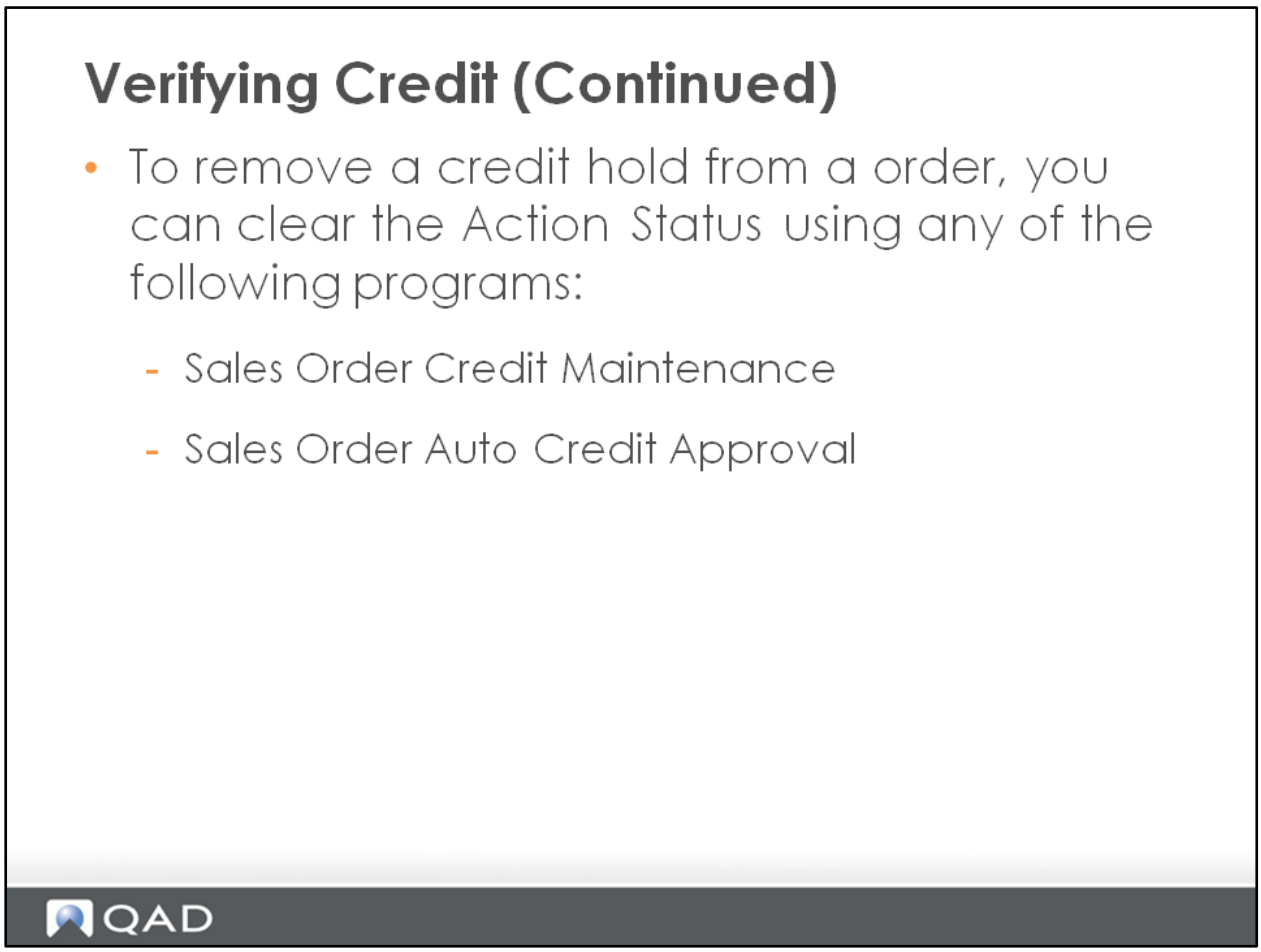


If the customer has reached a credit limit, the system shows a warning when you create an order for the customer.

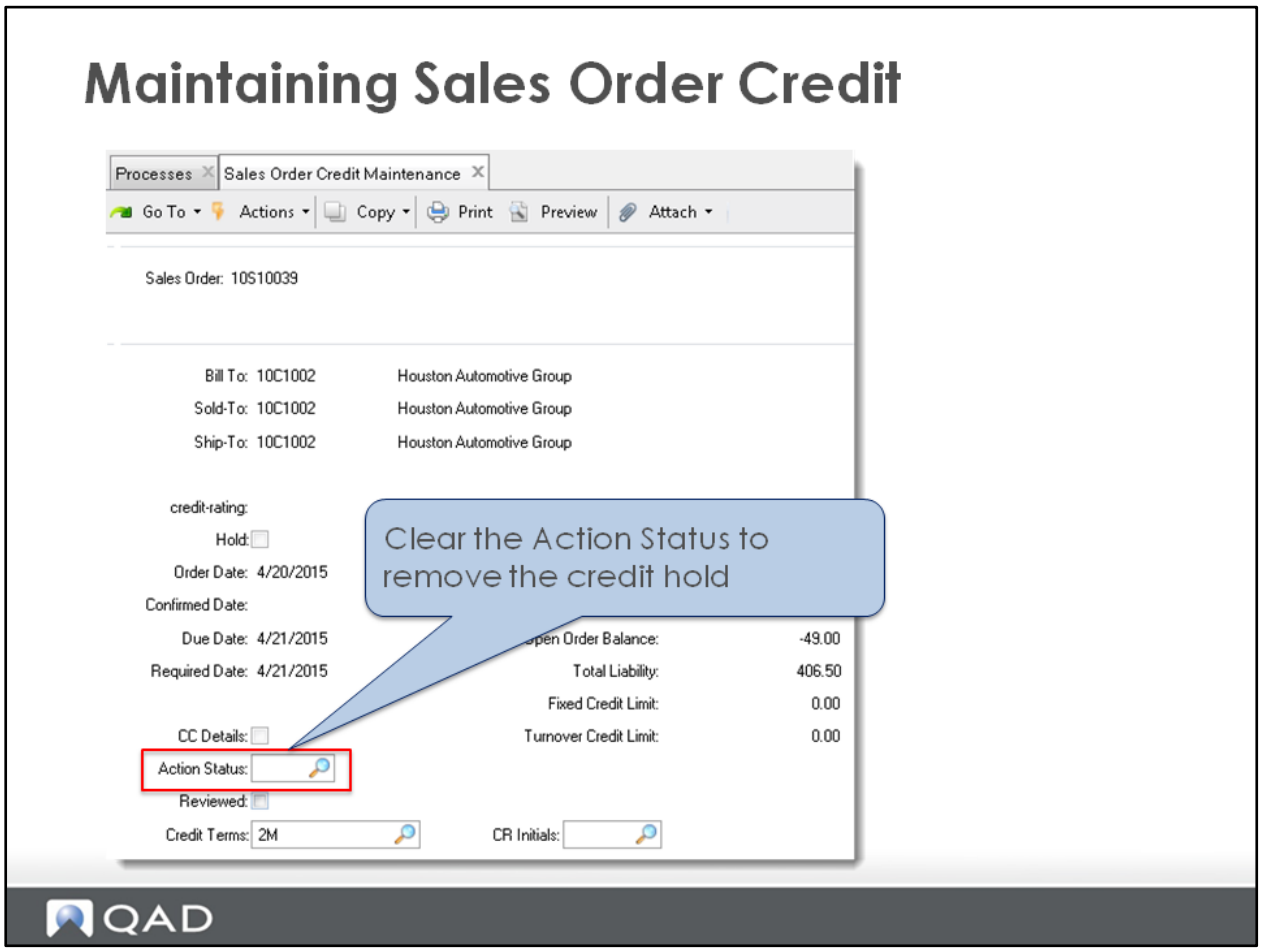
“WARNING: QADFIN-3059 The credit limit for customer xxxxxx has been reached. The fixed credit amount is xxxx USD. and open items are xxxxx USD and current sales orders are xxxx USD and current drafts are xxxx USD.
Sales Order placed on credit hold”

Note: Credit limits are checked against bill-to address during sales order maintenance. This check can optionally include other open sales orders. When an order is placed on credit hold, you cannot print a picklist, effectively preventing the order from being shipped. However, the sales order is still considered by MRP and can have inventory allocated to it. For information on customer credit, see *QAD Sales User Guide*.

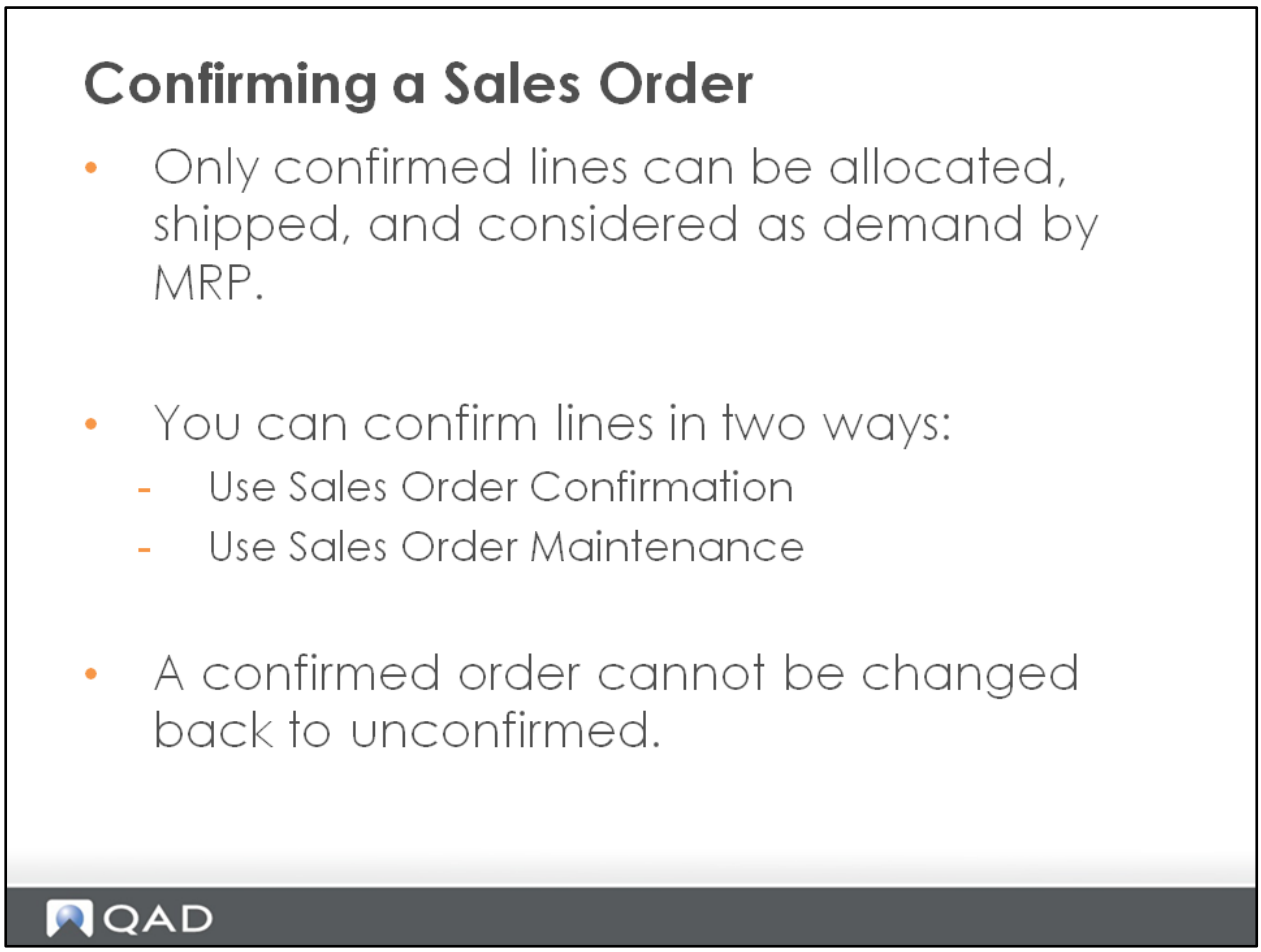
Verifying Credit (Continued)



Maintaining Sales Order Credit



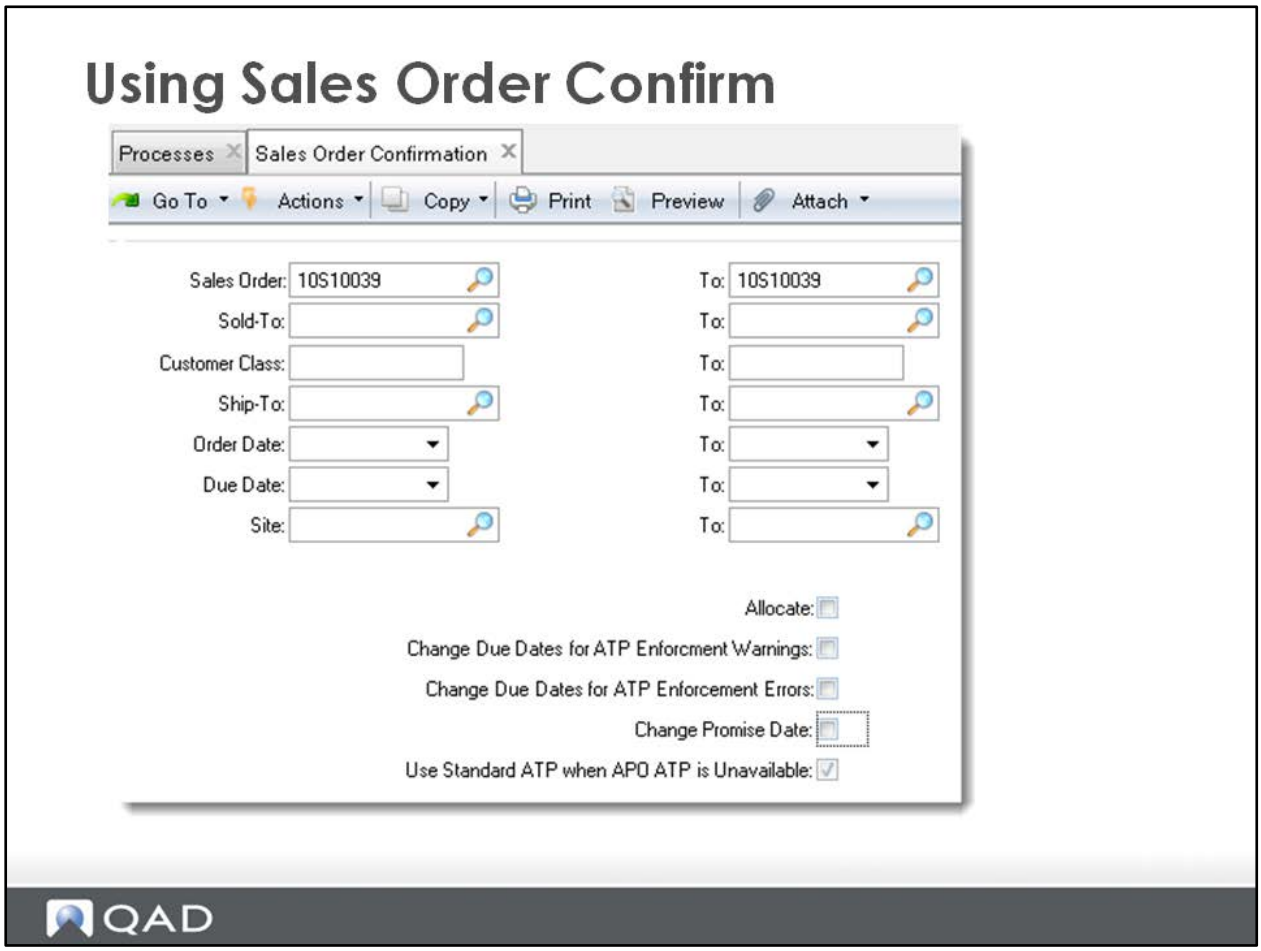
Confirming a Sales Order



You can confirm lines in two ways:

- To confirm all the lines on one or more sales orders at the same time, use Sales Order Confirmation to enter selection criteria for the orders to confirm.
- If you want to confirm only selected lines for a single order, set Confirmed to Yes on the line detail in Sales Order Maintenance.

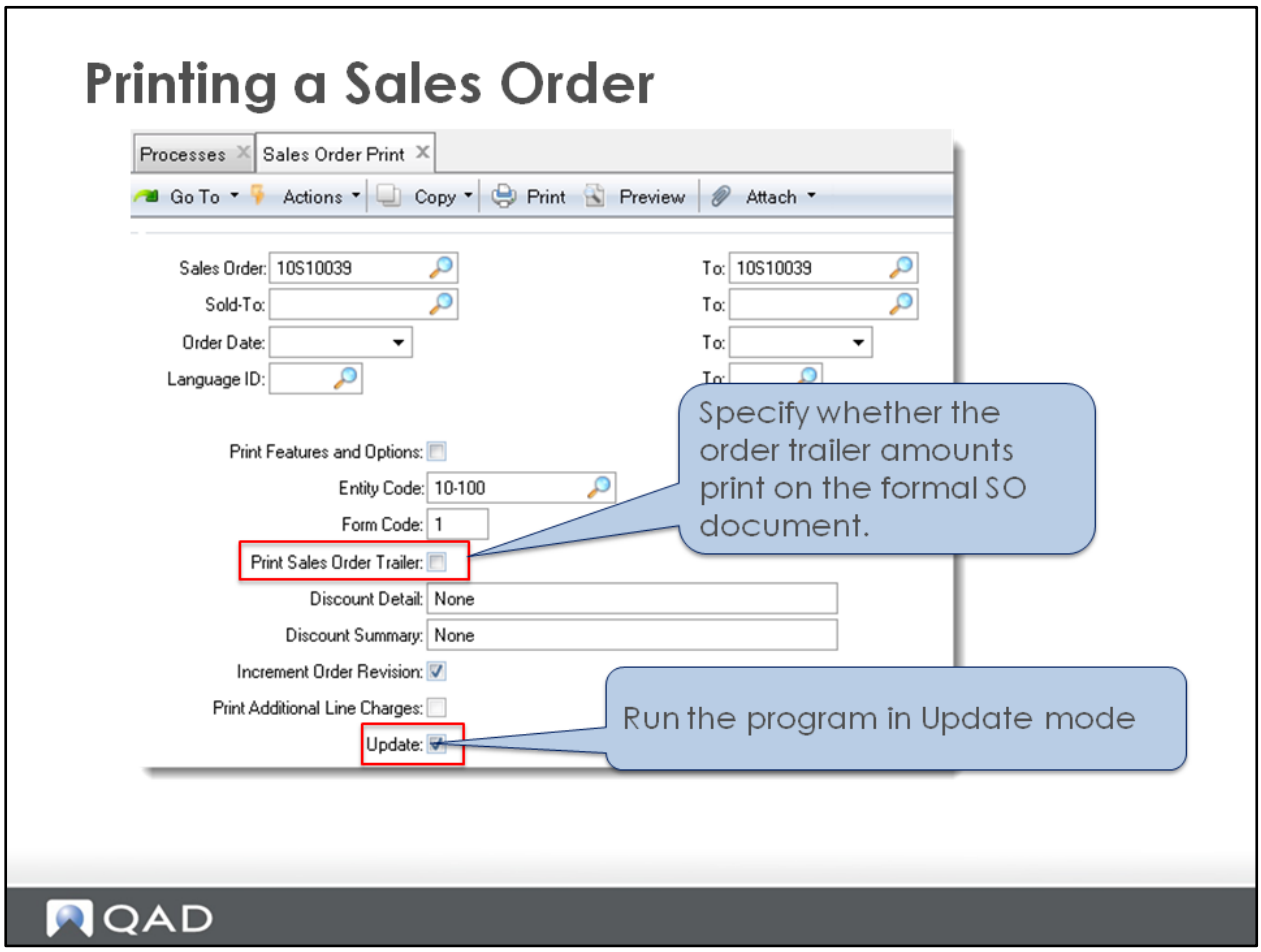
Using Sales Order Confirm



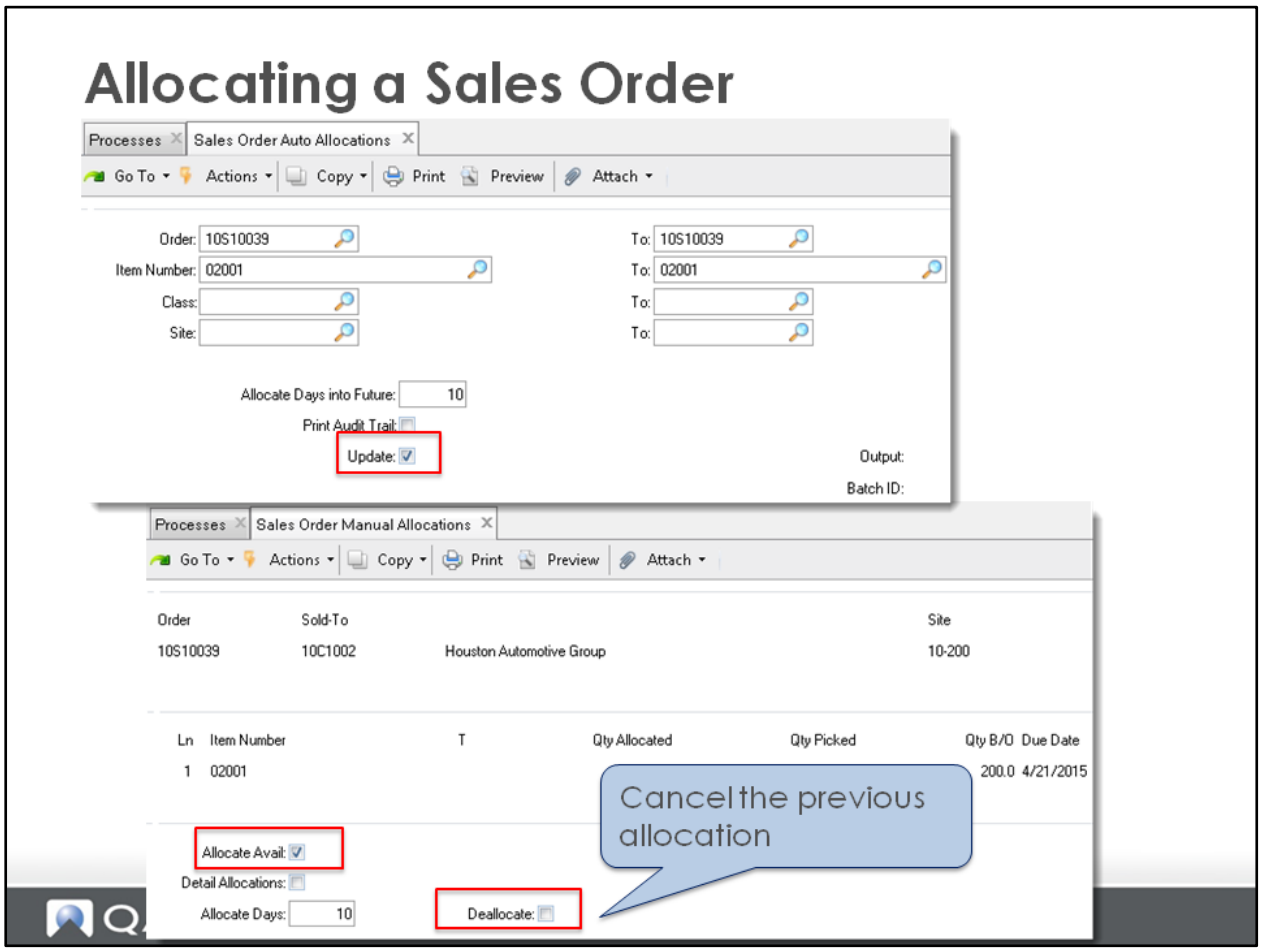
A packing list (picklist) details items to pick and ship. The printed document has two sections:

- The header includes general order information such as order number, date, addresses, and terms.
- Line items listing the quantity open, quantity to ship, and the locations, lot/serial, and lot reference numbers to pick.

Printing a Sales Order



Allocating a Sales Order



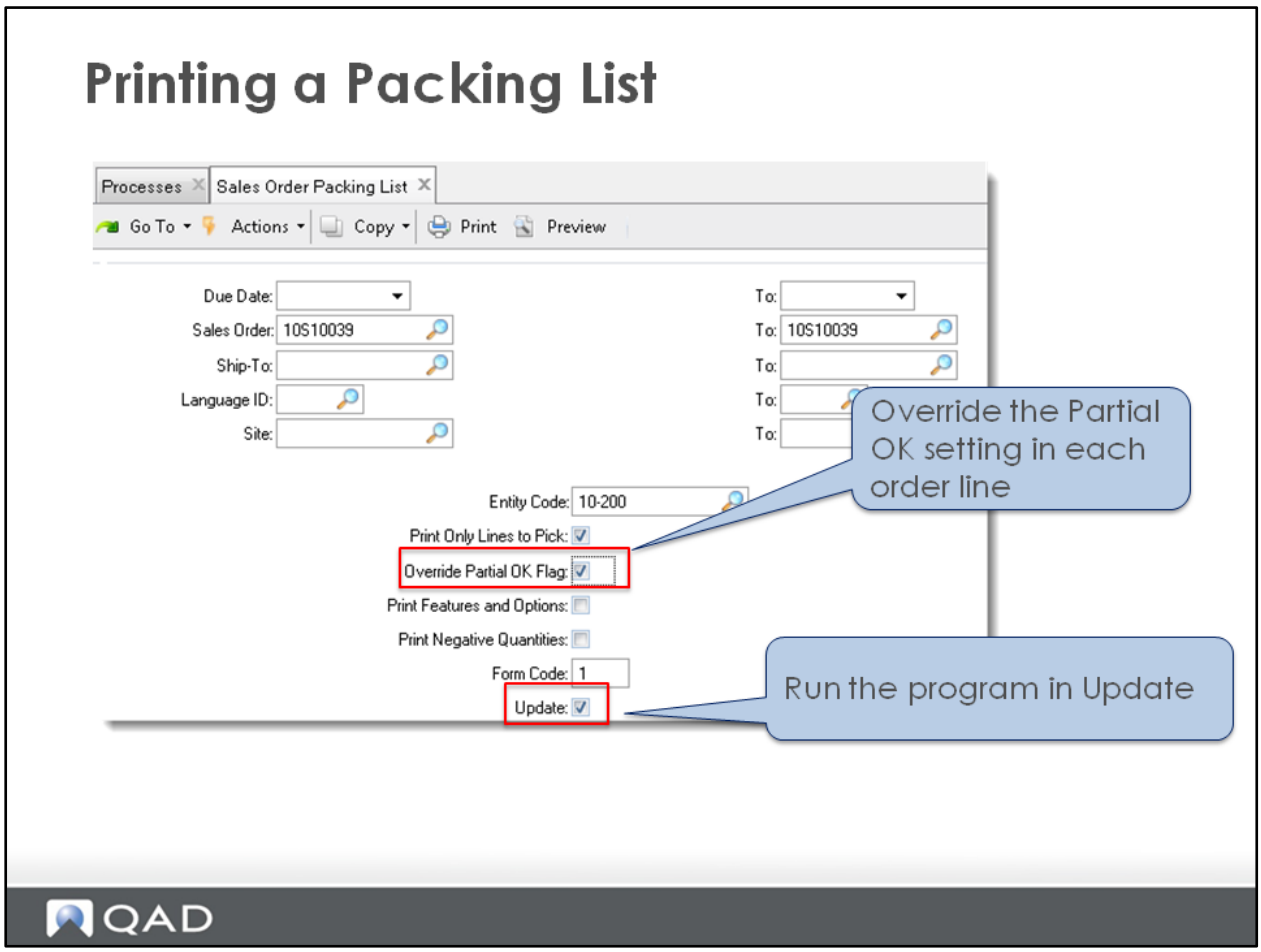
Allocating is the process of reserving items to fill an order.

If you do not create allocations during order entry, use Sales Order Auto or Manual Allocations to allocate sales order lines. The system automatically generates detail allocations when you print a packing list.

For more details on allocation, see *Allocation and Shipping Training Guide*.

The use of allocations is optional but recommended. Allocations and printed picklists give you control over what orders are shipped and when inventory can be allocated. Inventory balances are not decreased until a shipment is processed.

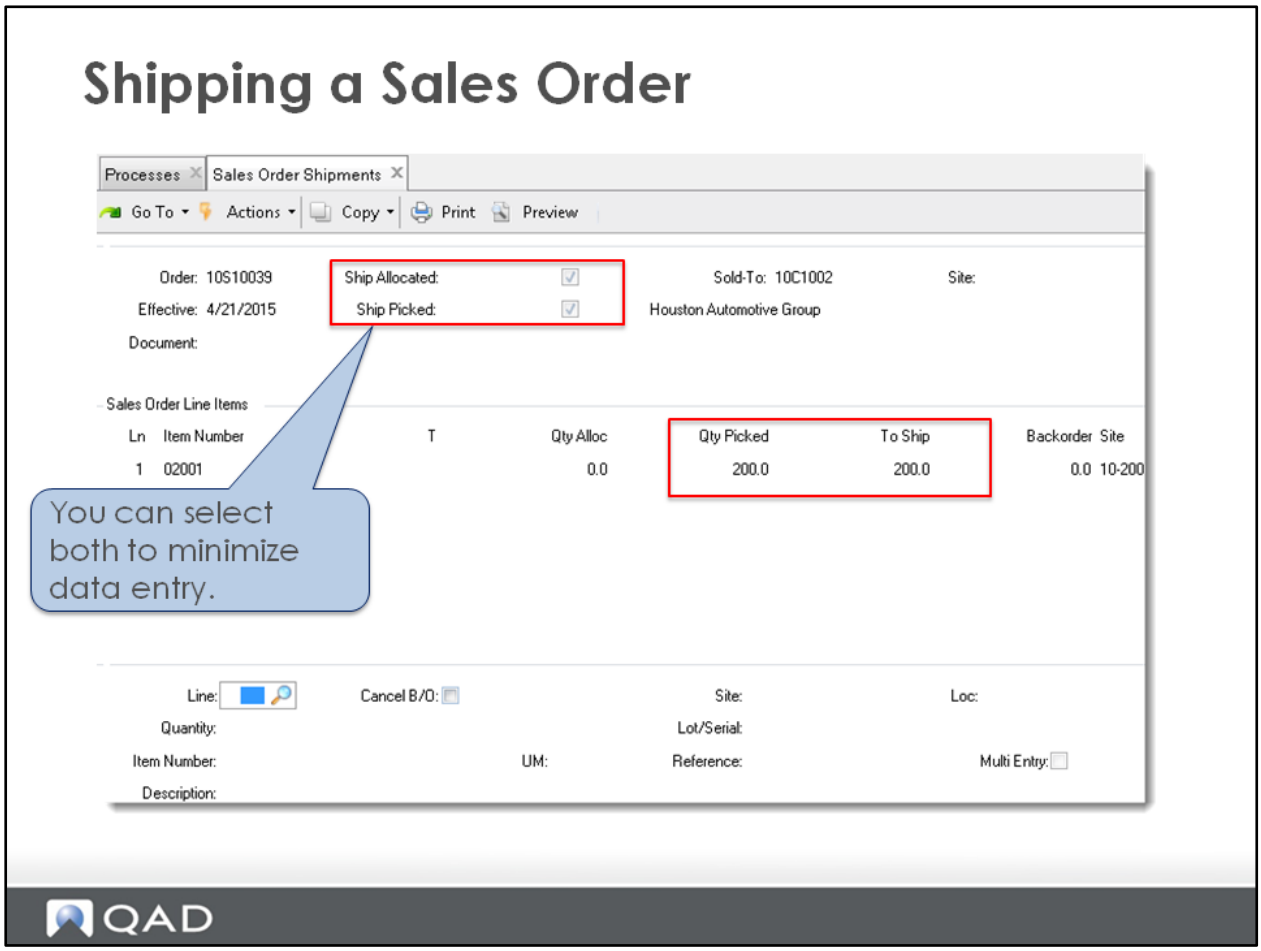
Printing a Packing List



A packing list (picklist) details items to pick and ship. The printed document has two sections:

- The header includes general order information such as order number, date, addresses, and terms.
- Line items list the quantity open, quantity to ship, and the locations, lot/serial, and lot reference numbers to pick.

Shipping a Sales Order



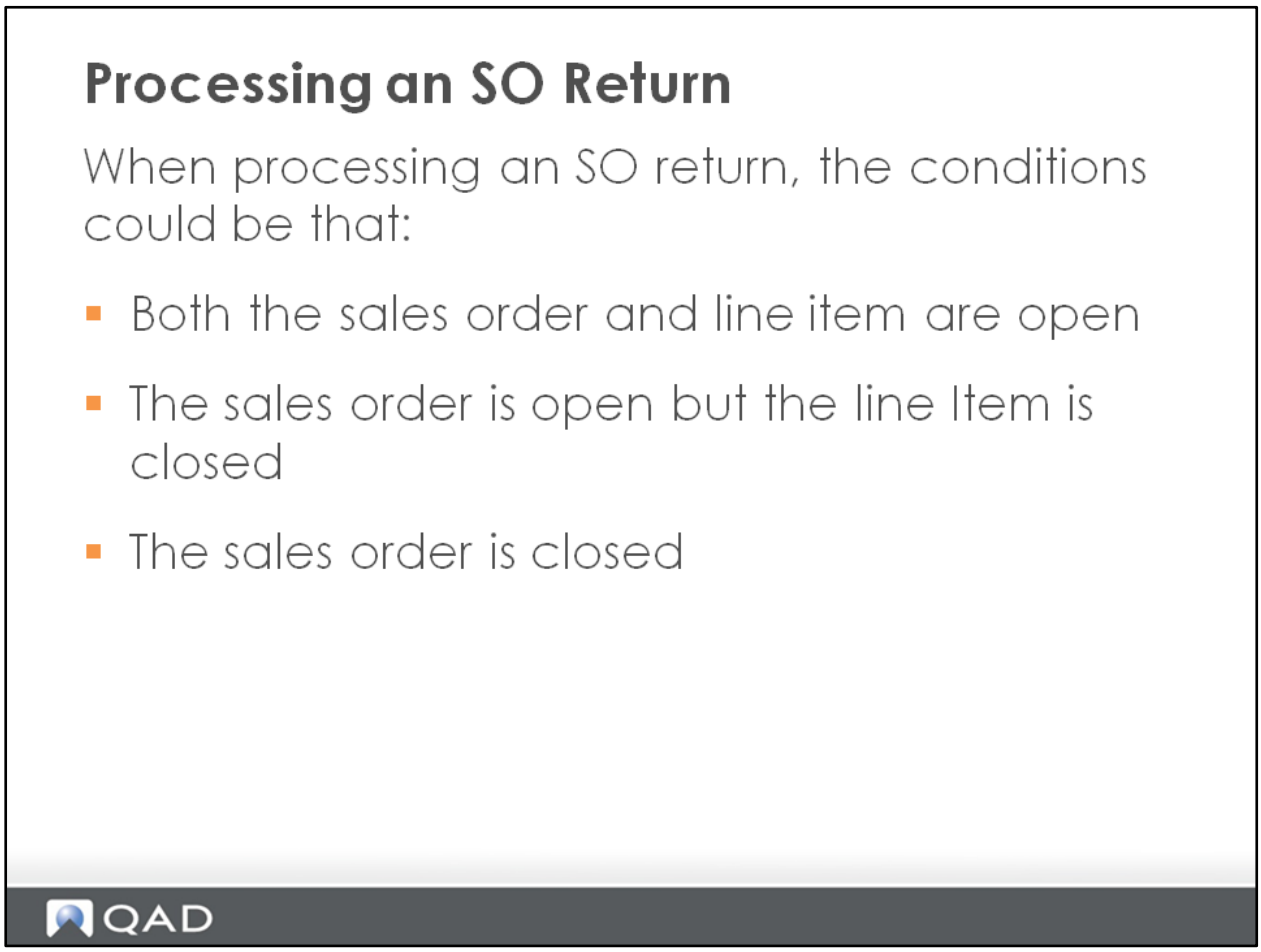
QAD Enterprise Application provides two ways of shipping sales orders: Sales Order Shipments and pre-shippers/shippers. Usually, discrete sales orders use Sales Order Shipments; scheduled orders use pre-shippers/shippers.

To process a shipment, first specify the sales order (SO) number, which lists the line items and the quantity open. Open items are ordered but not shipped. Use the Ship Allocated and Ship Picked fields to set up default quantities to ship.

- If you use packing lists to control the shipping process, set Ship Picked to Yes. The quantity to ship is set to the quantity picked for each line item, and you can press Go to process the shipment.
- If you do not print the packing list but you do use allocations to reserve inventory for shipment, set Ship Allocated to Yes. This sets the quantity to ship to the quantity allocated.

Next, you can update freight information for the order. This information defaults from the sales order.

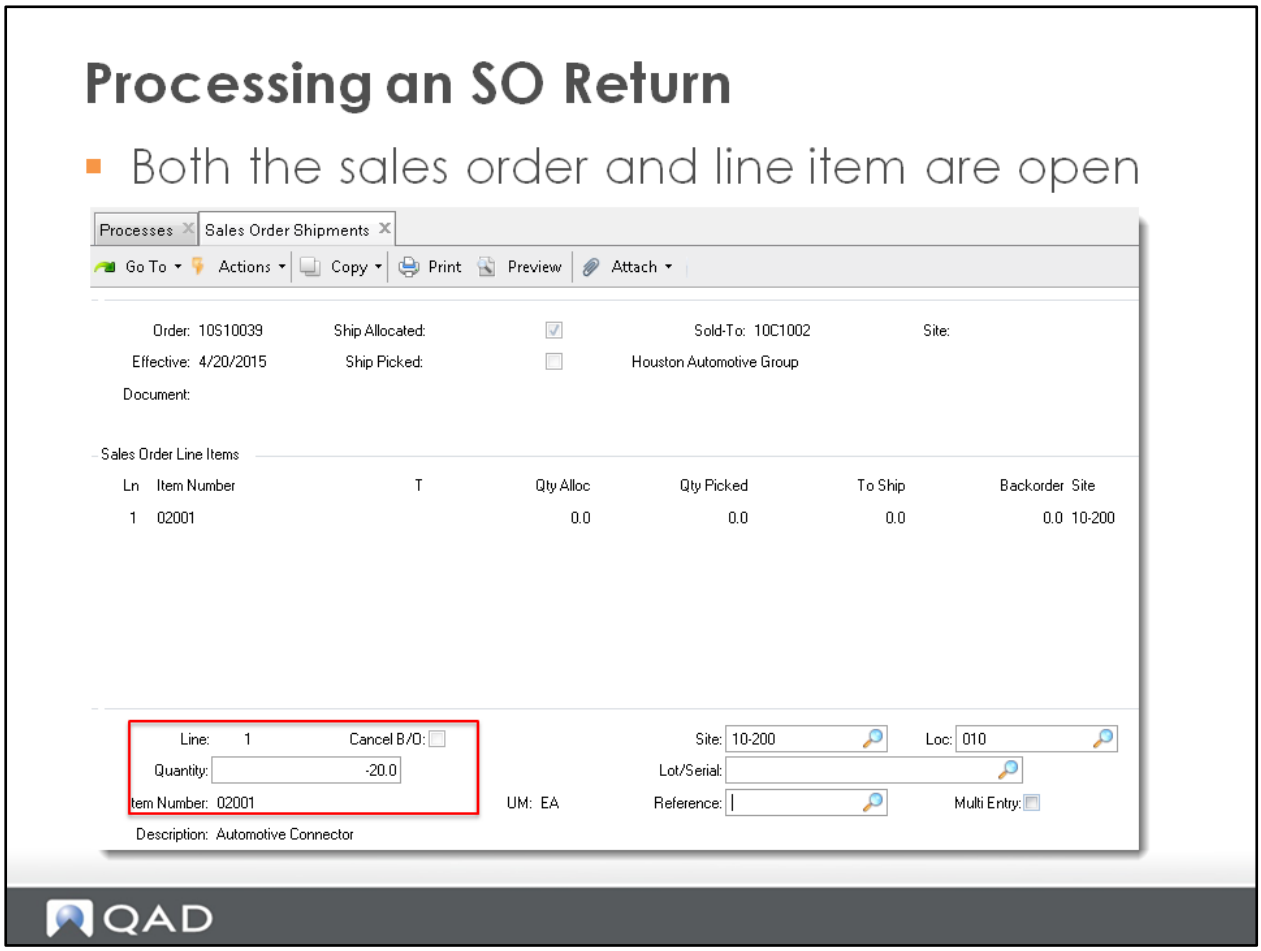
Processing an SO Return



How you process a return depends on:

- Whether the sales order is open
- Whether the line item is open

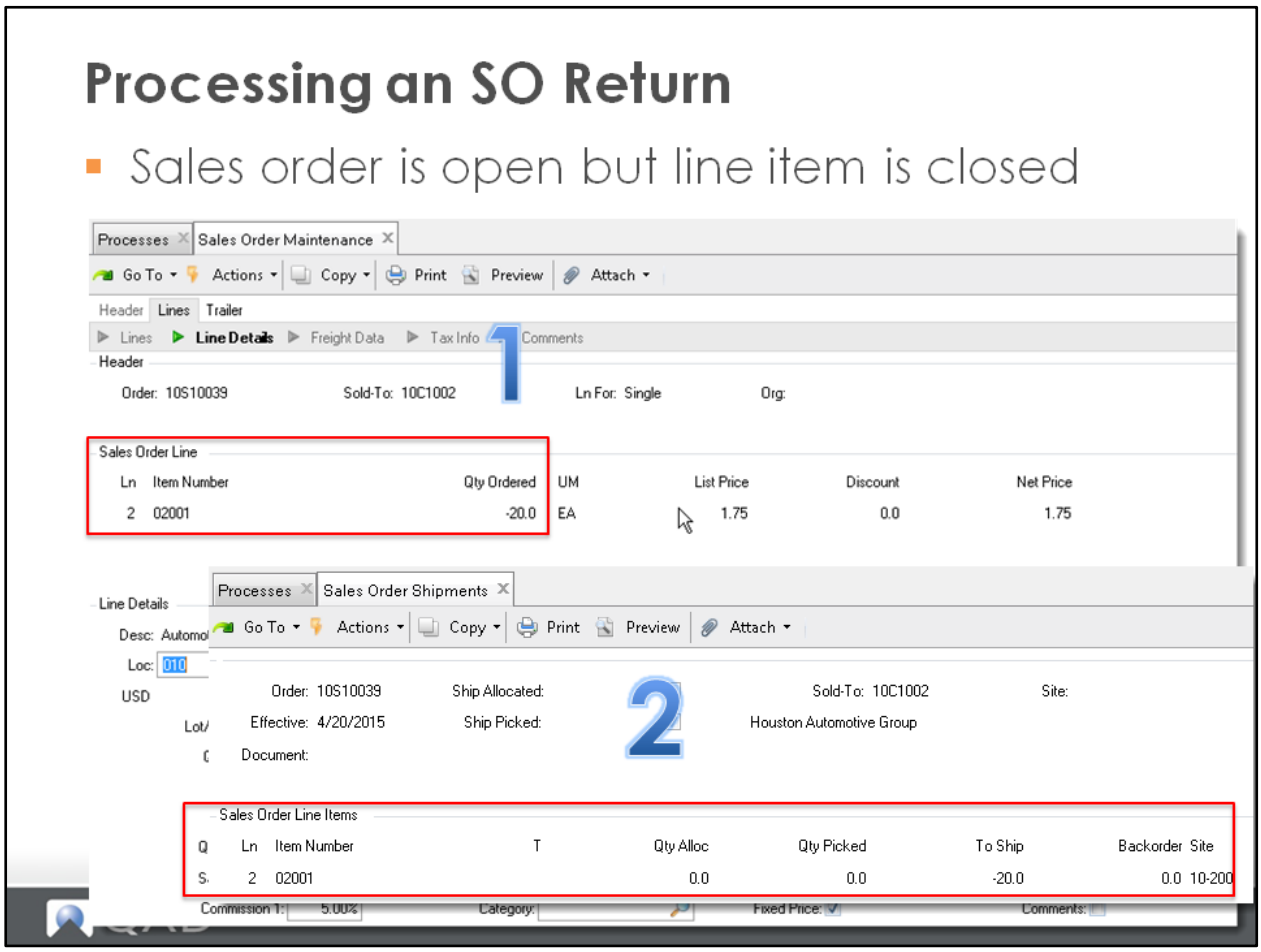
Processing an SO Return



When both the sales order and the line item are open at the time of the return, you can process the return using Sales Order Shipments as follows:

1. Enter the line item for the item being returned.
2. Enter the quantity returned as a negative amount.
3. Enter the location where the item was restocked.

Processing an SO Return

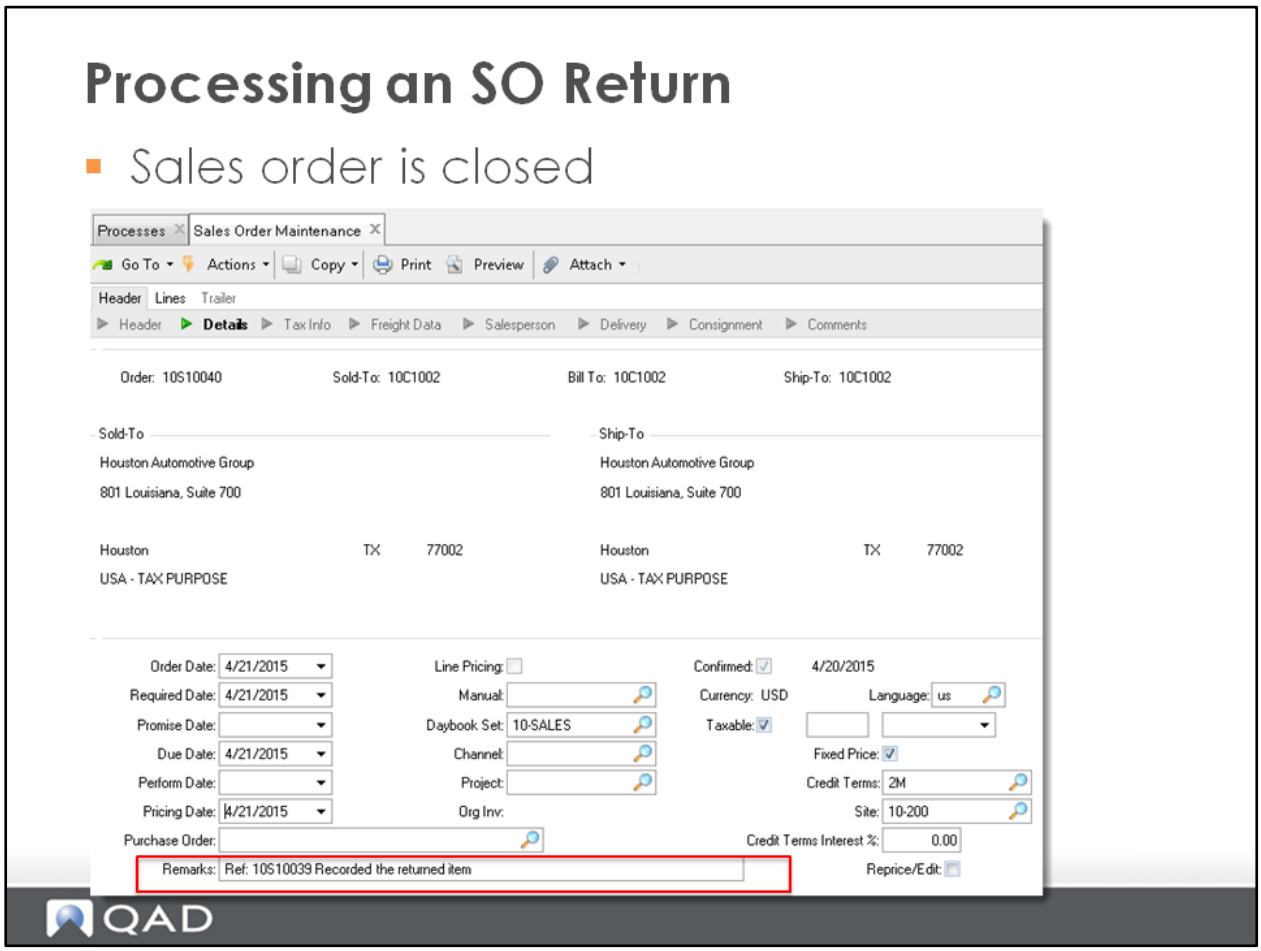


When the sales order is still open at the time of the return and the line item is closed:

1. Add a line item for the returned material to the original open sales order as a negative amount.
2. Process the sales order shipment.

The system then processes the return as a negative receipt.

Processing an SO Return

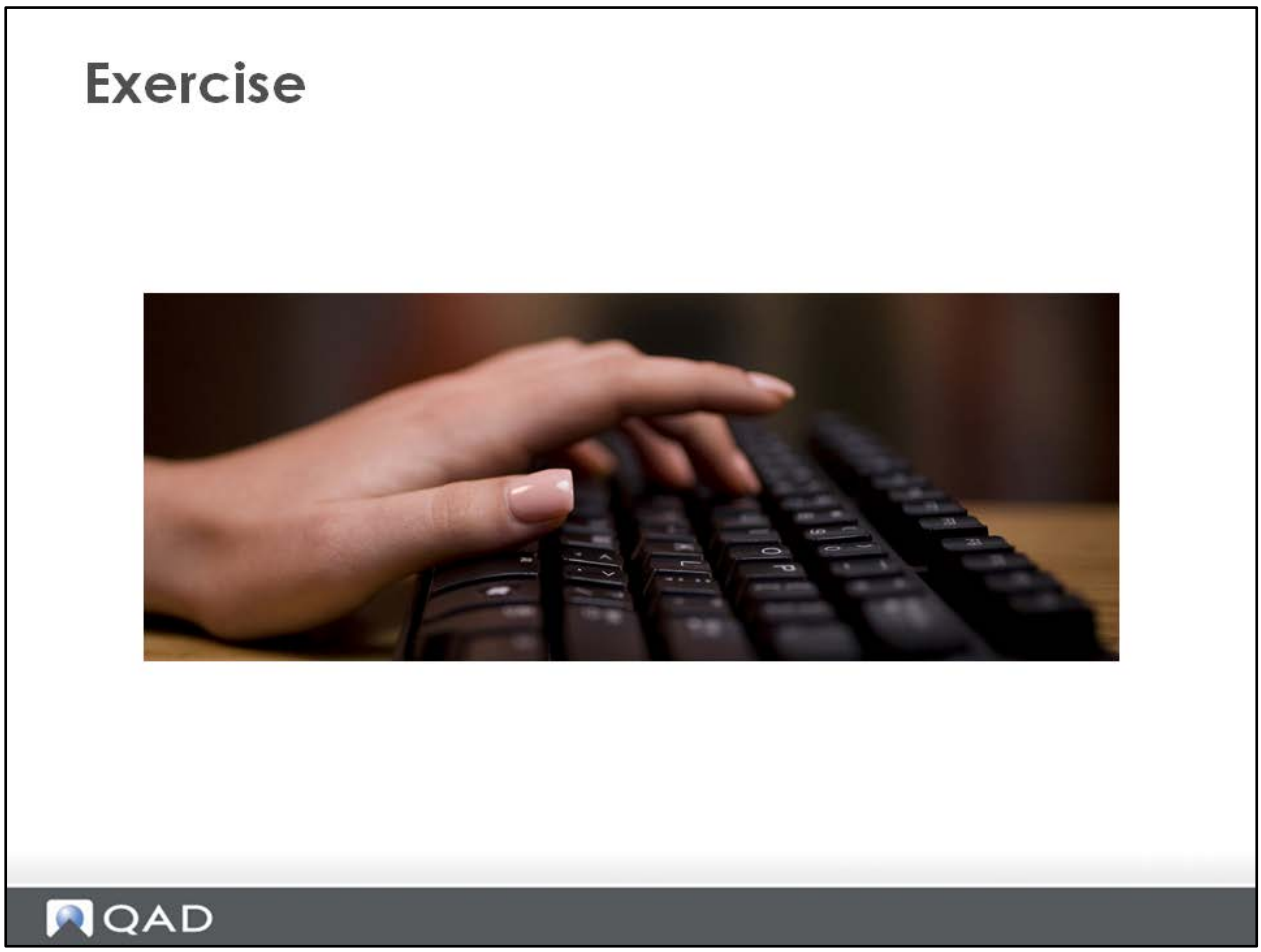


If the original sales order is closed when the item is returned:

1. Create a sales order and reference the original closed sales order in the Comments area of the new sales order to keep a record of the action.
2. Enter the returned quantity as a negative amount.
3. Process the sales order shipment.

The system then processes the return as a negative shipment.

Exercise



Exercise 1: Settings for Sales Function

1. Go through each frame of Customer Data Maintenance to view the customer data of customer 10C1002.
2. Select the option for Apply Fixed Ceiling and set the Fixed Credit Limit for 10C1002 to 100 in Customer Credit Limit Maintain.
   You will use this setup in a later exercise on handling sales order credit.
3. Use Customer Item Maintenance to associate item 02001 with item CM02001 for customer 10C1002.
4. Use Sales Order Control to ensure that:
   - General allocation is used for all SOs
   - Single line format is used for all order lines
   - Orders are unconfirmed at entry

Note: Pay attention to the Sales Order Prefix and Next Sales Order Number fields, which the system uses to generate the sales order number.

Exercise 2: Discrete Sales Order Process

1. Use the Process Sales Order map to create an unconfirmed order for 100 units of customer item CM02001 selling to 10C1002. Ensure that you select 10C1002 as the Bill To address. Record the order number generated by the system _____.

   Notes:

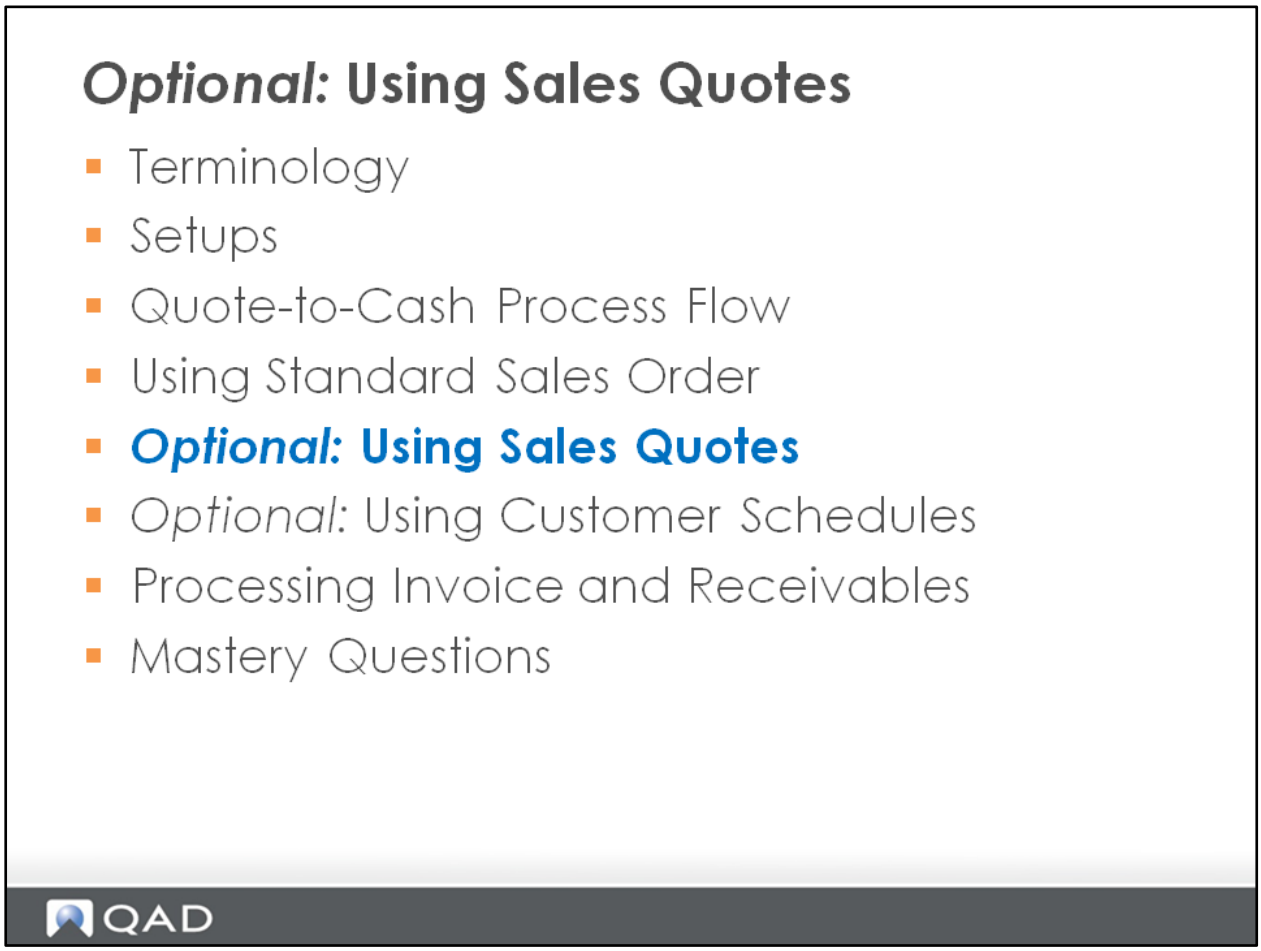
   - After you enter item number CM02001, the internal item number 02001 is displayed. Think about why this happened.
   - The system should warn you that the customer credit limit is reached and the order is created on hold. The Action Status in the Trailer Information frame should be CH (Customer is on Credit Hold).

2. Use Sales Order Credit Maintenance to clear the hold status for this order.
3. Confirm the sales order but do not allocate it at confirmation.
3. Print the sales order.
4. Allocate the sales order using Sales Order Manual Allocations.
5. Print the packing list in Update mode.
6. Assume that the order created in step 1 has been shipped. Record the shipment using Sales Order Shipment.
7. Use Ship Transactions Detail Inquiry (3.21.1) to view the transaction.

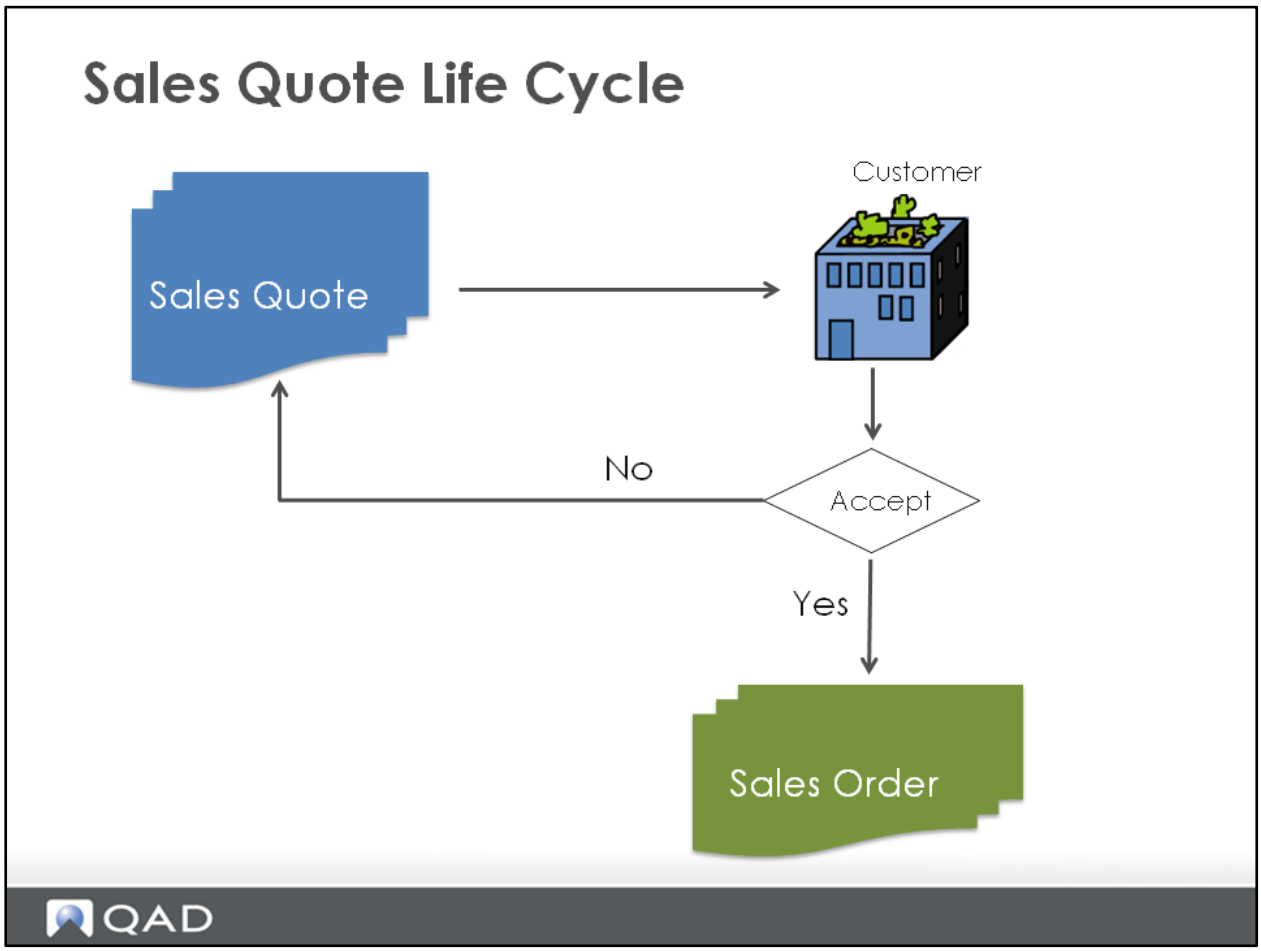
Exercise 3: Process the SO Return

Return 20 units of item 02001 against the sales order you shipped in Exercise 2.

Optional: Using Sales Quotes

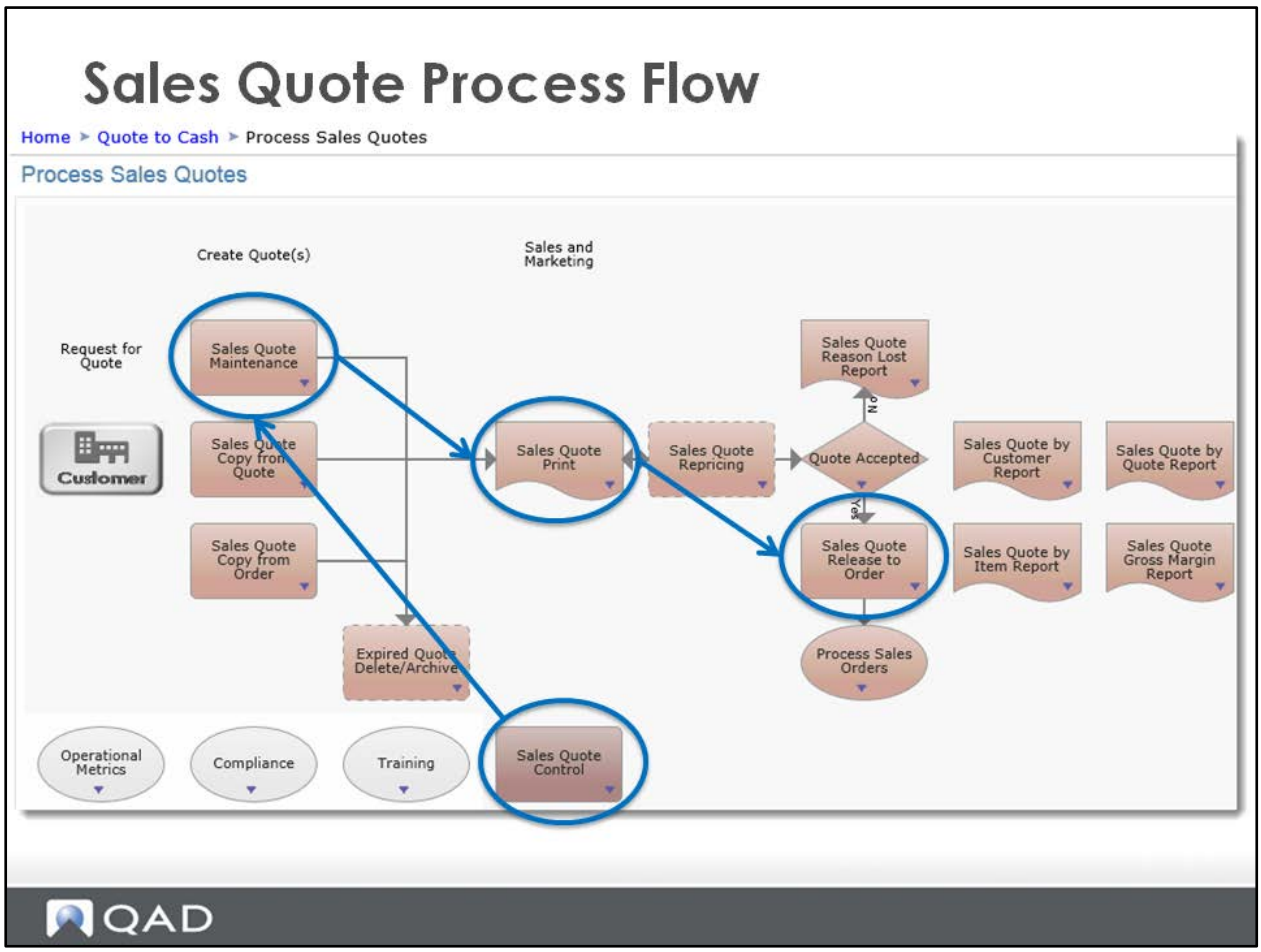


Sales Quote Life Cycle



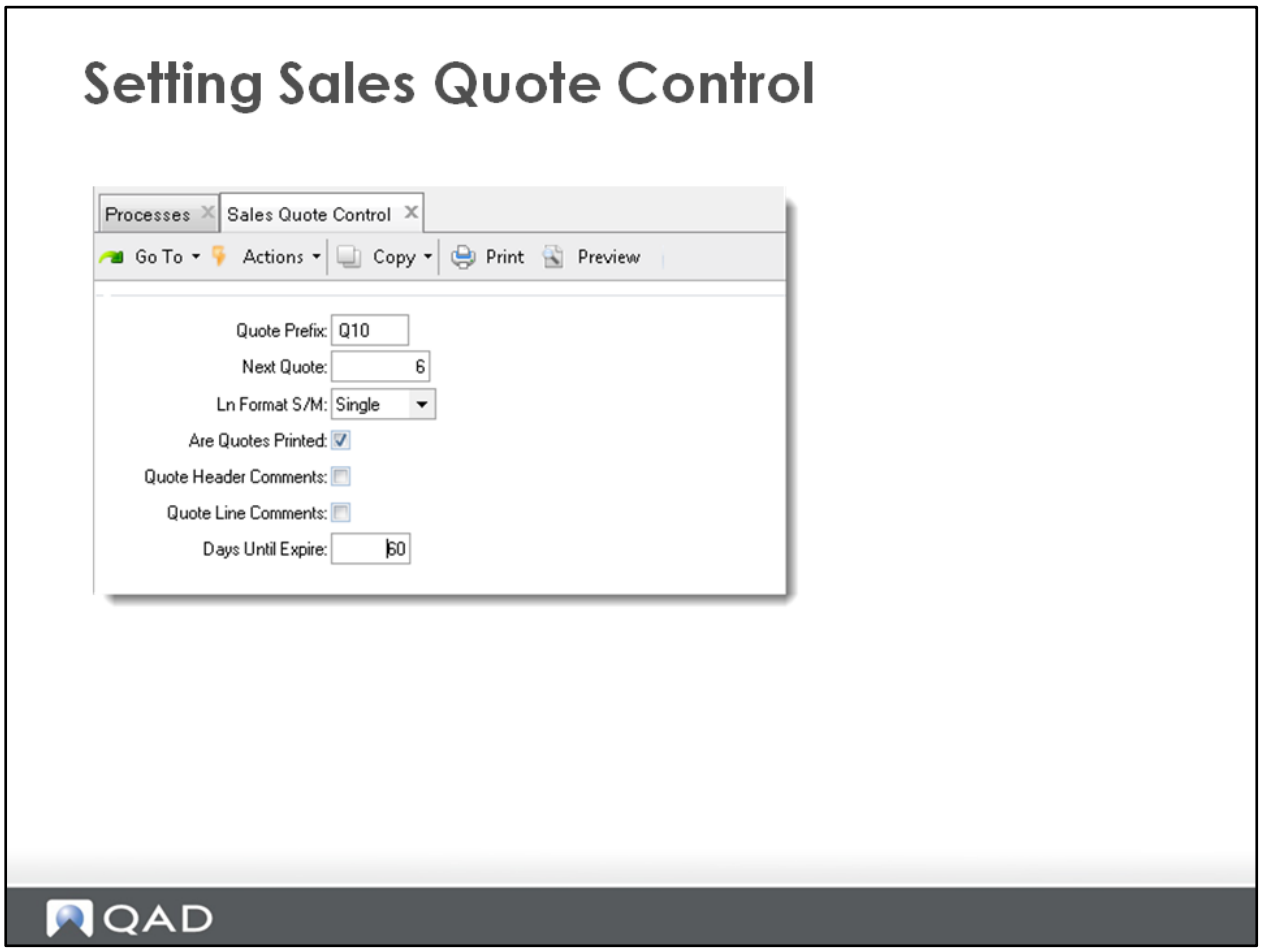
A quote is a statement of price, terms of sale, and description of goods or services offered by a vendor to a prospective purchaser. When given in response to an inquiry, it is considered an offer to sell. When you reach consensus with the customer, you can release the quotation to a sales order in QAD EE.

Sales Quote Process Flow



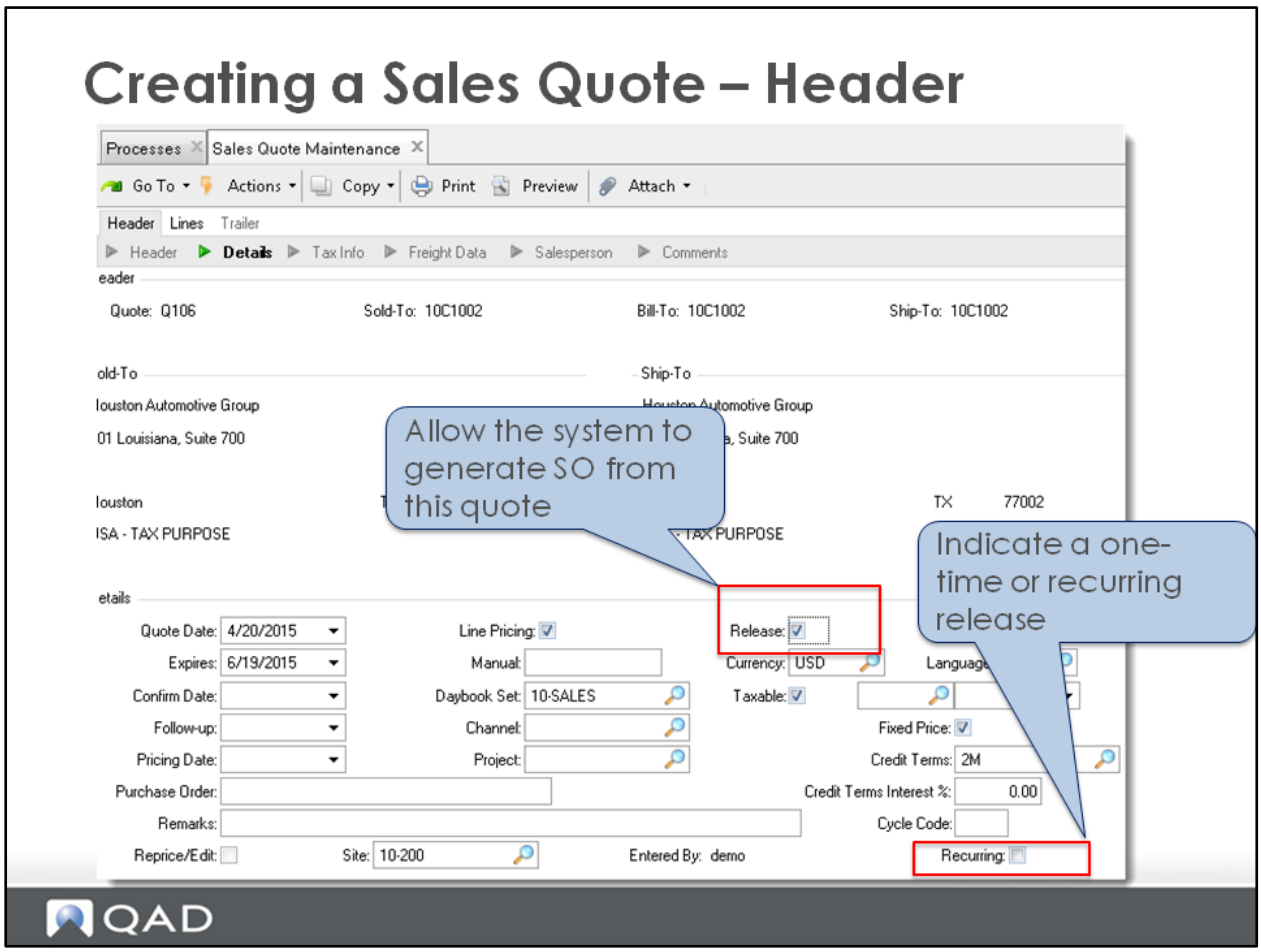
Use the process map to navigate the quotation steps. The main process is Create > Print > Release.

Setting Sales Quote Control



Use Sales Quote Control to define the default settings for the sales quote number convention, line format, expiration, and comments.

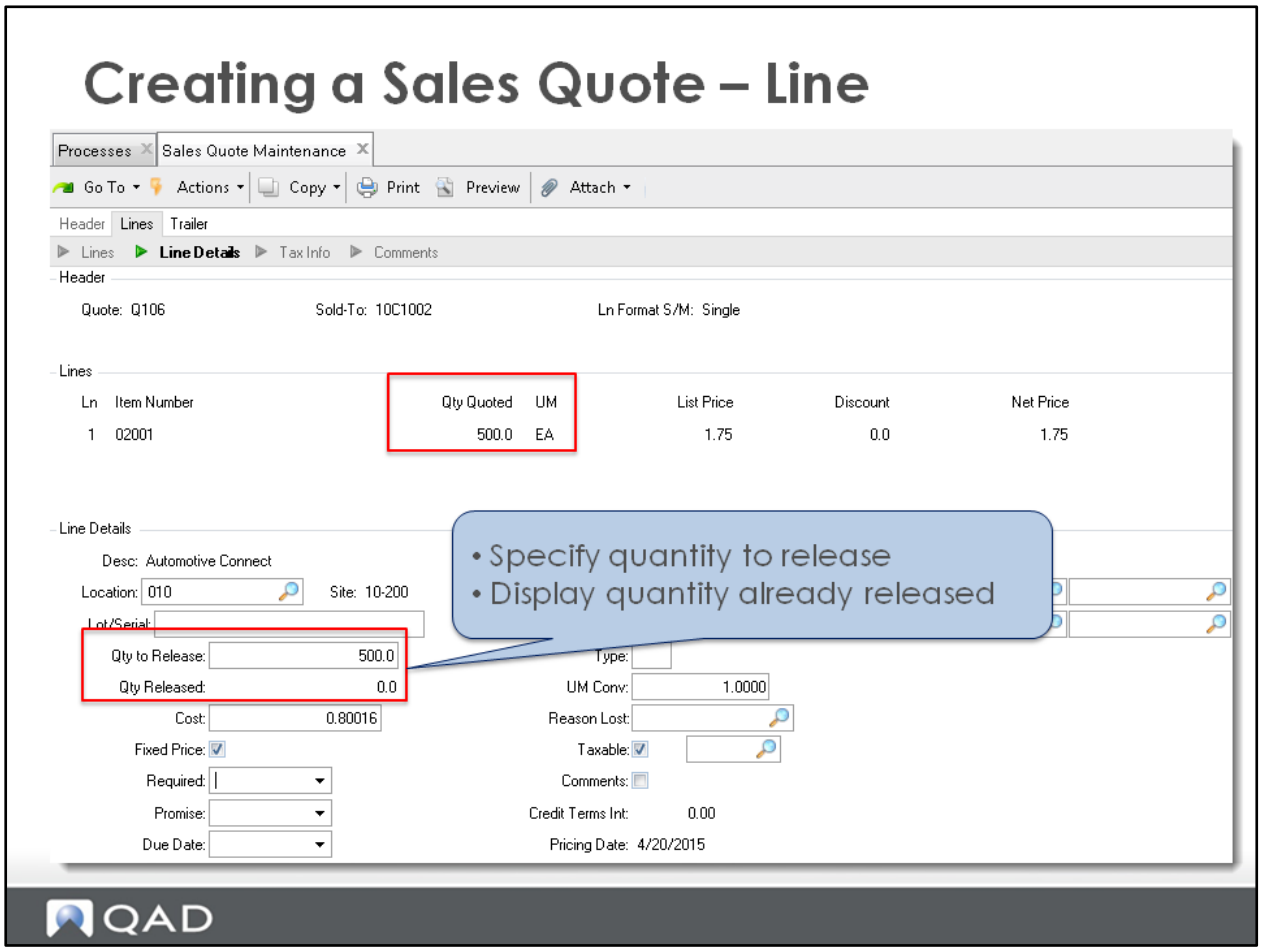
Creating a Sales Quote – Header



Like a sales order, a sales quote also contains header, line, and trailer information. To create a quotation, you can:

- Create a quote from scratch using Sales Quote Maintenance
- Reuse the information from an existing quote using Sales Quote Copy from Quote
- Reuse the information from an existing order using Sales Quote Copy from Order

Creating a Sales Quote – Line



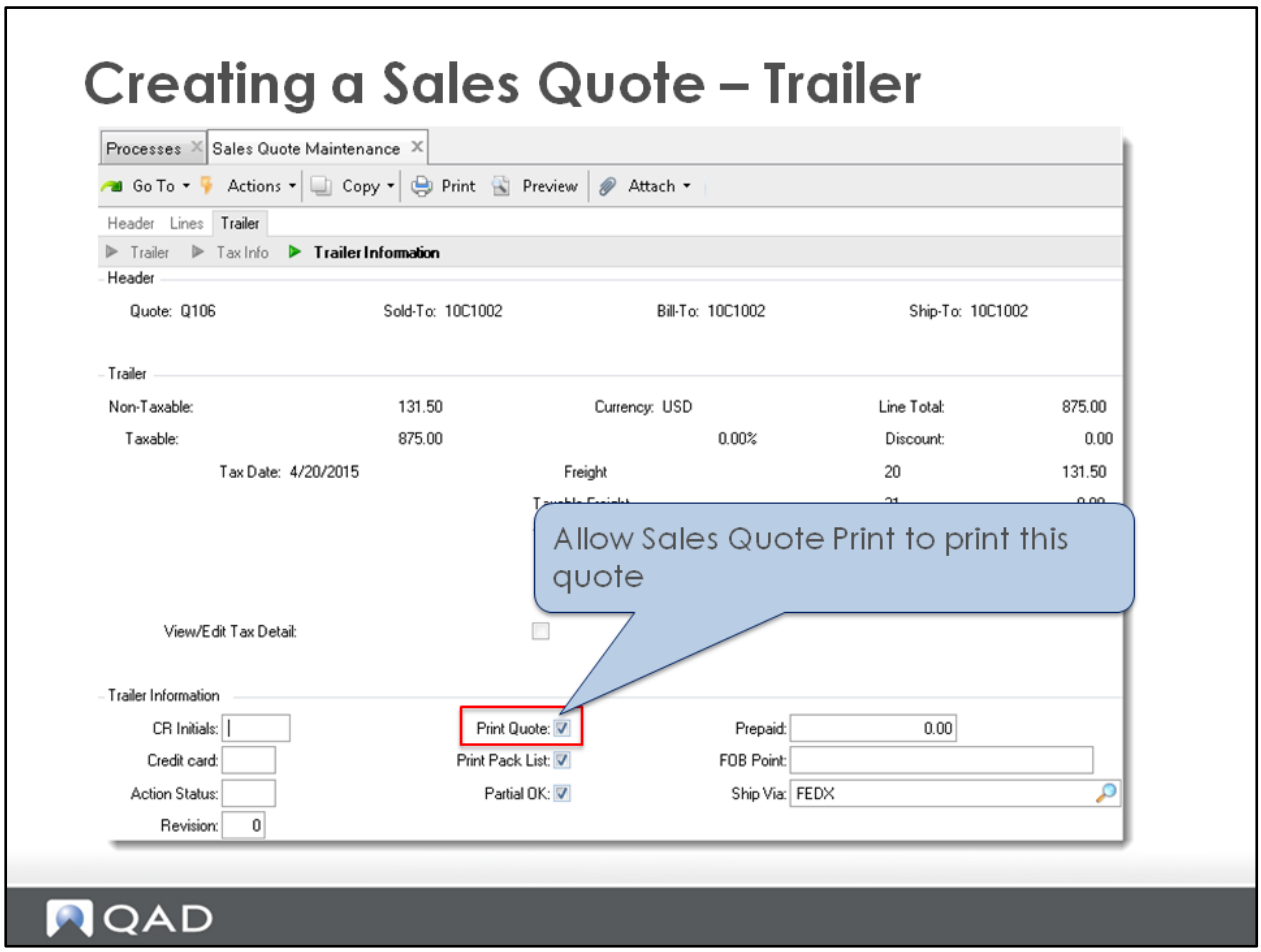
Quantity Quoted. The order quantity for this line item.

Qty to Release. The quantity to release can be greater than the original quote quantity. This field specifies the quantity to order on the sales order released from this line item.

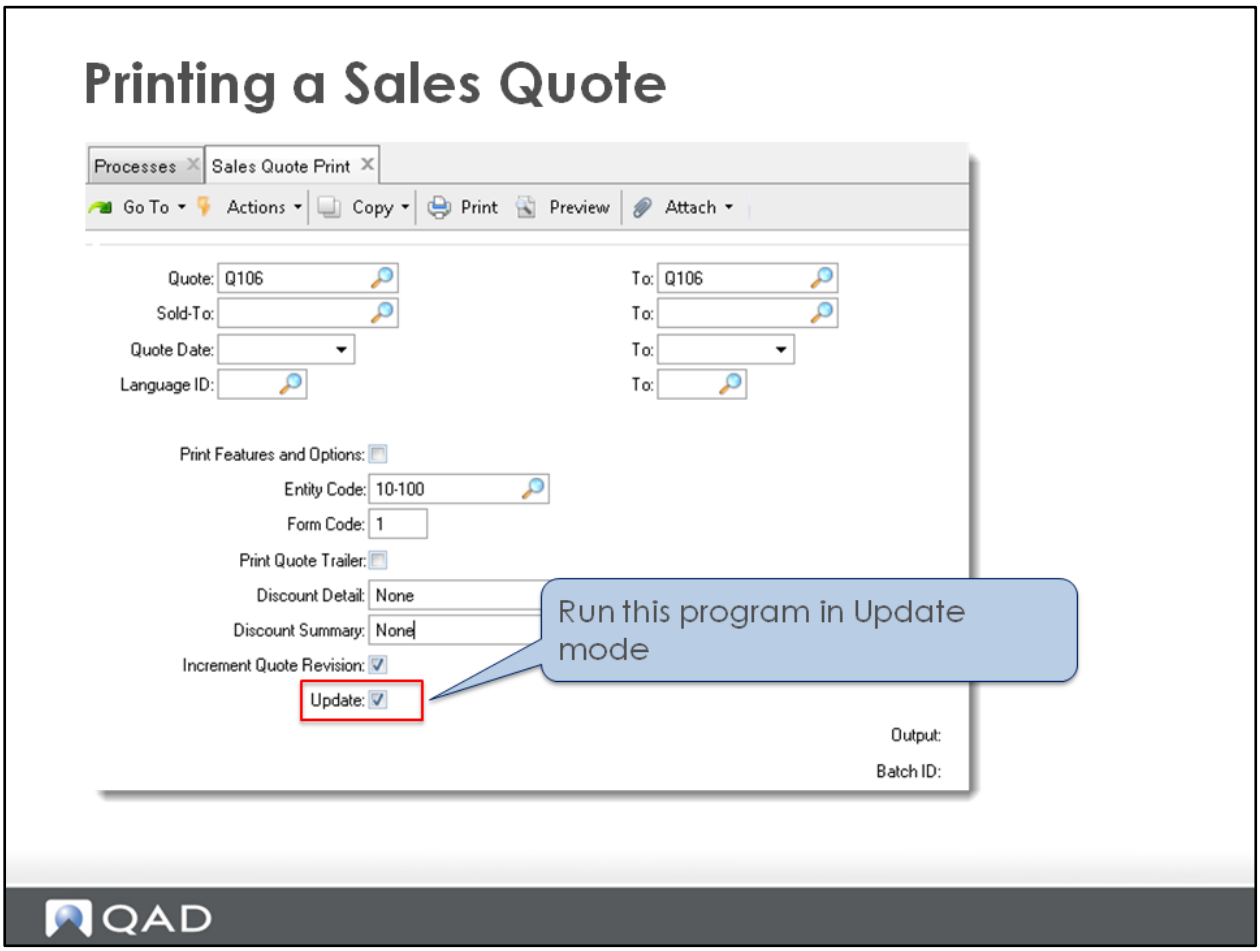
Qty Released. A system maintained field that records the total order quantity released from this quote. This field is updated automatically by Sales Quote Release to Order. The quantity released can be greater than the quantity quoted.

Reason Lost. Indicates the reason why the customer did not place an order against this quote.

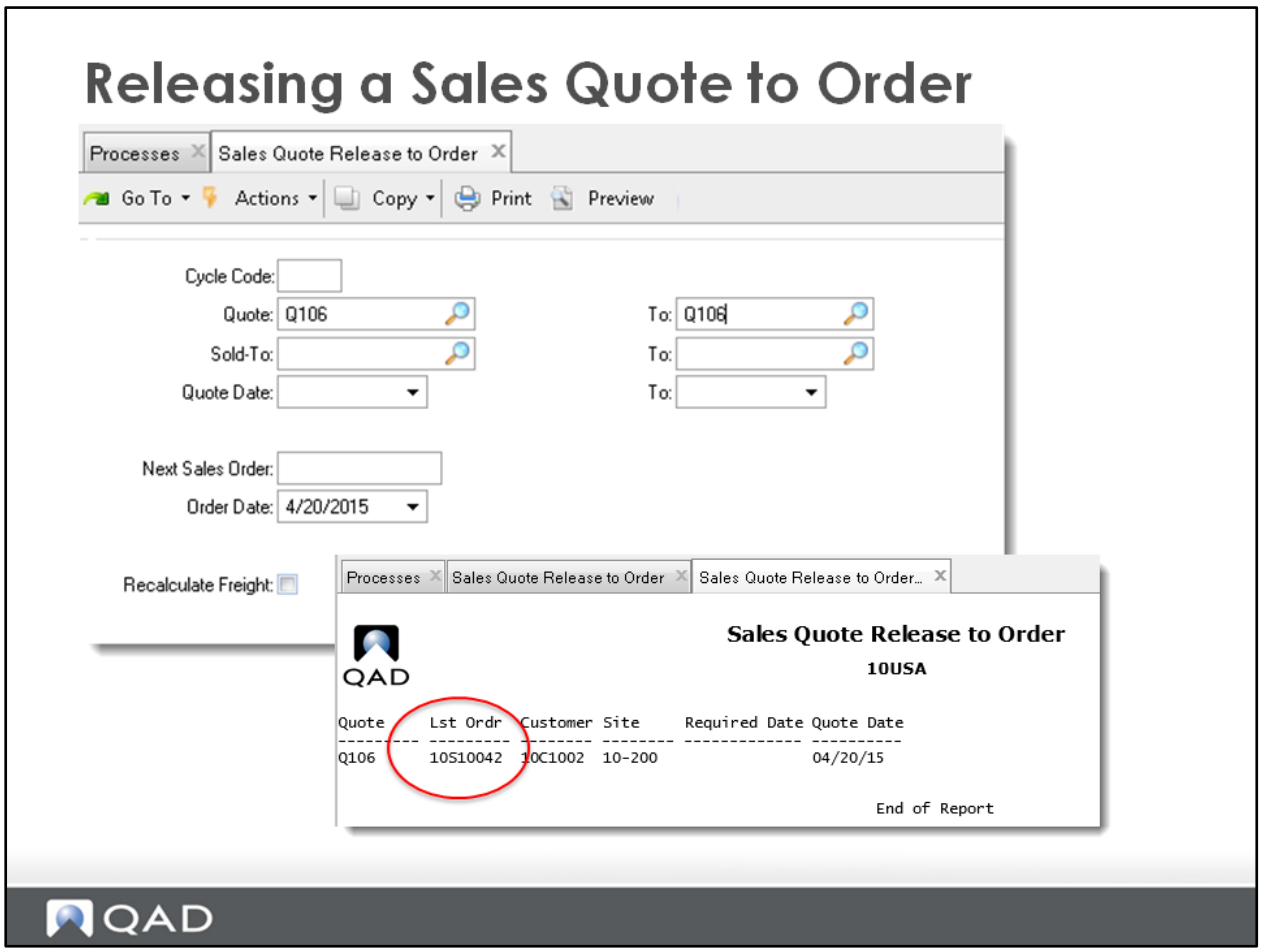
Creating a Sales Quote – Trailer



Printing a Sales Quote



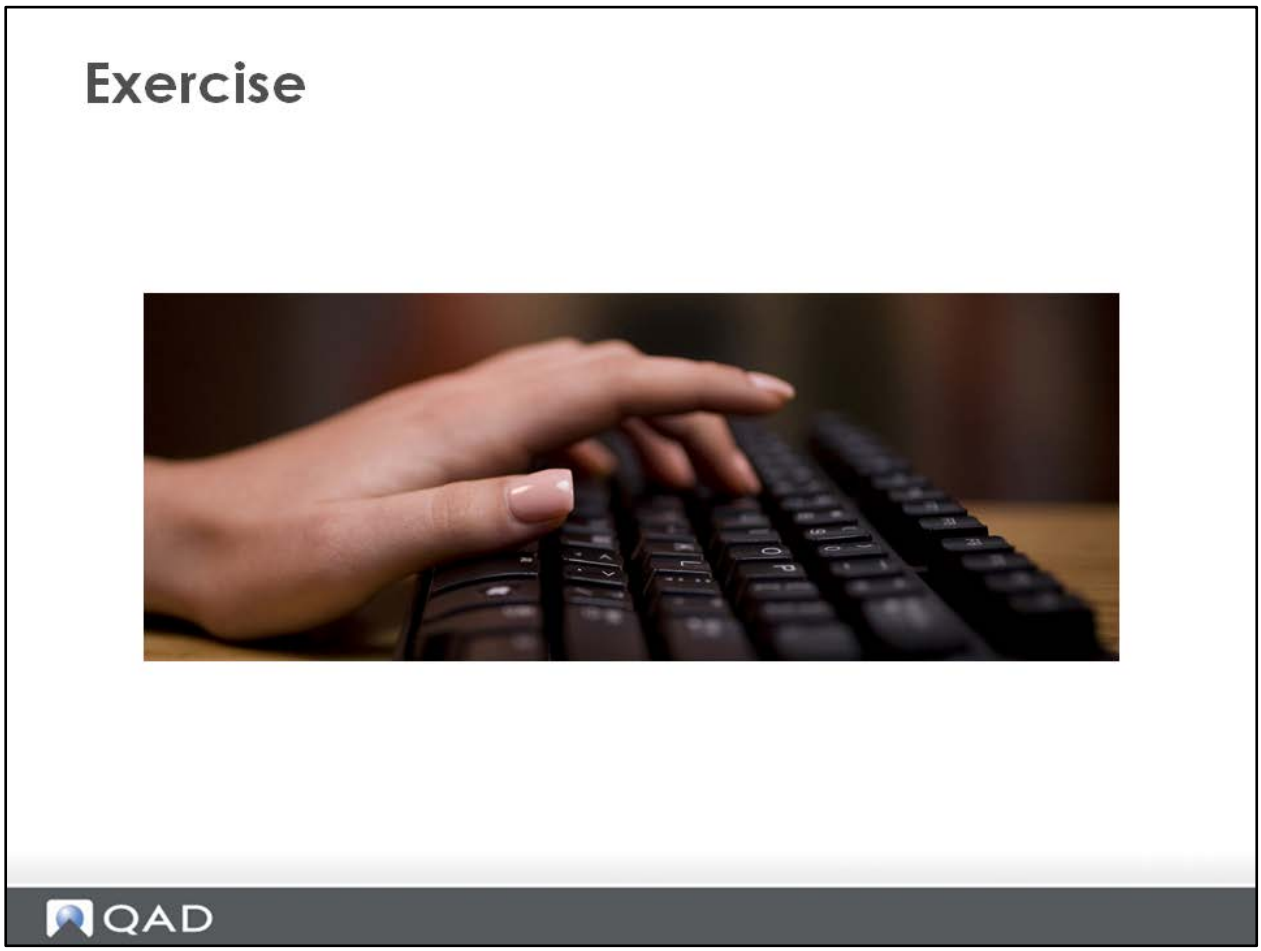
Releasing a Sales Quote to Order



Sales Quote Release to Order only generates sales orders for open sales quotes that are ready for release. If the Release field is not set to Yes in the header of the quote, no order is generated from the quote. See the report for the SO number when the SO is generated.

The process is the same as that for a standard sales order.

Exercise

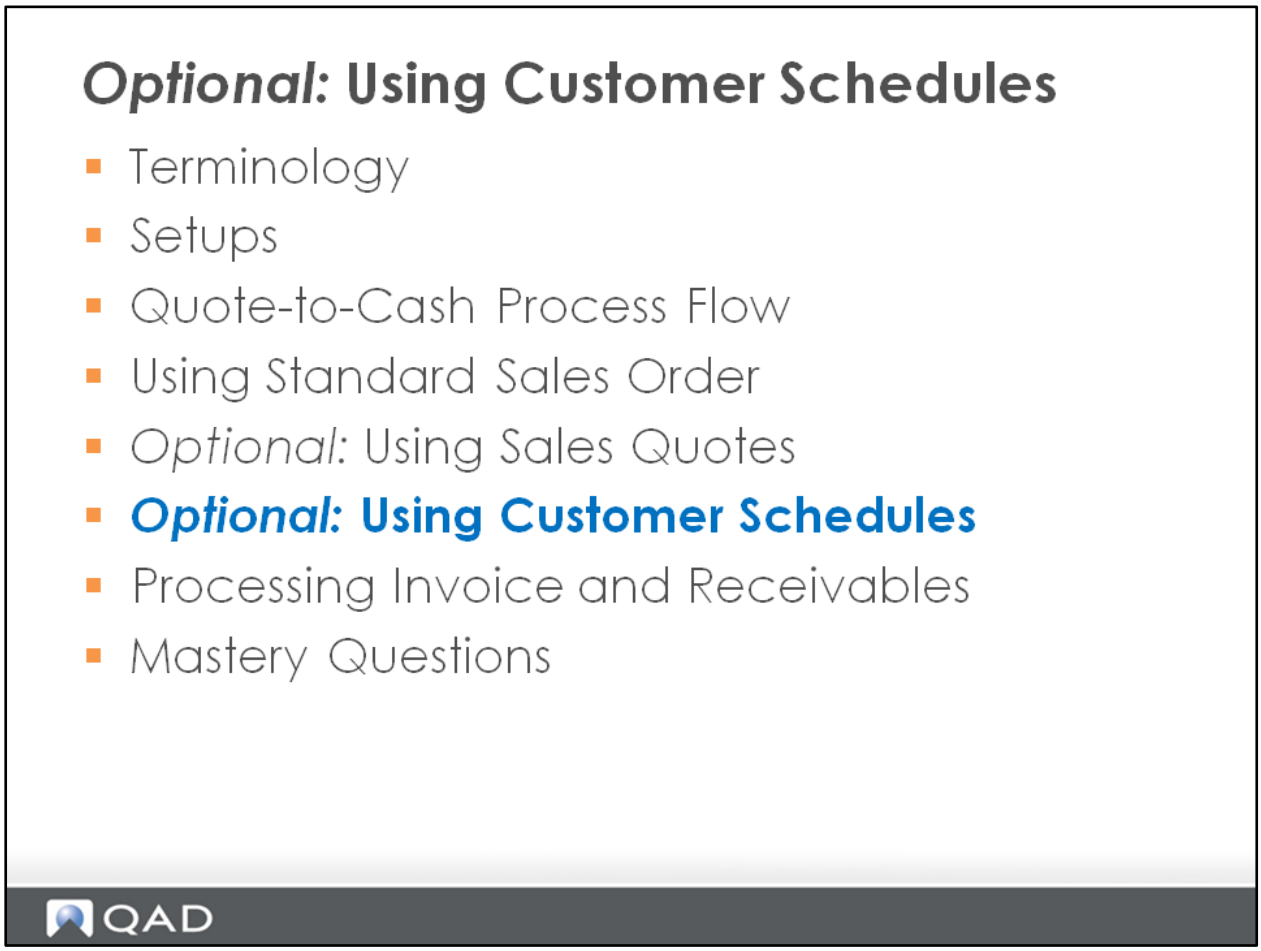


Exercise: Creating and Releasing a Quotation

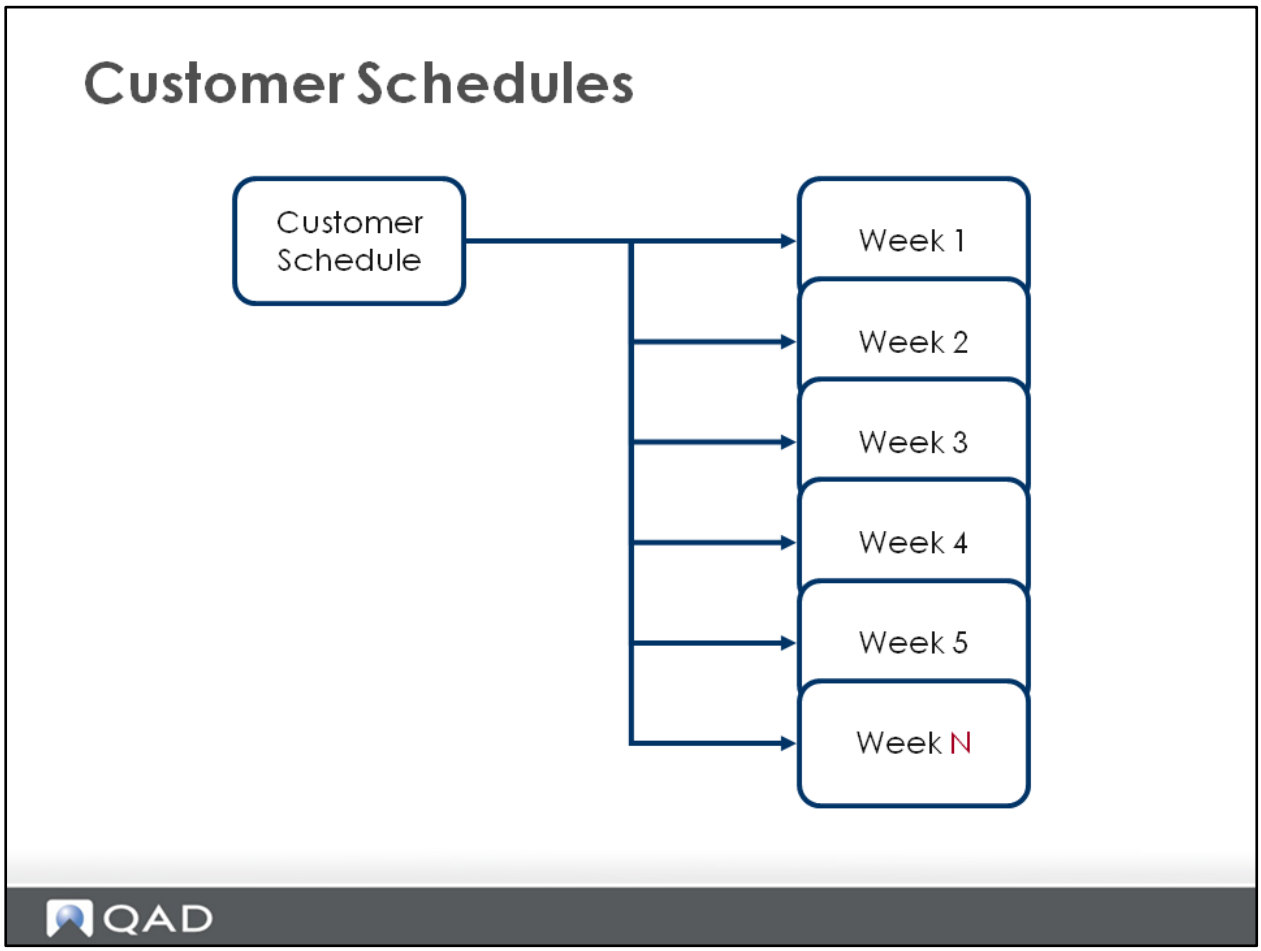
1. To respond to an inquiry from customer 10C1002 for 500 units of item 02001, create a quotation using the Sales Quote process map. Ensure that you select the Release option in the Details frame. Otherwise, you cannot release the quote to an order.

2. Release the quote to a sales order.

Optional: Using Customer Schedules



Customer Schedules



Customer schedules refer to the shipping and planning schedules that your customers send to you as a supplier. These schedules are used to create cumulative, schedule-driven sales orders with multiple line items. Based on scheduled orders, you release shipments using standard sales order shipping functions. Each release has its own ID number and each shipment you send to a customer has its own shipment number.

Terminology



Planning Schedule

A schedule used for moderate or long-term planning of production, materials, and resources. Shows weekly/monthly quantities and dates, and covers a time horizon from the present out 2–6 months.

Shipping Schedule

Used for short-term planning of products, materials, and resources. Lists exact quantities with exact dates, usually covering a few days or weeks.

Required Ship Schedule (RSS)

A schedule containing customer requirements as derived from a customer's planning and ship schedule transmissions.

Netting

Calculating net requirements by subtracting quantity-on-hand from gross requirements.

Netting Logic

Indicates how the system calculates a required shipping schedule. There are five options:

1: Use the shipping schedule only.
2: Use the planning schedule only.
3: Replace the beginning of the planning schedule with the shipping schedule (replace logic).
4: Replace the beginning of the planning schedule with the shipping schedule, then adjust the last quantity in each week of the shipping schedule data upward so the cumulative of the shipping schedule requirements is not less than the cumulative of the planning schedule requirements (consume logic).
5: Replace the beginning of the planning schedule with the shipping schedule. Determine the excess planning quantity in the last overlap week (the last week with both planning and shipping schedules) and spread the excess planning quantity over the open work days in the last overlap week.

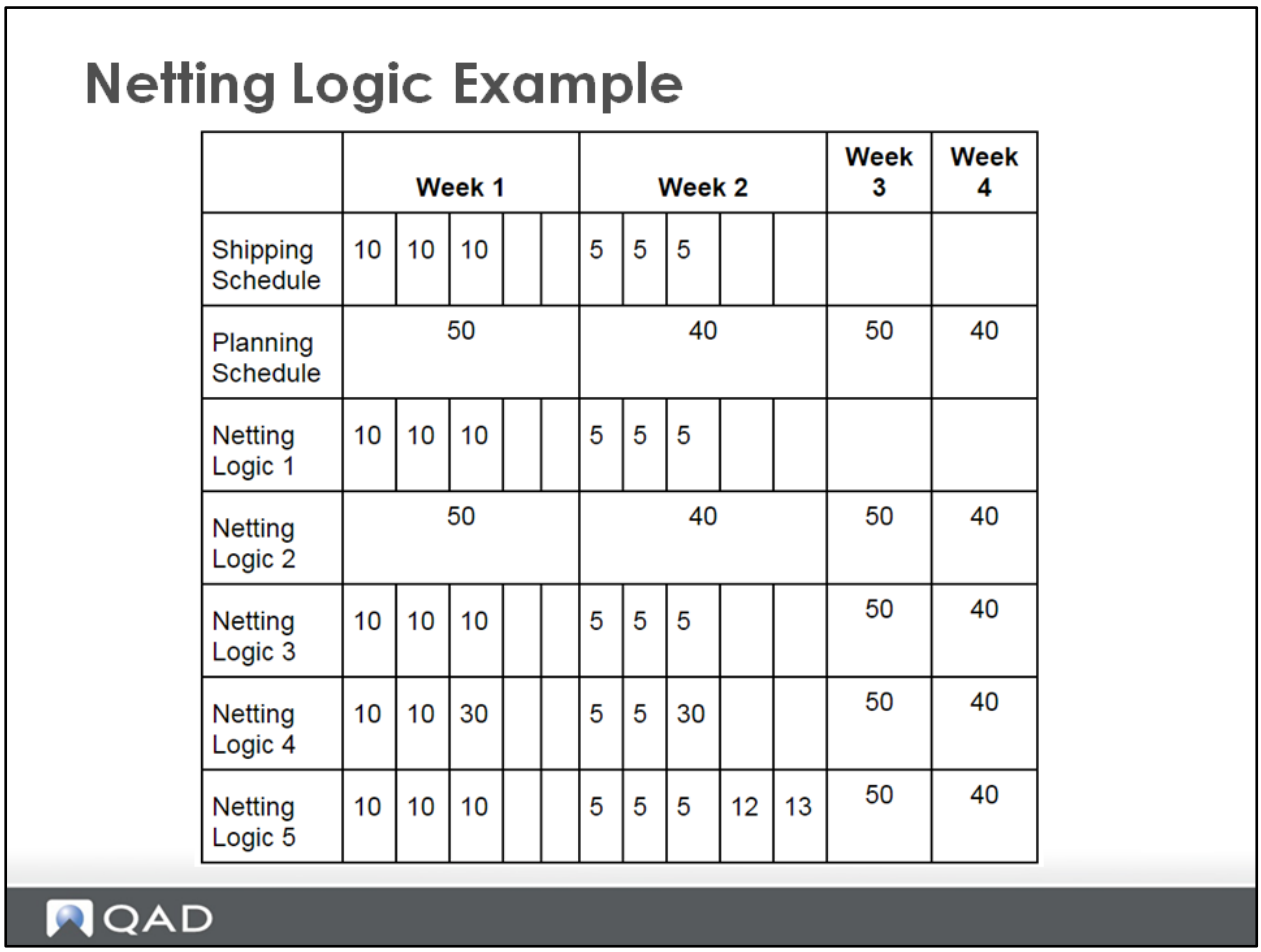
Cumulative Accounting

A method of tracking shipments and receipts in which trading partners maintain running totals of required and shipped/received quantities. While, non-accumulative accounting is based on net requirements.

Firm Days

The number of days in a schedule firm interval. The schedule firm interval begins with the first day of a schedule release.

Netting Logic Example

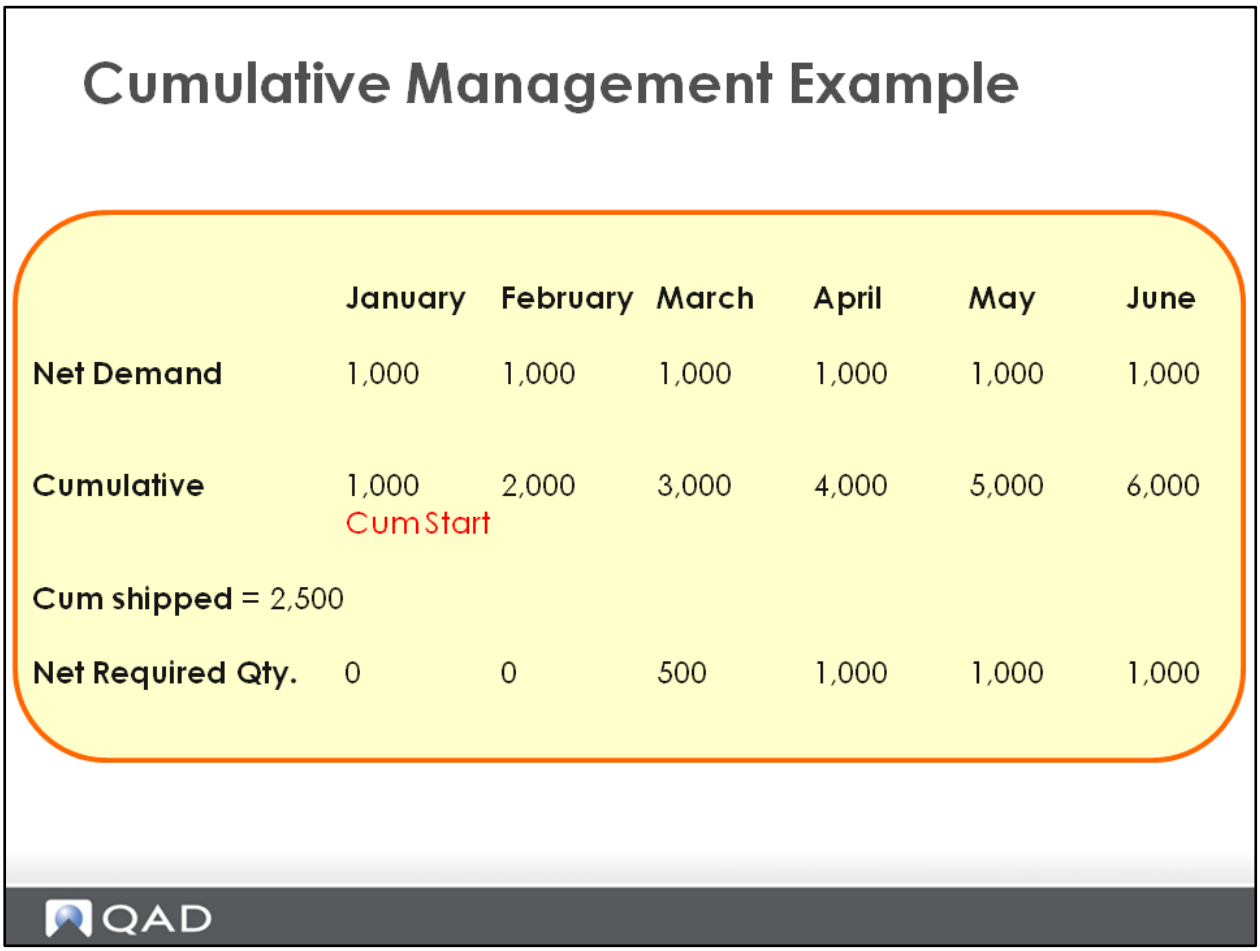


As shown in the table, if you specify netting logic 3, the shipping schedule takes precedence in weeks 1 and 2 because it overlaps the planning schedule for this period. In weeks 3 and 4, there is no shipping schedule requirement, so the planning schedule dictates the quantities.

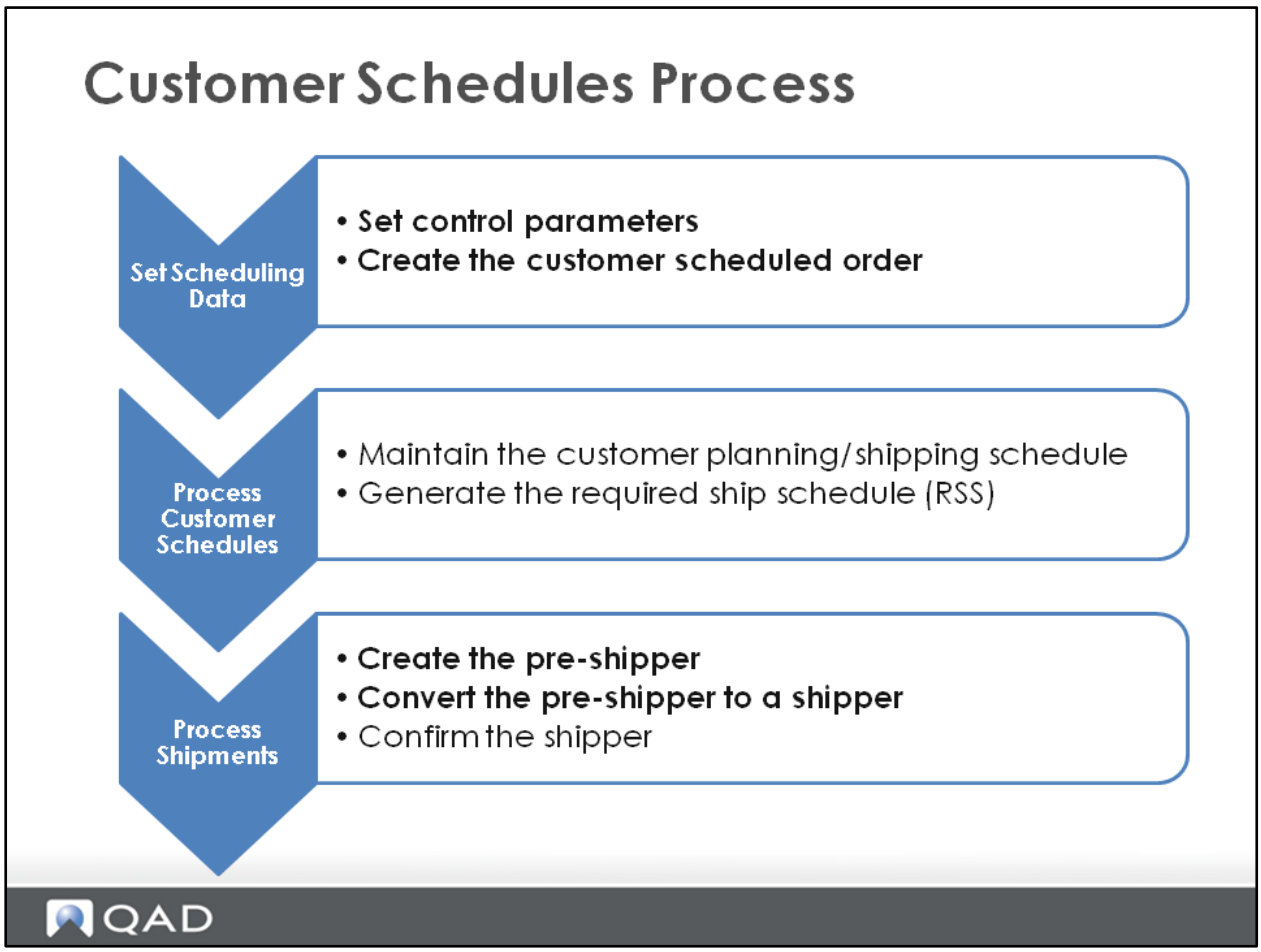
If you specify netting logic 4, the shipping schedule is in place up until the last day that it is in effect. The amount on the last day is adjusted, though, to meet the consumed planning schedule.

If you specify netting logic 5, the system determines the available operating days on which to spread the excess planning quantities by selecting either the shop or customer calendar. In the example, the system used a shop calendar that is open Monday to Friday because it has the shortest work week. Week 2 is the last overlap.

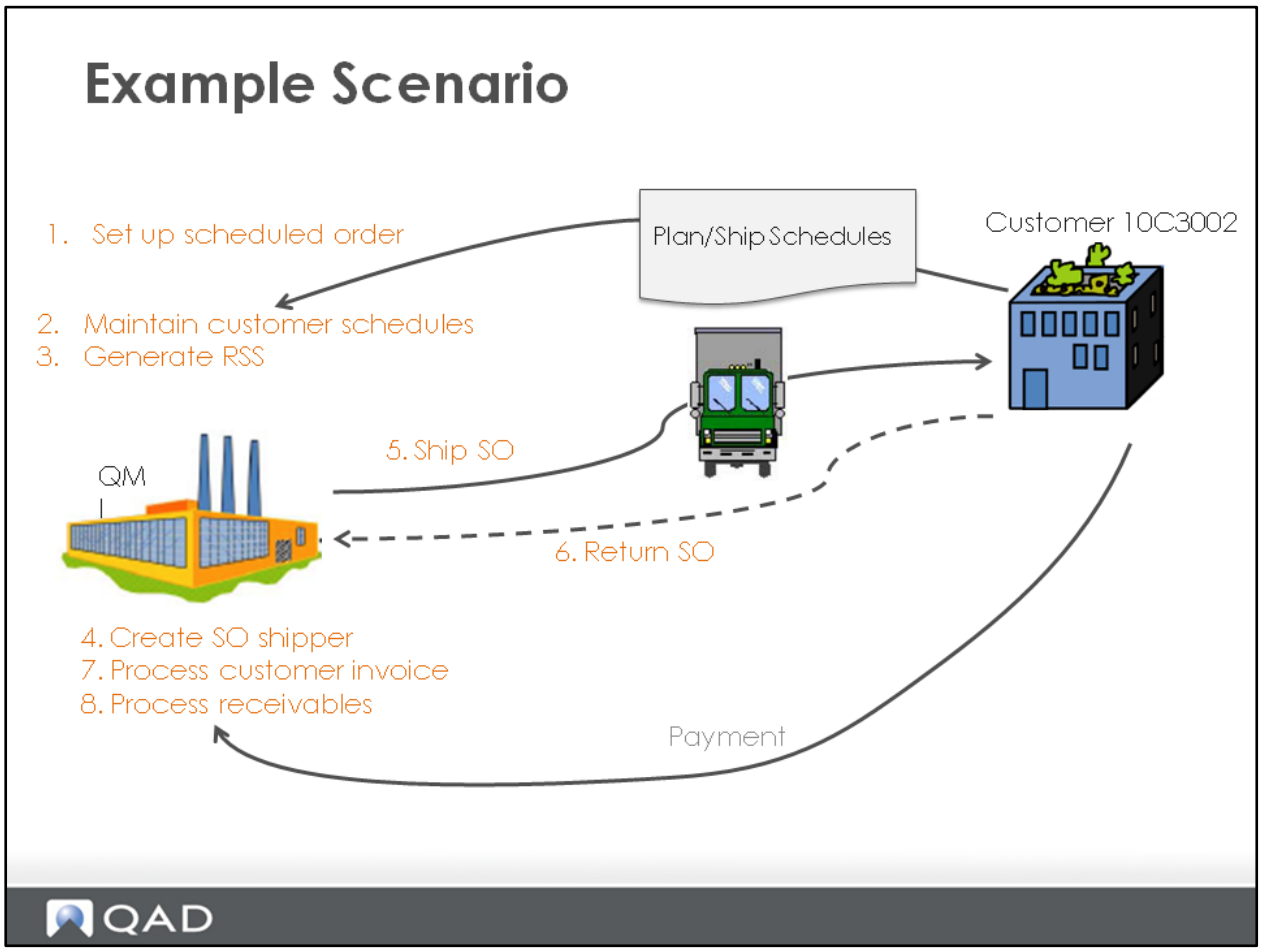
Cumulative Management Example



Customer Schedules Process

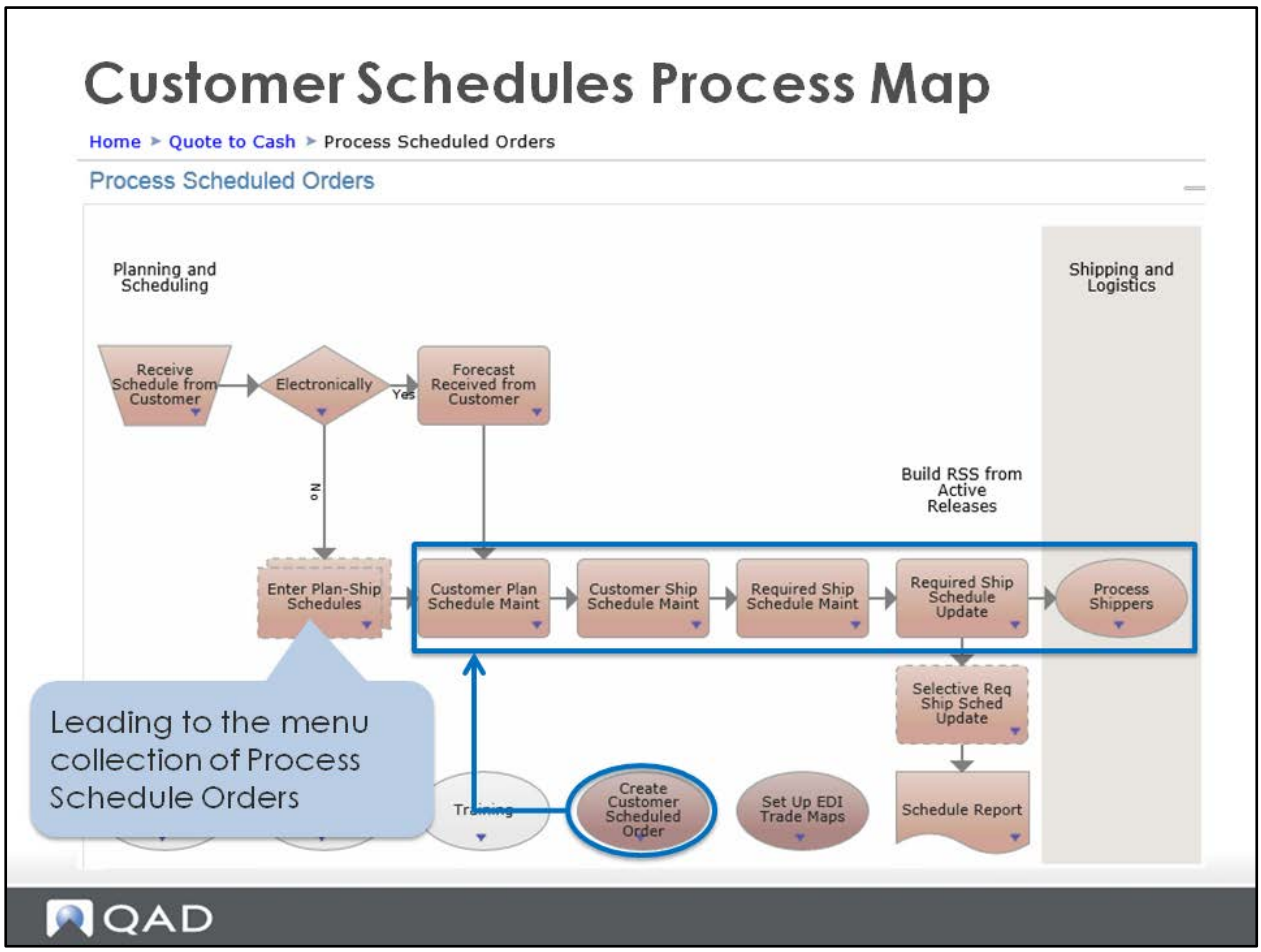


Example Scenario



Note: For information on the customer invoice and receivable processes, see *Processing Invoices and Receivables*.

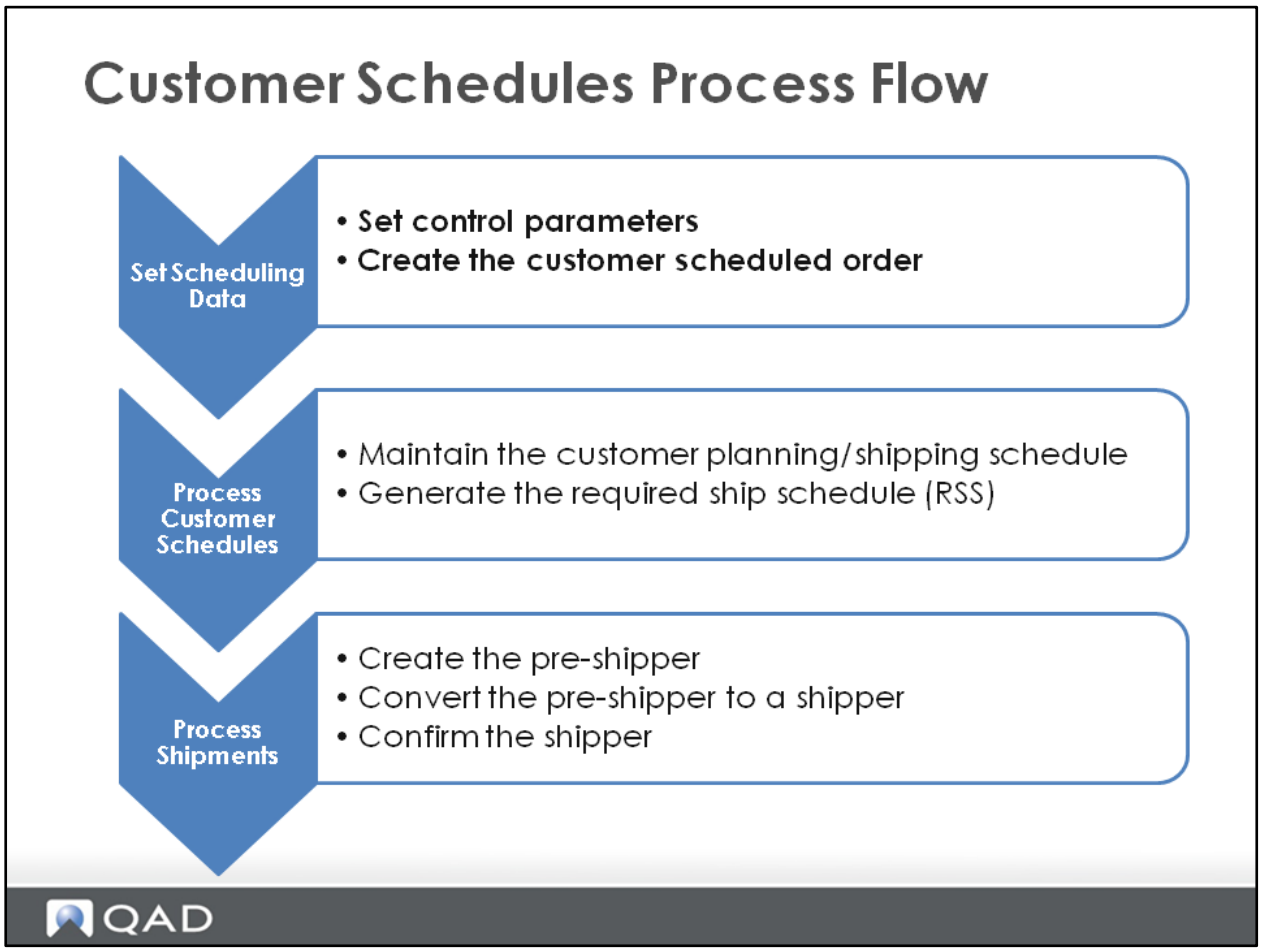
Customer Schedules Process Map



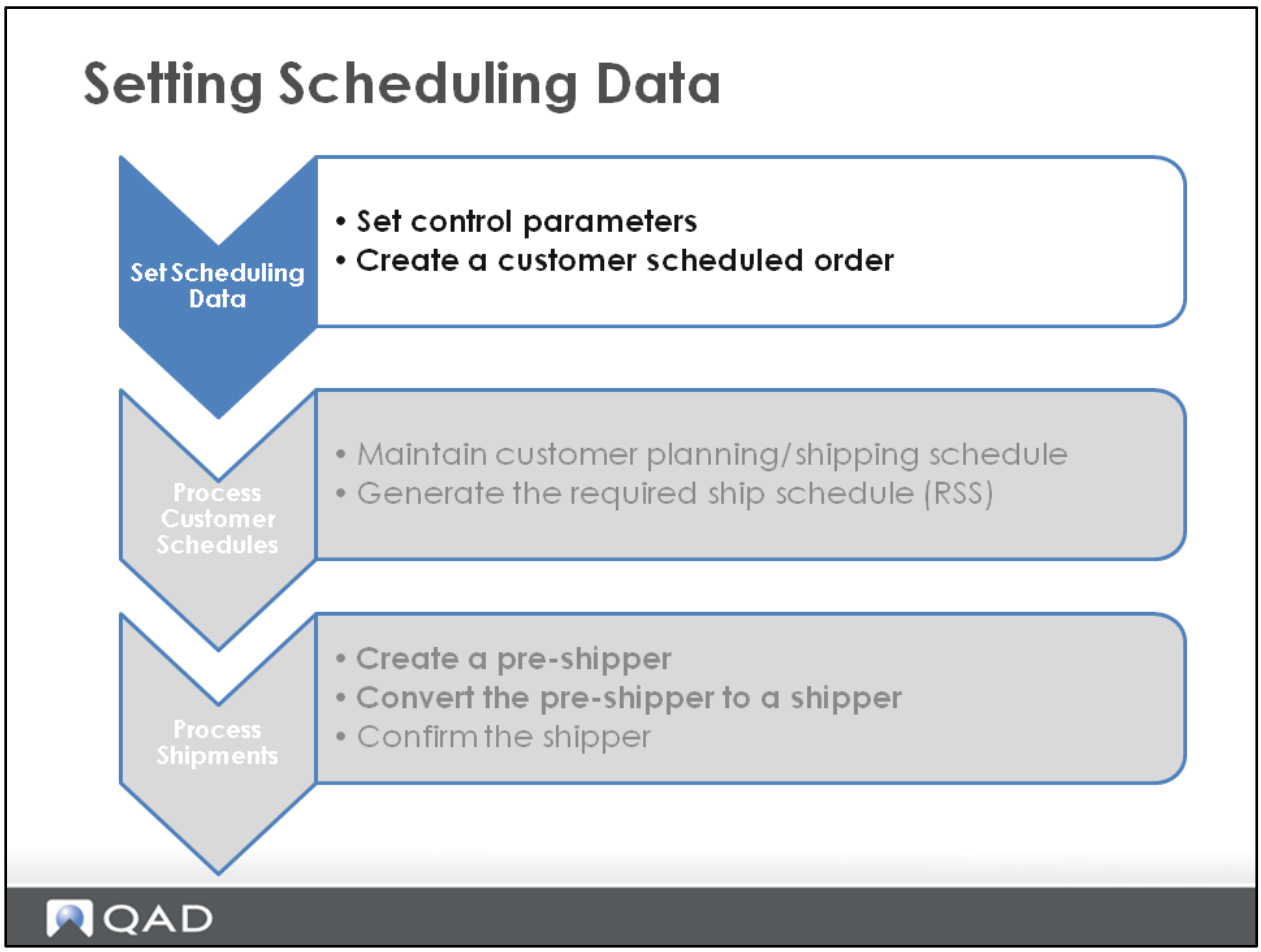
Use the customer schedules process map to process scheduled orders from creation through shipment. This training course focuses on the highlighted steps only.

For more details, see *QAD Customer Schedules Training Guide*.

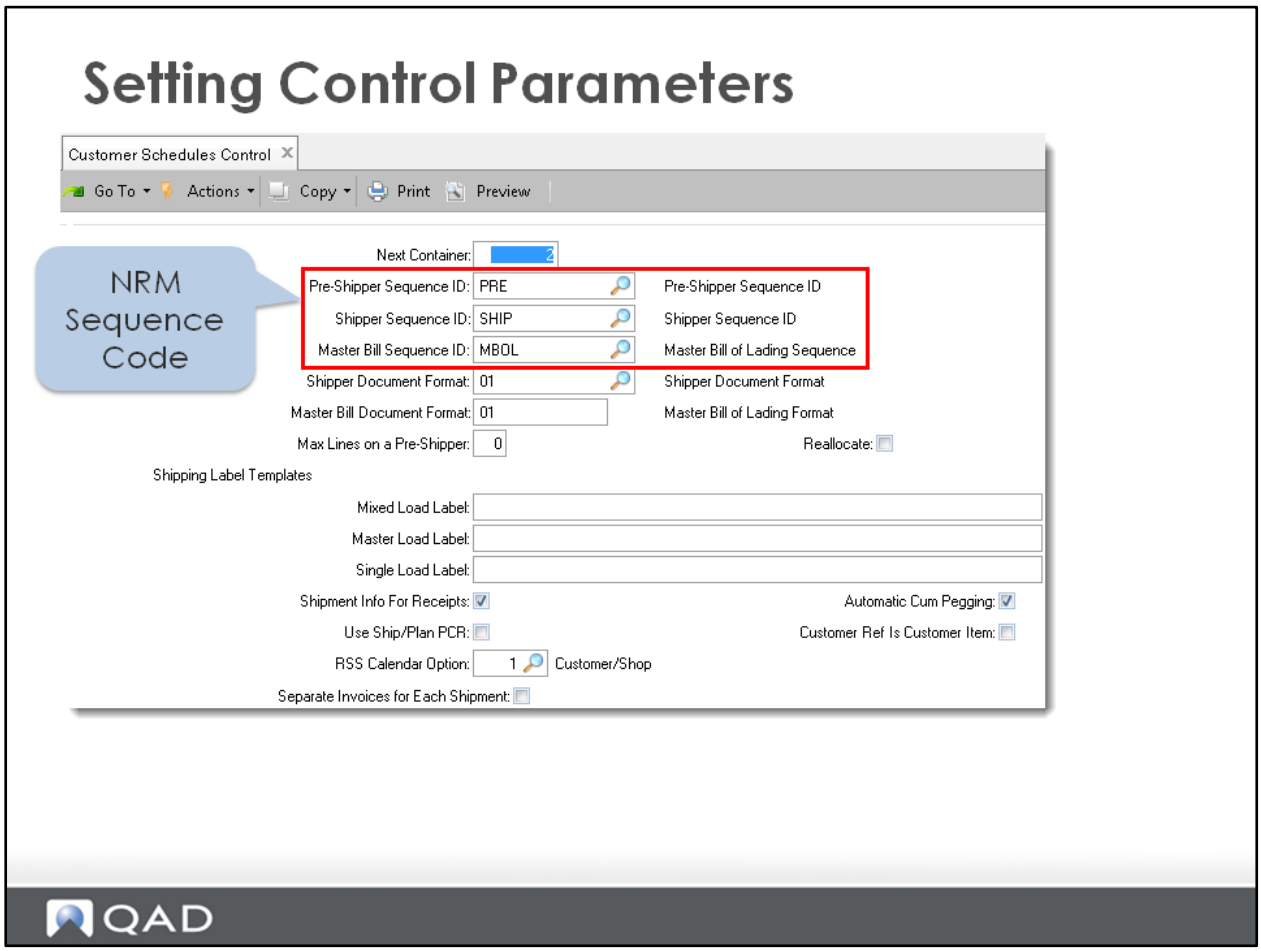
Customer Schedules Process Flow



Setting Scheduling Data



Setting Control Parameters

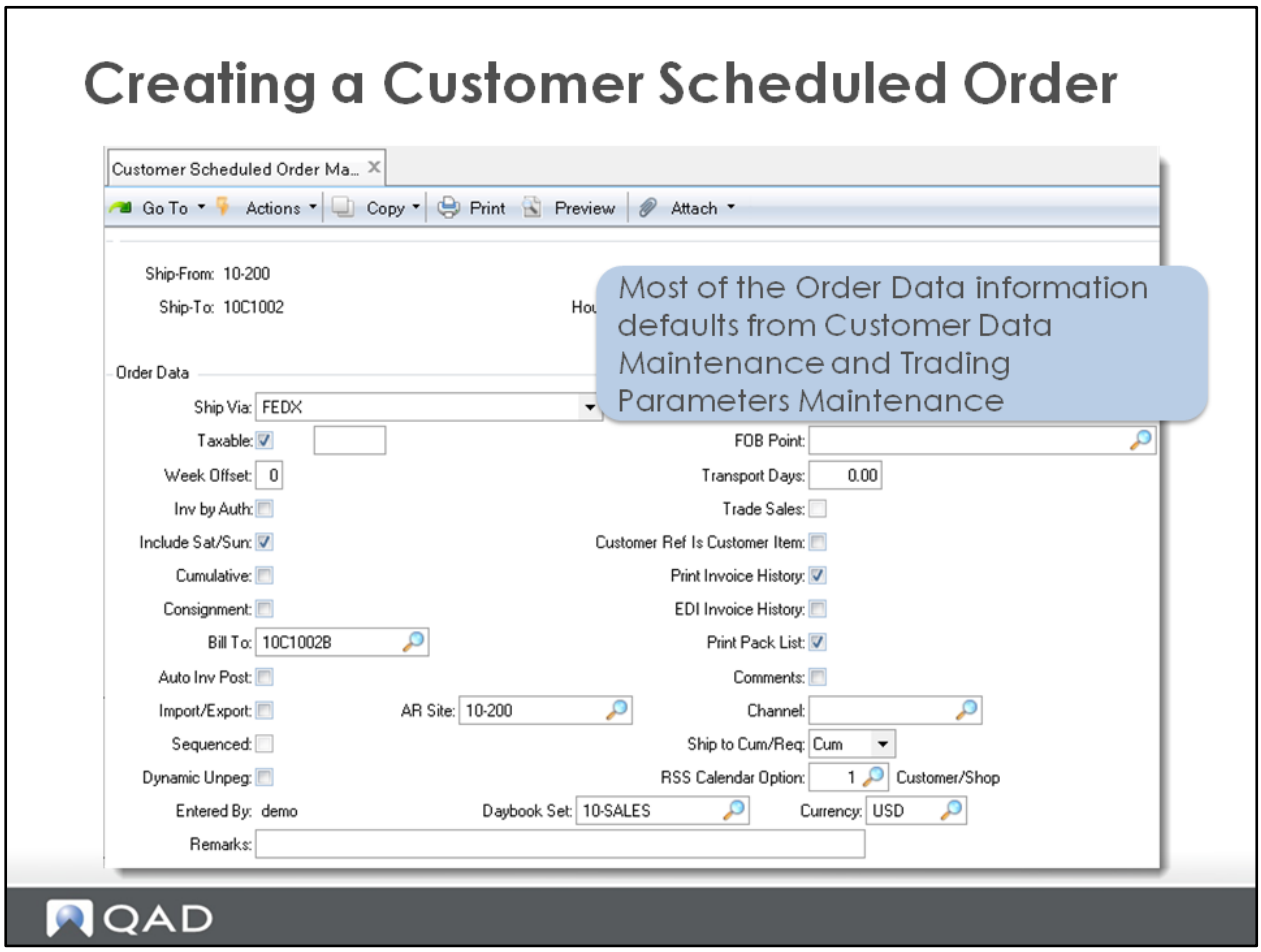


Before you begin processing customer schedules, you may need to finish multiple setups such as shipping labels, dock addresses, and customer calendars. In the training environment, some setups are pre-configured. This section introduces the control parameters.

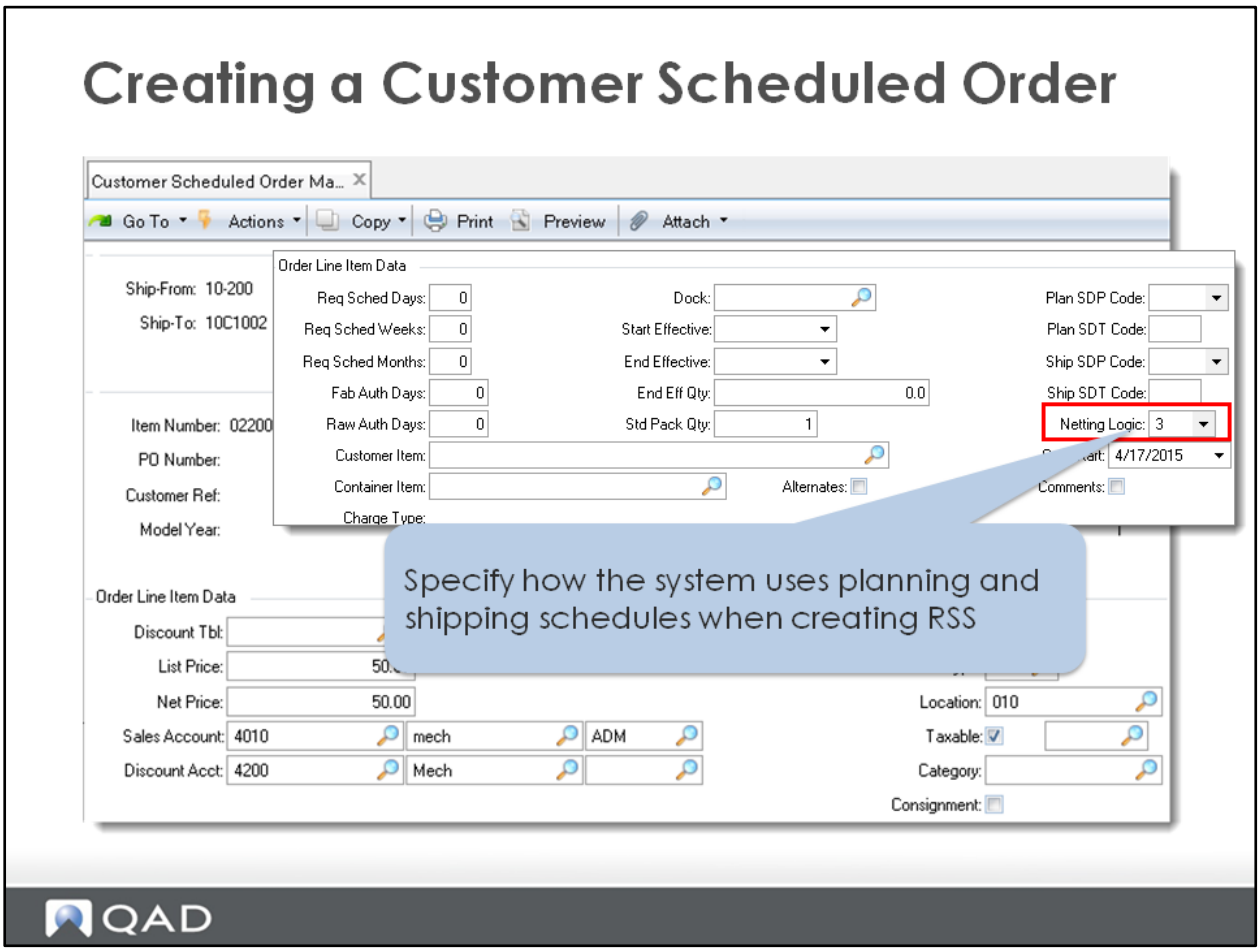
Use the Customer Schedules Control program to set up default information for:

- Pre-shipper sequence numbers
- Shipper sequence numbers
- Master billing of lading sequence ID
- Document formats
- Invoice processing
- Shipping labels

Creating a Customer Scheduled Order

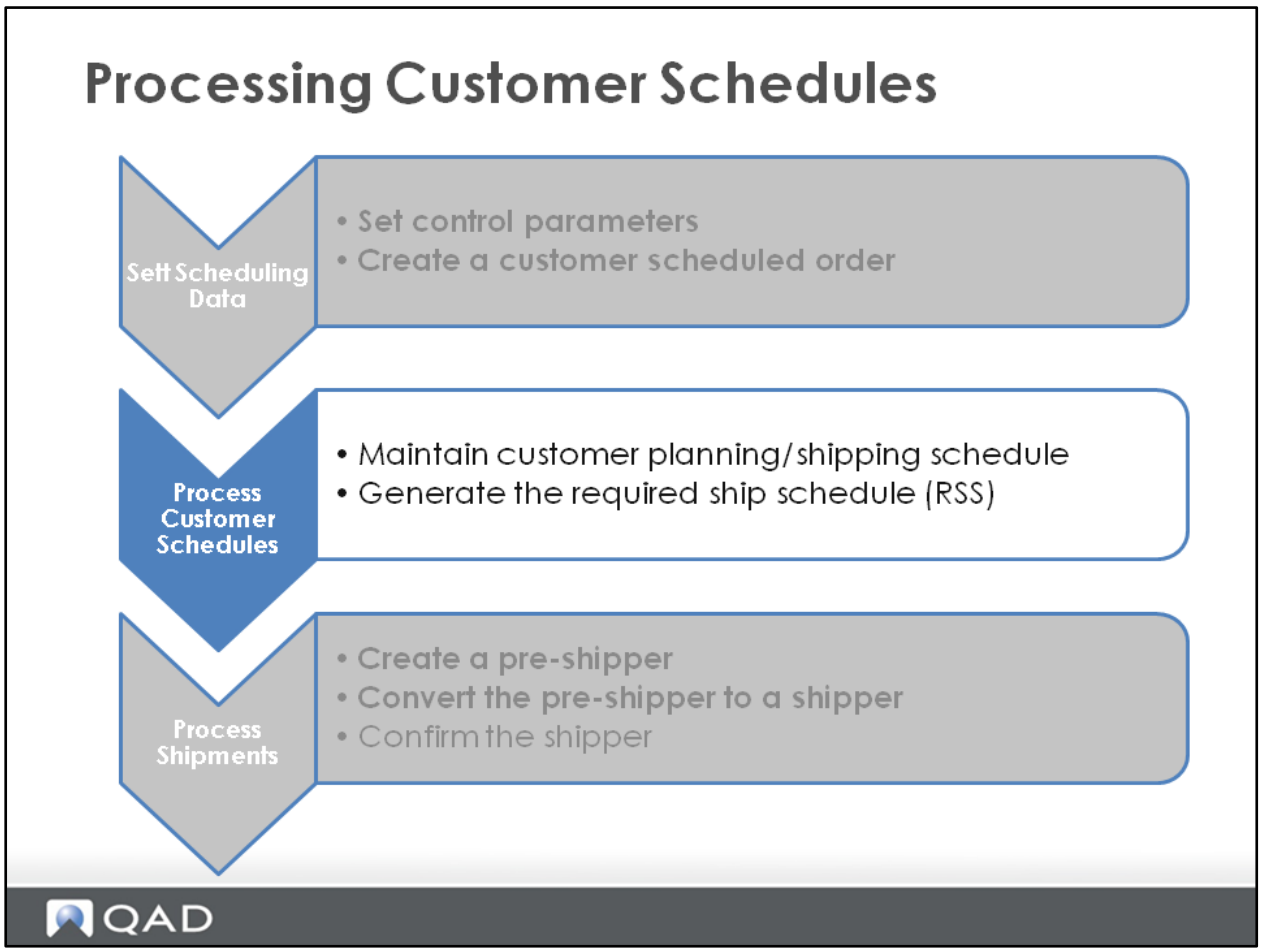


Creating a Customer Scheduled Order

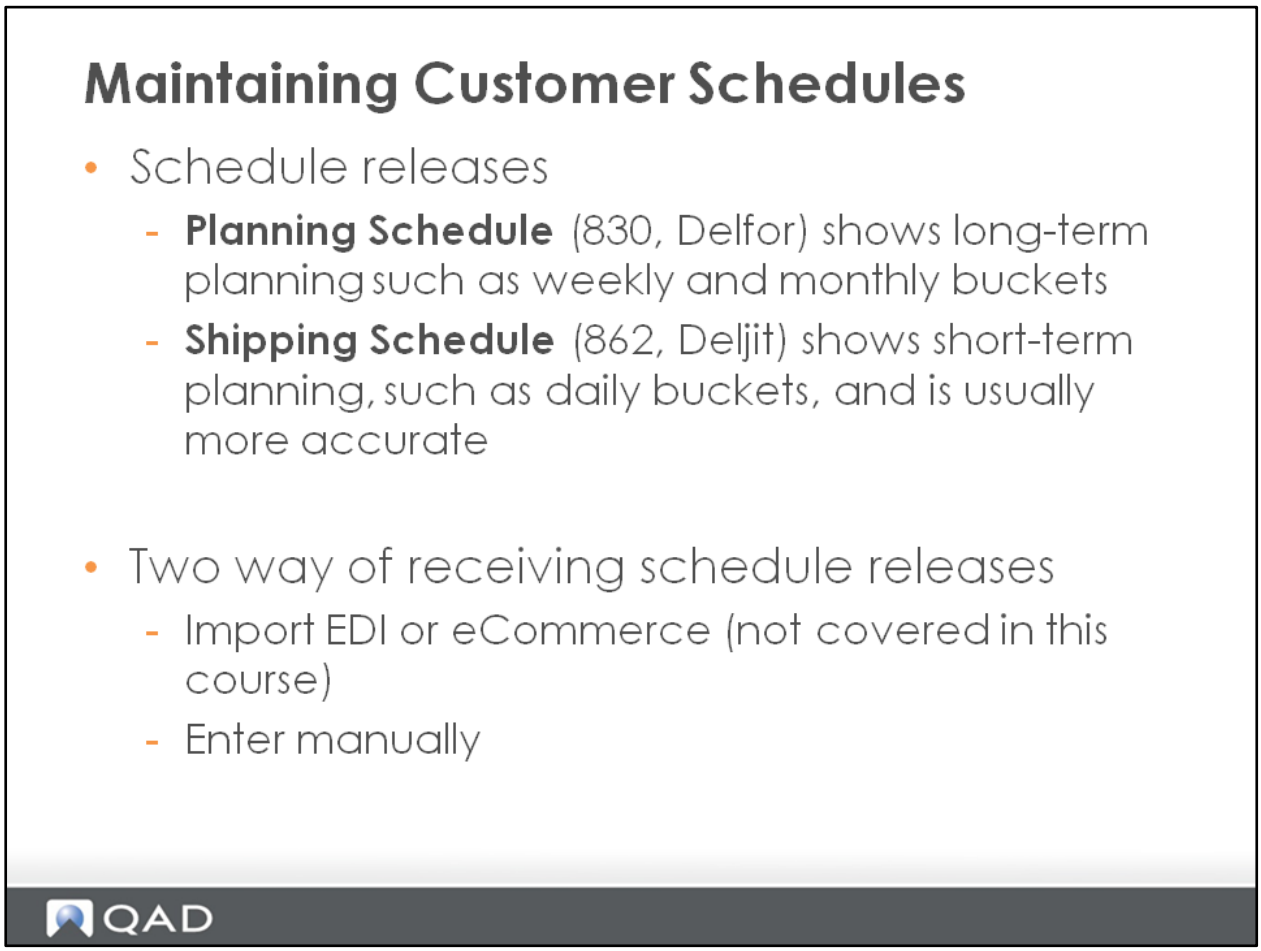


In the Order Line Item Data frame, netting logic determines how the system uses planning and shipping schedules to generate the required ship schedule (RSS) when using Required Ship Schedule Update or Selective Required Ship Schedule Update.

Processing Customer Schedules



Maintaining Customer Schedules

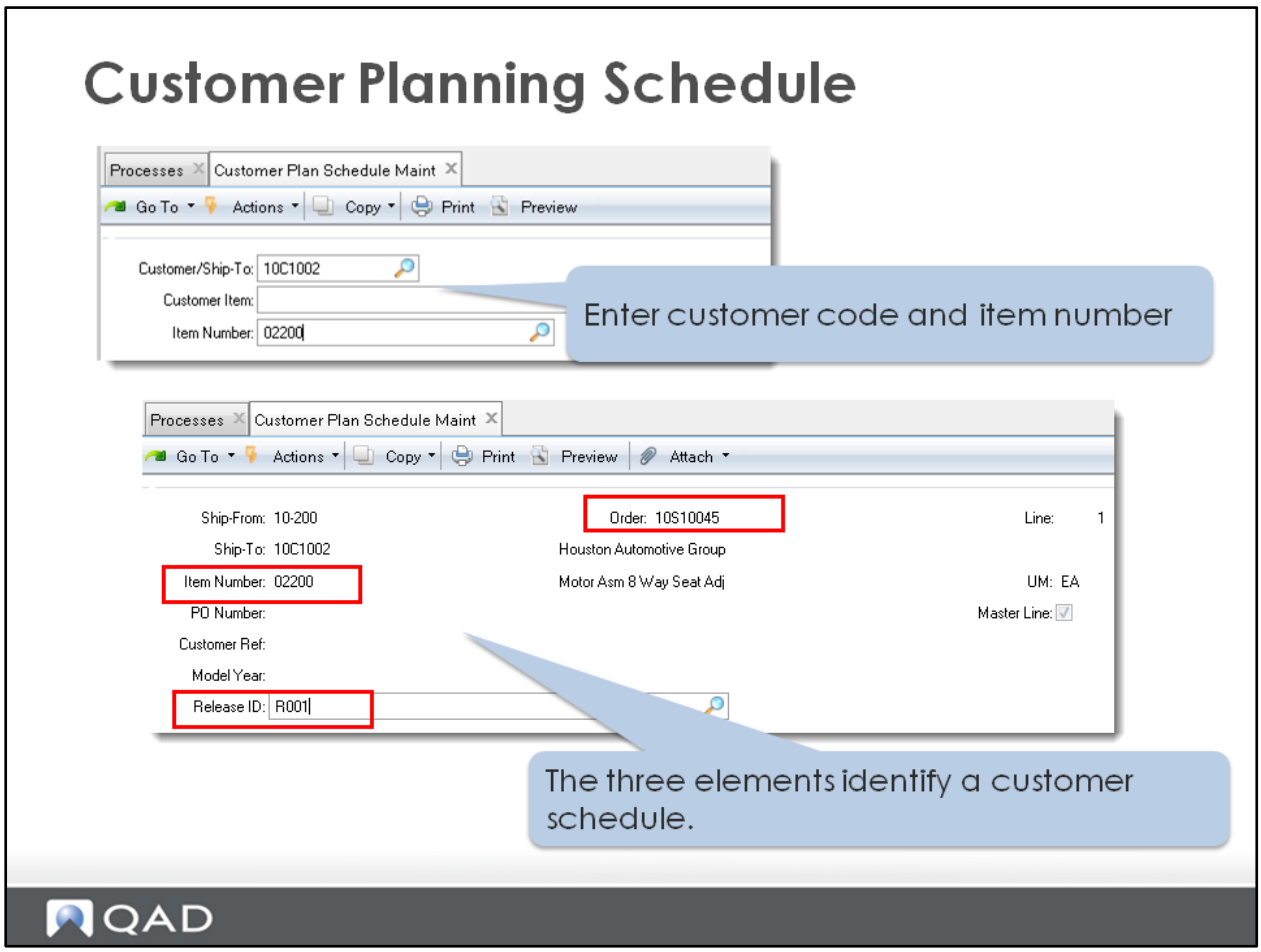


The system supports two types of schedule releases: planning schedules and shipping schedules. Each approach determines how much of a certain item a customer needs and when. The difference between the two is that planning scheduling is a long-term planning method and shipping scheduling is a short-term planning method.

When both schedules exist, the netting logic set up when you create customer scheduled orders determines how to combine the schedules to obtain an RSS.

You can either import the schedule releases from your customer or enter them manually. Since the training environment is not set up for EDI communication, this training course uses manual scheduling transactions.

Customer Planning Schedule

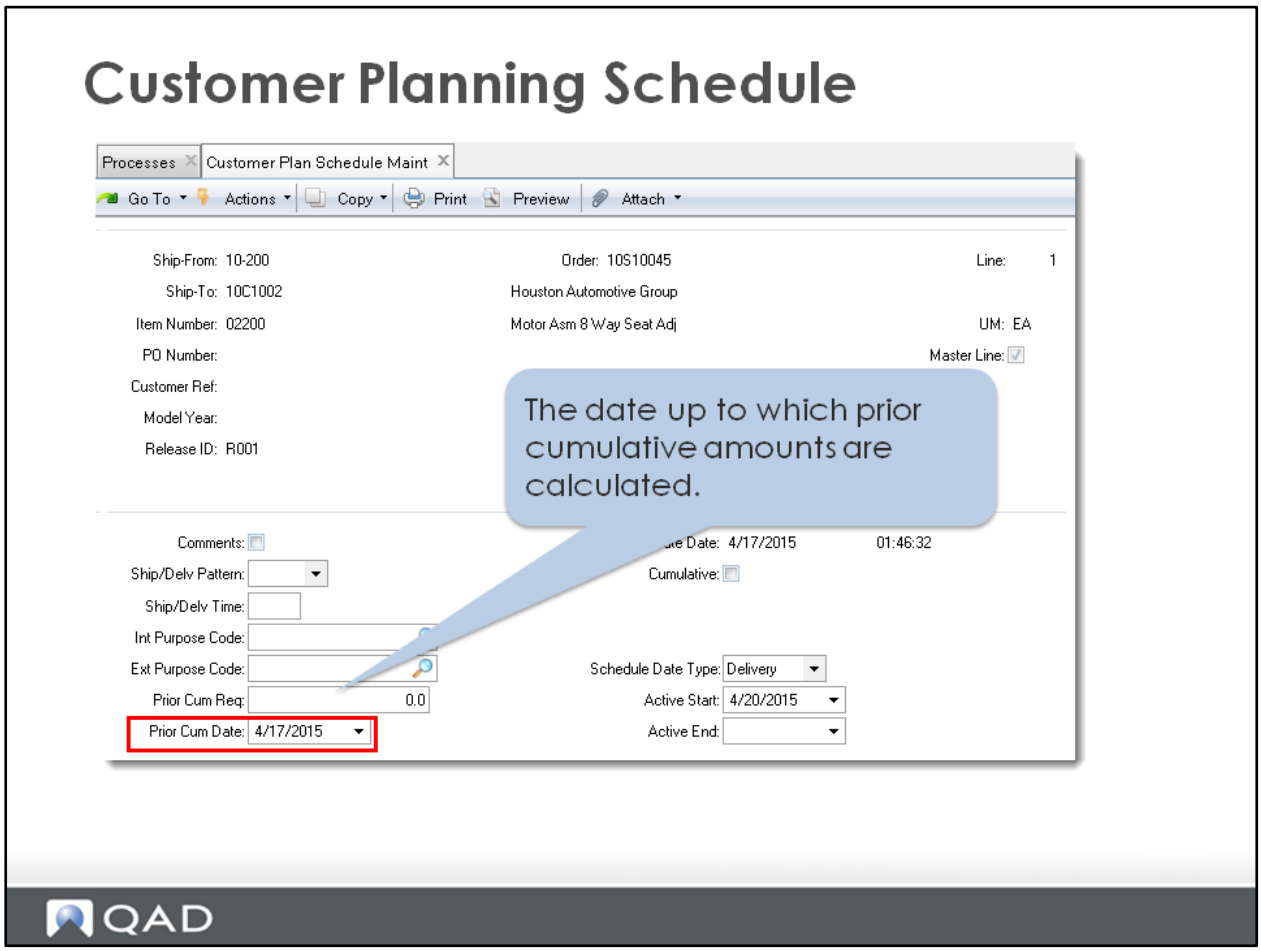


Each customer schedule is identified by a sales order number, line item, and release ID, allowing the system to maintain multiple releases of the same schedule and to keep a complete online history of all schedule revisions.

Normally, customers send in schedule releases on a weekly or daily basis. These releases are recorded in the system with a unique release ID.

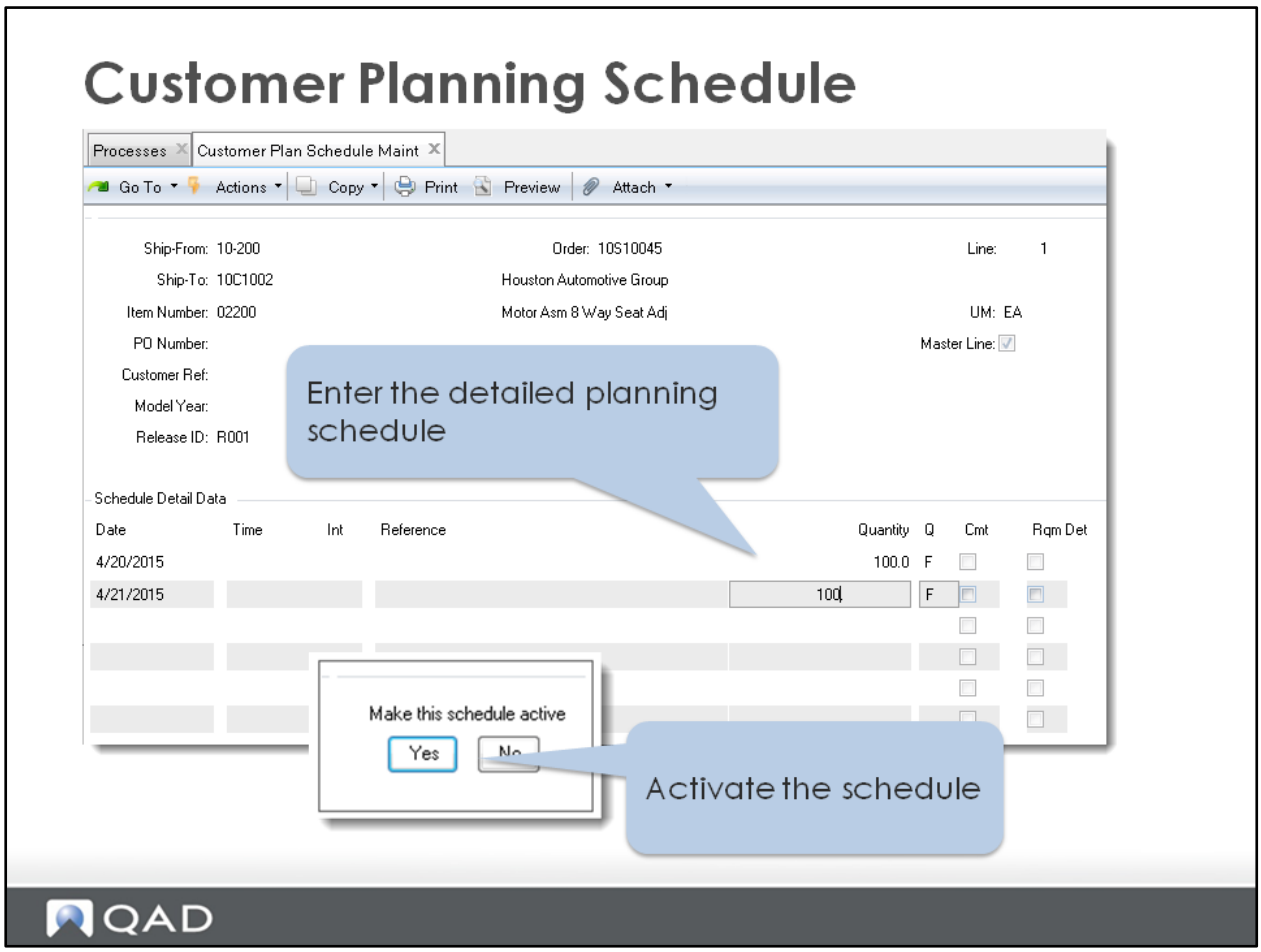
Only one schedule release can be designated as the currently active release. The required ship schedule is the schedule whose requirements are visible to MRP.

Customer Planning Schedule

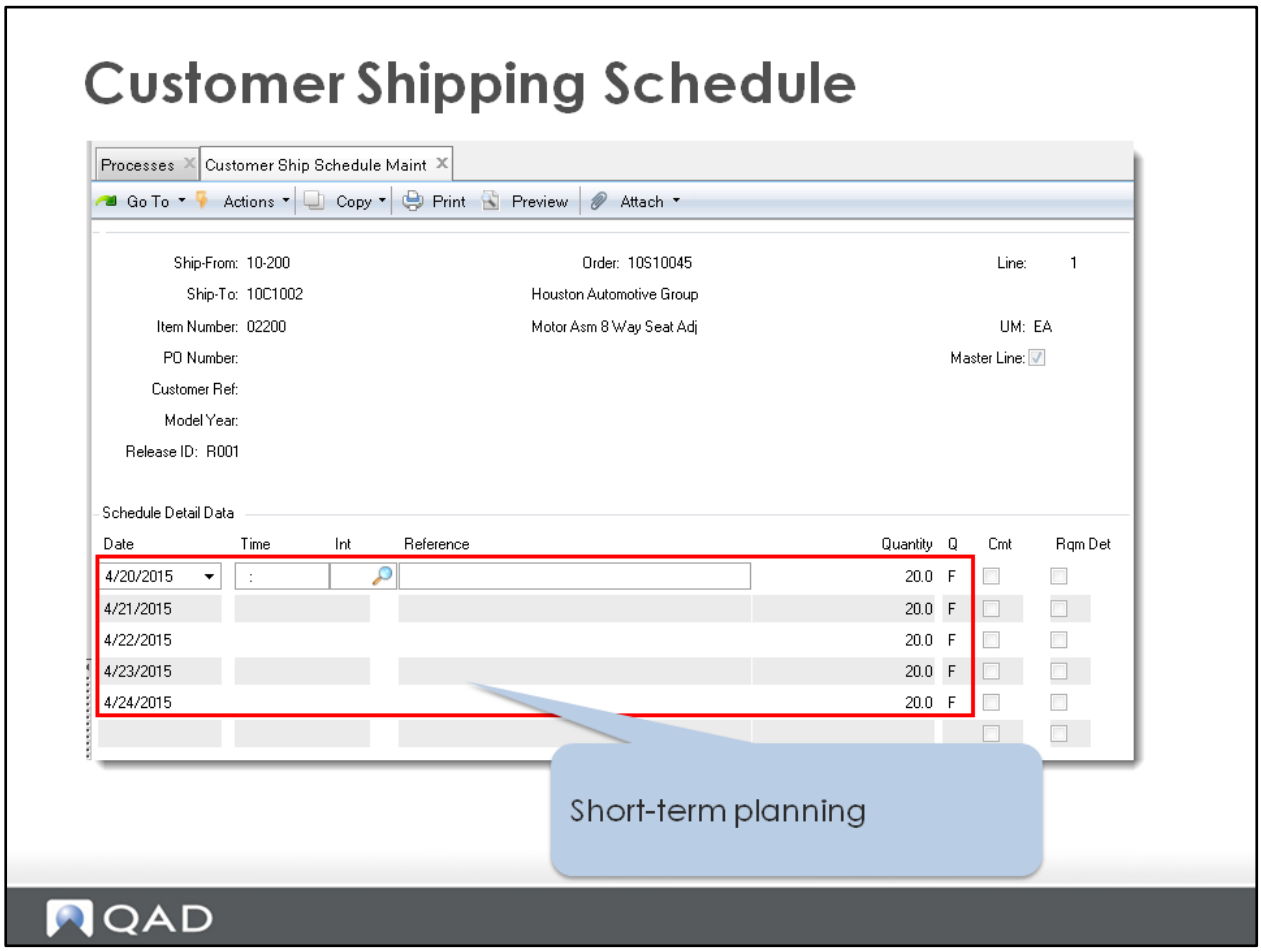


When a new revision of a schedule is created, the quantity planned for previous periods drops off the schedule, but is added to the prior cumulative requirement quantity. For example, in week 2, the requirement for week 1 no longer appears on the schedule, but is added to prior cumulative requirements. The prior cumulative start date is set to the last day in week 1. This field is for reference only and appears on some selected reports and inquiries.

Customer Planning Schedule

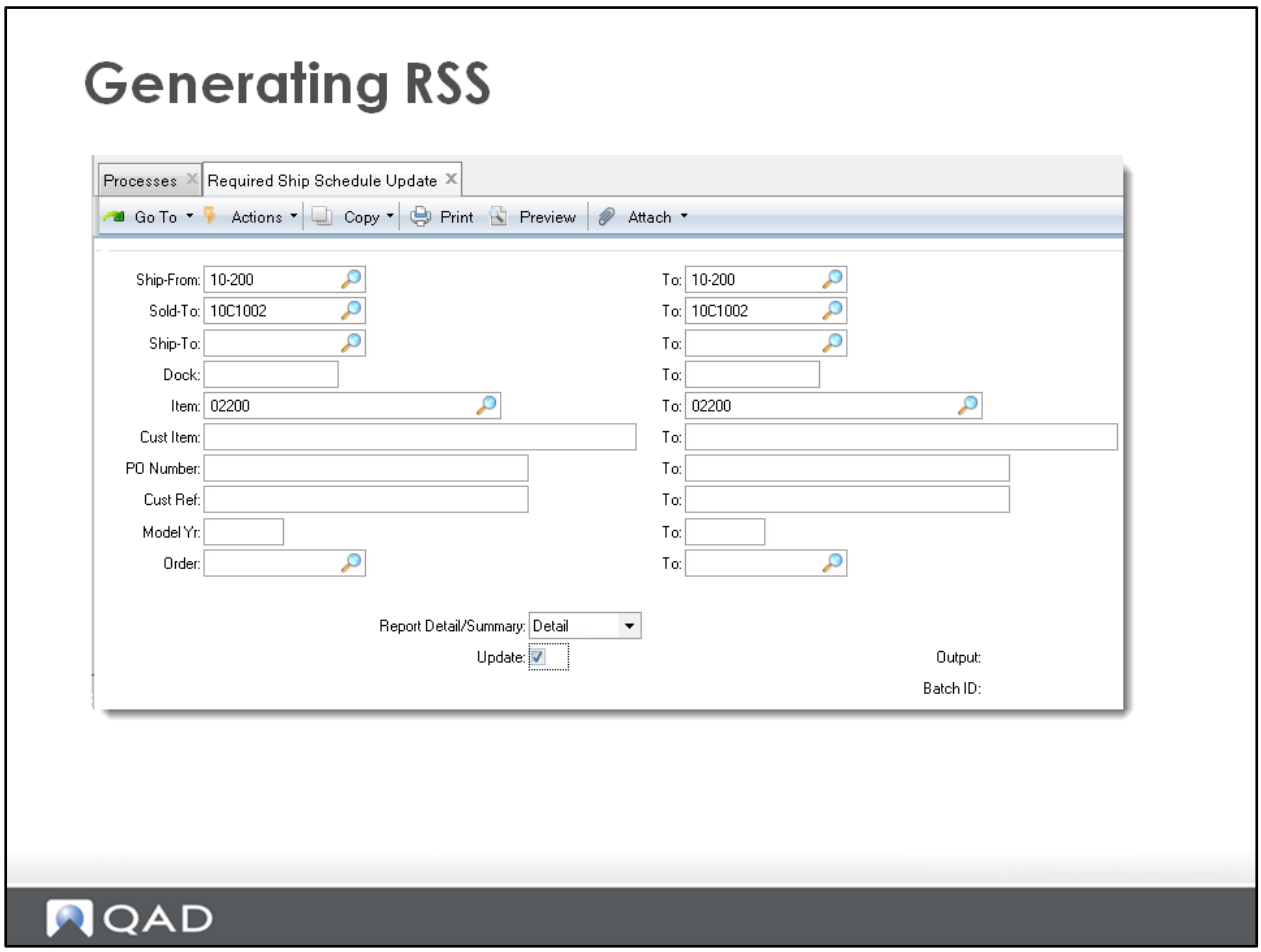


Customer Shipping Schedule



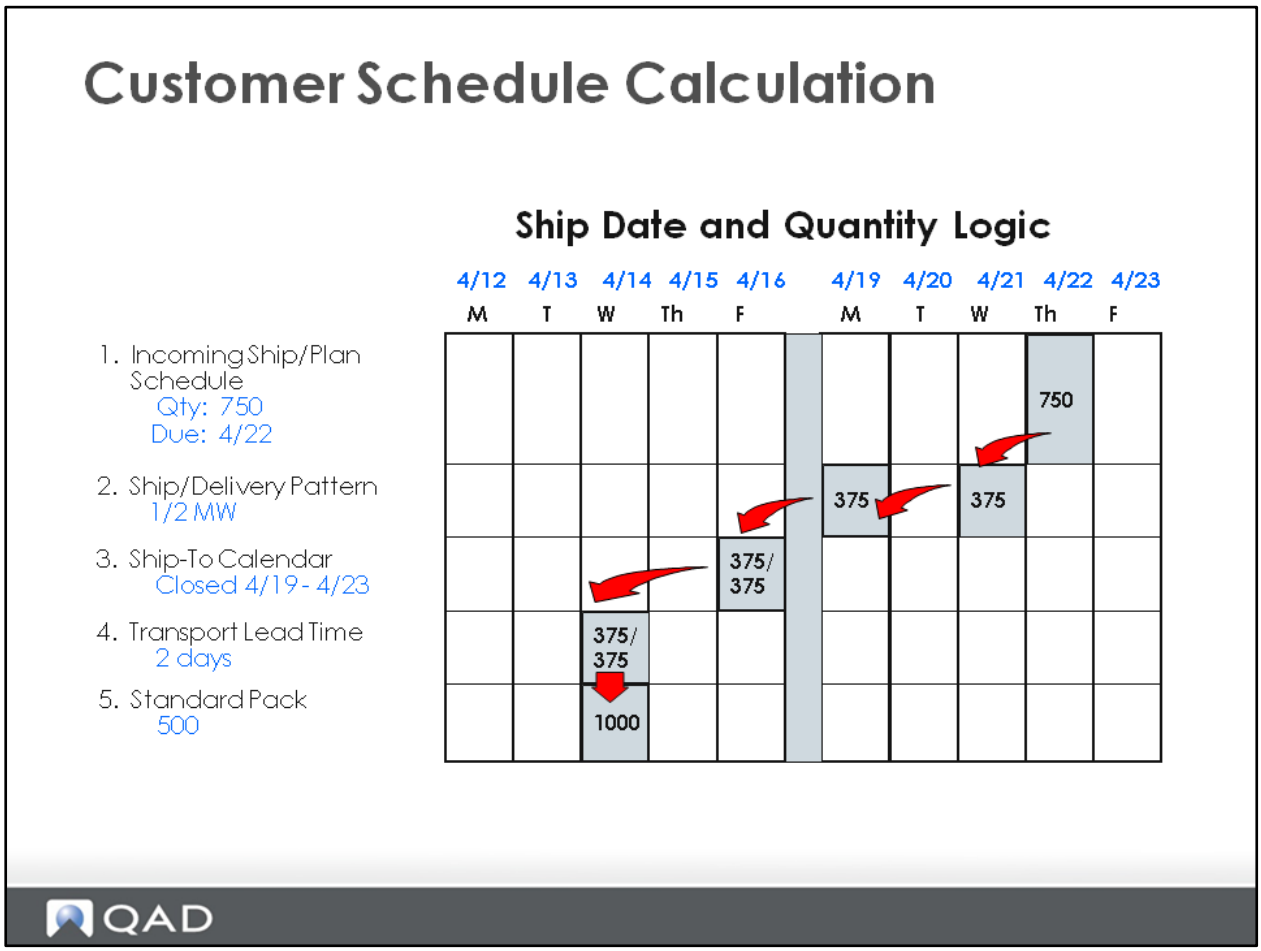
MRP uses customer planning and shipping schedules to generate the required ship schedule. However, in order for shipping schedule data to be included when you calculate the required ship schedule, the Netting Logic field in Scheduled Order Maintenance must be set to 1 or 3.

Generating RSS



The RSS is the actual schedule of shipping requirements needed to meet customer demand. It is what is visible to MRP. Other parameters, such as transport lead time, standard pack quantity, customer calendars, and shop calendars, are also used by Required Ship Schedule Update or Selective Required Ship Schedule Update to build the RSS. If you need to modify the RSS, use Required Ship Schedule Maintenance.

Customer Schedule Calculation



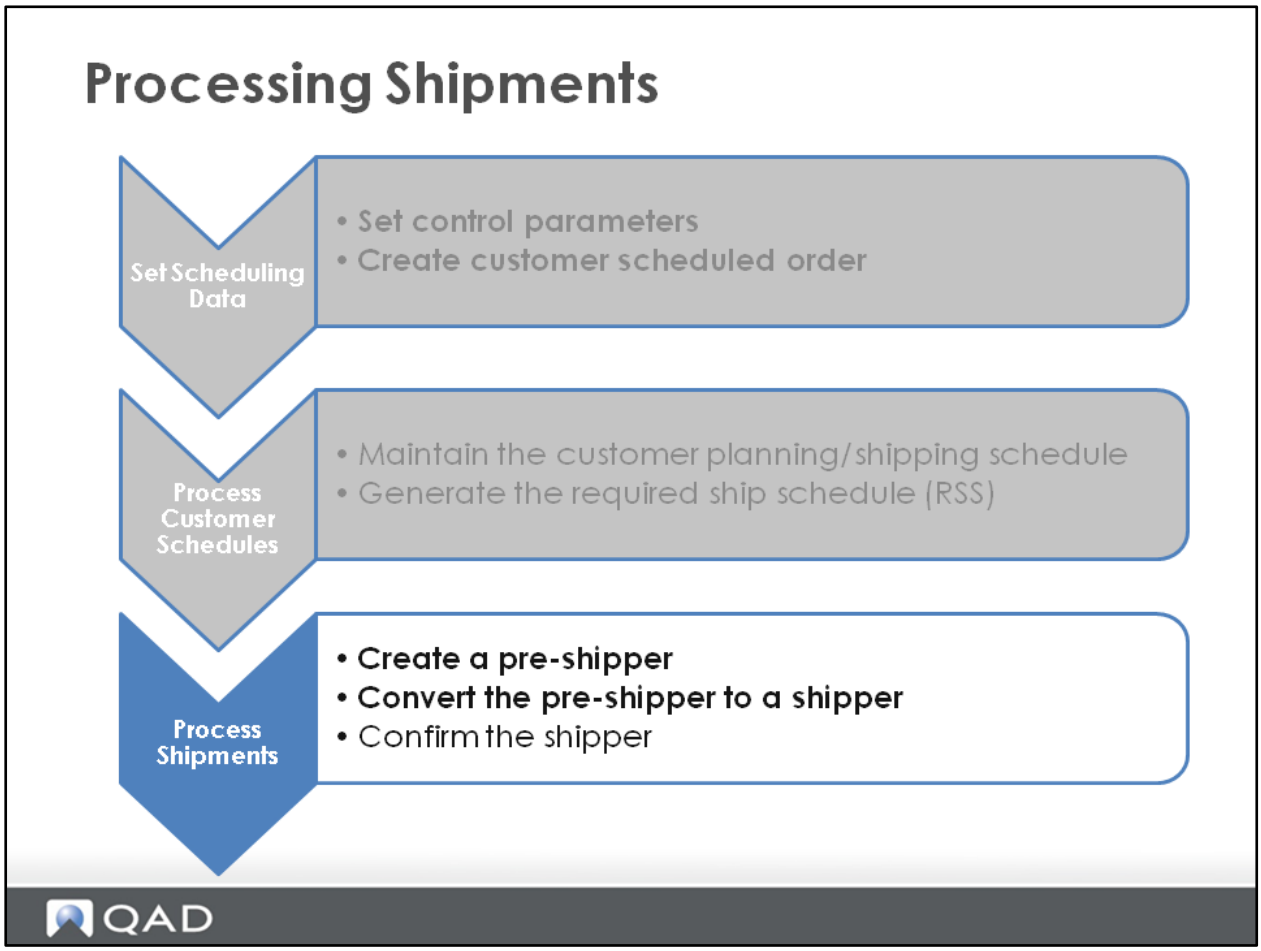
In creating the RSS, the update program performs the following calculations:

1. Back-schedules for ship/delivery pattern.
    - This creates buckets of required quantities spread over the interval specified, according to the SDP.
    - In the example above, a weekly quantity of 750 is divided into 375 for Monday and 375 for Wednesday.
2. Combines schedules using netting logic specified in Scheduled Order Maintenance.
3. Back-schedules the ship/delivery schedule according to the customer's calendar. If one of the delivery days calculated above is a non-operating day for the customer (indicated in the customer calendar), the program brings the delivery date forward to the next available day for that quantity.
4. Back-schedules the transport lead time using the calendar-adjusted schedule.

- Set in Scheduled Order Maintenance
- All delivery dates are adjusted by the number of calendar days entered in the Transport Days field shown in line 4 of the slide.

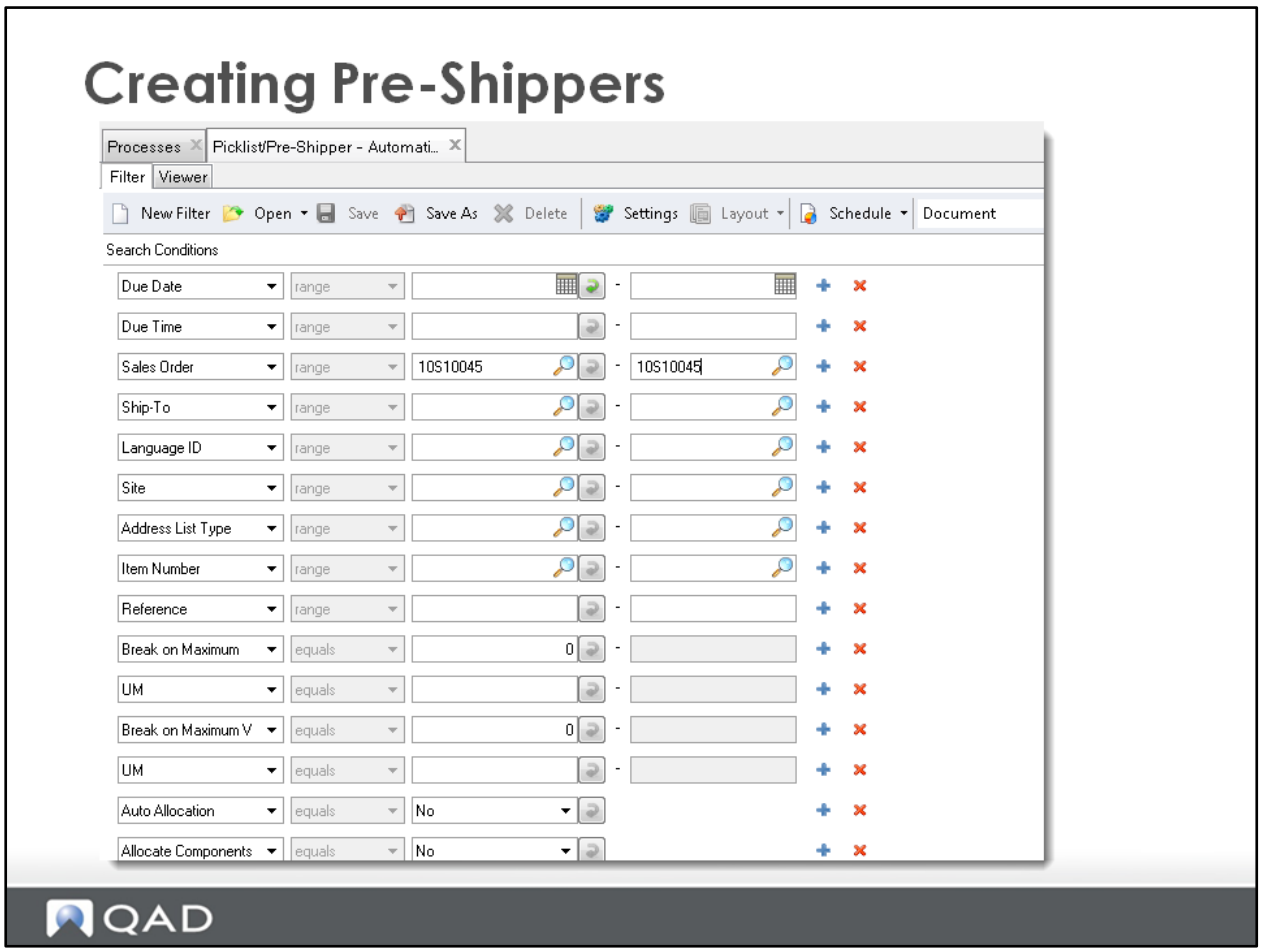
5. Revises quantities to meet the standard packing quantity multiple defined in Scheduled Order Maintenance.
6. Rebuckets monthly and weekly quantities to define daily quantities. Rebucketing is carried out according to the values entered in the Req Sched Days, Req Sched Weeks, Req Sched Months fields (set in Scheduled Order Maintenance).
7. Creates a new active RSS.
    - Assigns a release ID.
    - Displays quantities and dates.

Processing Shipments



Note: For information on the customer invoice and account receivable processes, see Processing Invoices and Receivables.

Creating Pre-Shippers

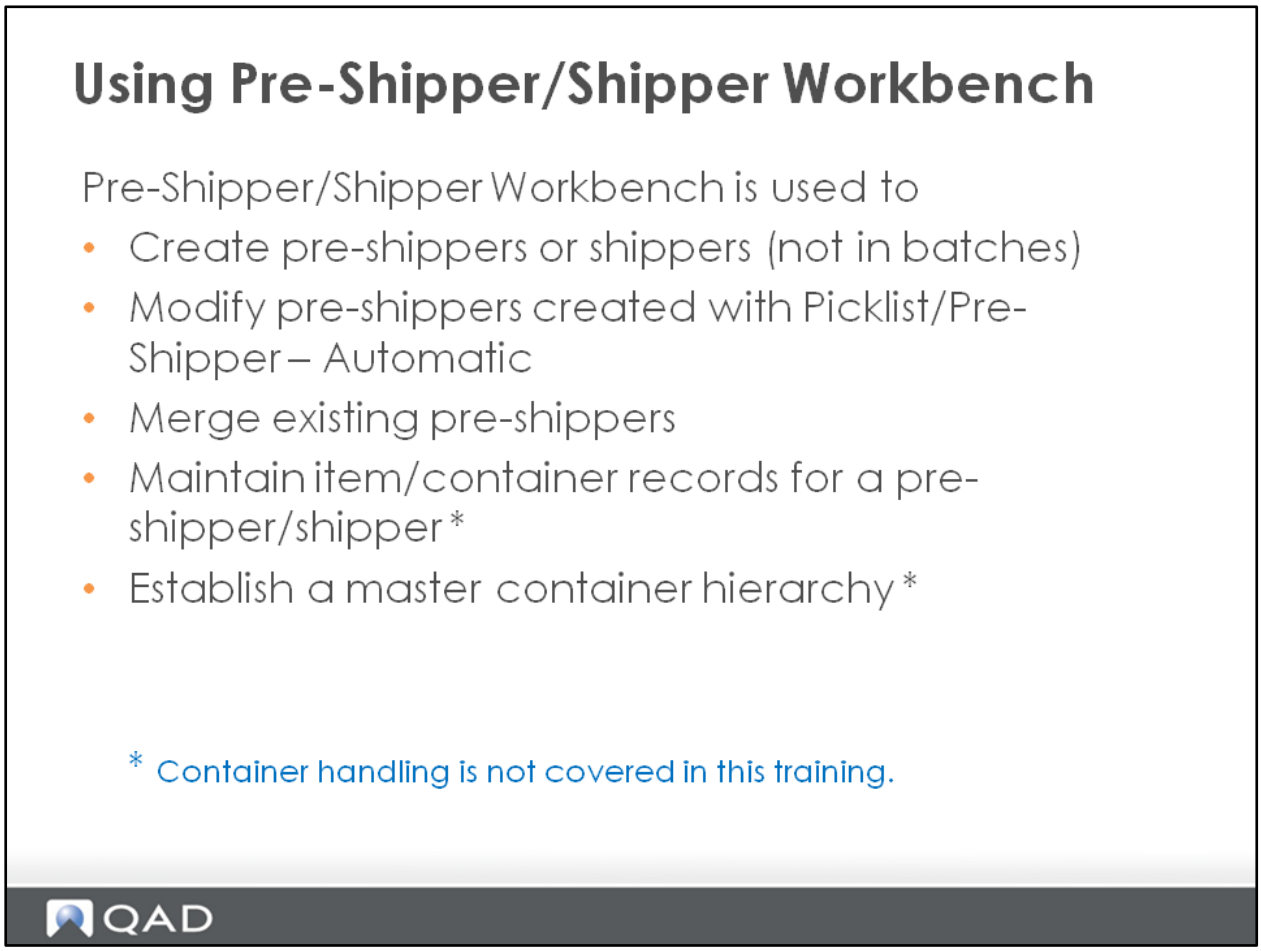


Pre-shipper and Shipper

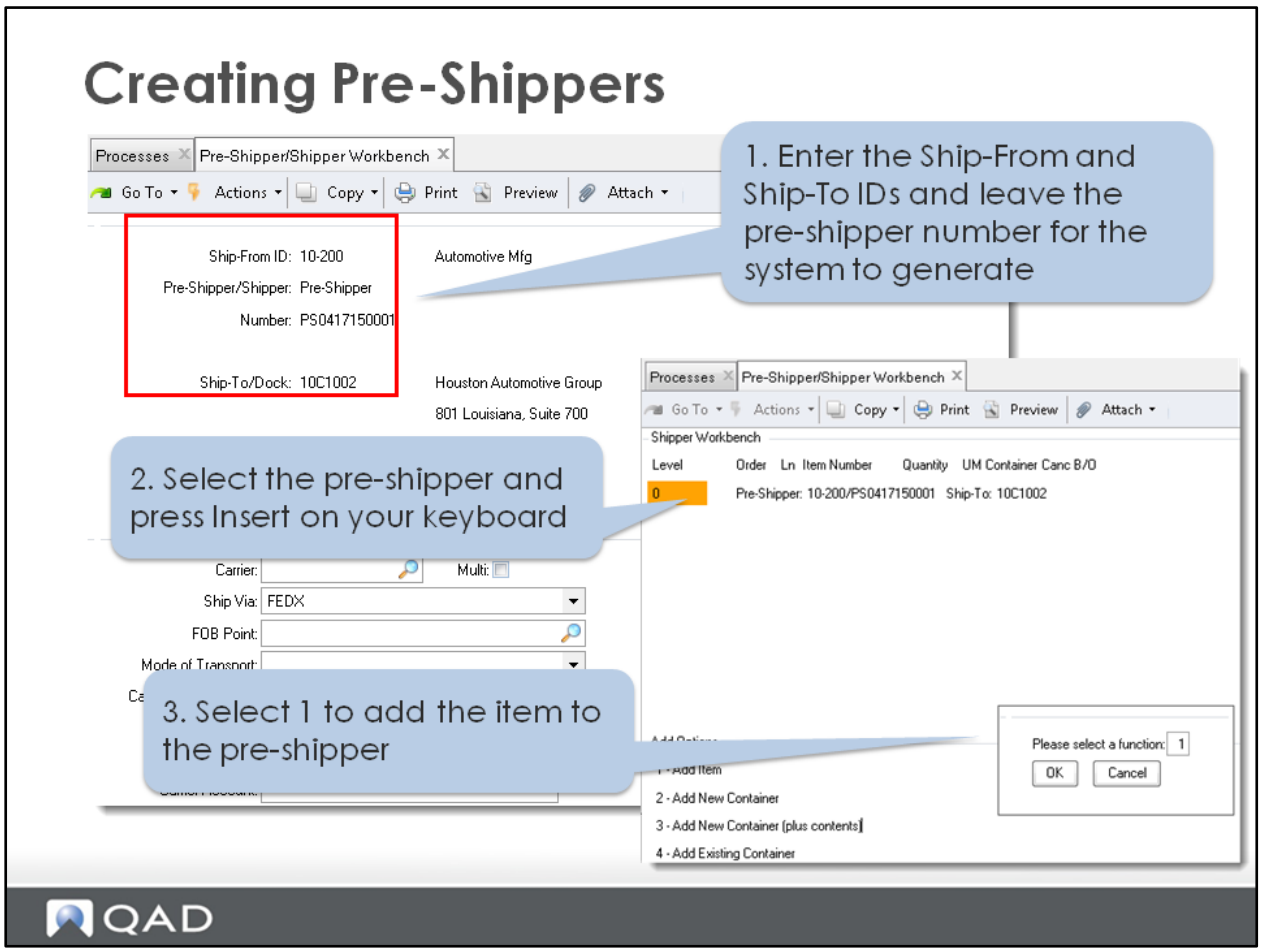
The system distinguishes between pre-shippers and shippers to accommodate businesses that number shipments consecutively. If consecutive numbering of shipments is important in your business, always create pre-shippers first.

- To create pre-shippers in batches, use Picklist/Pre-Shipper - Automatic.
- To create one pre-shipper or shipper at a time, use Pre-Shipper/Shipper Workbench.

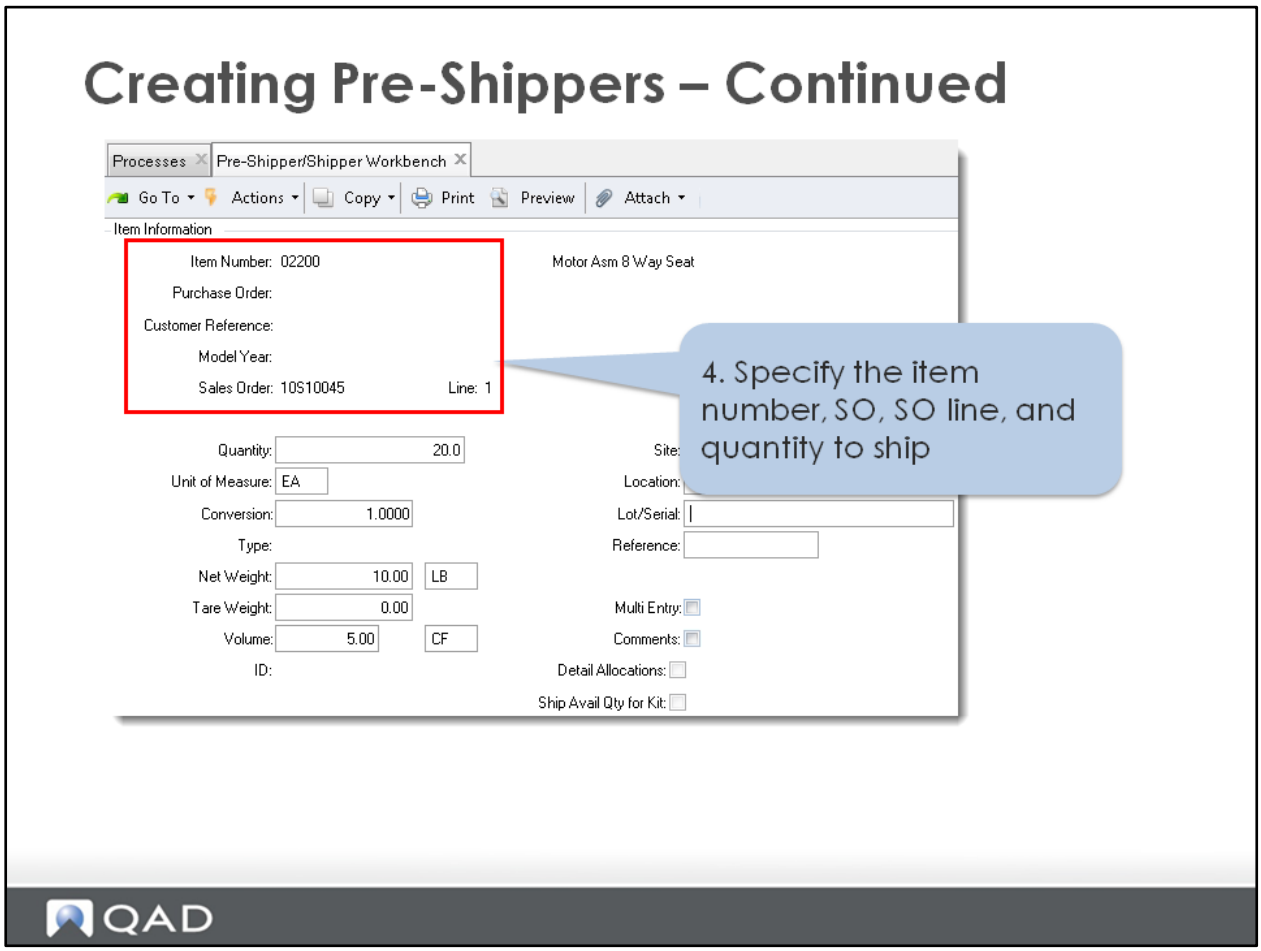
Using Pre-Shipper/Shipper Workbench



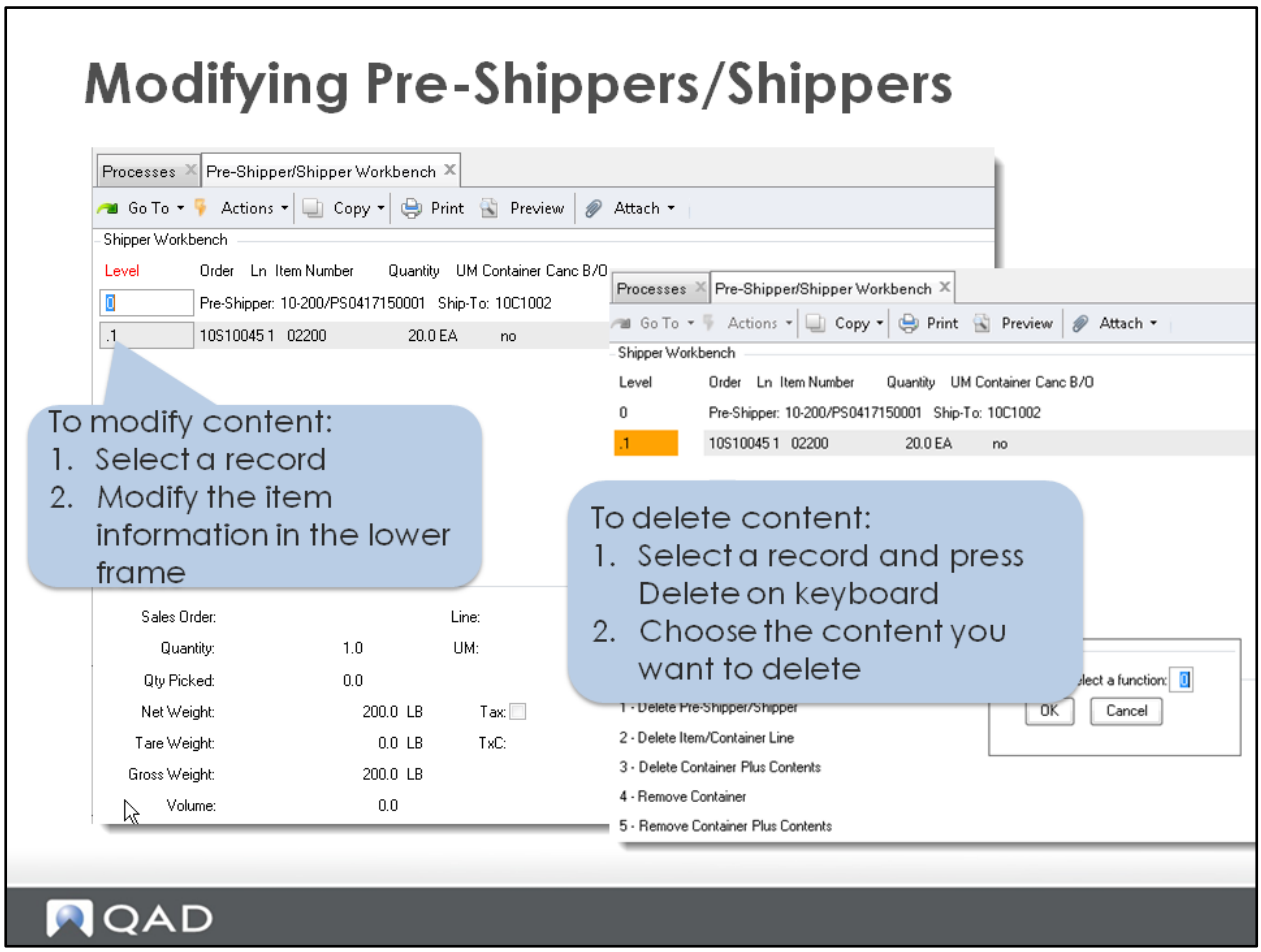
Creating Pre-Shippers



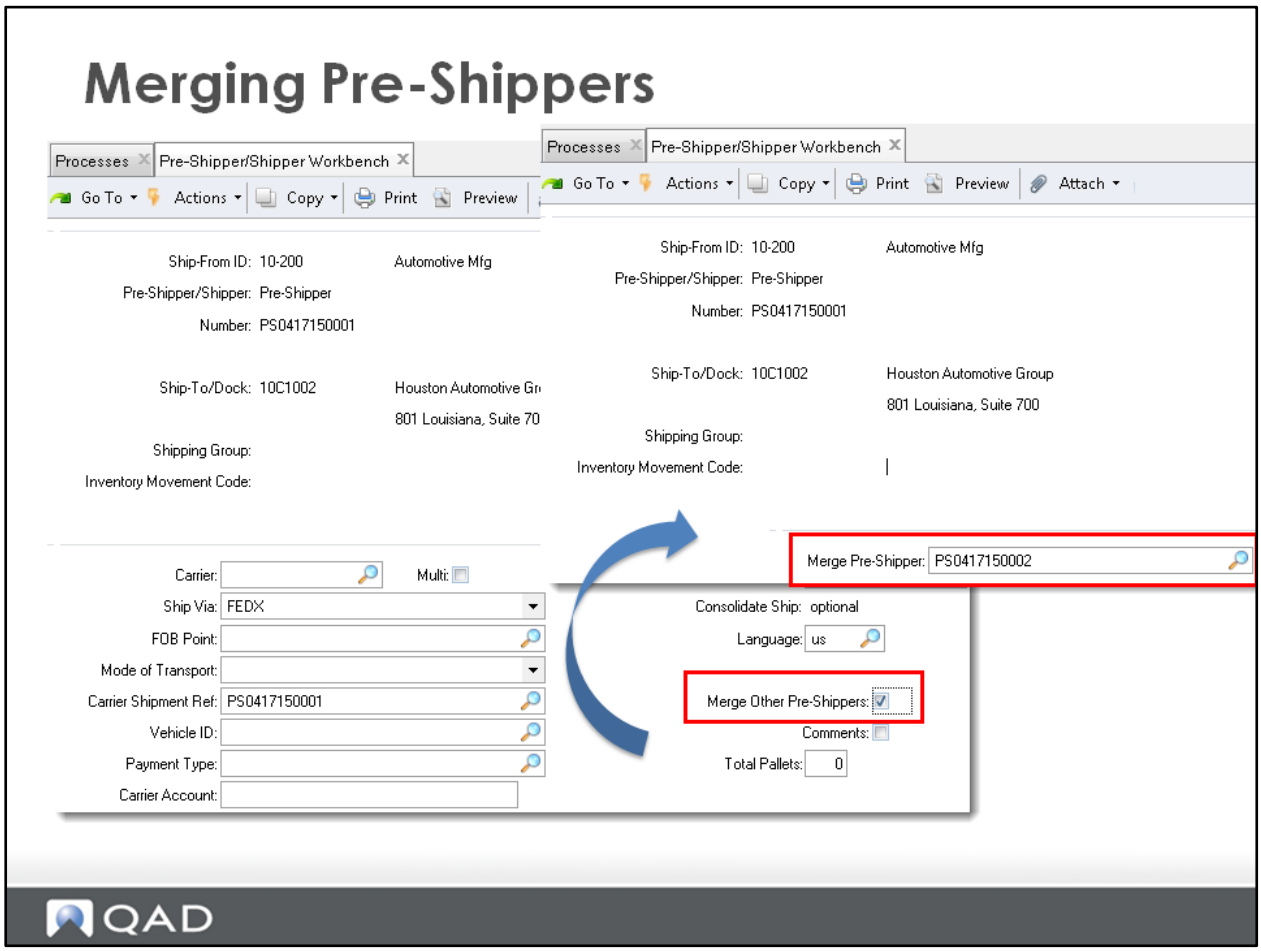
Creating Pre-Shippers – Continued



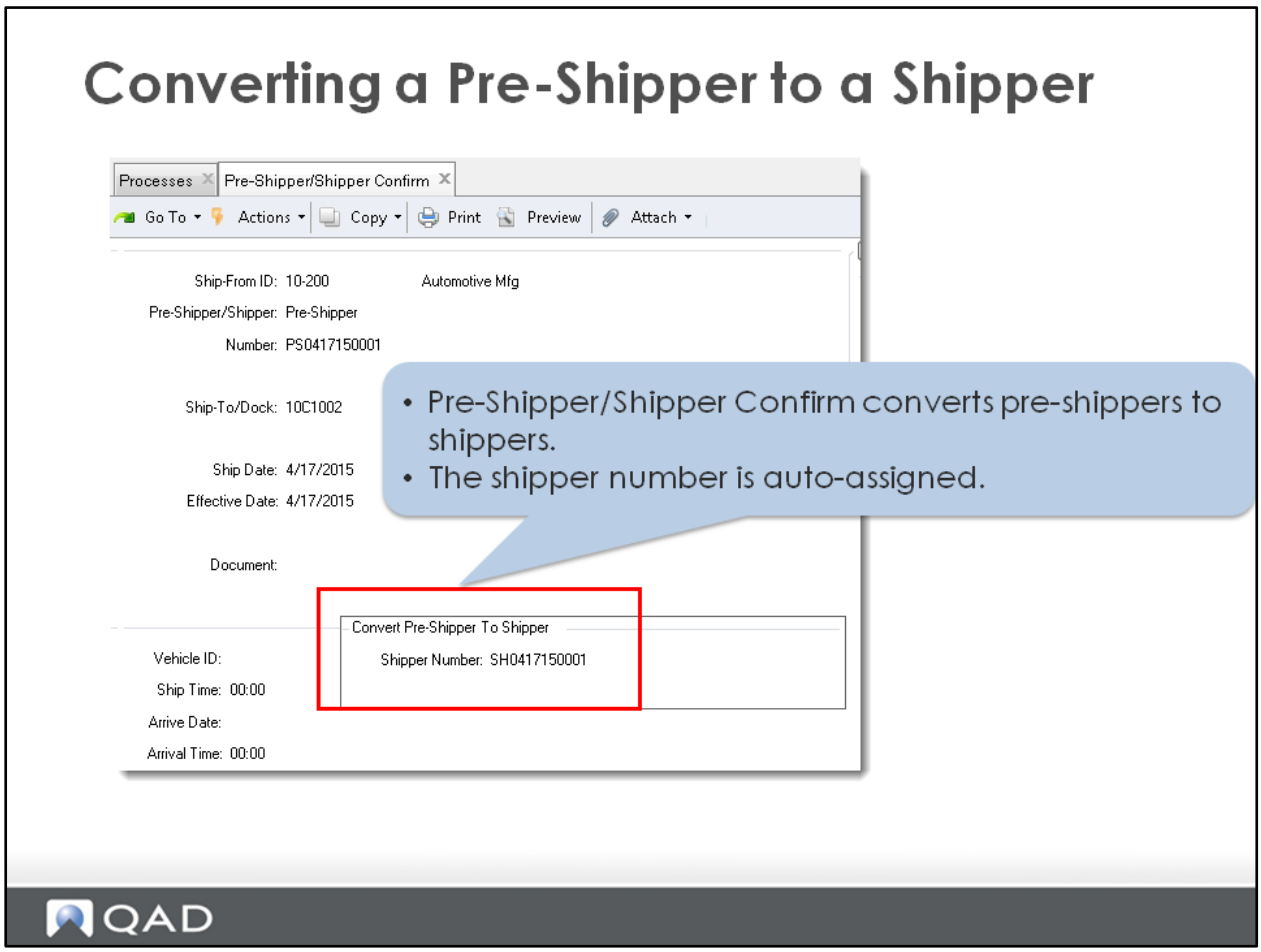
Modifying Pre-Shippers/Shippers



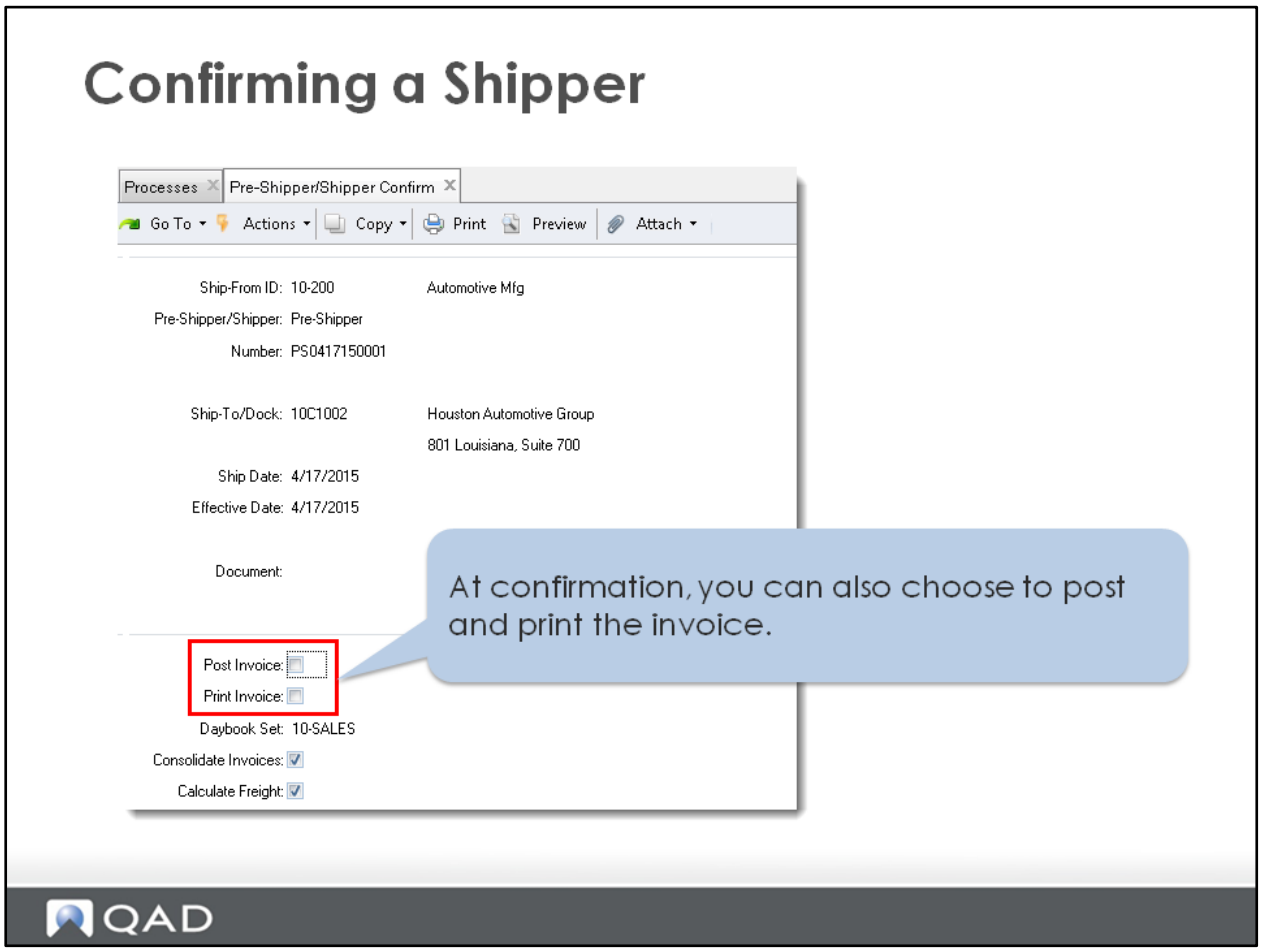
Merging Pre-Shippers



Converting a Pre-Shipper to a Shipper



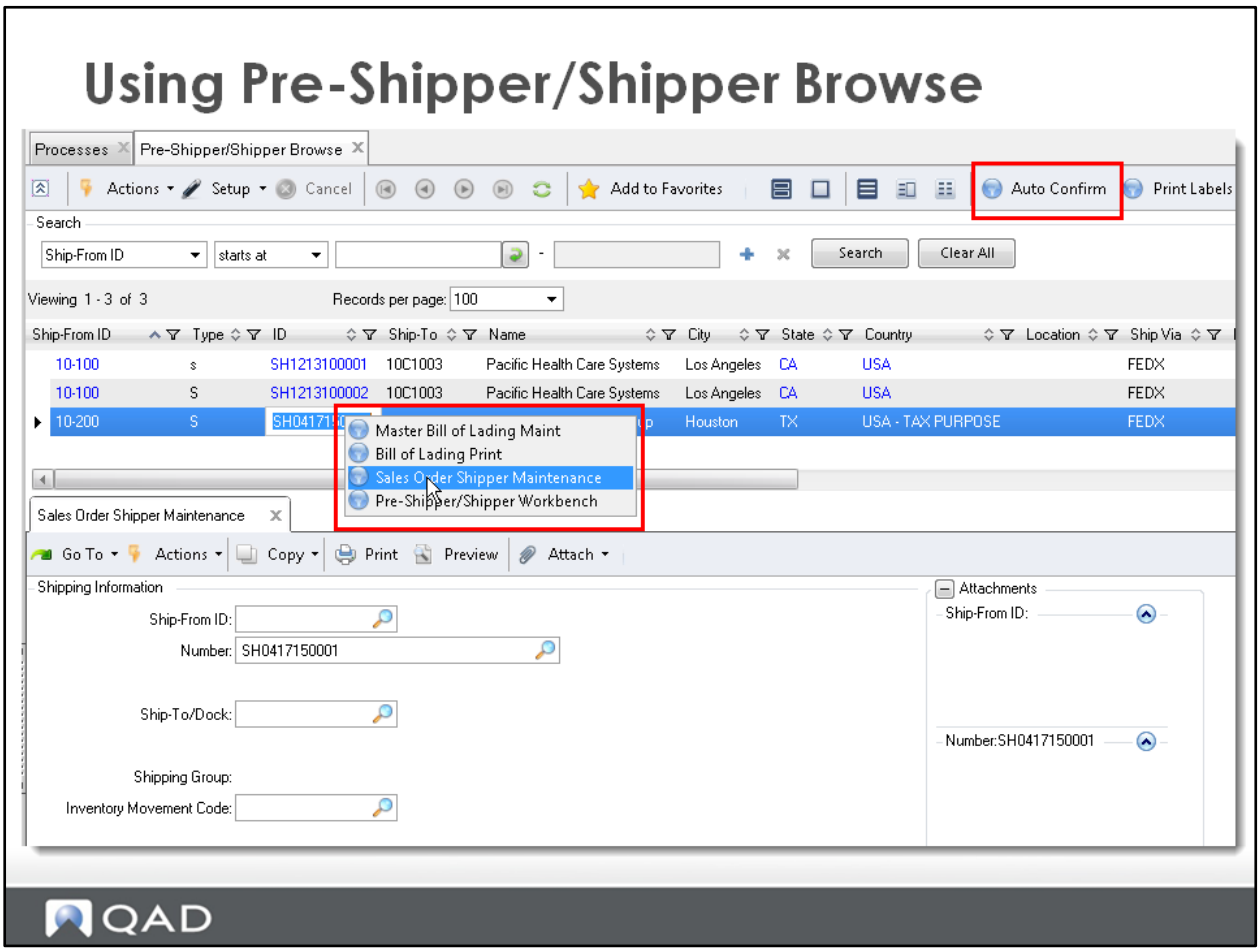
Confirming a Shipper



During the process of confirming the shipper, the system:

- Decreases finished goods inventory
- Uses the requirement quantity to increase the cumulative shipped quantity
- Decreases the net requirement for the order line item
- Updates general ledger (GL) accounts

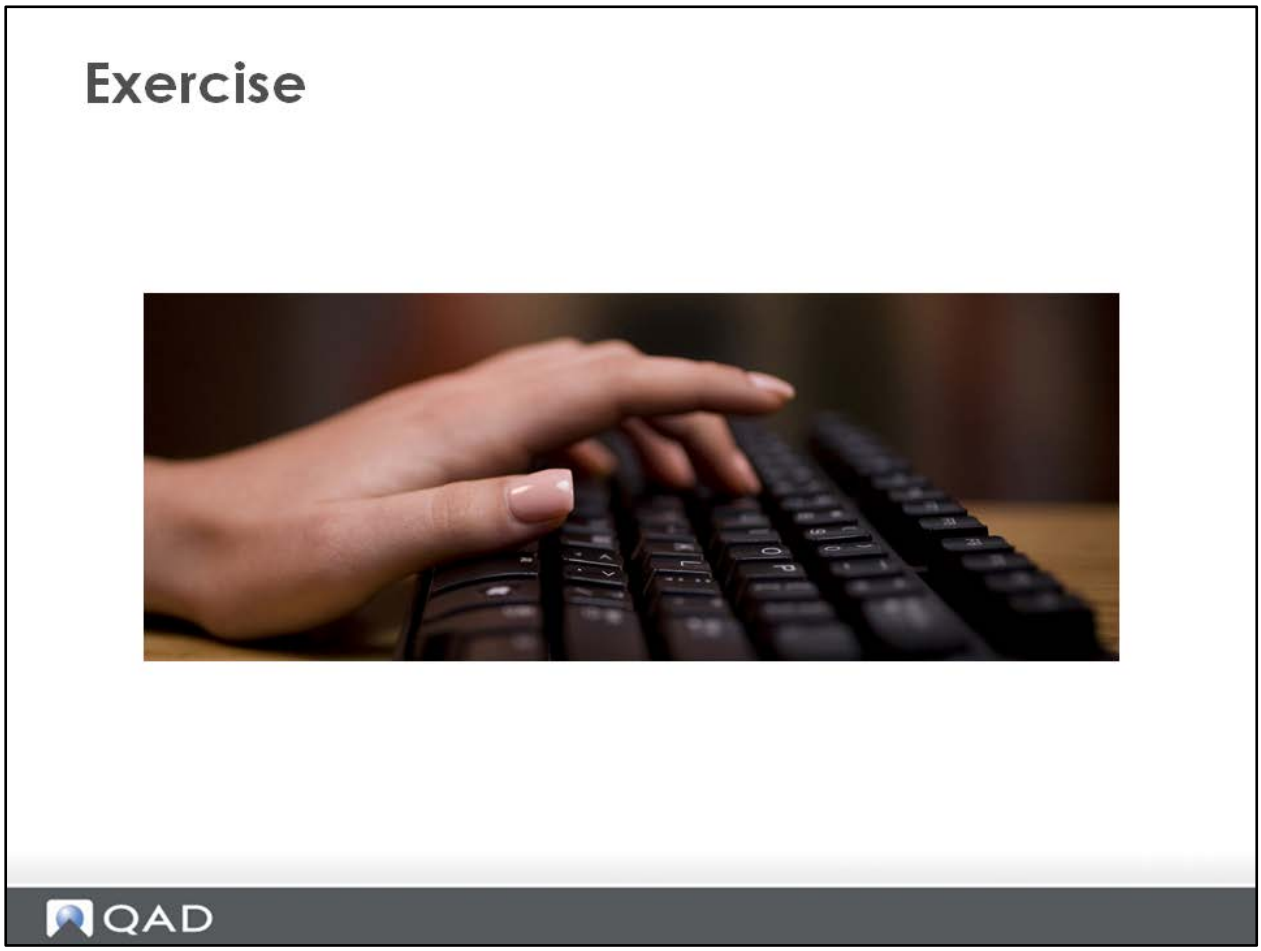
Using Pre-Shipper/Shipper Browse



In the browse, you can:

- View the pre-shippers/shippers
- Confirm the selected pre-shippers/shippers
- Call out relevant programs against the selected record by right-clicking

Exercise



Exercise 1: Setting Up and Processing Schedules

1. Create a customer scheduled order using the following information. Do not create a customer item number and do not copy data from another order line for the items.

    - Order Information:
      Ship-From: 10-200
      Ship-To: 10C1002
      Ship Via: FEDX
    - Line 1
      Item Number: 02200
      Netting Logic: 3
    - Line 2
      Item Number: 02005
      Netting Logic: 3

Record the order number, which you will use to generate RSS and pre-shippers.

2. Manually add the customer ship schedules as a daily shipment of 100 units of item 02200 and item 02005, respectively, for the next five workdays.
    - Set the release ID to 001 and the Prior Cum Date to today's date.
    - Skip the Customer Receipts frame by clicking Back.
    - Enter a daily schedule of 100 units for the next five days.
    - Activate the schedules.
3. Update RSS for the two items using the ship schedules.
    - Use the scheduled order number to filter out the items that you are going to update RSS for.
    - Set to show the detail report
    - Run this program in Update mode
    - If needed, use Required Ship Schedule Maint (7.5.3) to modify the shipment schedules.

Exercise 2: Processing shipments

Assume that your customer needs 100 units of items 02200 and 02005 respectively. You are going to generate a pre-shipper for item 02200 and 02005 respectively, at 100 units for each.

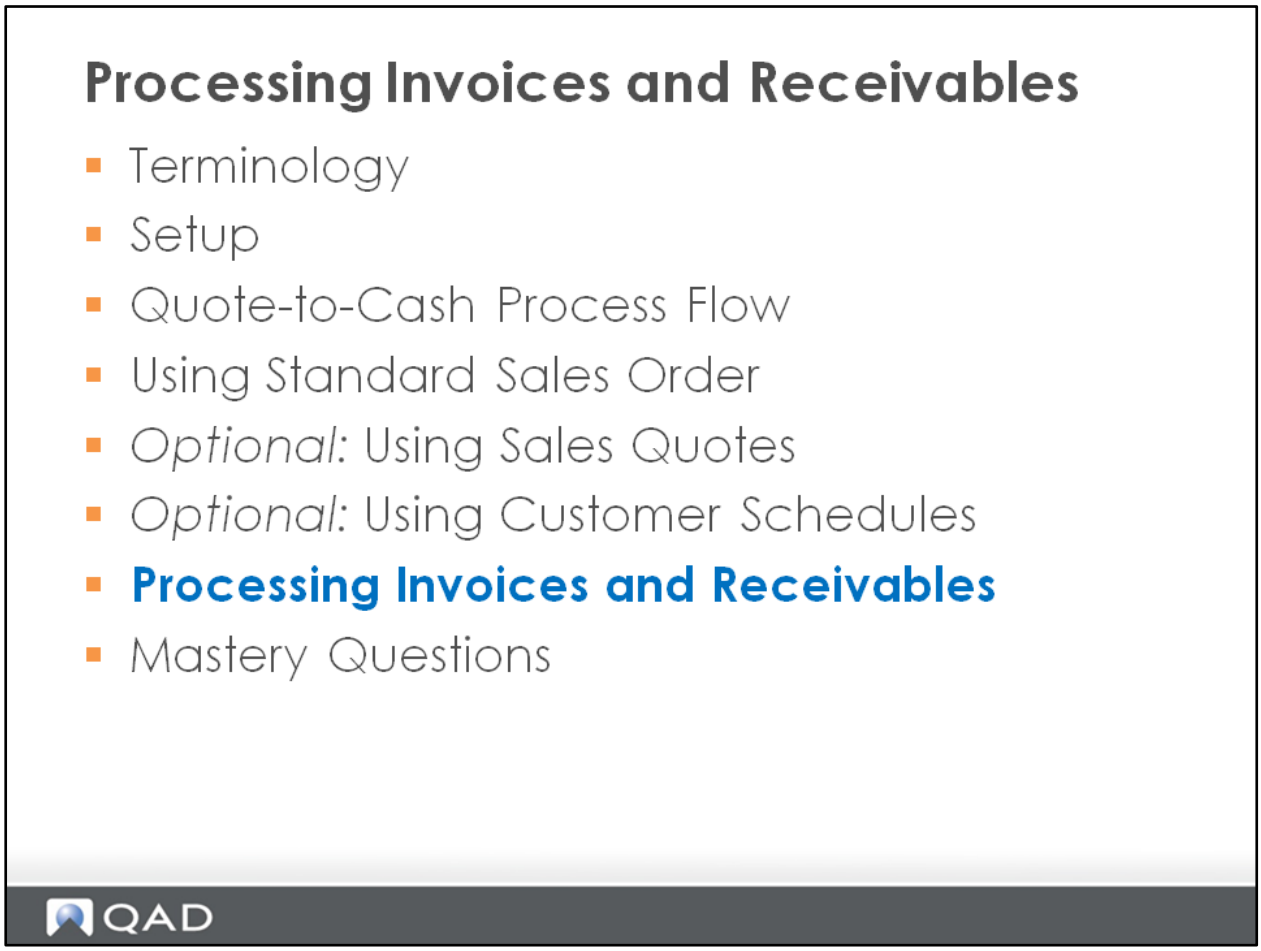
1. In Pre-Shipper/Shipper Workbench, create a pre-shipper for 100 units of item 02200 and record the pre-shipper number.
2. In Pre-Shipper/Shipper Workbench, create a pre-shipper for 100 units of item 02005 and record the pre-shipper number.
   Tips for creating pre-shippers:
    - Use the scheduled order number to filter out the items to ship
    - Press Insert on the keyboard to add items to the pre-shipper
    - Enter a random number, such as 01, for the Lot/Serial field when prompted
    - Click Back when the Consume Required Ship Schedule Requirements frame pops up

Since the two items have the same Ship-From ID and Ship-To/Stock, you want to ship them together using one shipper.

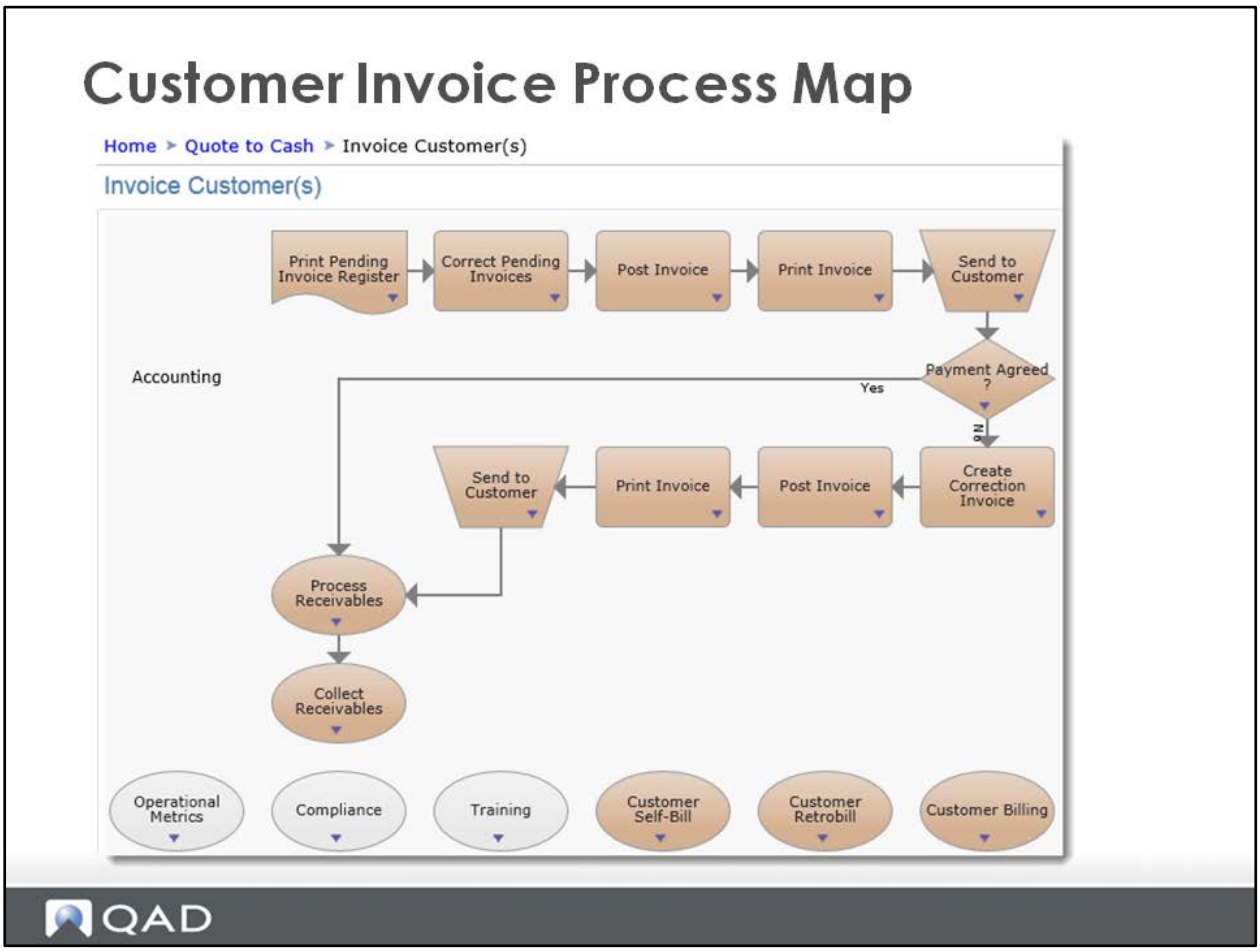
1. Merge the two pre-shippers created in Steps 1 and 2.
2. Open the pre-shipper for item 02200 in Pre-Shipper/Shipper Workbench
3. Select the Merge Other Pre-Shippers option
4. Select the pre-shipper for item 02005 when you are prompted for the pre-shipper number to merge

5. When merged, you cannot access the pre-shipper for item 02200 using its original pre-shipper number.
6. Confirm the pre-shipper to convert it into a shipper using Pre-Shipper/Shipper Confirm.
7. Confirm the shipper to record the shipment.
8. View the shipper using Pre-Shipper/Shipper Browse.

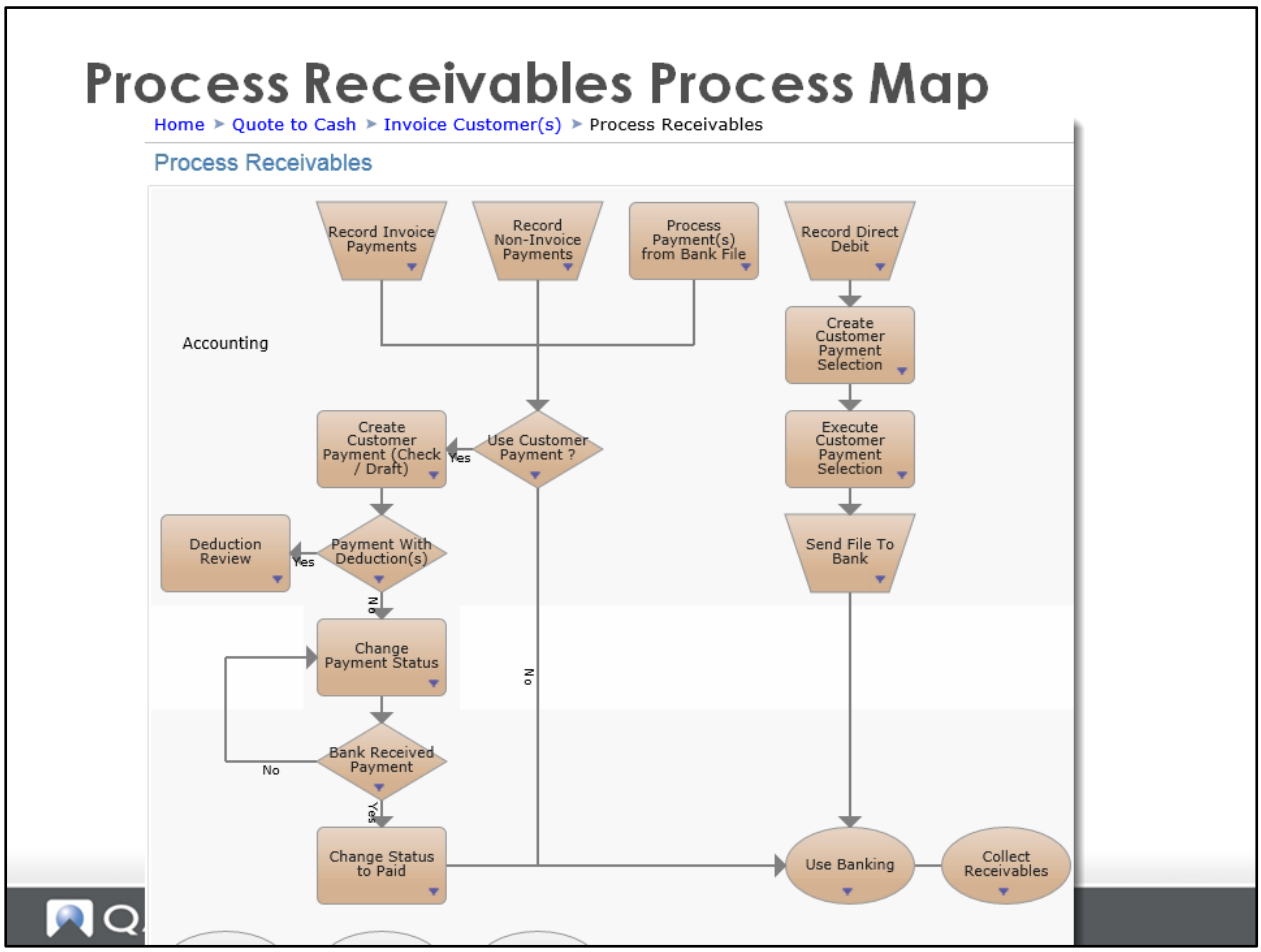
Processing Invoices and Receivables



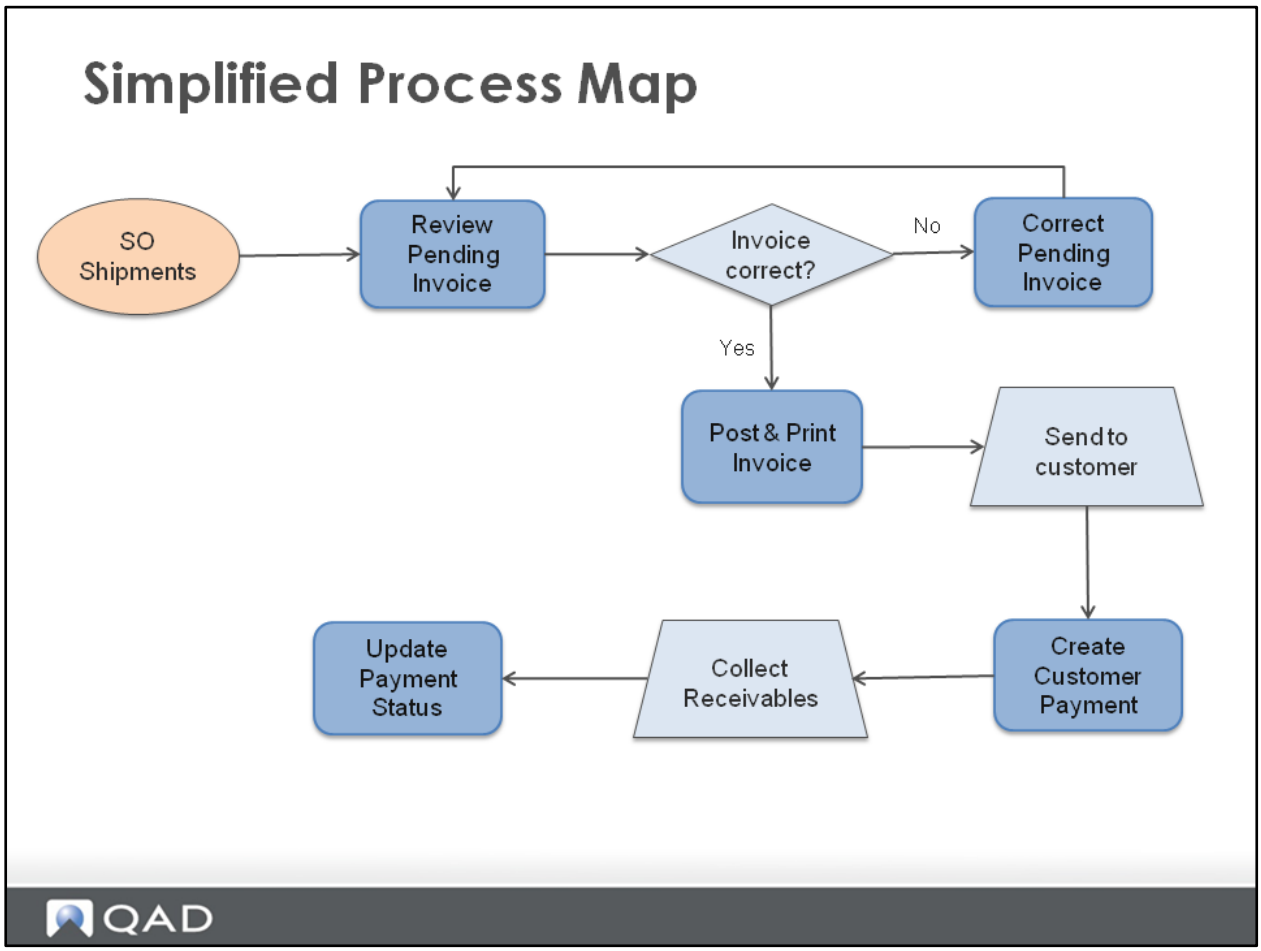
Customer Invoice Process Map



Process Receivables Process Map

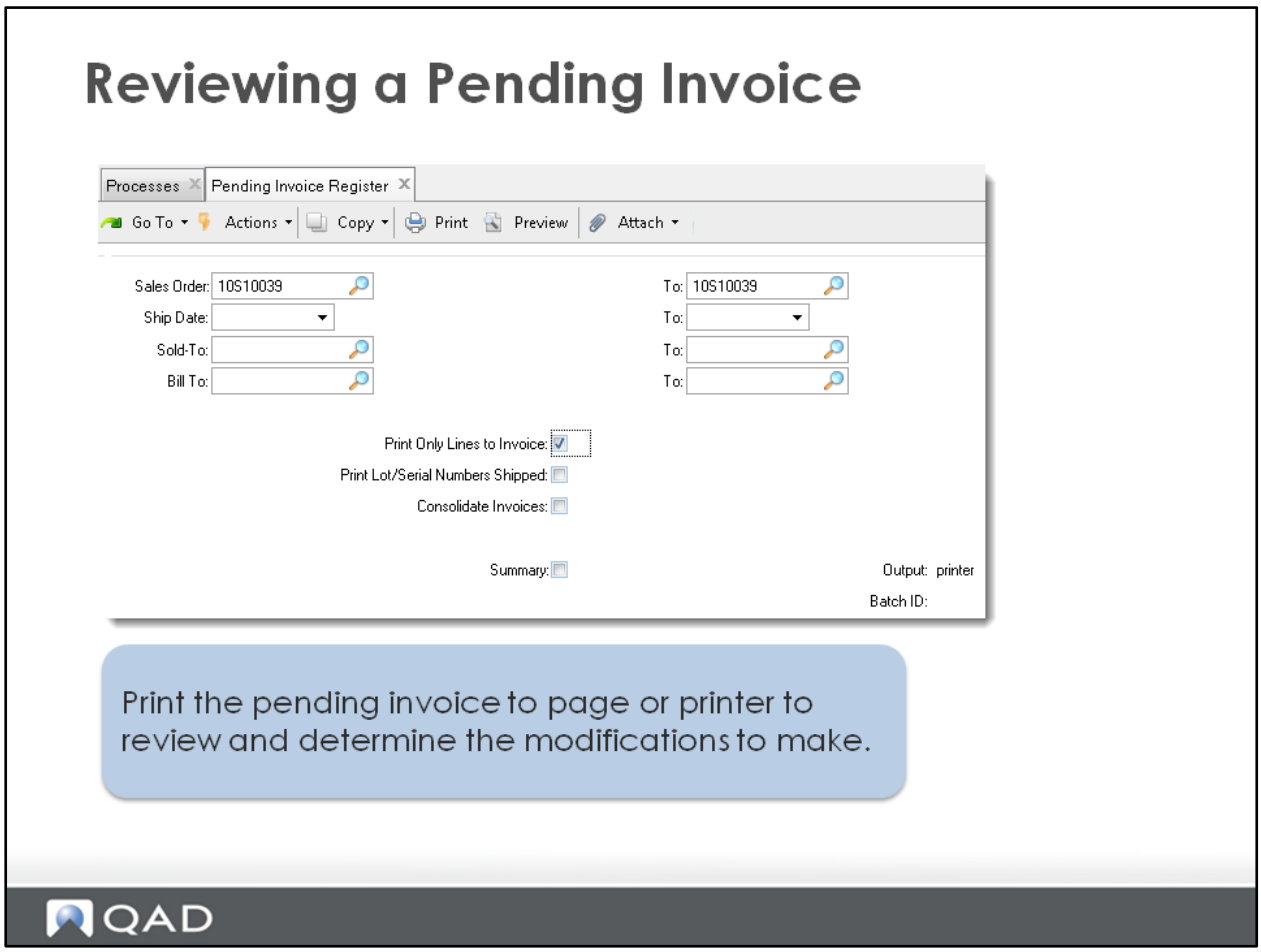


Simplified Process Map

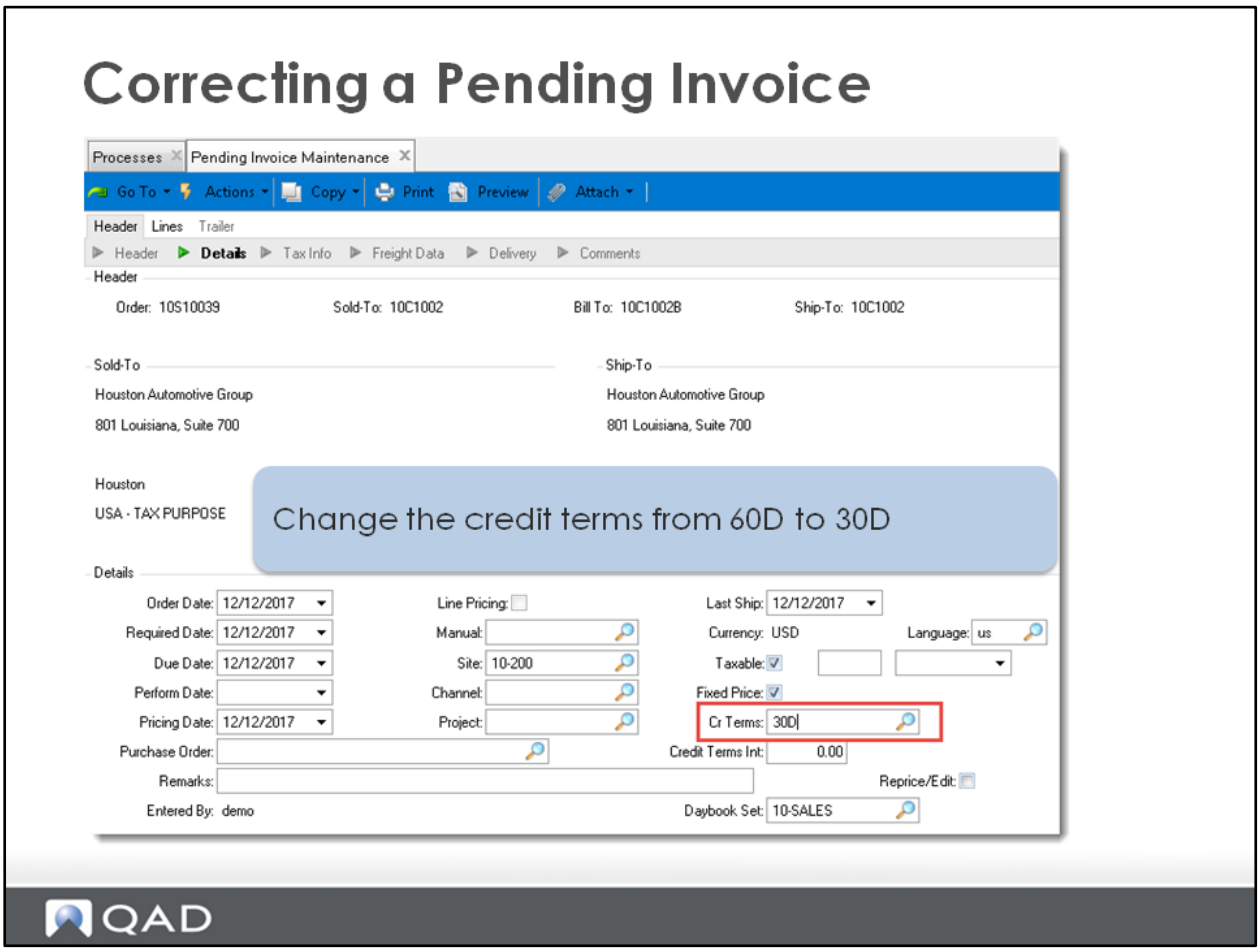


The process may vary for a specific business environment. The simplified process map depicts the basic process that is this course's focus. All the steps here can be accessed from the pre-delivered process maps.

Reviewing a Pending Invoice



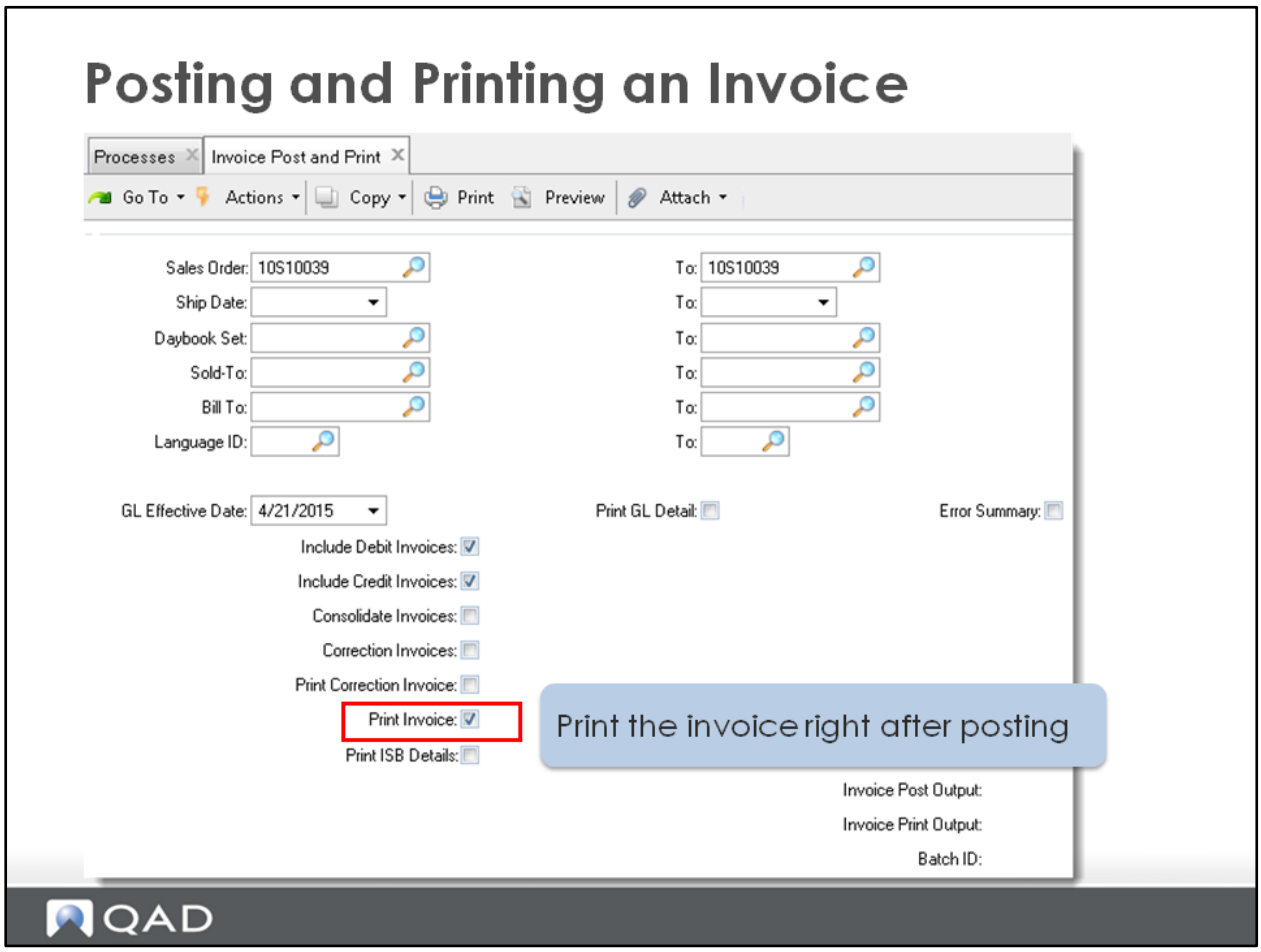
Correcting a Pending Invoice



You can use Pending Invoice Maintenance to:

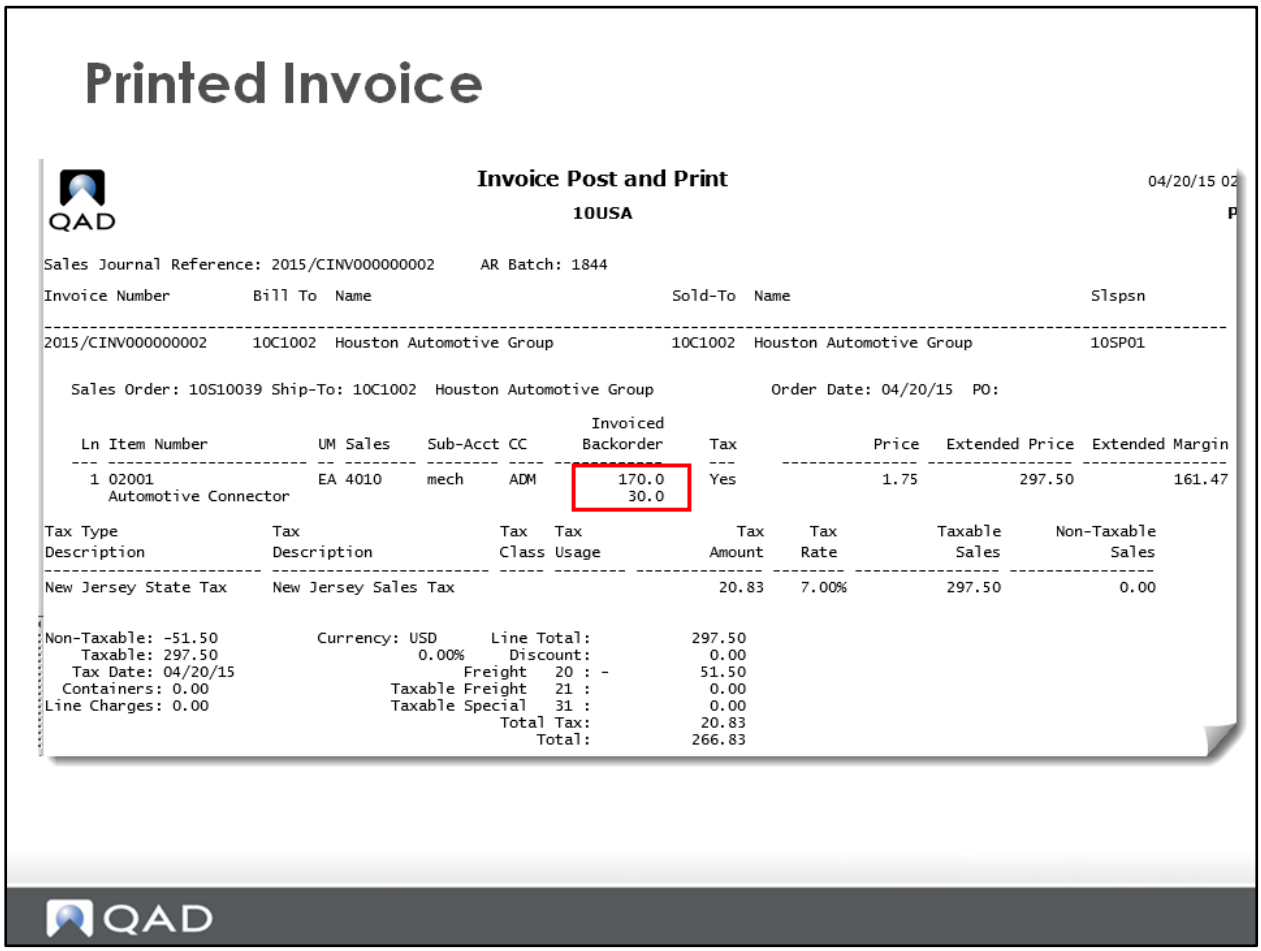
- Correct existing pending invoices
- Change some of the invoice information:
  - Credit terms
  - Commission percentages
  - Prices and discounts
- Enter invoices for non-inventory items (line item ship type of memo)
- Enter invoices for over-the-counter sales
- Process a credit invoice for a sales order return using a negative quantity

Posting and Printing an Invoice

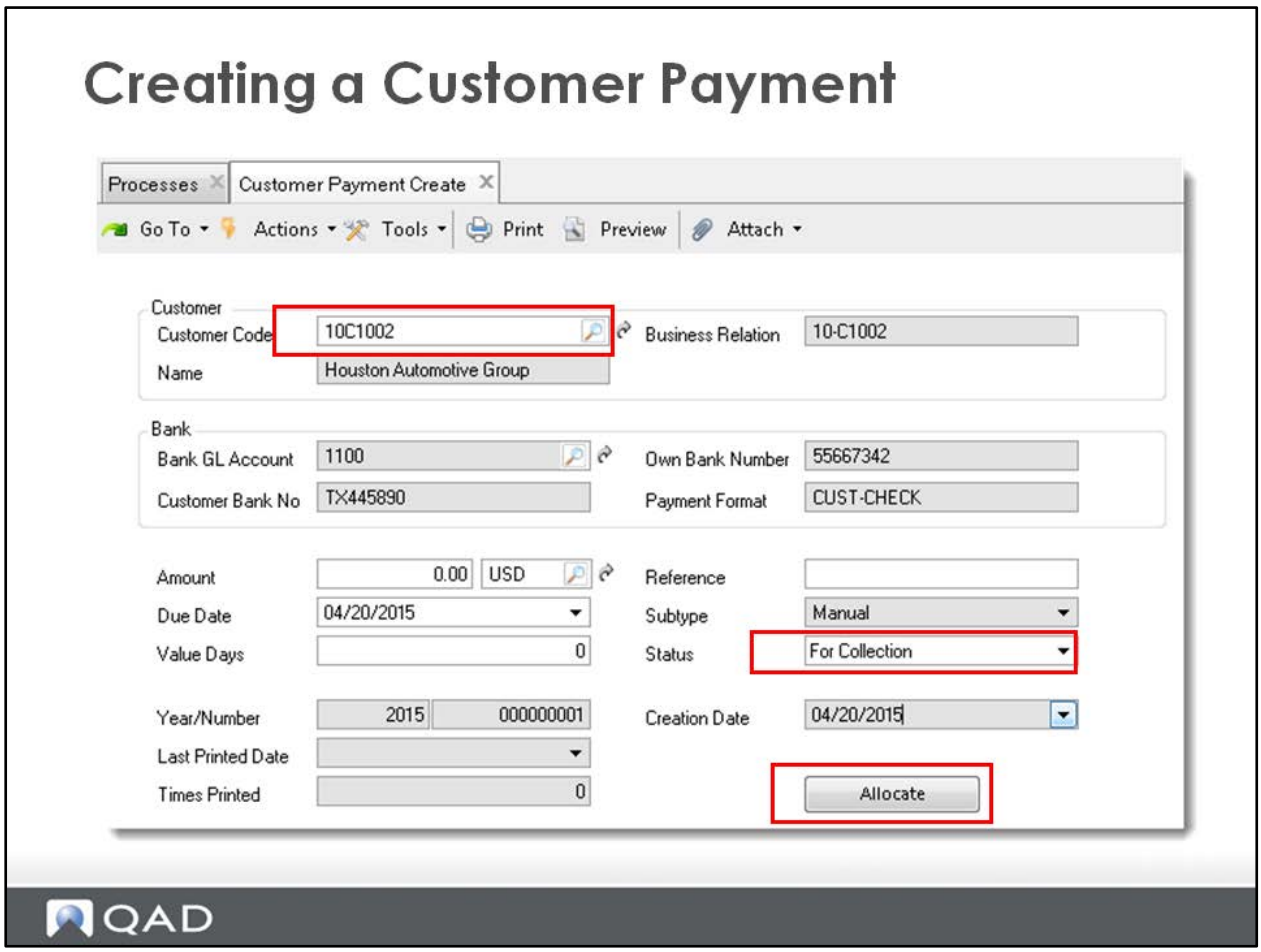


Use Invoice Post and Print to post invoice amounts to Accounts Receivable, where they remain open until customer payments are received.

Printed Invoice

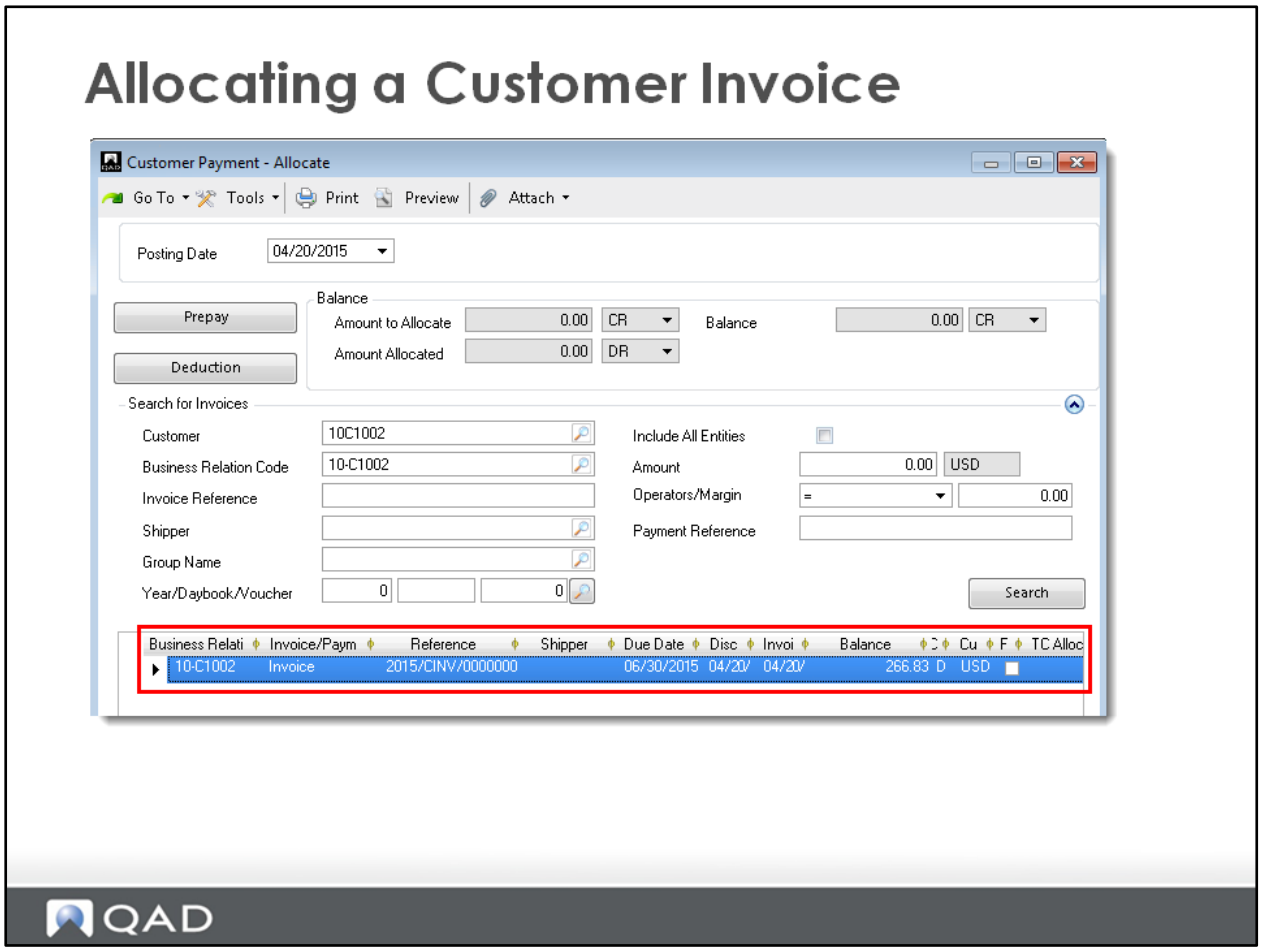


Creating a Customer Payment



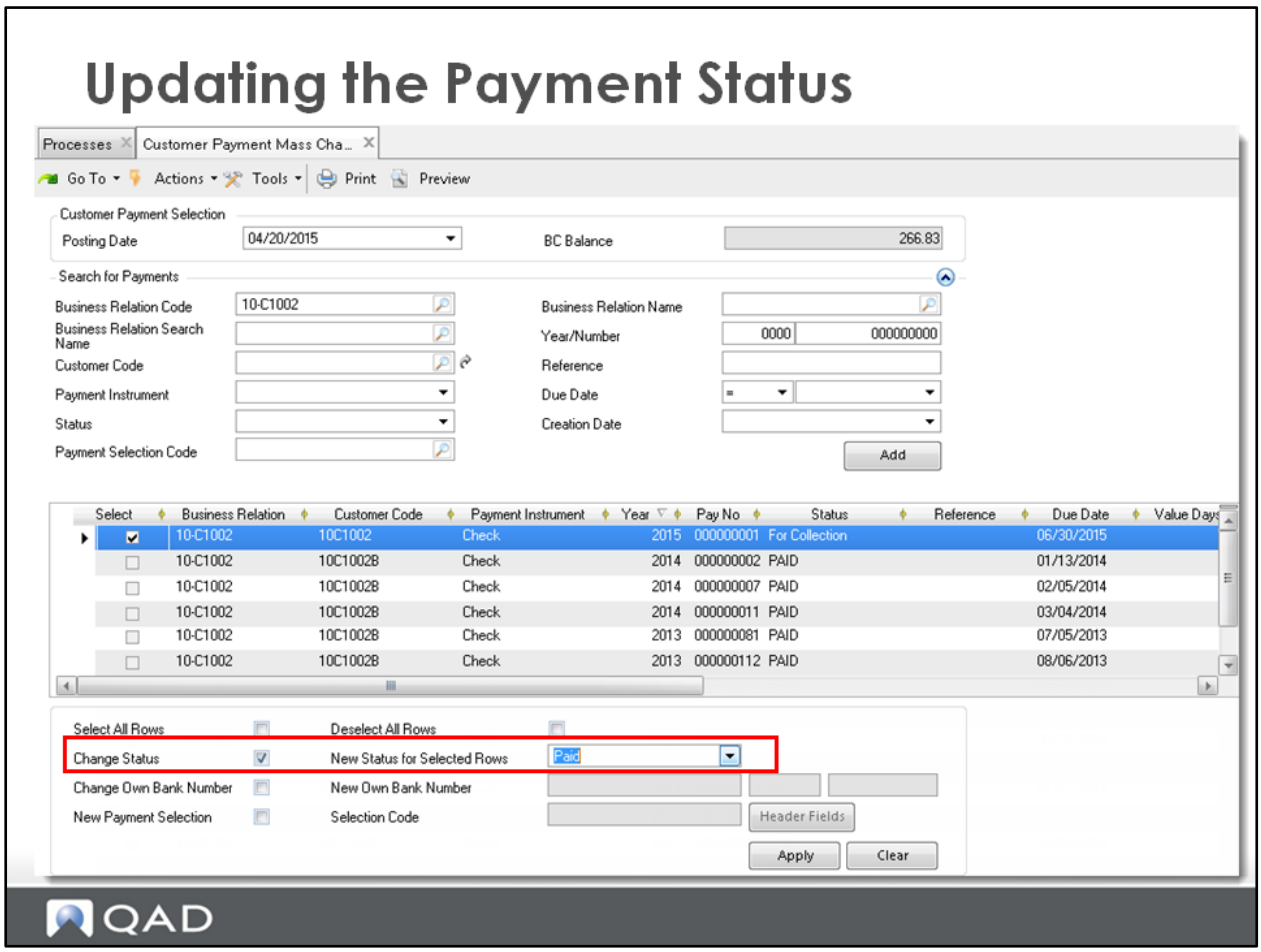
- Enter the customer code. The other fields related to this customer are auto-populated.
- The payment amount is available when you finish allocating the payment to the invoice.
- If you have received payment from the customer when you create this payment record, you can set the status to Paid instead of Initial or For Collection.

Allocating a Customer Invoice



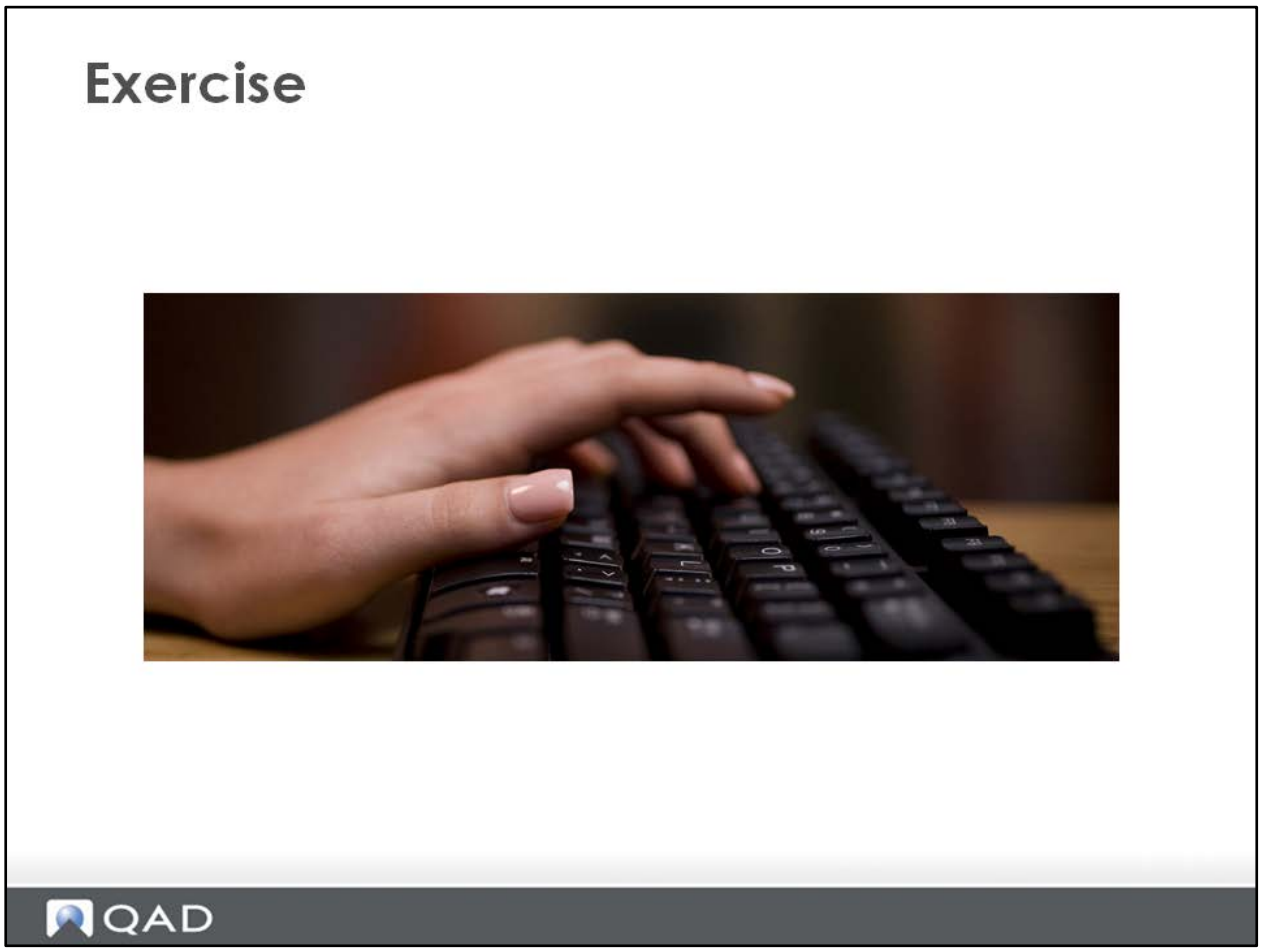
Search for and select the invoice that you are going to match to the customer payment record.

Updating the Payment Status



After receiving payment from the customer, use Customer Payment Mass Change to change the payment status from Initial or For Collection to Paid to complete the process. You can also change payment statuses in batch.

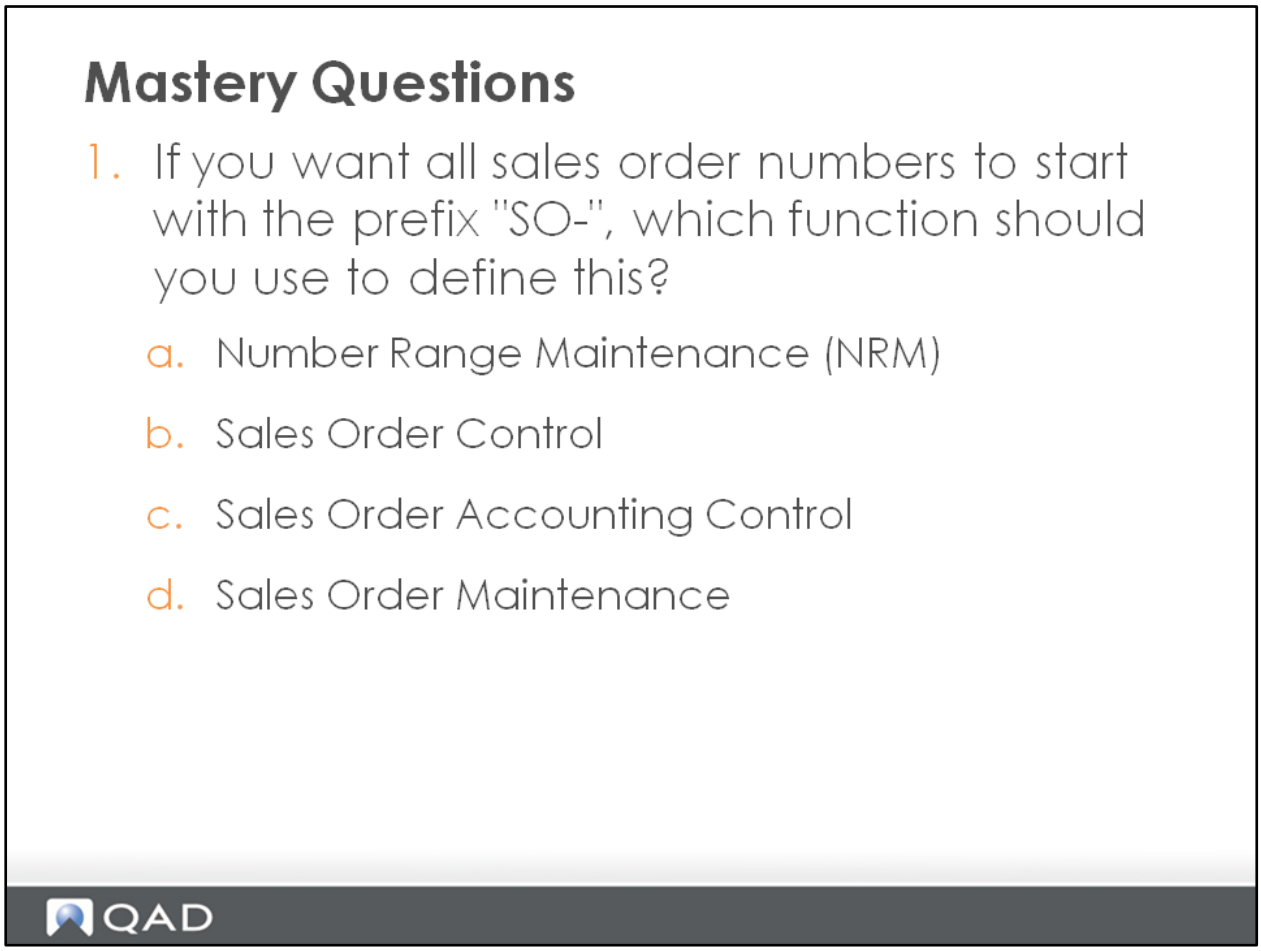
Exercise



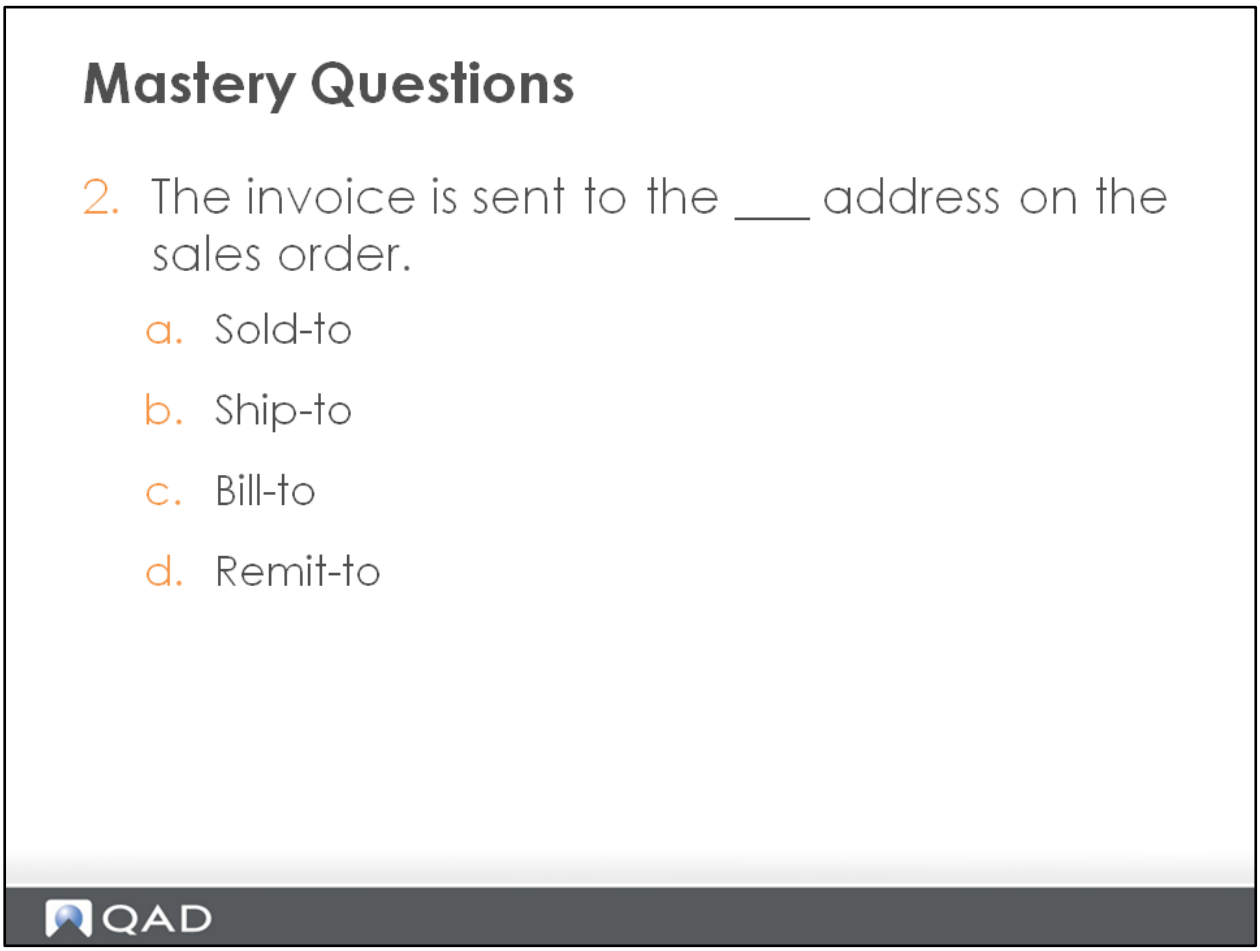
Exercise: Invoice and Accounts Receivable Process

1. Post and print the invoice for the sales order you created and shipped in the Using Standard Sales Orders exercises.
2. Create a customer payment with a status of For Collection and allocate it to the invoice you just posted.
3. Assume that you have received payment from the customer. Update the payment status to Paid.

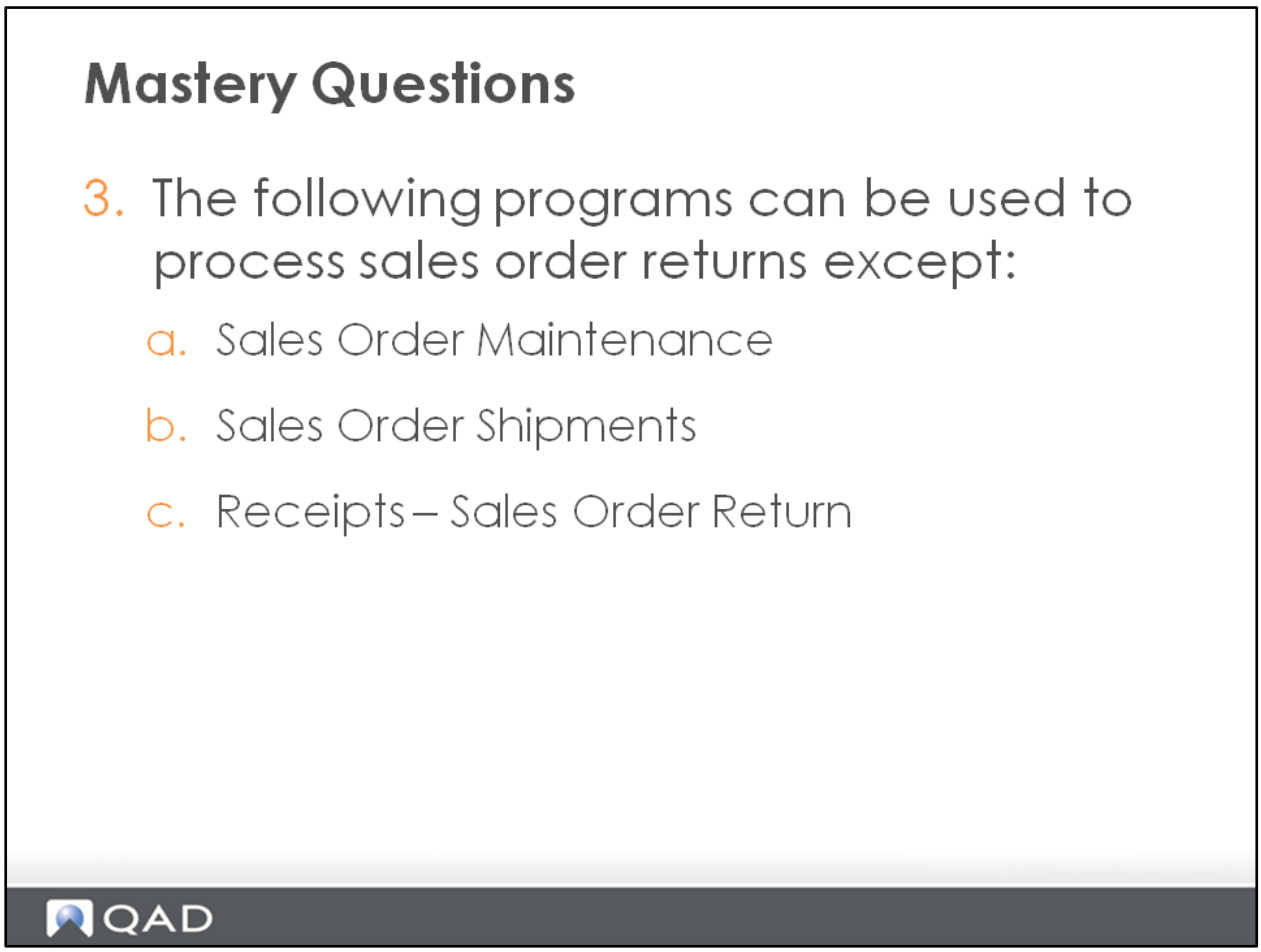
Mastery Questions



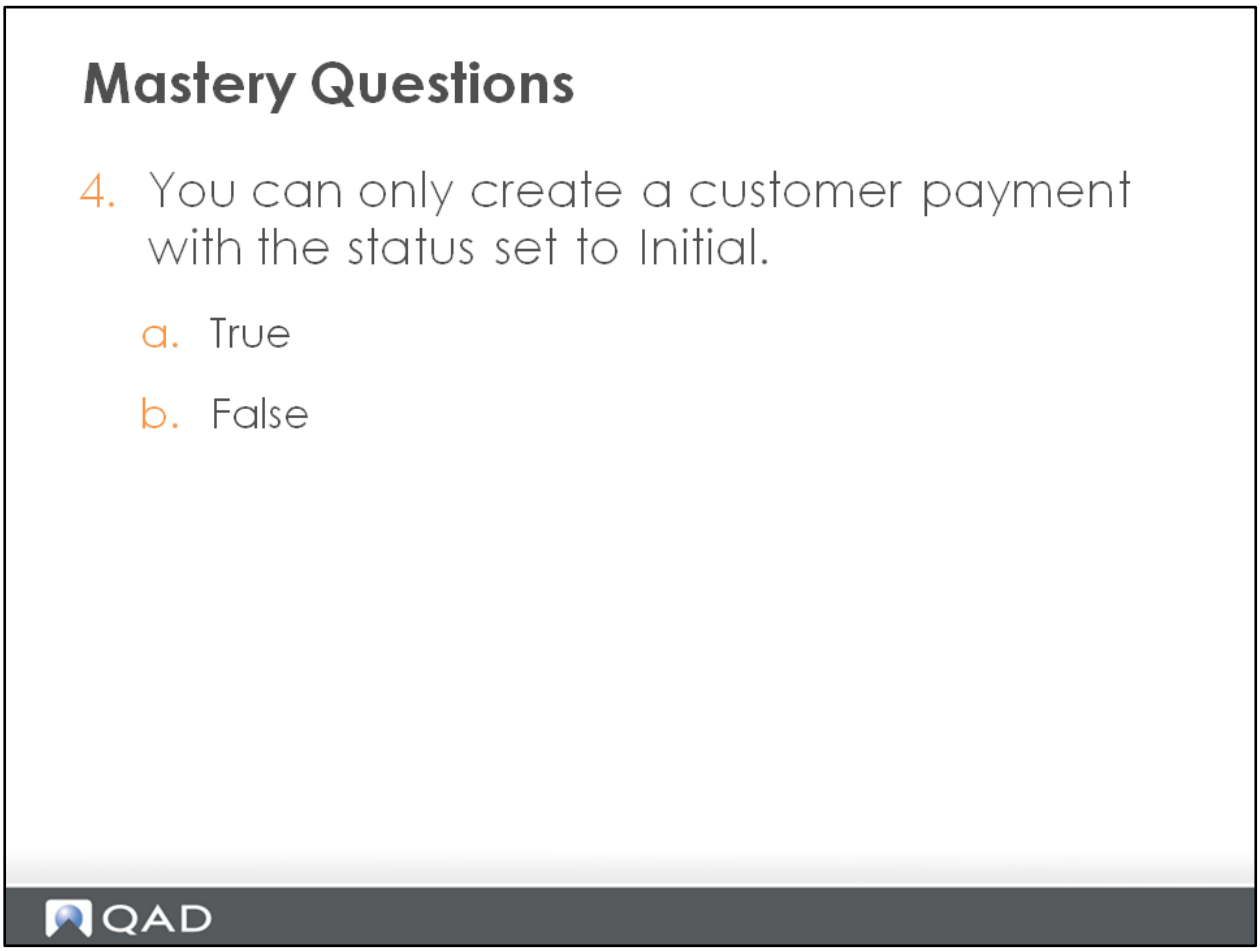
Mastery Questions



Mastery Questions



Mastery Questions



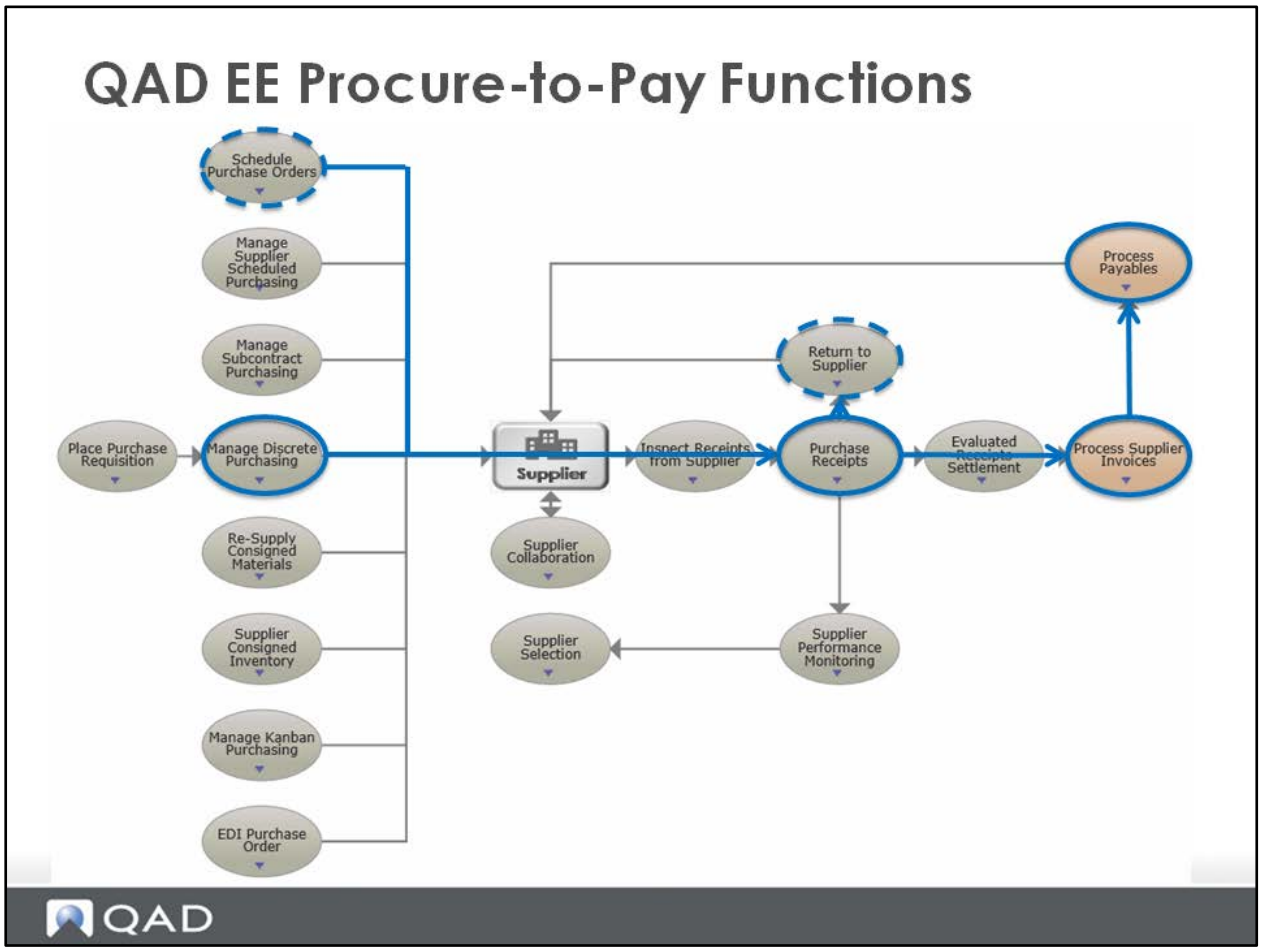
CHAPTER 8

Procure-to-Pay Process

Procure-to-Pay Process



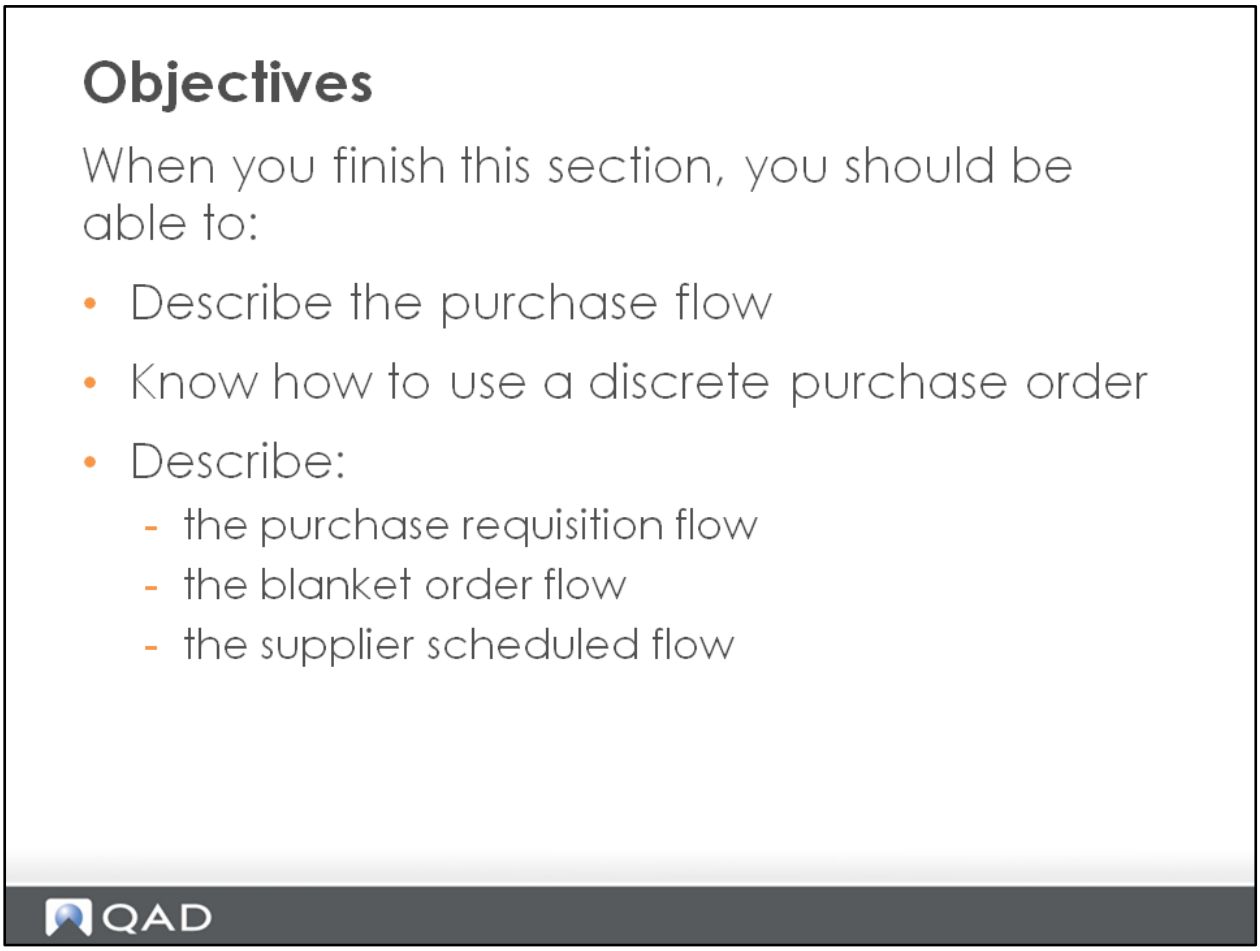
QAD EE Procure-to-Pay Functions



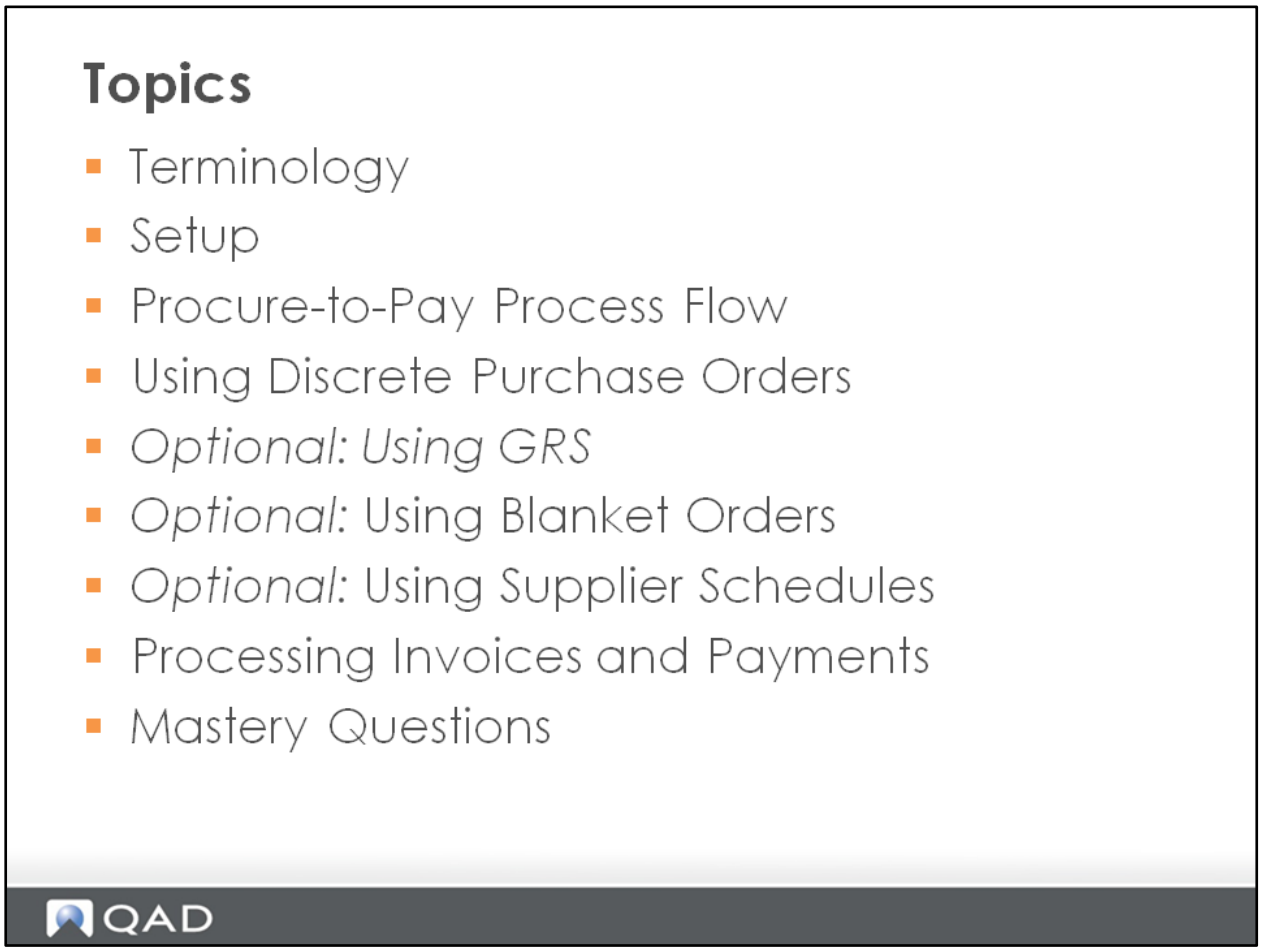
The functionalities in the Purchasing module of QAD EE are not limited to those listed in this training guide. The Purchasing module also includes features such as consignment, EDI, Kanban, and supplier management. This training guide introduces discrete purchasing and supplier scheduled purchasing. The optional standard requisition and blanket order processes are also covered in this guide.

For information on the other Purchasing module features, see the relevant training guide or user guide.

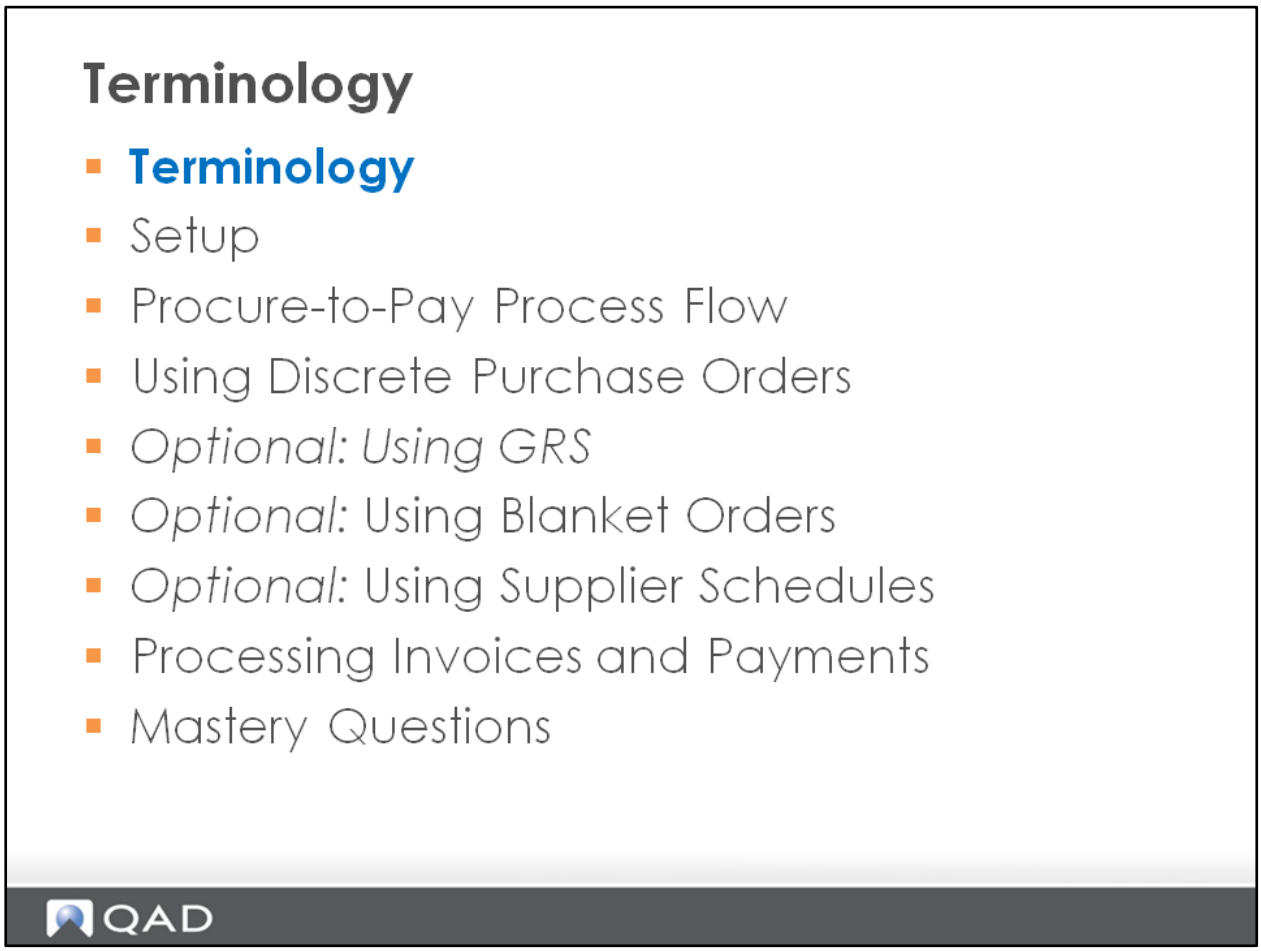
Objectives


Objectives
When you finish this section, you should be able to:
• Describe the purchase flow
• Know how to use a discrete purchase order
• Describe:
- the purchase requisition flow
- the blanket order flow
- the supplier scheduled flow
QAD

Topics


Topics
Terminology
Setup
Procure-to-Pay Process Flow
Using Discrete Purchase Orders
Optional: Using GRS
Optional: Using Blanket Orders
Optional: Using Supplier Schedules
Processing Invoices and Payments
Mastery Questions
QAD

Terminology



Terminology



Supplier: Provider of goods or services; individual seller with whom the buyer does business, as opposed to vendors, which is a generic term referring to all sellers in the marketplace.

Supplier Item: The item number that the supplier uses to identify an item.

Requisition: A statement that someone needs a certain amount of an item by a certain time.

The requisition lists what items are needed, how many, where, and when.

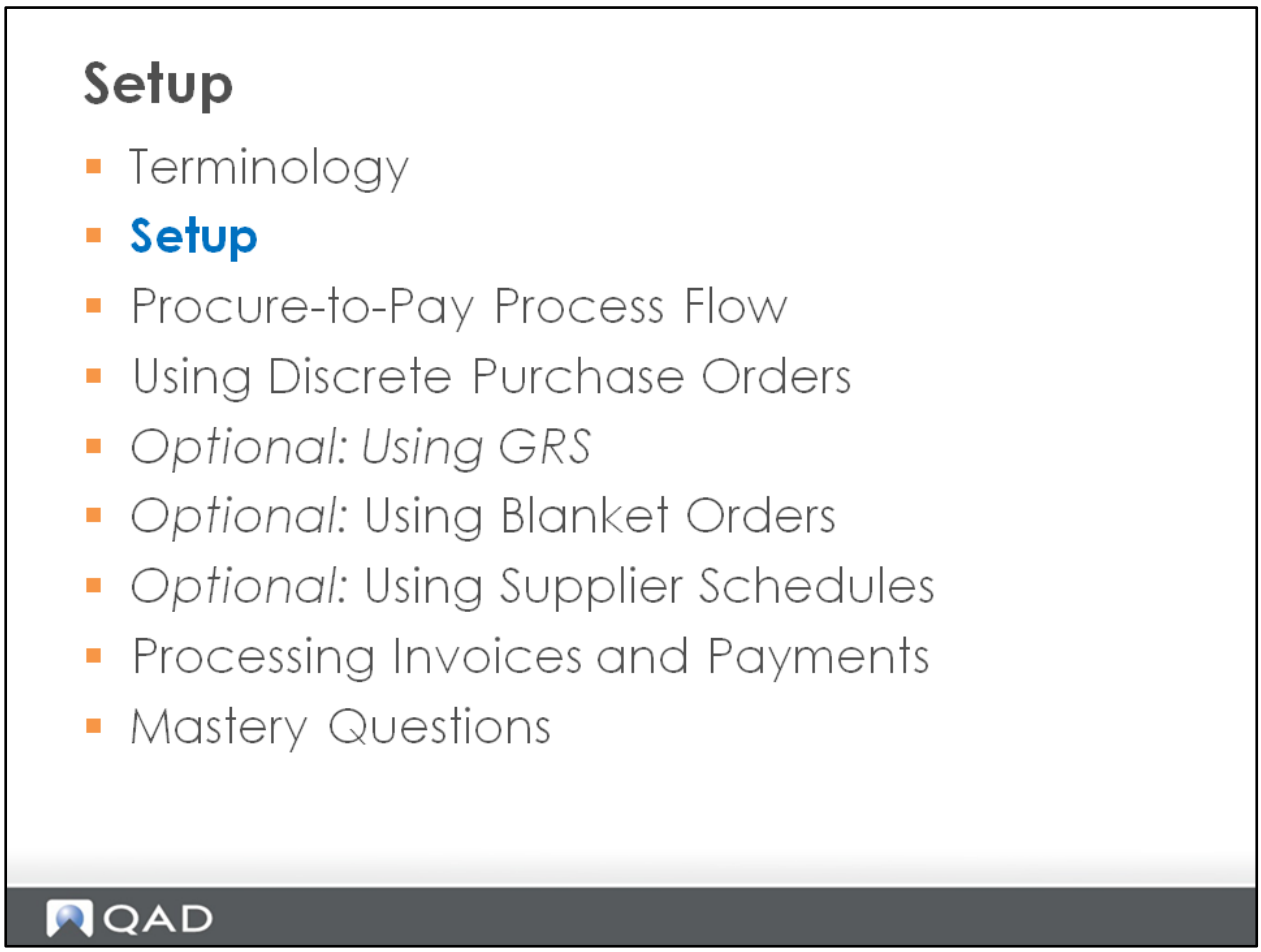
Purchase Order (PO): A contract with a supplier to purchase a specific quantity of items to be delivered at an agreed upon date for a set price. A purchase order should include the order quantity, description, price, discounts, payment terms, transportation terms, and all other terms pertinent to the purchase and its execution.

Blanket Purchase Order: A long-term commitment to a supplier for products against which short-term releases are generated to satisfy requirements. When a need arises, a release is made against the blanket order to generate a purchase order.

Supplier Scheduled Order: A cumulative and schedule-driven purchase order with multiple line items from which releases of requirements and due dates are issued.

Note: For more terminologies, see the QAD Glossary in the QAD Document Library.

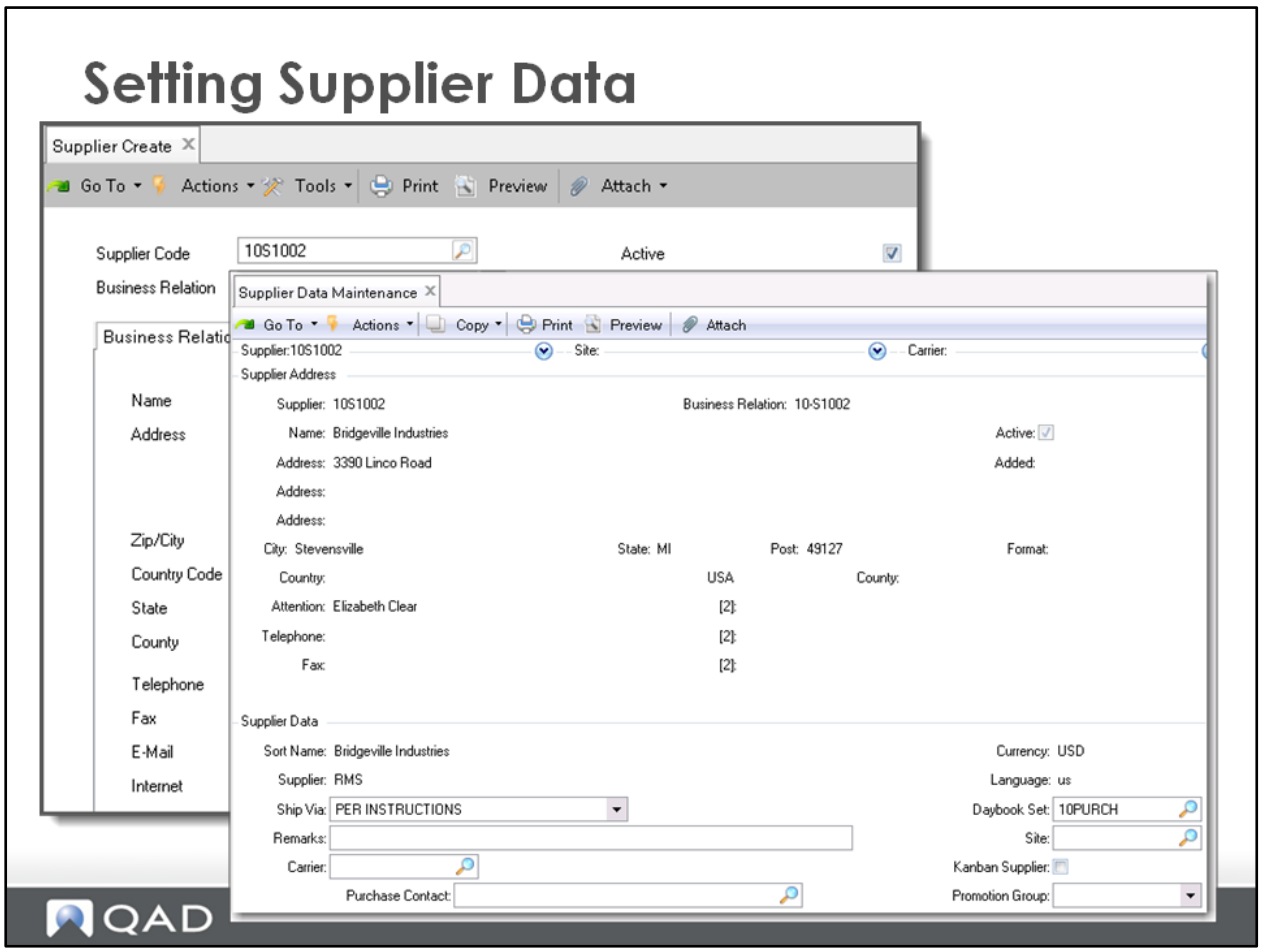
Setup


Setup
Terminology
Setup
Procure-to-Pay Process Flow
Using Discrete Purchase Orders
Optional: Using GRS
Optional: Using Blanket Orders
Optional: Using Supplier Schedules
Processing Invoices and Payments
Mastery Questions
QAD

Setup


Setup
Setting Supplier Data
Adding Supplier Item
Setting Purchasing Controls
QAD

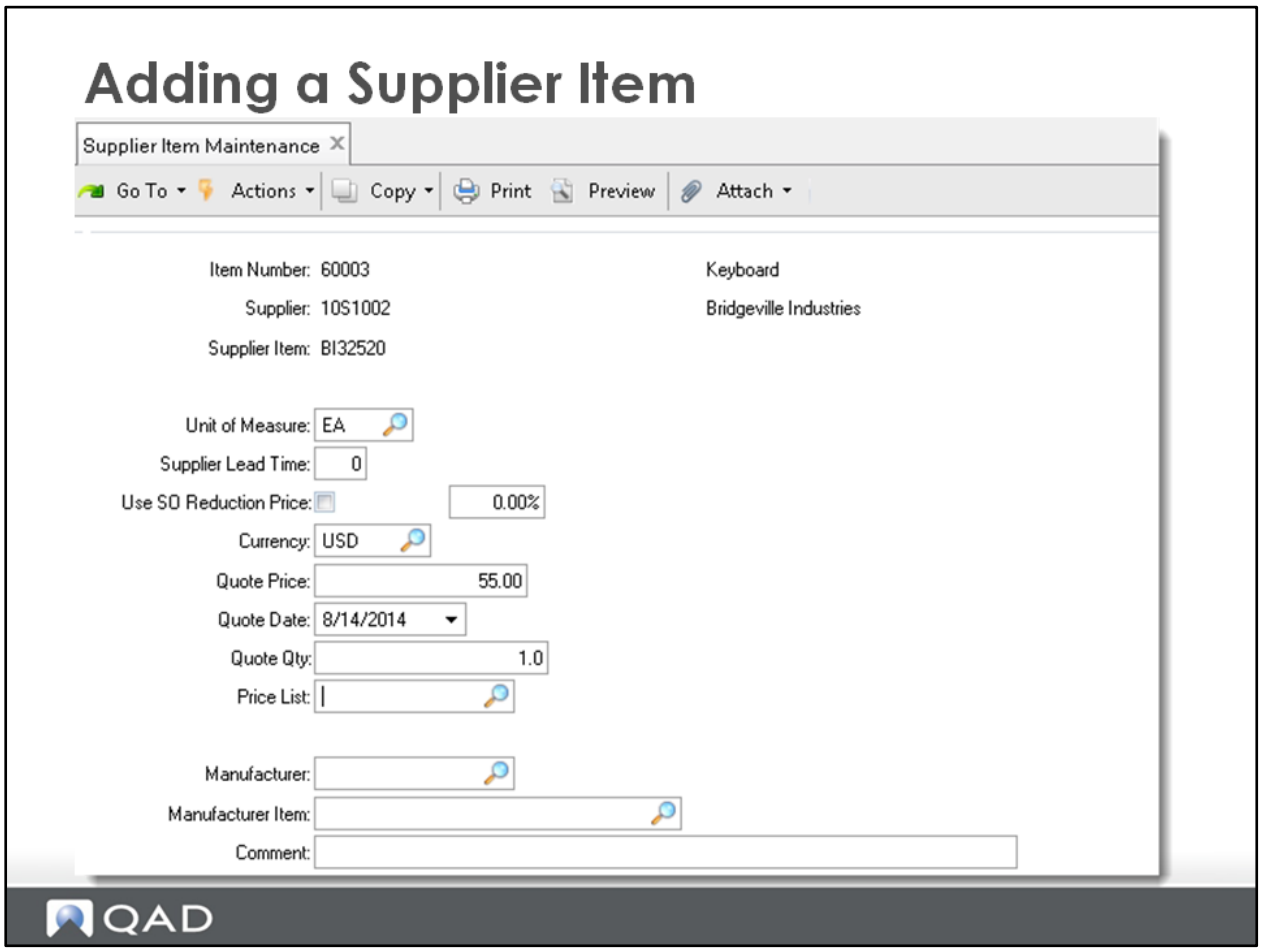
Setting Supplier Data



A company's Finance Department is generally responsible for creating supplier records in the system using Supplier Create.

Logistics staff can then use Supplier Data Maintenance to review and modify the supplier data.

Adding a Supplier Item

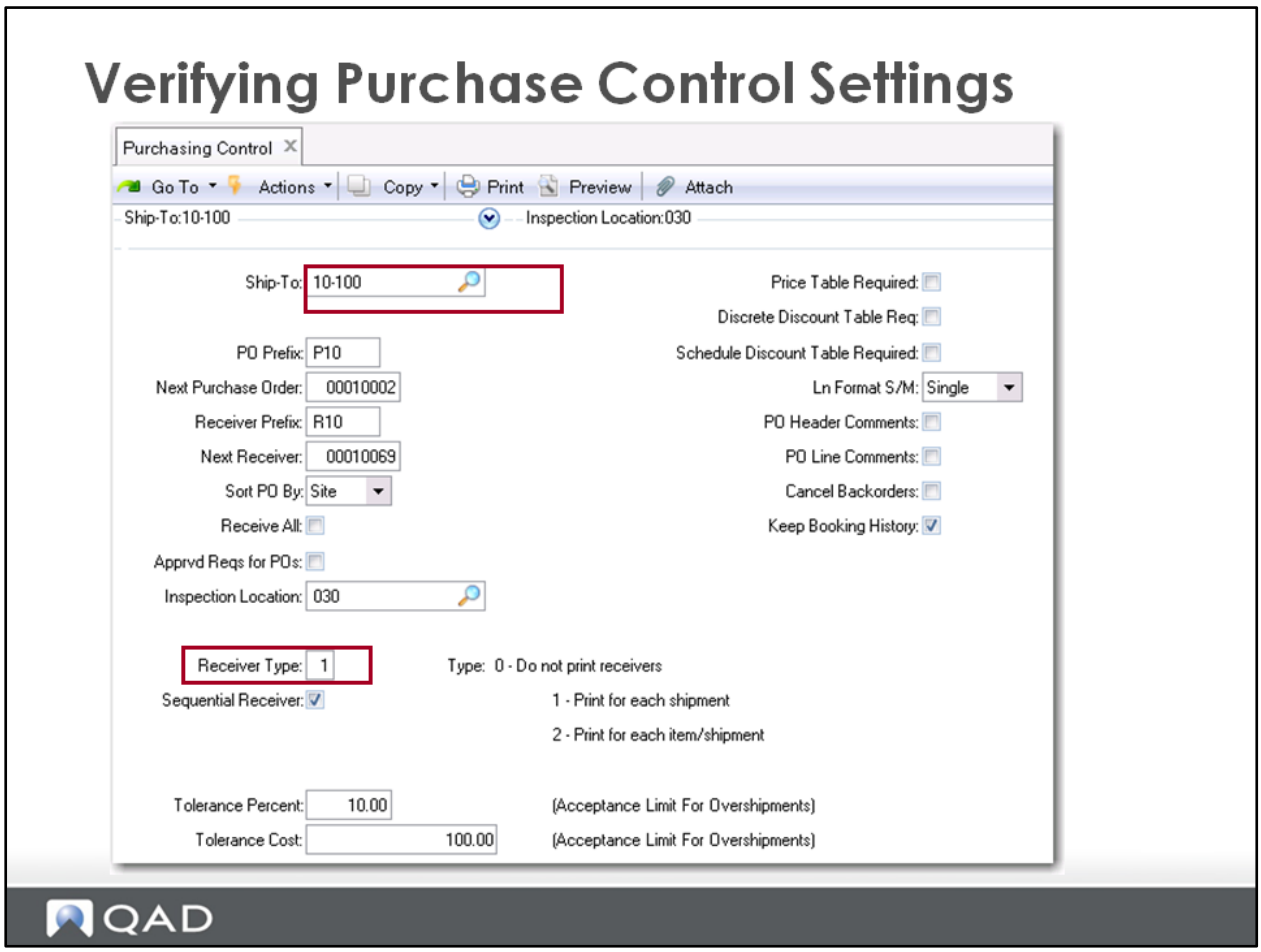


Enter information obtained from the supplier, Bridgeville Industries, about the keyboard in Supplier Item Maintenance (1.19). The supplier's corresponding item number for QMI item 60003 is BI32520.

Typically, suppliers do not use the same numbering scheme that their customers do. By entering the supplier item information in the system, the buyer can use either the supplier's item number or their own company's item number on purchase orders. The system then recognizes both numbers as belonging to the same item.

Important: The ability to use the Supplier Item Browse to search for an item or supplier is a powerful feature. This feature lets you search for all suppliers that can supply an item, or all the items that you purchase from each supplier.

Verifying Purchase Control Settings



The settings in Purchasing Control affect the purchasing process. Use the Ship-To field to specify the default site code where most shipments are received. The site code is linked to QMI's company address record. This code lets the system print the ship-to address on all purchase orders. The ship-to address can be modified on each purchase order line, if necessary.

In the QMI training data, the PO Prefix field is set to P10 and the Receiver Prefix field is set to R10. Since the Receiver Type field is set to 1, each line item on the PO generates a receiver. Therefore, receiver numbers index differently than PO numbers.

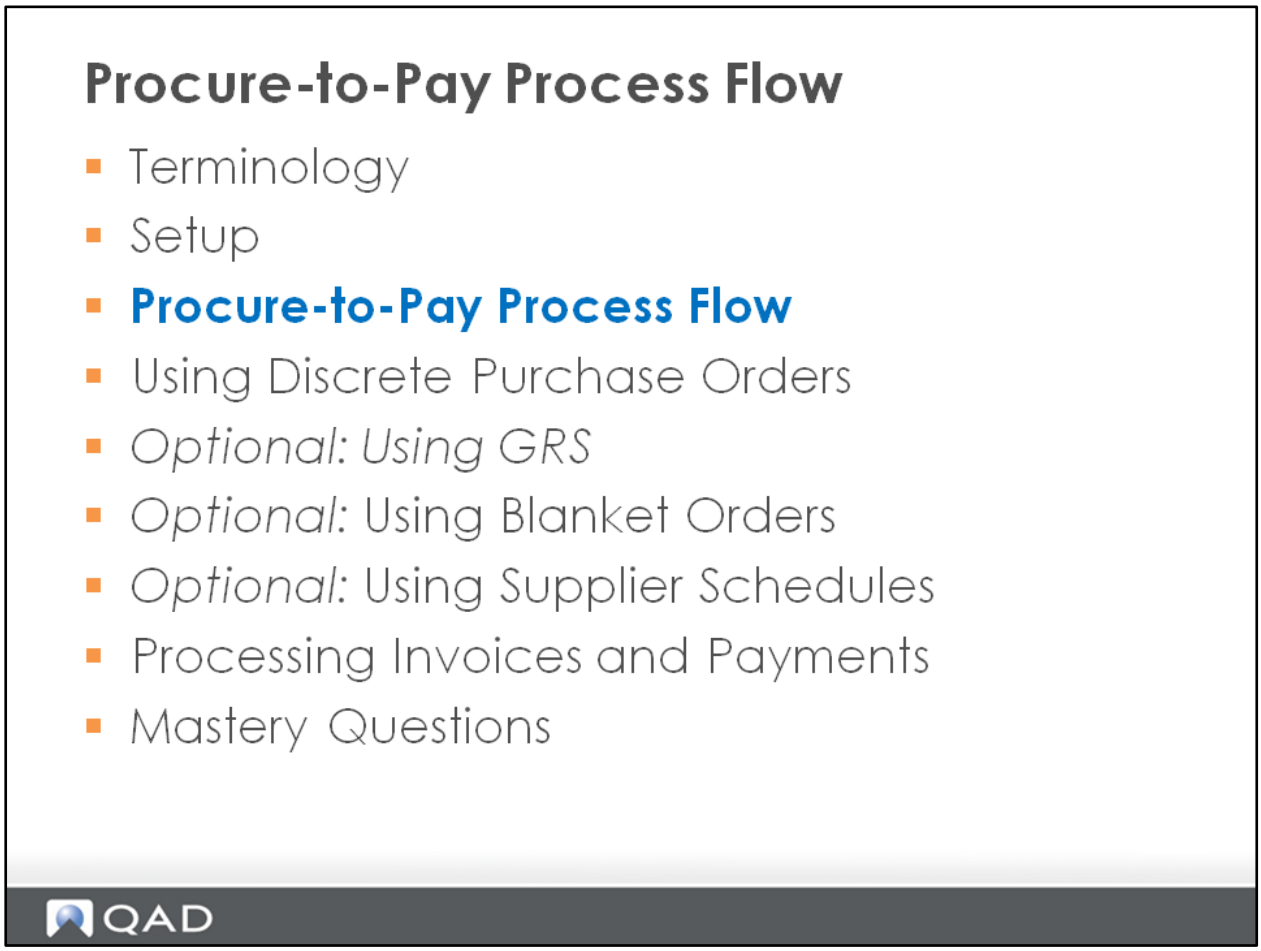
All the fields on the right, except Keep Booking History, are unchecked.

The tolerance fields set the limits for overshipments. The settings indicate that any item receipt with a count 10% greater than the PO quantity or a value of 100 currency units greater than the PO value is rejected.

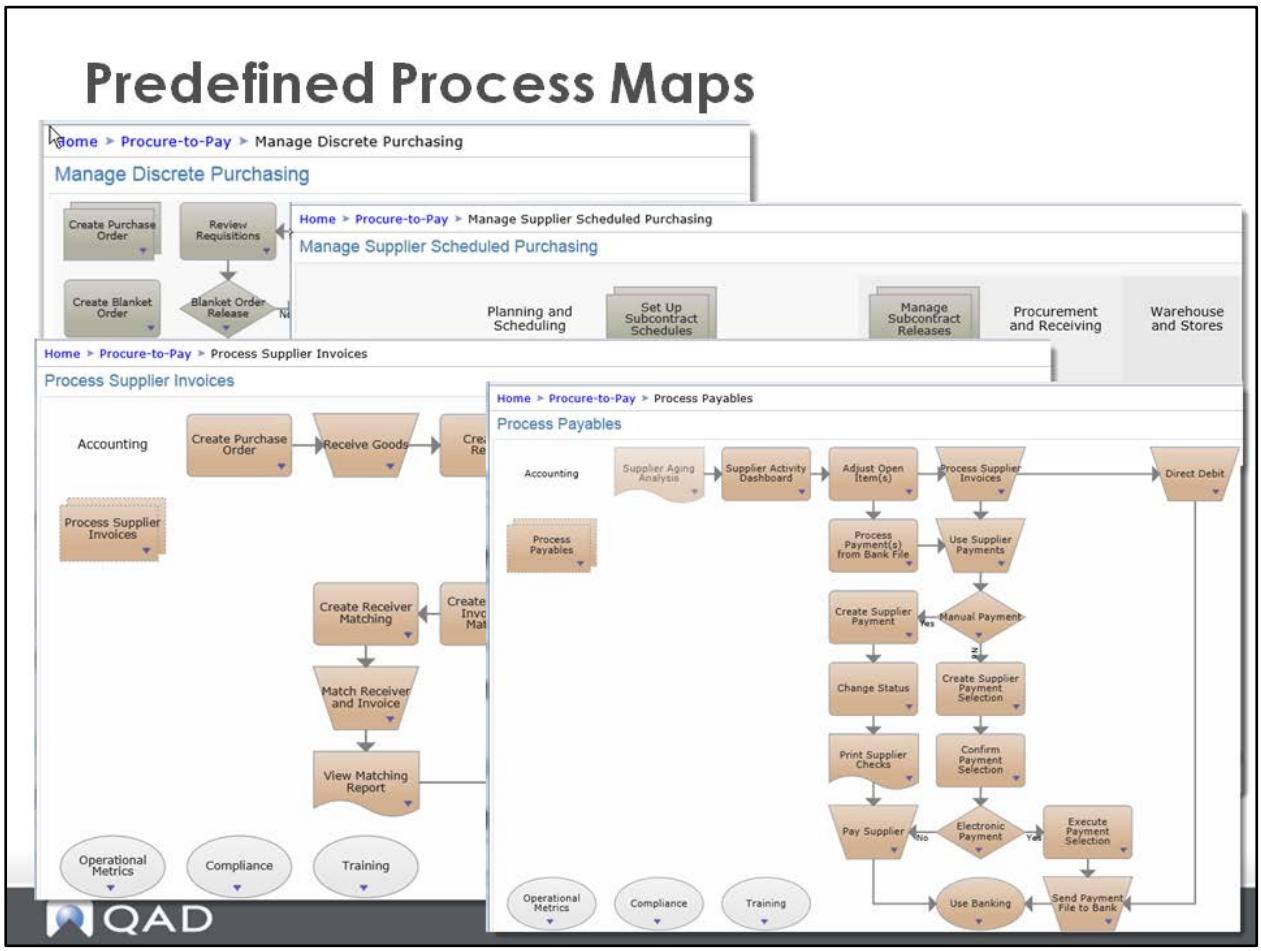
The single entry line format lets you customize due dates, sites, tax statuses, and other information for each line item on a purchase order. The Multiple entry feature lets you enter basic information, such as the item number, quantity, and price, for several lines on a single screen.

PO header and line comments are used to add significant detail to a purchase order header (for the entire order), or to the line item detail (which applies to a specific line only). The control settings let you set the defaults for each new order.

Procure-to-Pay Process Flow



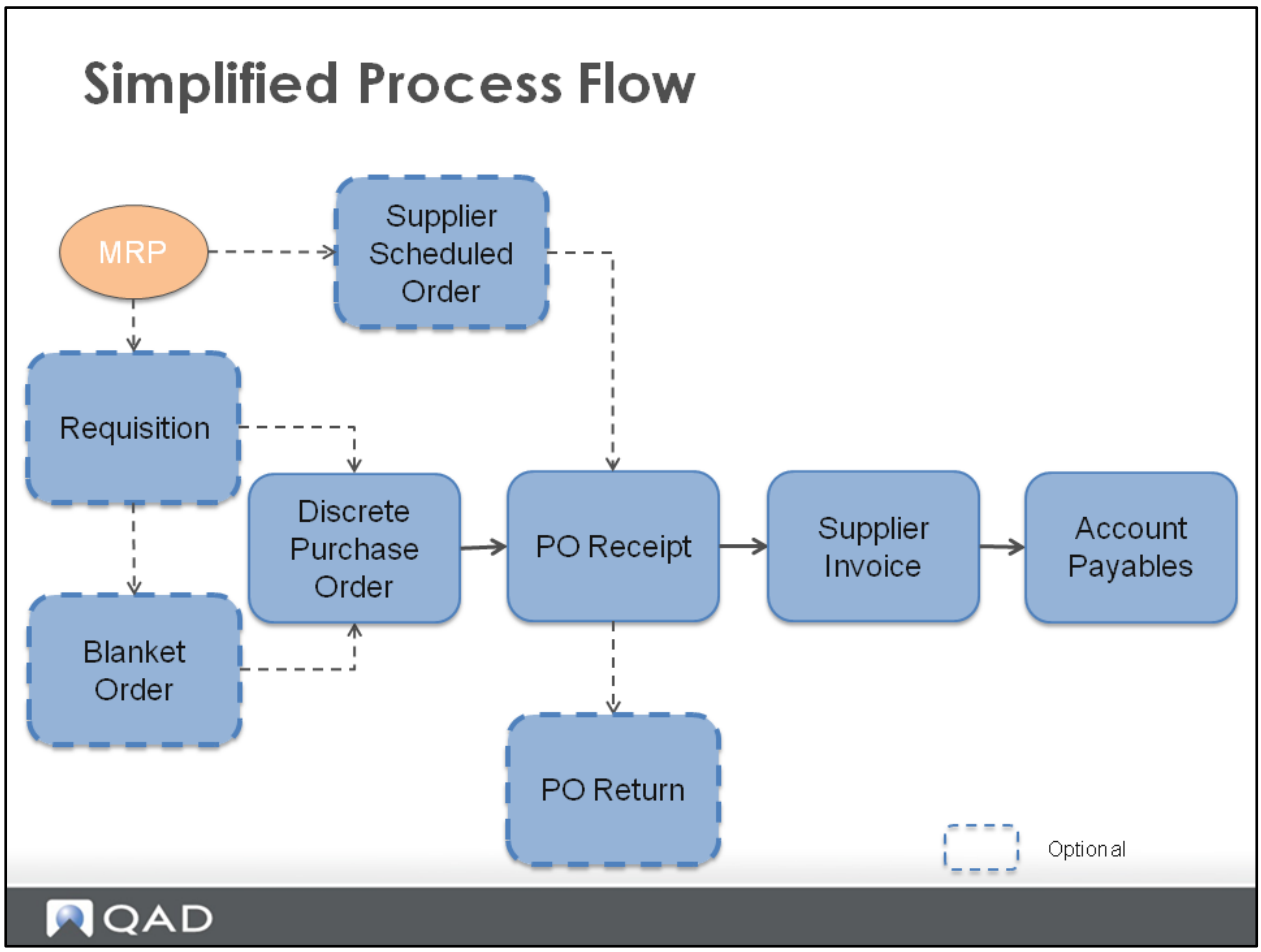
Predefined Process Maps



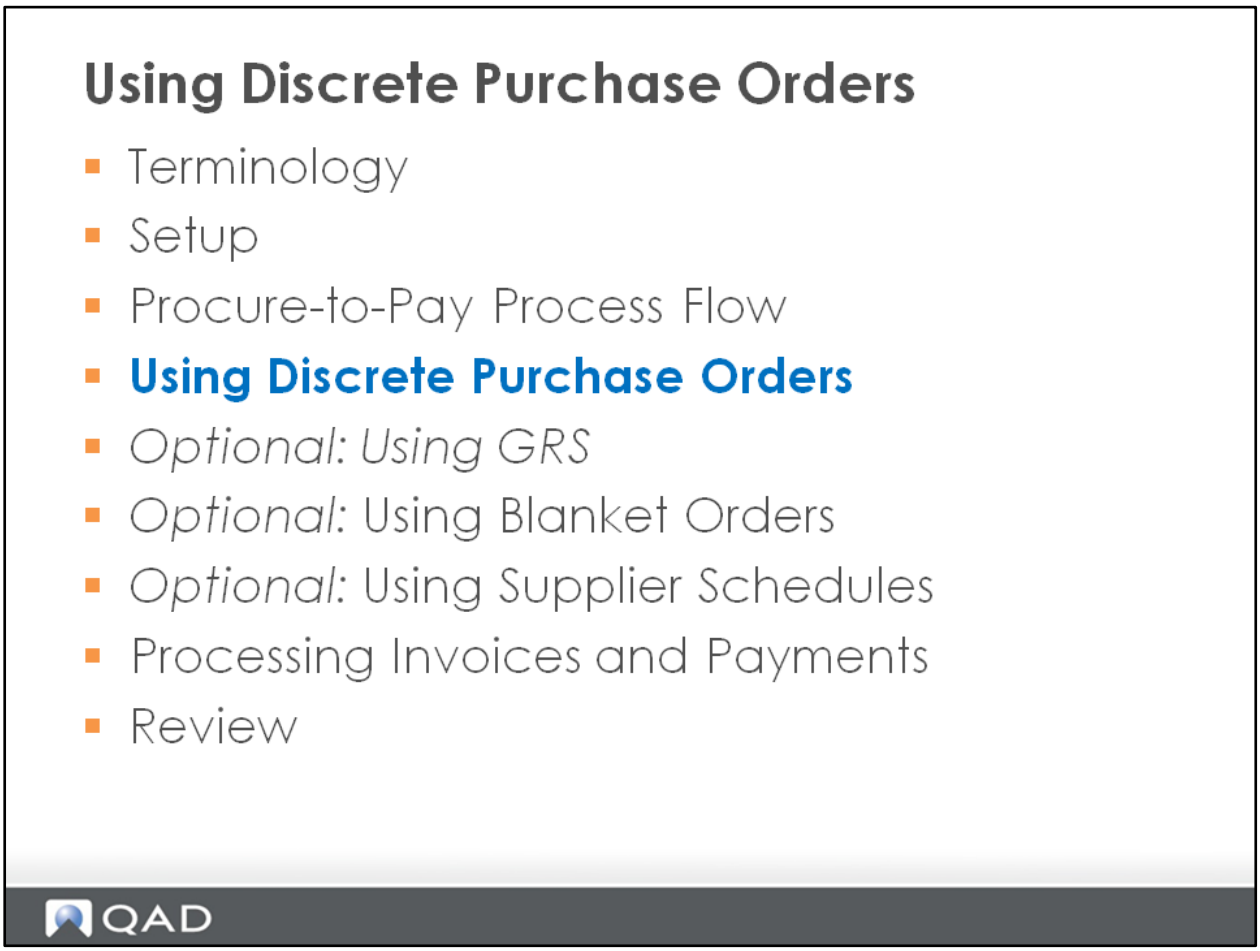
QAD Enterprise Application has predefined process maps, which map real-world business processes. You can use the pre-delivered Procure-to-Pay process map or you can create your own process maps that fit your business environment.

This training course only discusses the fundamental steps in Procure-to-Pay, as the simplified process flow in the next slide shows.

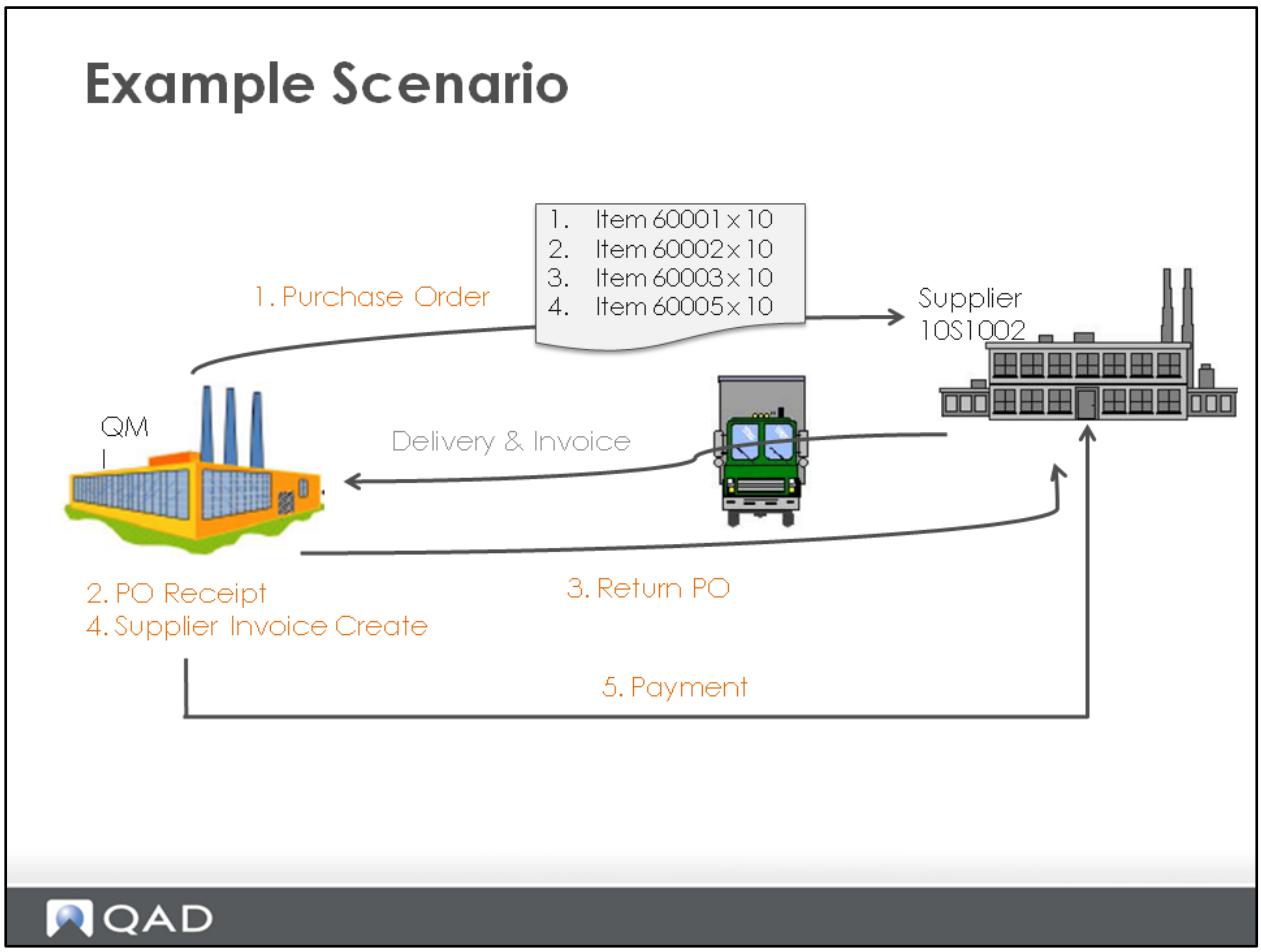
Simplified Process Flow



Using Discrete Purchase Orders



Example Scenario

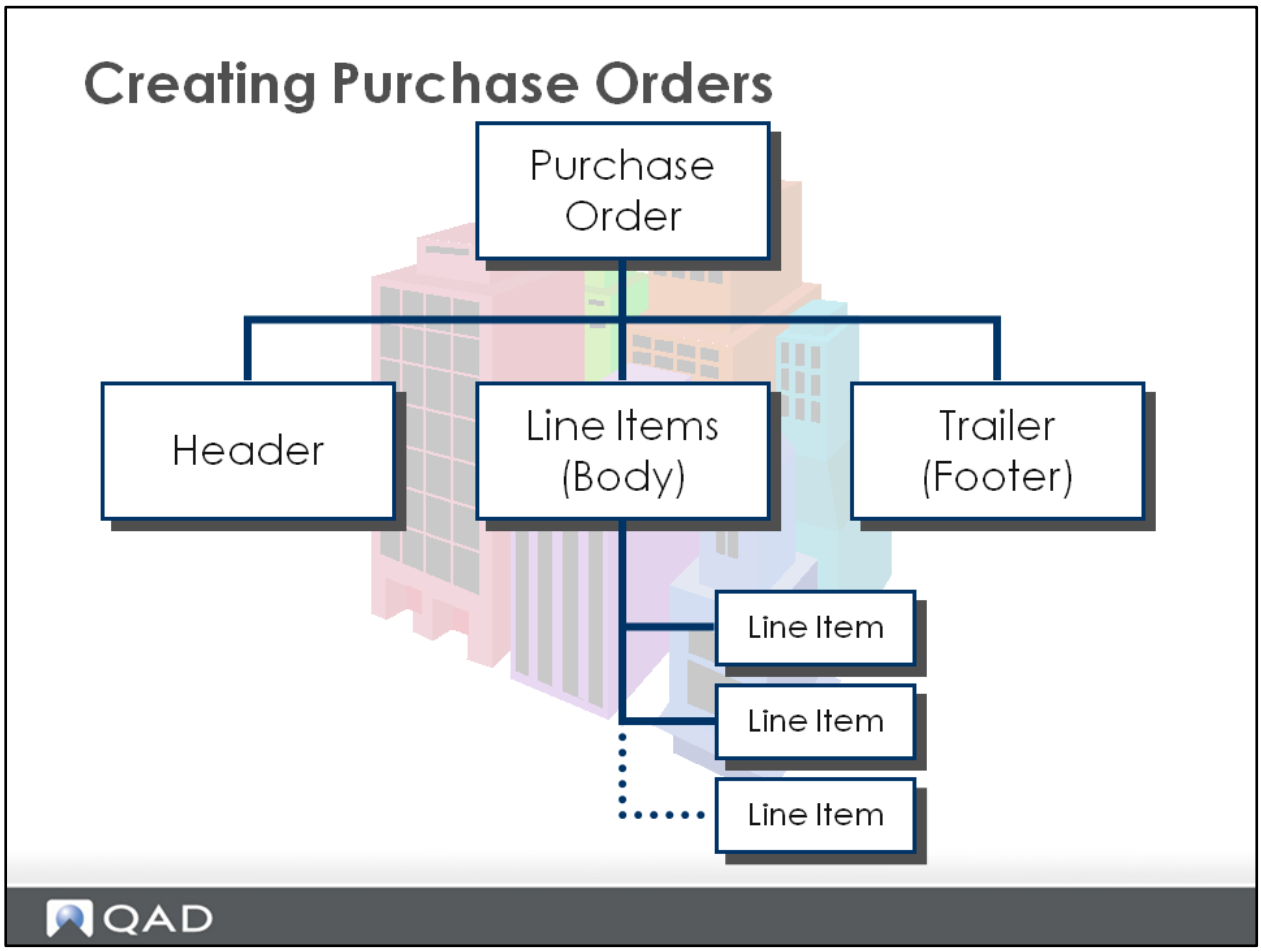


The example shows the following purchasing activities:

1. Create a purchase order to buy the components (items 60001, 60002, 60003, and 60005) in sufficient quantities to build ten medical ultrasound devices.
2. Receive the items into inventory.
3. Process the PO return.
4. Process the supplier invoice.
5. Process the payment to the supplier.

Note: This section only covers the PO creation, receipt, and return processes. For more information on the supplier invoice and payment processes, see *Processing Invoices and Payments*.

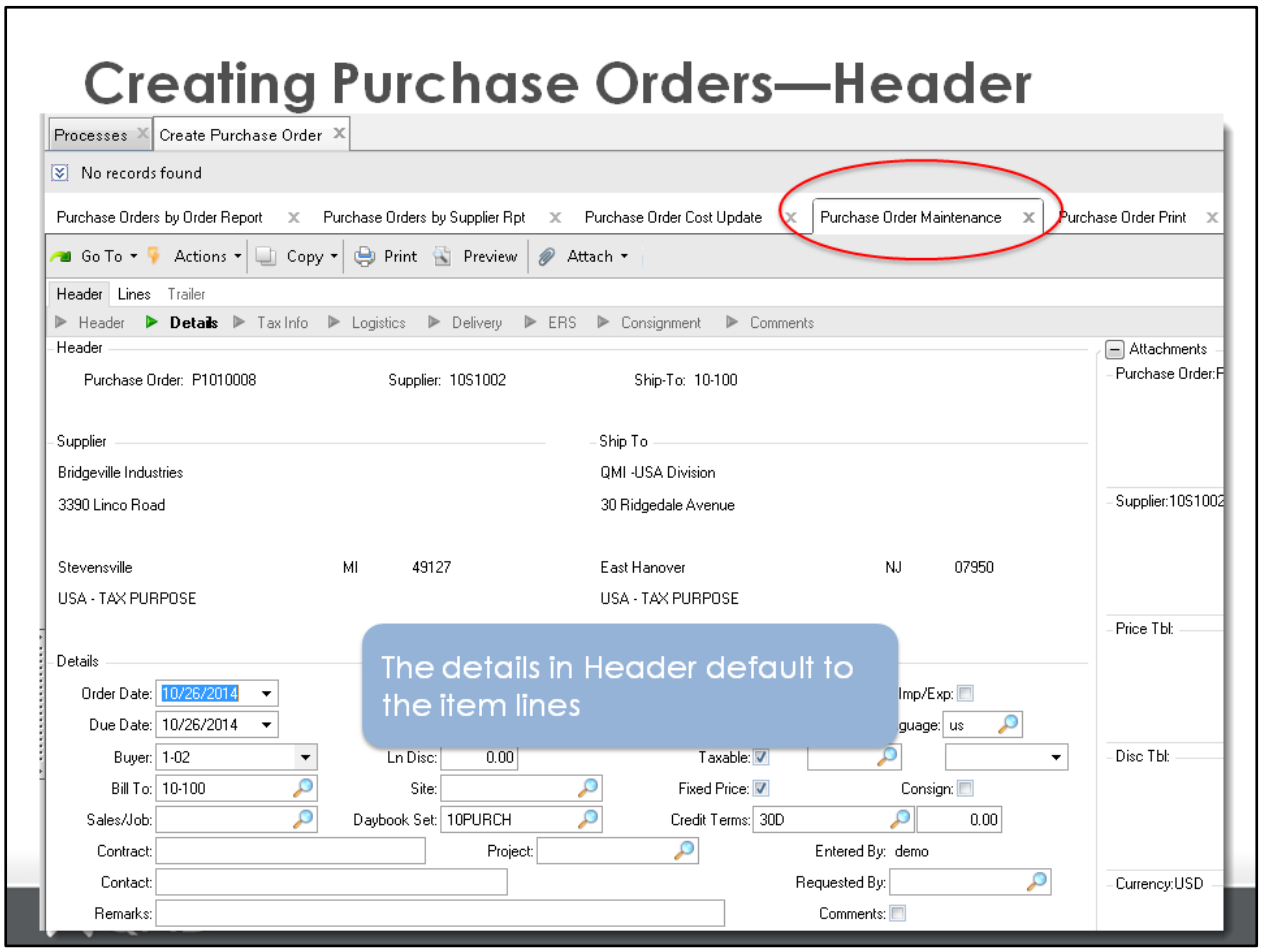
Creating Purchase Orders



There are three elements of a purchase order:

- Header
- Line Items
- Trailer

Creating Purchase Orders—Header

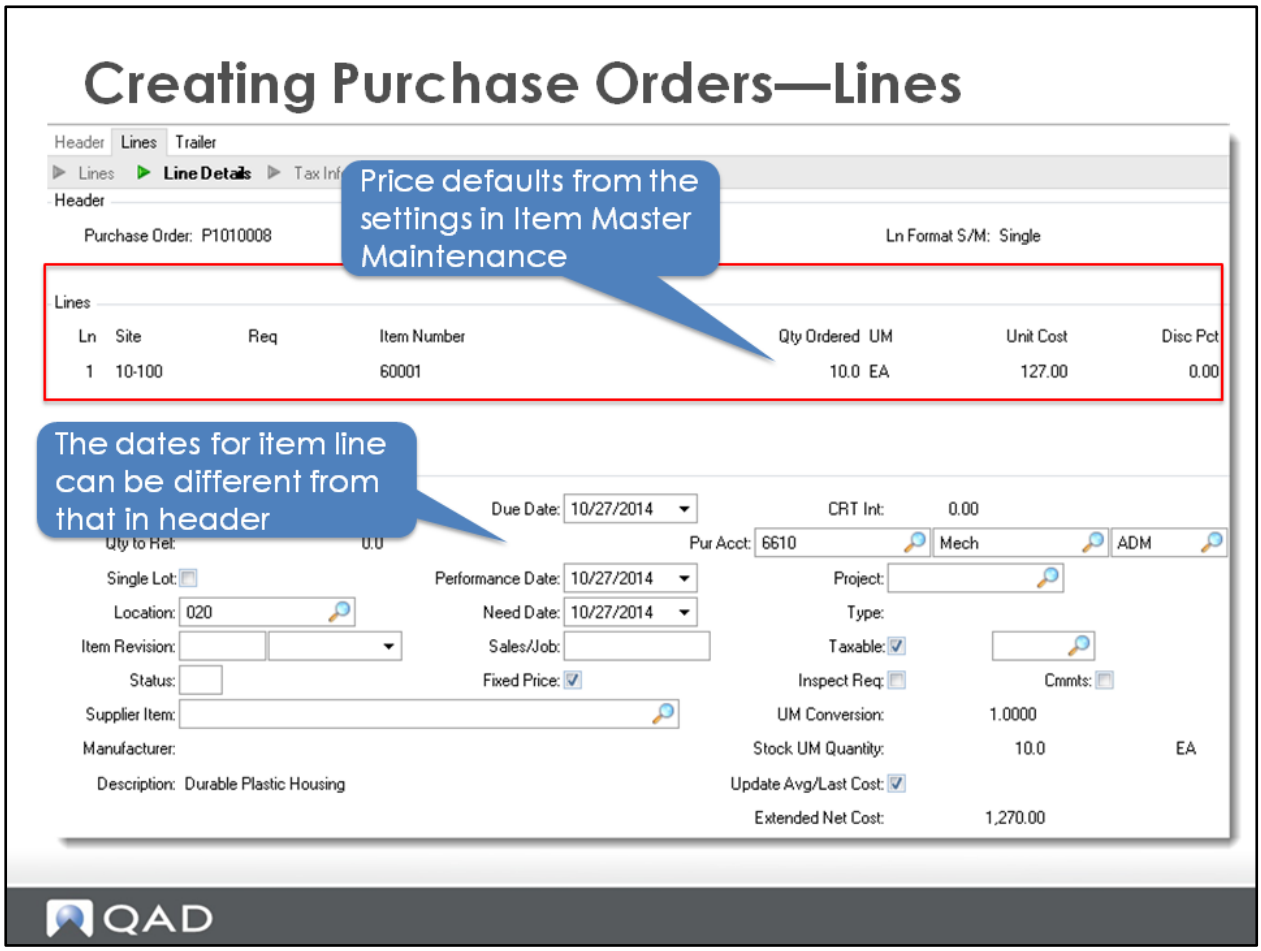


To create a discrete purchase order, use the Create Purchase Order node in the Manage Discrete Purchasing process map. The menu collection gathers the menus related to purchase orders.

Header Information

- The purchase order number can either be system-generated or manually entered.
- The supplier is 10S1002.
- The dates entered in the header default to the item lines.
- The tax data defaults from Global Tax Management and is not normally modified in Purchase Order Maintenance.

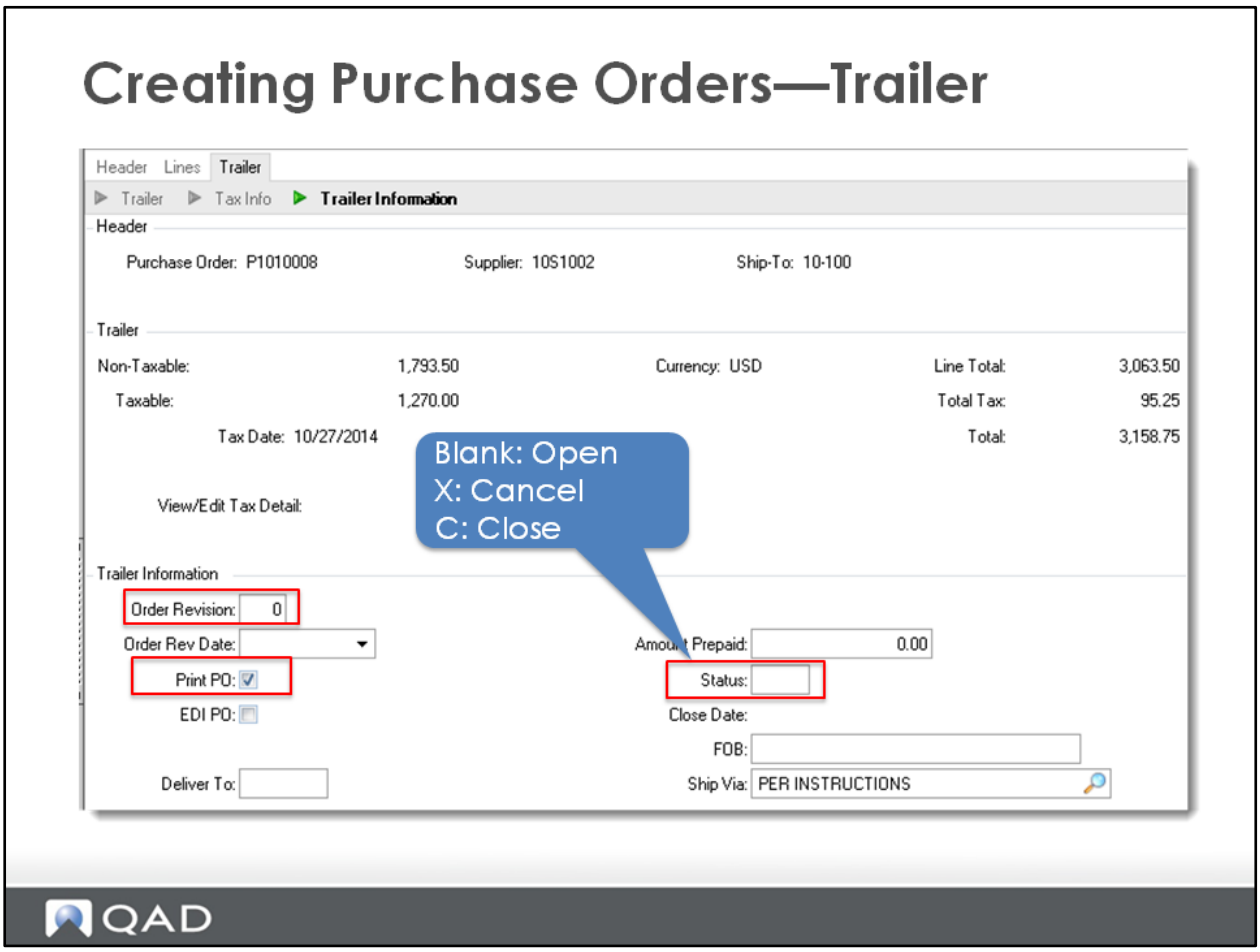
Creating Purchase Orders—Lines



Item Line Information

- Each line indicates a particular item to order, the order quantity, and the price.
- The line details include any exceptions to the header information, such as a delivery date or receiving site, that apply to this line item only and not to the whole order.

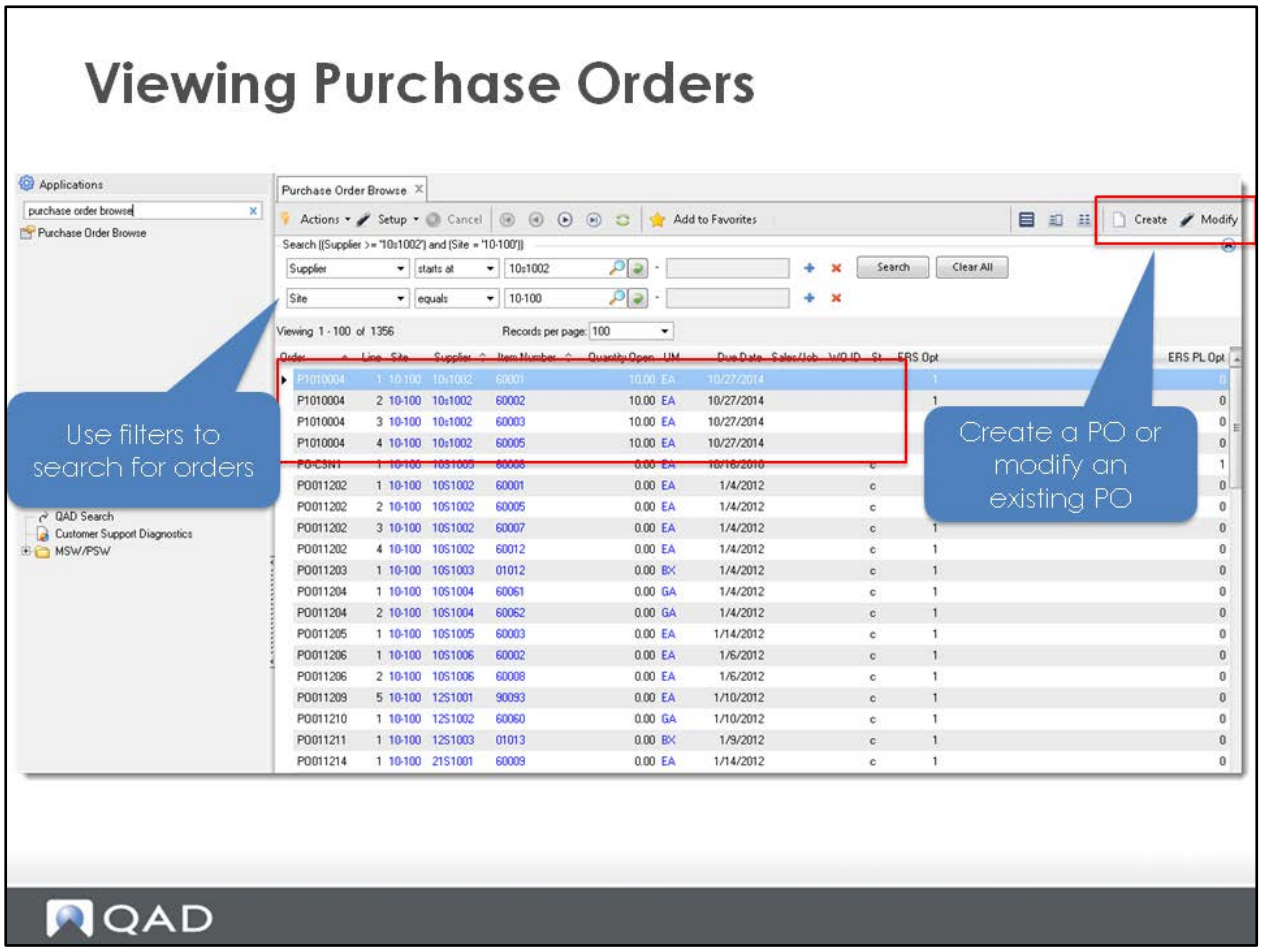
Creating Purchase Orders—Trailer



Trailer Information

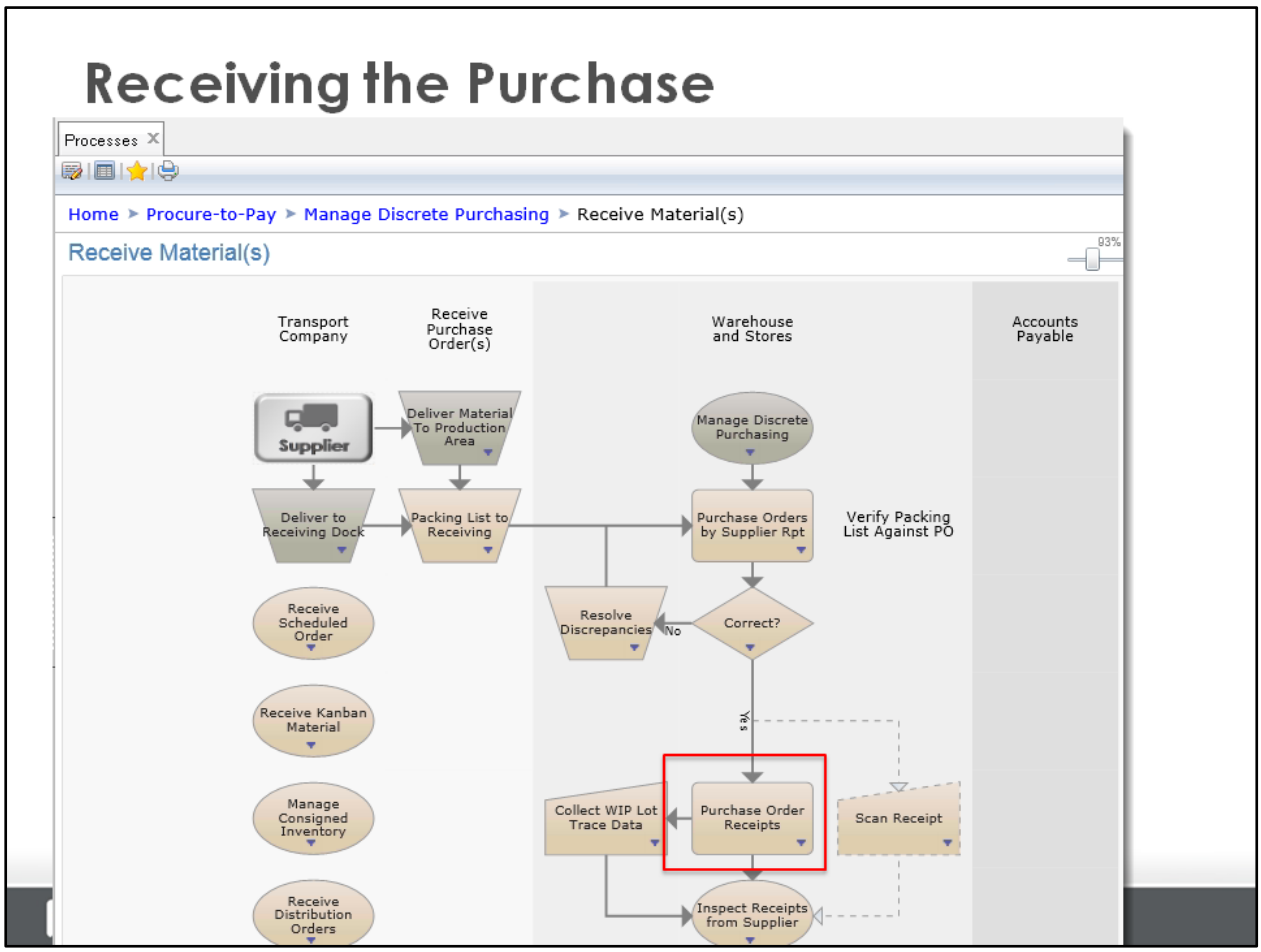
- The trailer information contains tax and order status information for all line items.
- The revision number in the trailer enables you to track how many changes were made to the order.
- The Print PO field in the trailer allows you to print the PO using Purchase Order Print, which is also available in the Create Purchase Order menu collection.
- A blank status indicates that the order is open. You can manually close an order by changing the status to X or C.

Viewing Purchase Orders



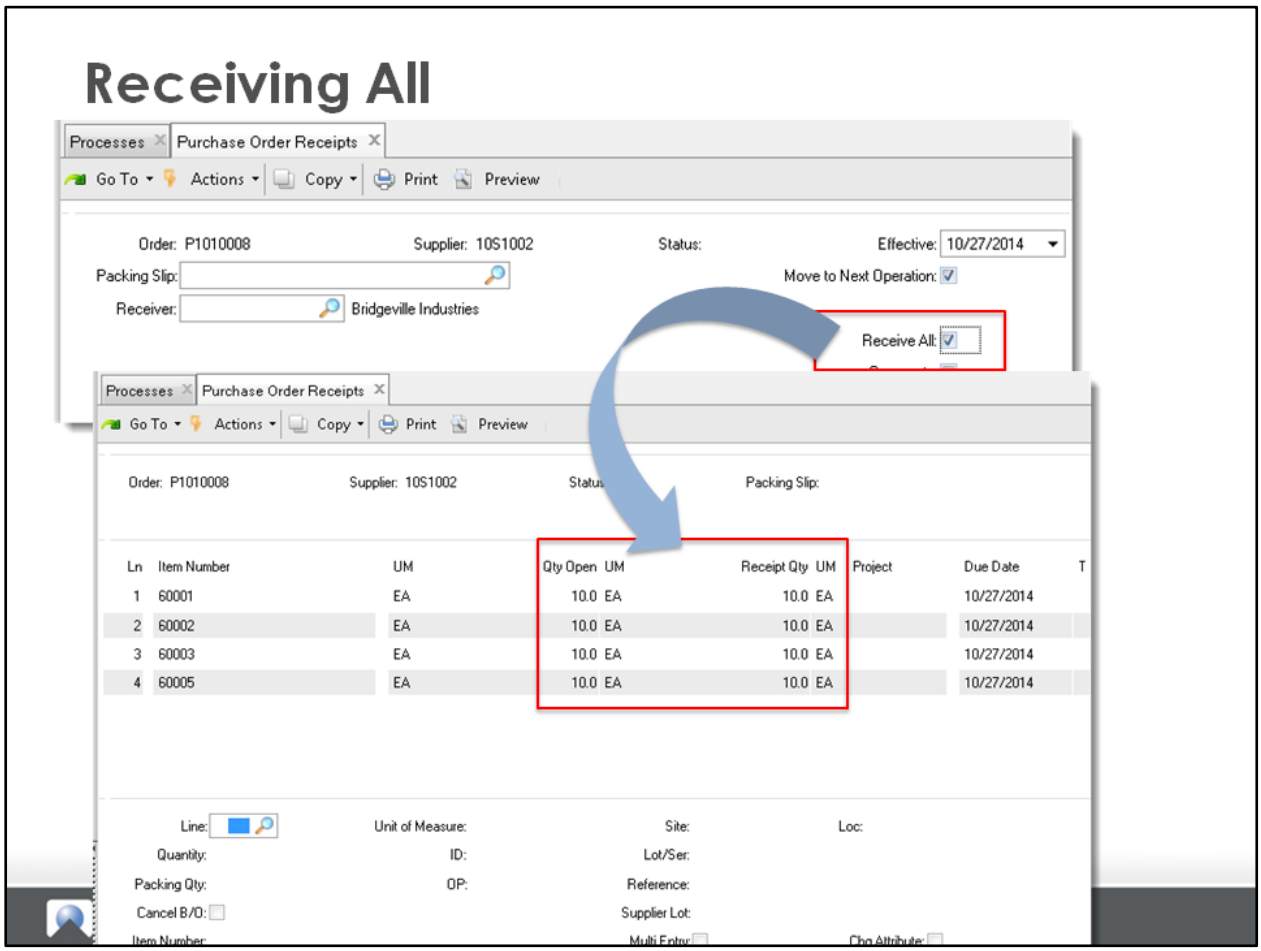
You can review purchase orders using the Purchase Order by Supplier/Order Report within the Create Purchase Order menu collection, or using the Purchase Order Browse, as shown in the slide. The browse provides more functions than the ability to view purchase orders. From the browse, you can also create POs or modify existing POs.

Receiving the Purchase



Open Purchase Order Receipts from Home > Procure-to-Pay > Manage Discrete Purchasing > Receive Material(s).

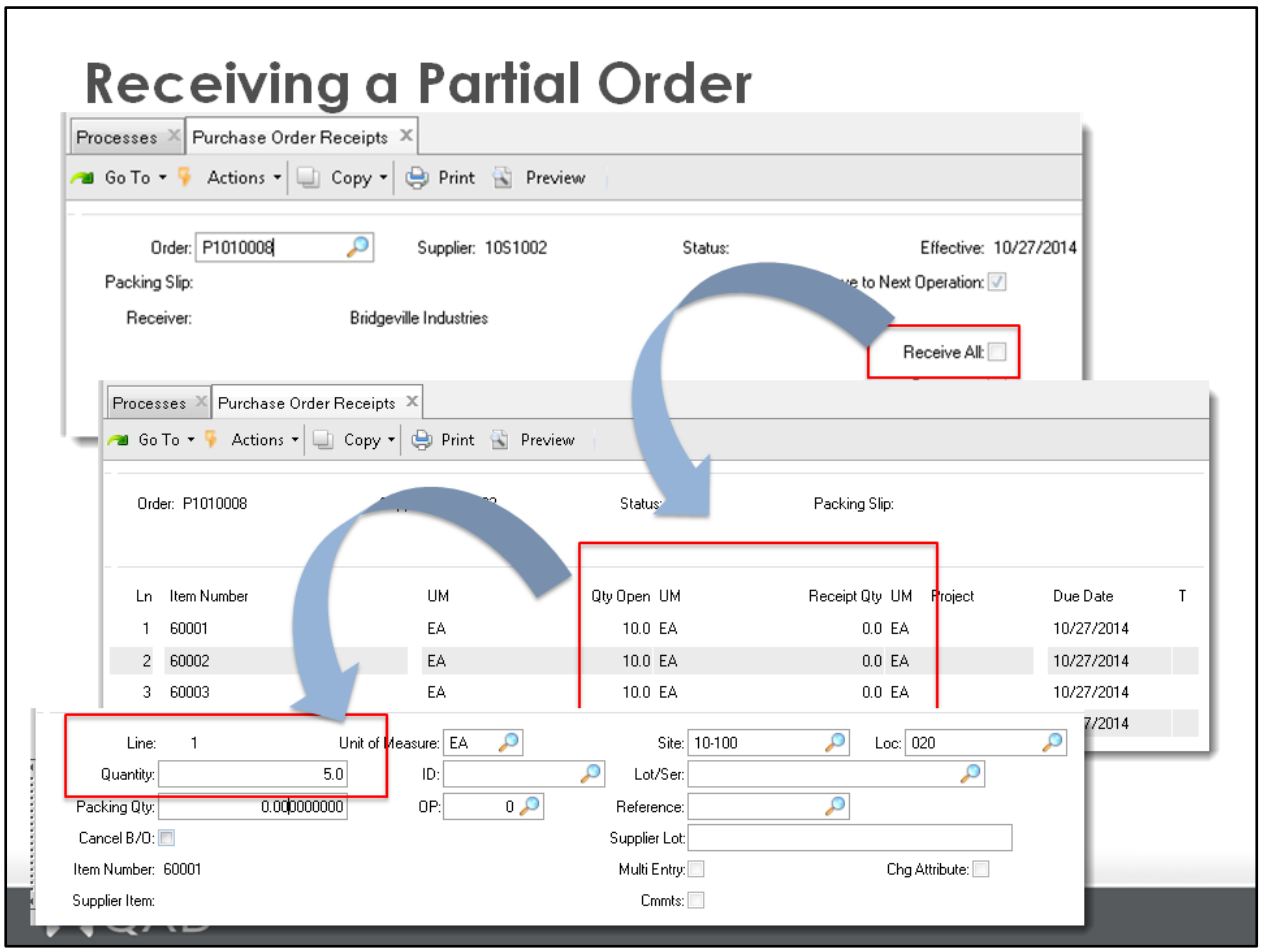
Receiving All



Enter the purchase order number and select the Receive All field. By selecting Receive All, the receiving personnel do not need to receive the items line by line.

If the Receive All field is selected, the system automatically fills the Receipt Quantity field. You can also review the PO lines to be processed by responding Yes when you are asked whether to display the PO lines to be received.

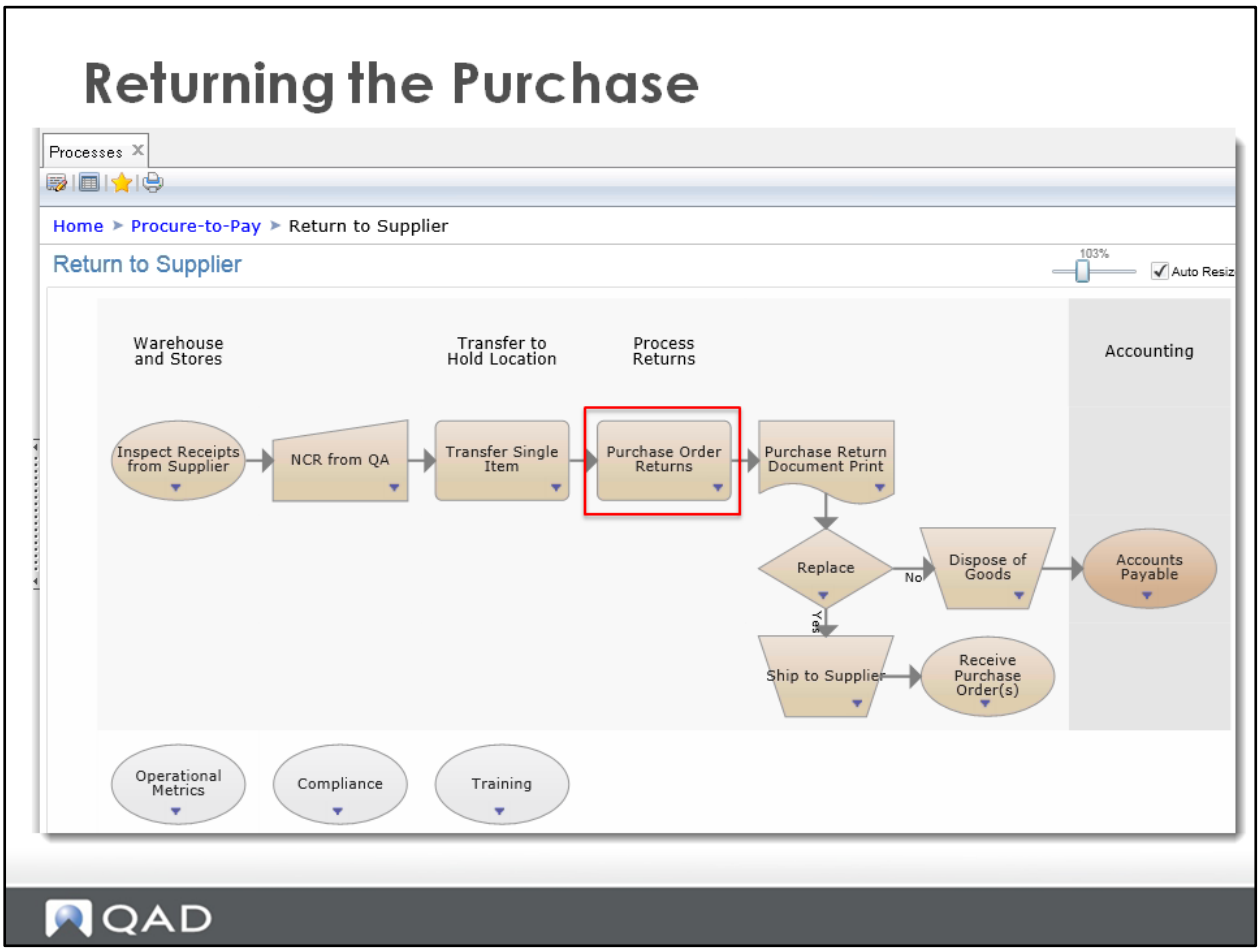
Receiving a Partial Order



If, for some reason, the company just received a portion of the items they ordered, the receiving staff can also use the Purchase Order Receipts to process the partial receipts. Ensure that the Receive All field is cleared so that staff can manually enter the receipt quantity in the subsequent frame.

Since Receive All is not selected, the Receipt Quantity field shows zero in the slide example. Enter the line number and the quantity received.

Returning the Purchase

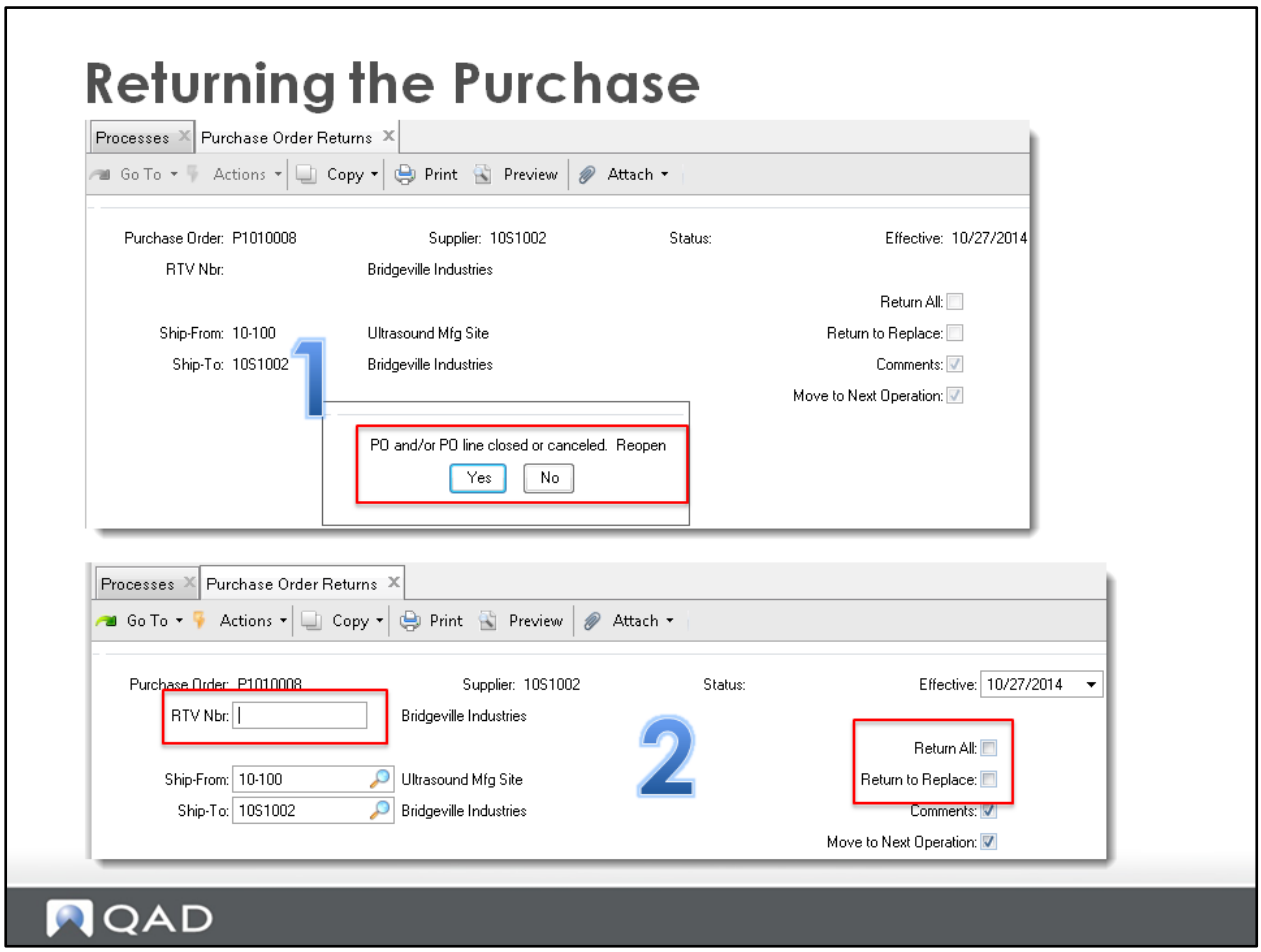


A purchase order return indicates that you are returning materials to a supplier. The material can be taken from inspection, inventory, or work in process (WIP). The system generates receiving history that you can match against the supplier invoice in Accounts Payable.

There are two ways to return goods to a supplier. If the purchase order still exists, use Purchase Order Returns in the process maps; or use Purchase Order Maintenance to enter a new line for the items to be returned. Use negative numbers to indicate returned quantities. Receive items in Purchase Order Receipts.

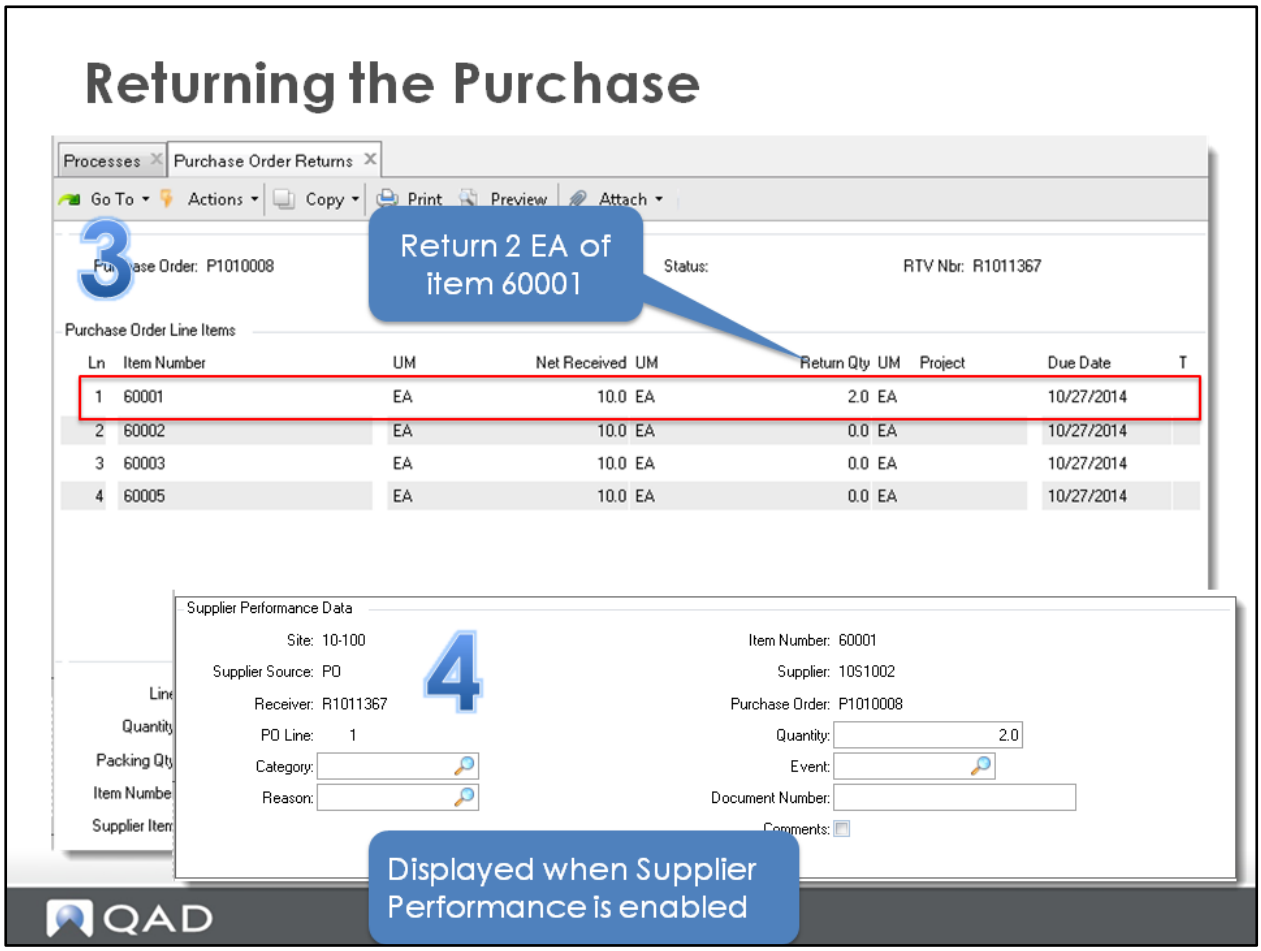
This guide discusses the return of goods to the supplier using Purchase Order Returns.

Returning the Purchase



- Returning materials against a closed or canceled PO reopens it. Click Yes to proceed.
- If the return is just part of a purchase, clear the Return All option.
    - Select the Return to Replace field if the item must be replaced. The system adds another line to the original PO for the returned quantity.
    - The RTV number is a form of receiver number and is unique. Enter a receiver number on the receipt transaction only if the Receiver Type field is set to 0 or 1 in Purchasing Control. Some companies use different receiver numbers when recording returns. When left blank, the system automatically generates a number.

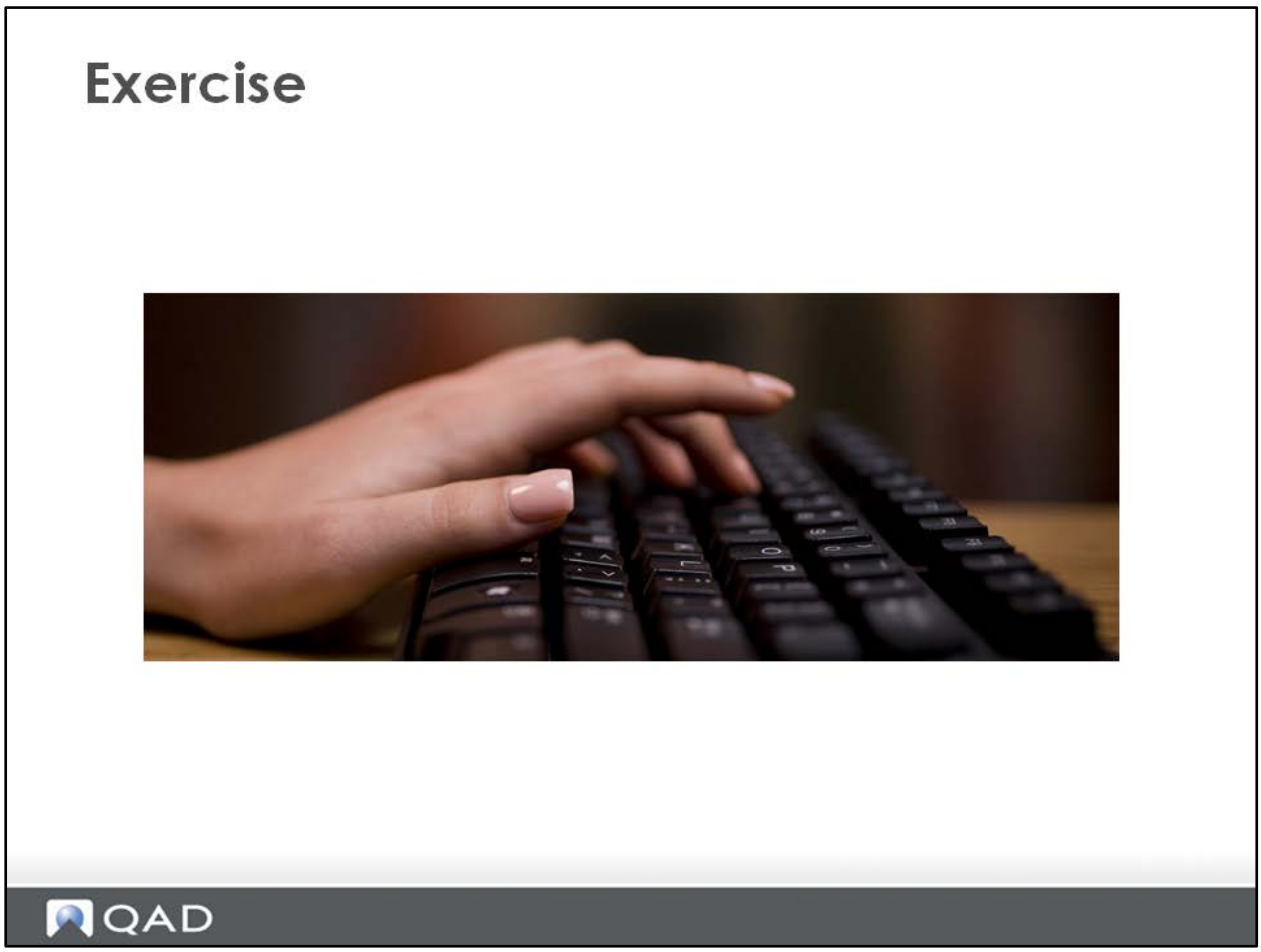
Returning the Purchase



- In this example, you are going to return 2 each of item 60001 received from P1010008. The process is similar to that of receiving a PO in Purchase Order Receipts.
- If the Supplier Performance function is enabled in Supplier Performance Control, you are prompted to complete the Supplier Performance Data frame.

The return process is finished. You can print the document for the return using Purchase Return Document Print. You can then use Transactions Detail Inquiry (3.21.1) to see how the return affects the GL transaction.

Exercise



Exercise 1: Settings for the Purchasing Function

1. Use Supplier Data Maintenance to verify supplier data as follows:
   Supplier:10S1002
   Name: Bridgeville Industries
   Cr Terms: 30D (1 month)
   Partial OK: No

2. Use Supplier Item Maintenance to create a record that cross-references item numbers 60001 and 60002 to your supplier's item numbers.
   Item Number: 60001
   Supplier: 10S1002
   Supplier Item: SCC60001
   Unit of Measure: EA
   Supplier Lead Time: 5
   Currency: USD

Quote Price: 120
Quote Quantity: 5

Item Number: 60002
Supplier: 10S1002
Supplier Item: SCC60002
Unit of Measure: EA
Supplier Lead Time: 5
Currency: USD
Quote Price: 122
Quote Quantity: 5

3. Open Purchasing Control to verify settings as follows:
   Ship To: 10-100
   PO Prefix: P10
   Receiver Prefix: R10
   Ln Format S/M: Single
   PO Header Comments: No
   PO Line Comments: No

Exercise 2: Discrete Purchase Order Process

1. Use Purchase Order Maintenance (under Home > Procure-to-Pay > Manage Discrete Purchasing > Create Purchase Order) to place an order buying items 60001 and 60002 from supplier 10S1002. The quantity is 10 for each item. The ship-to address is 10-100.

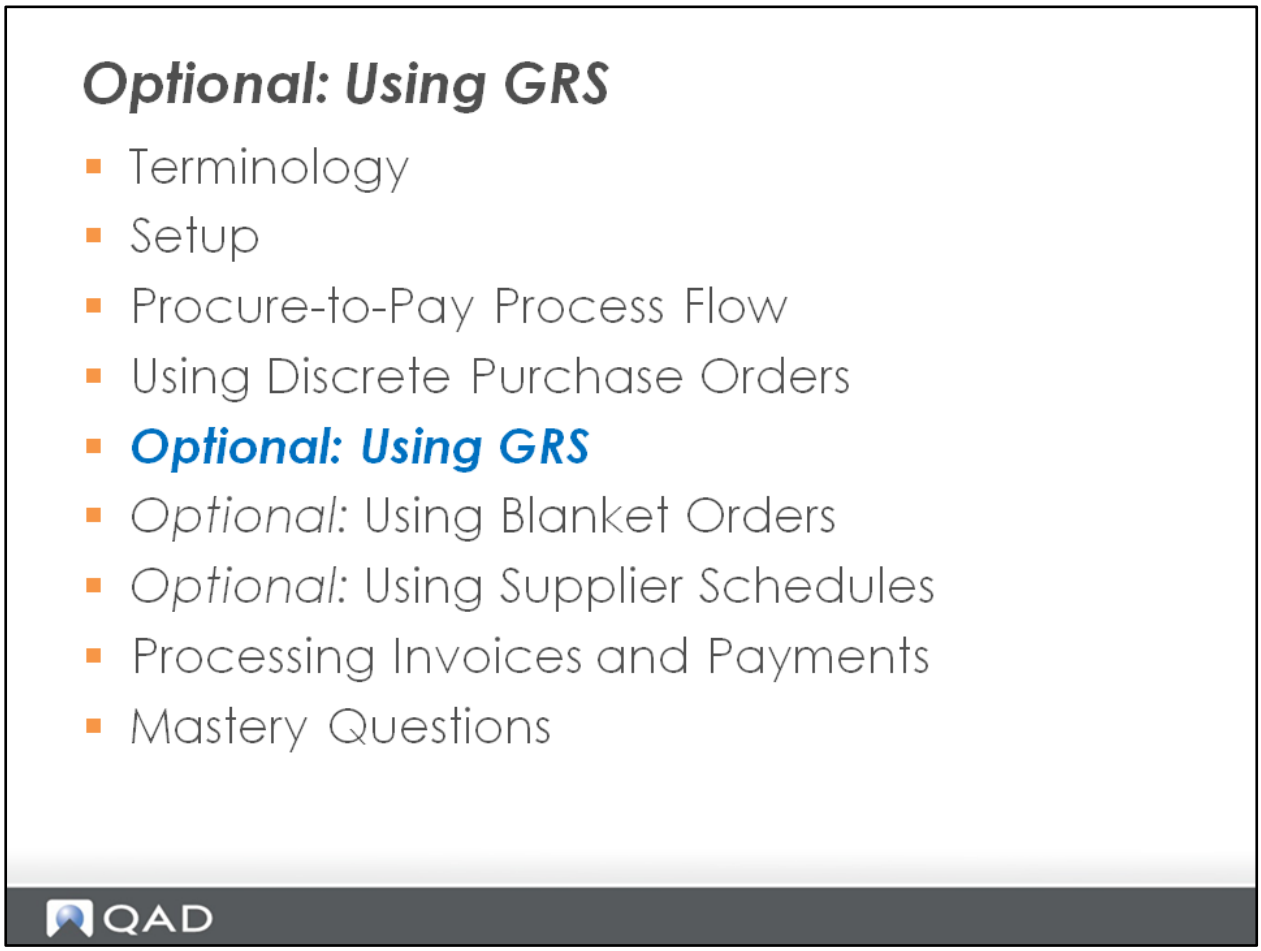
2. Find Purchase Order Receipts in the Procure-to-Pay process maps and use it to record the receipts of all components against the purchase order created in Step 1. Leave the Receiver field blank to let the system generate the receiver number.

   Note: The generated receiver number is displayed on the last screen of the receiving process. Record the number, which you will need for creating the supplier invoice. You can also use Purchase Receipt Document Print to print the receiver.

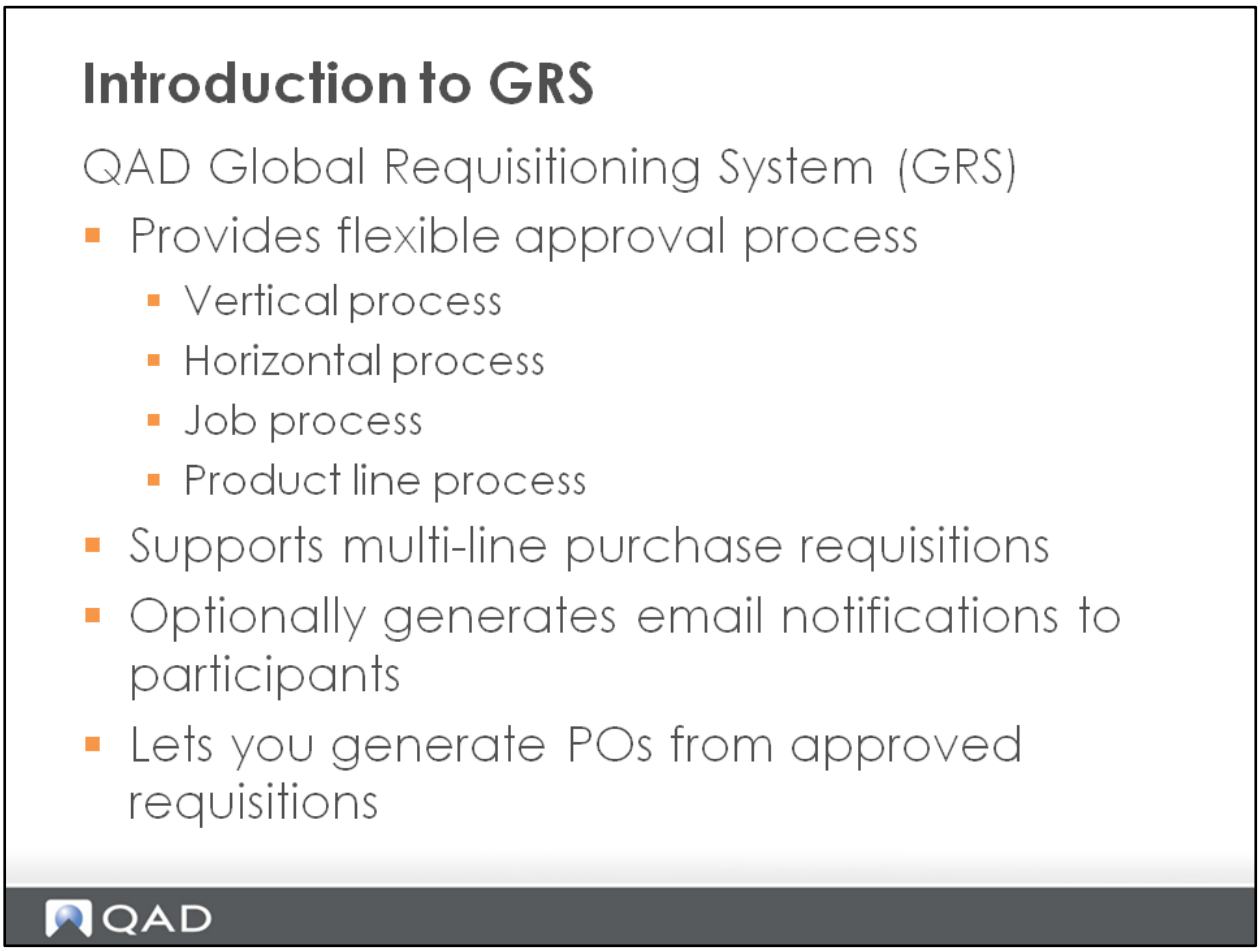
3. Use Inventory Detail by Item Browse to review the inventory levels for your component items.

Note: For exercises on processing supplier invoices and payments, see *Processing Invoices and Payments*.

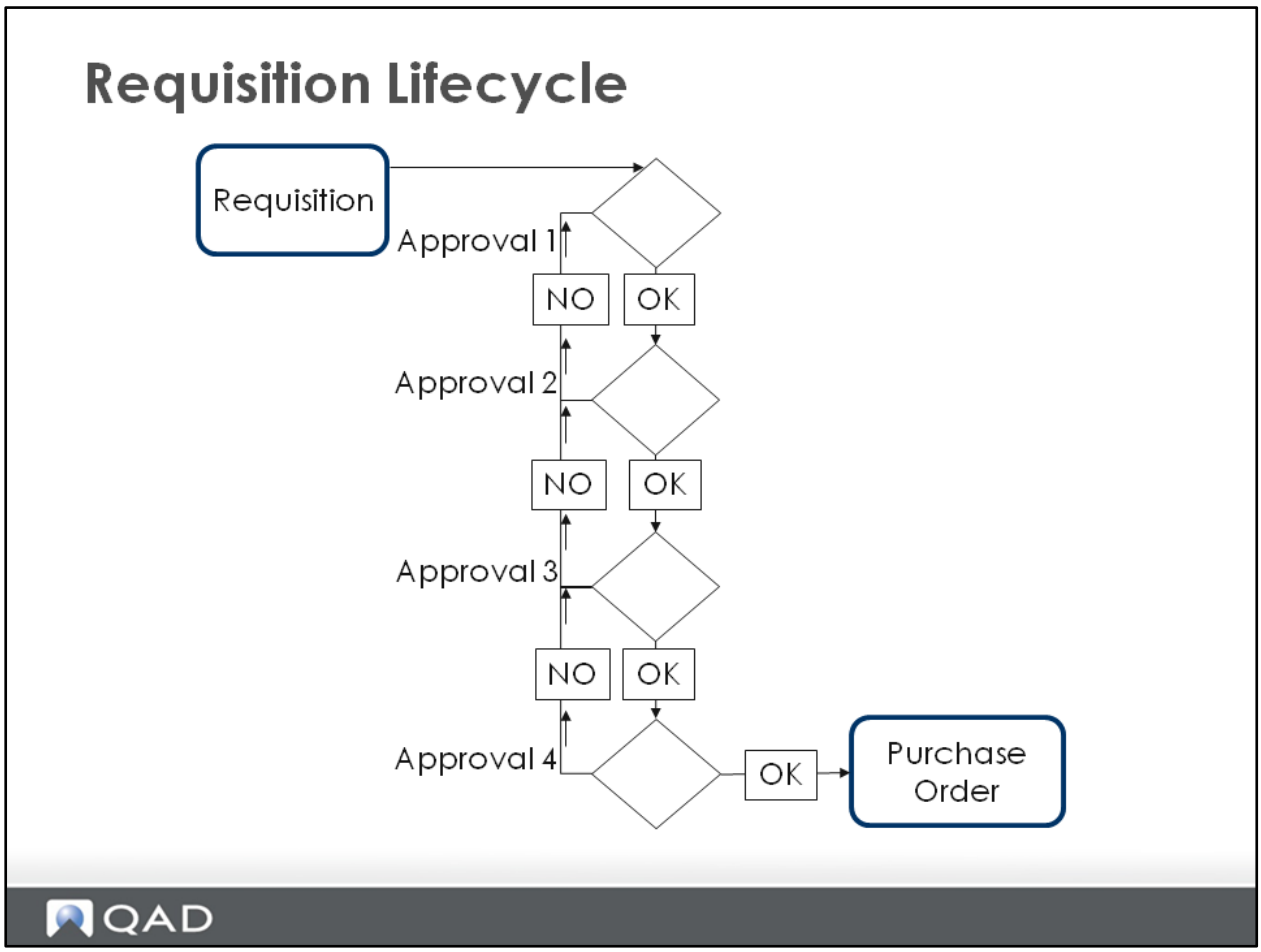
Optional: Using GRS



Introduction to GRS

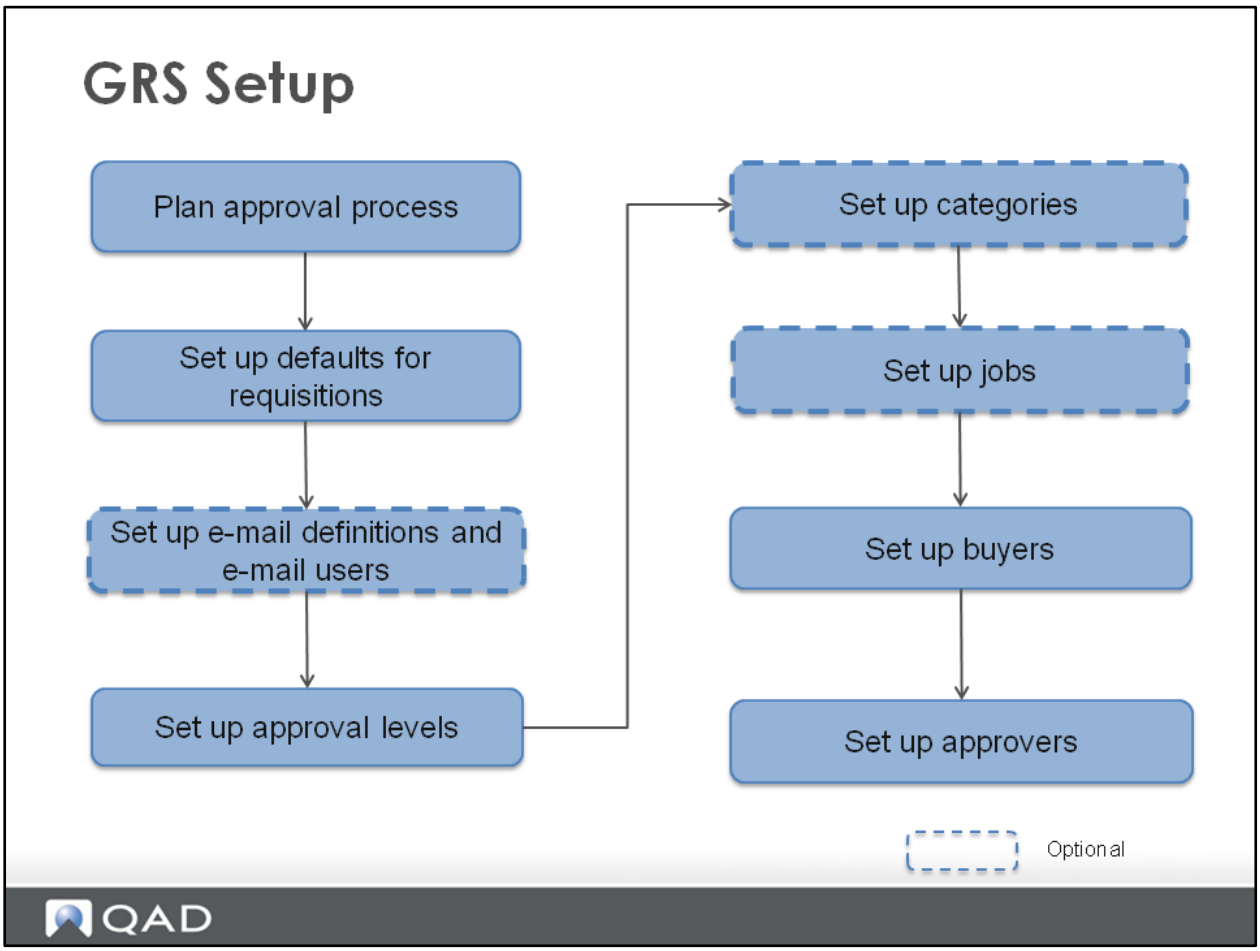


Requisition Lifecycle



A requisition is a record stating that an item is needed. Requisitions specify the quantity, date needed, and place of delivery. A requisition is often the first step of a purchase, although you can issue a purchase order without a requisition. Some companies require multiple approvals before requisitions become orders.

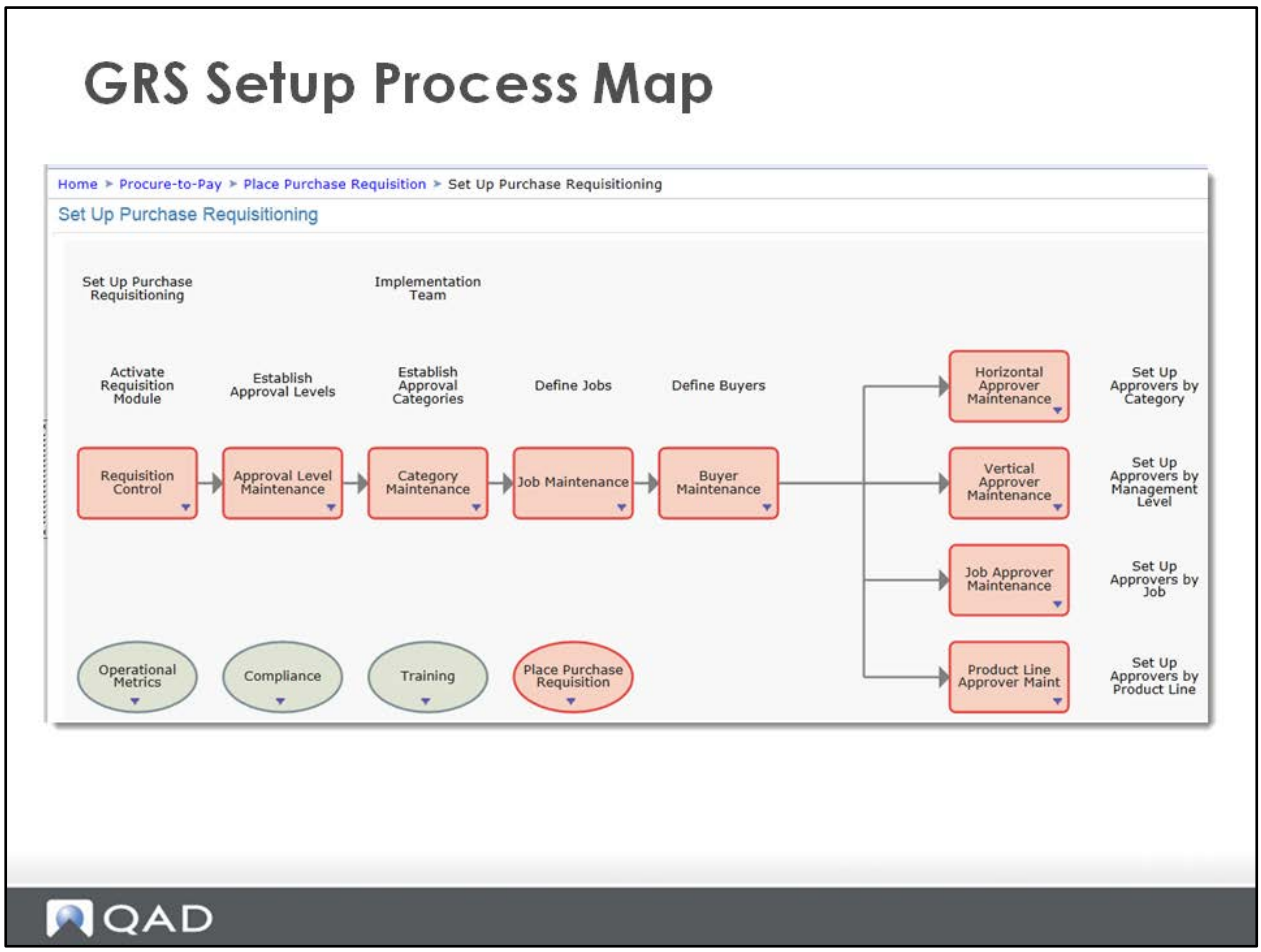
GRS Setup



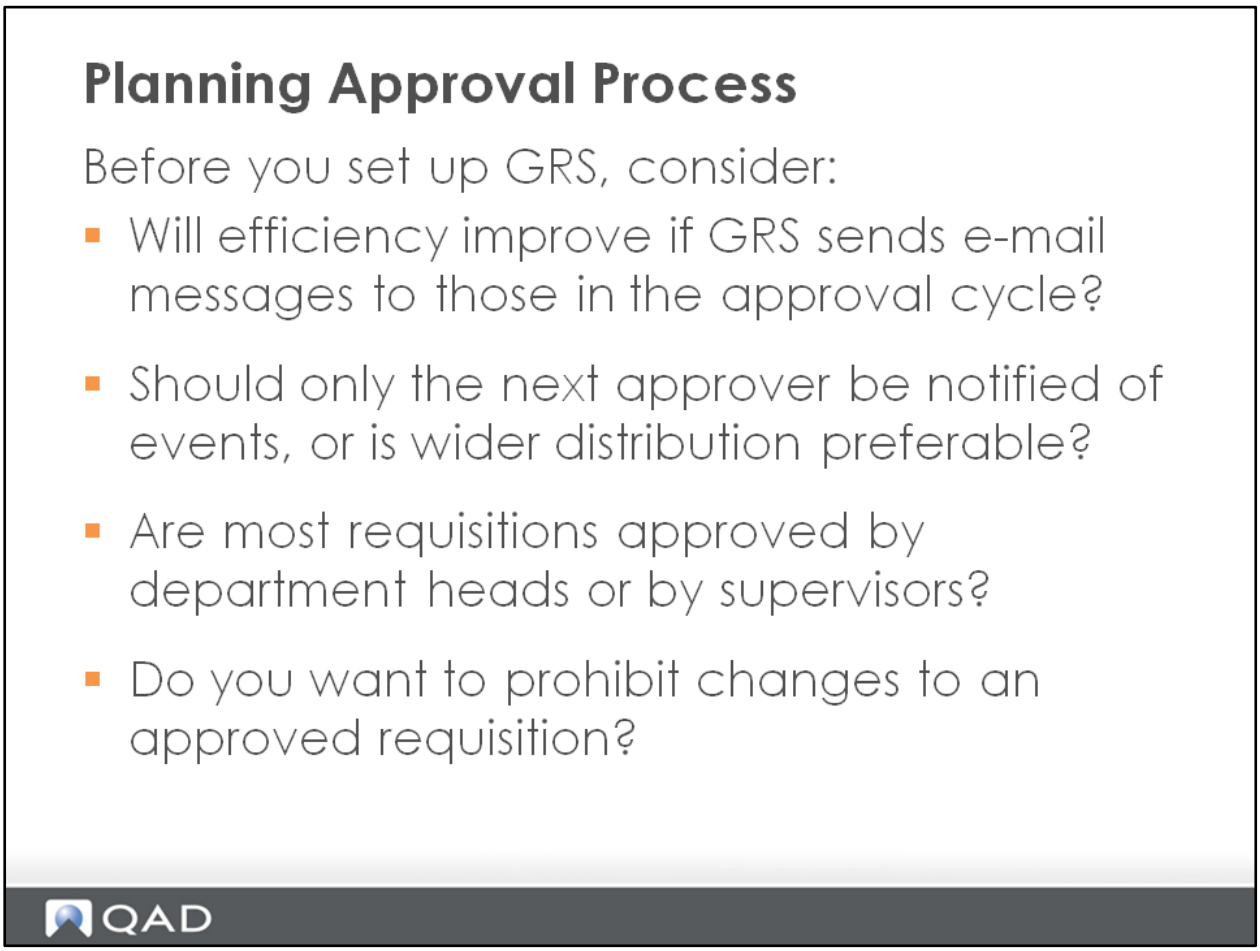
The administrator can set up requisition settings to define general controls and to establish default values for new requisitions.

This course covers only the mandatory setup.

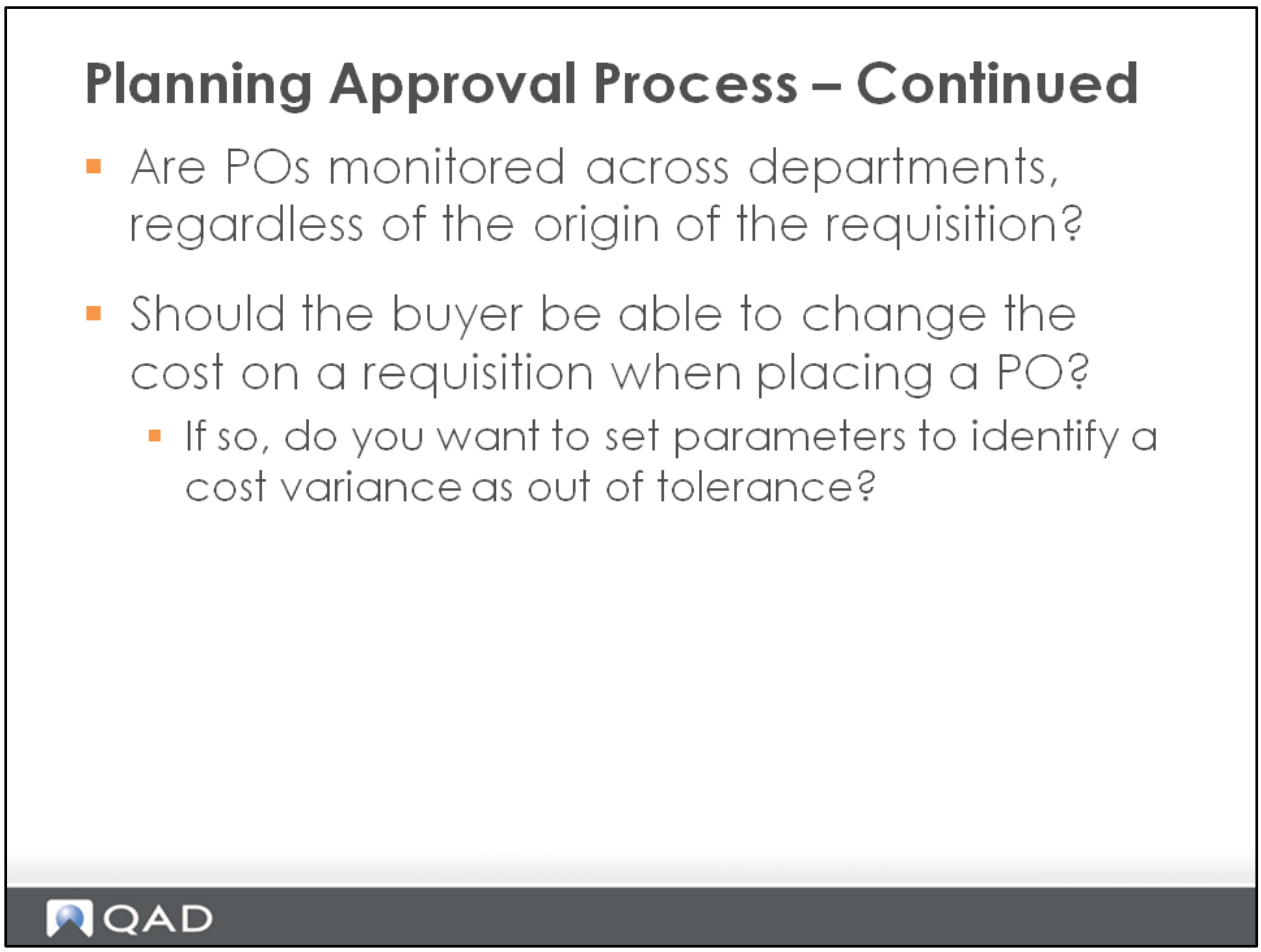
GRS Setup Process Map



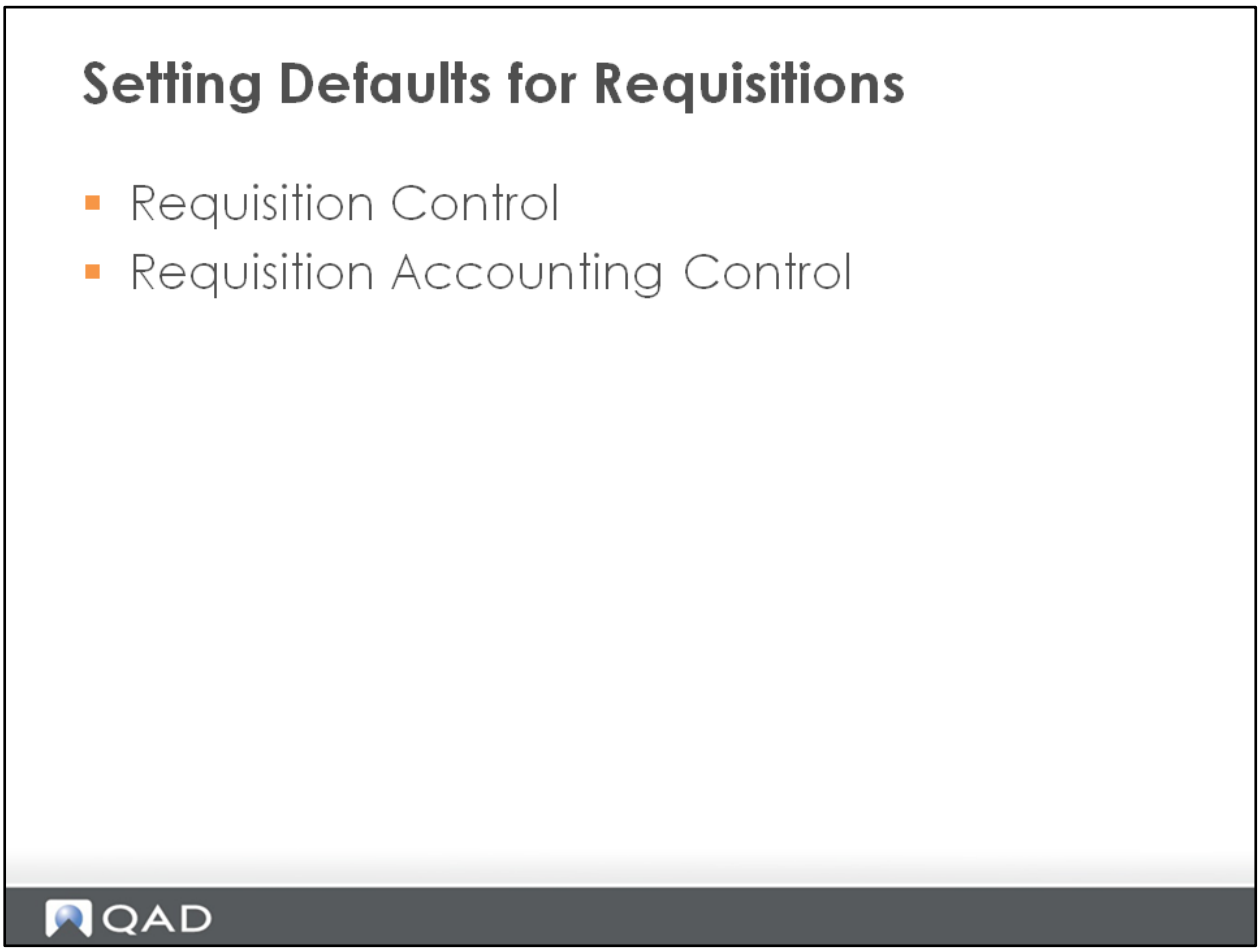
Planning Approval Process



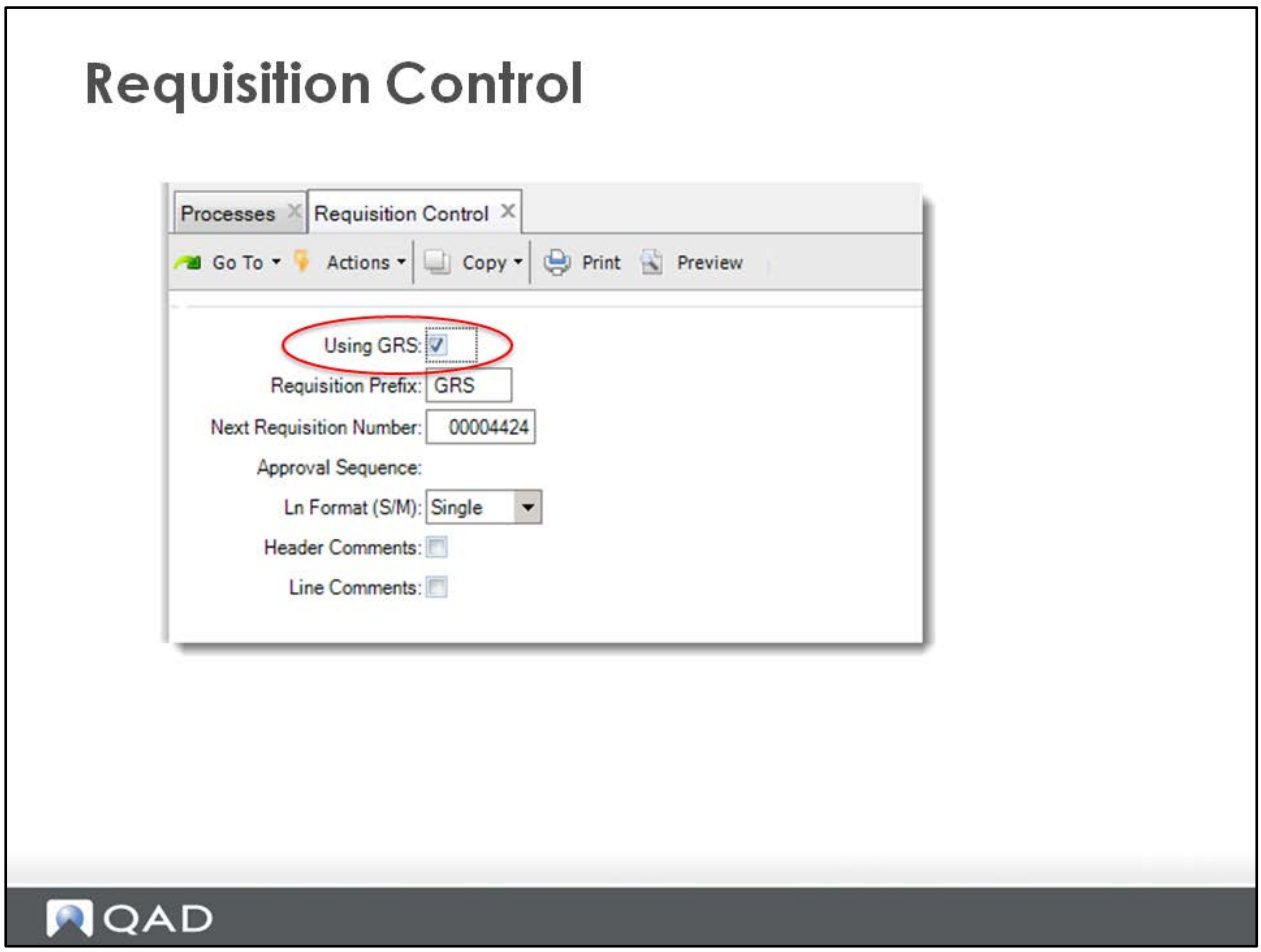
Planning Approval Process – Continued



Setting Defaults for Requisitions



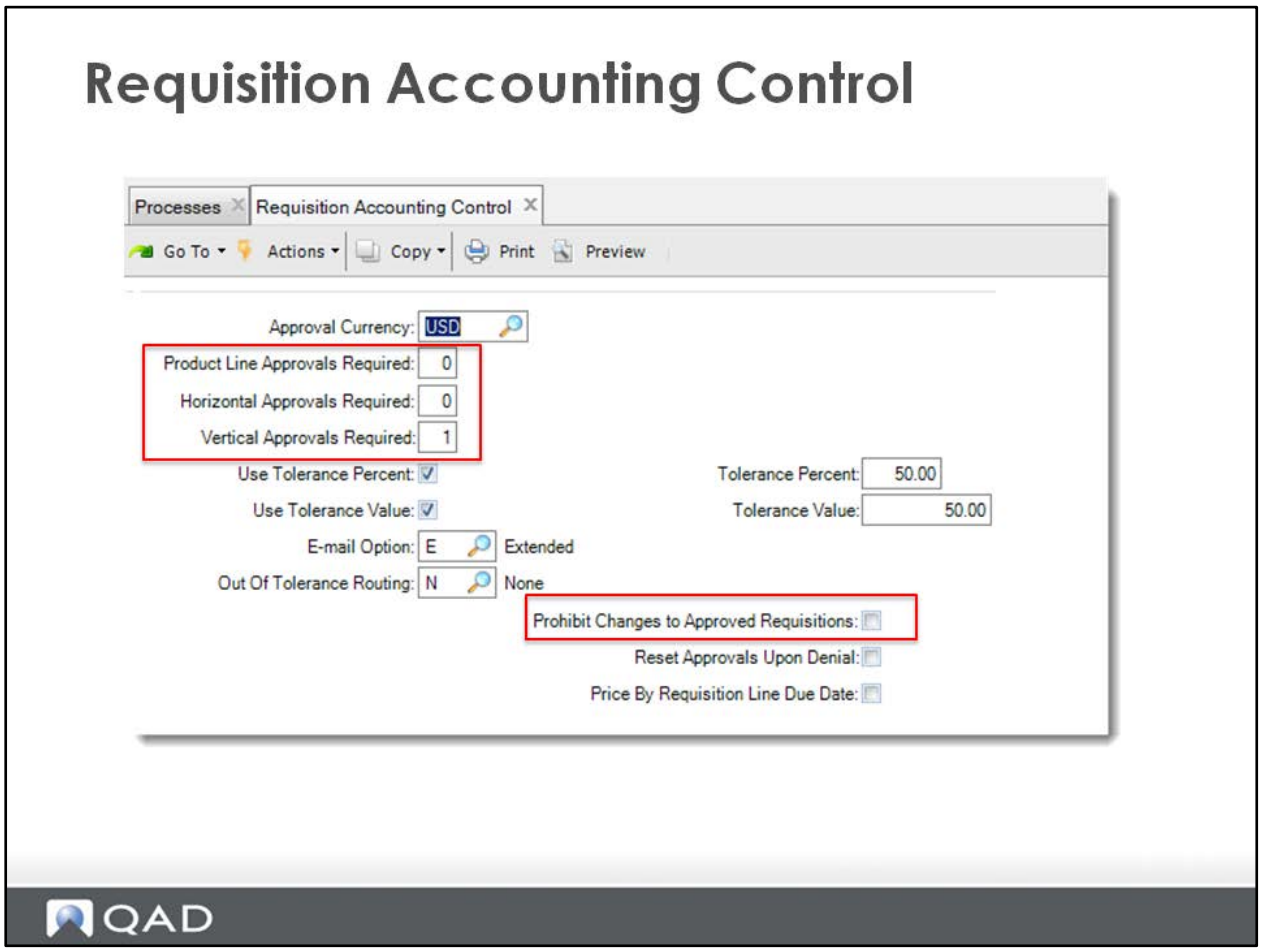
Requisition Control



- Select Using GRS in Requisition Control to activate GRS.
- Define the number format for requisitions using the Requisition Prefix and Next Requisition Number fields.

Warning: If you activate GRS, create new requisitions in GRS Requisition Maintenance (5.2.3), then reset the Using GRS field to No, the GRS-created requisitions are not available from any of the requisition programs. In addition, any POs you have built from GRS requisitions are not accessible from Purchase Order Maintenance (5.7) when GRS is inactive.

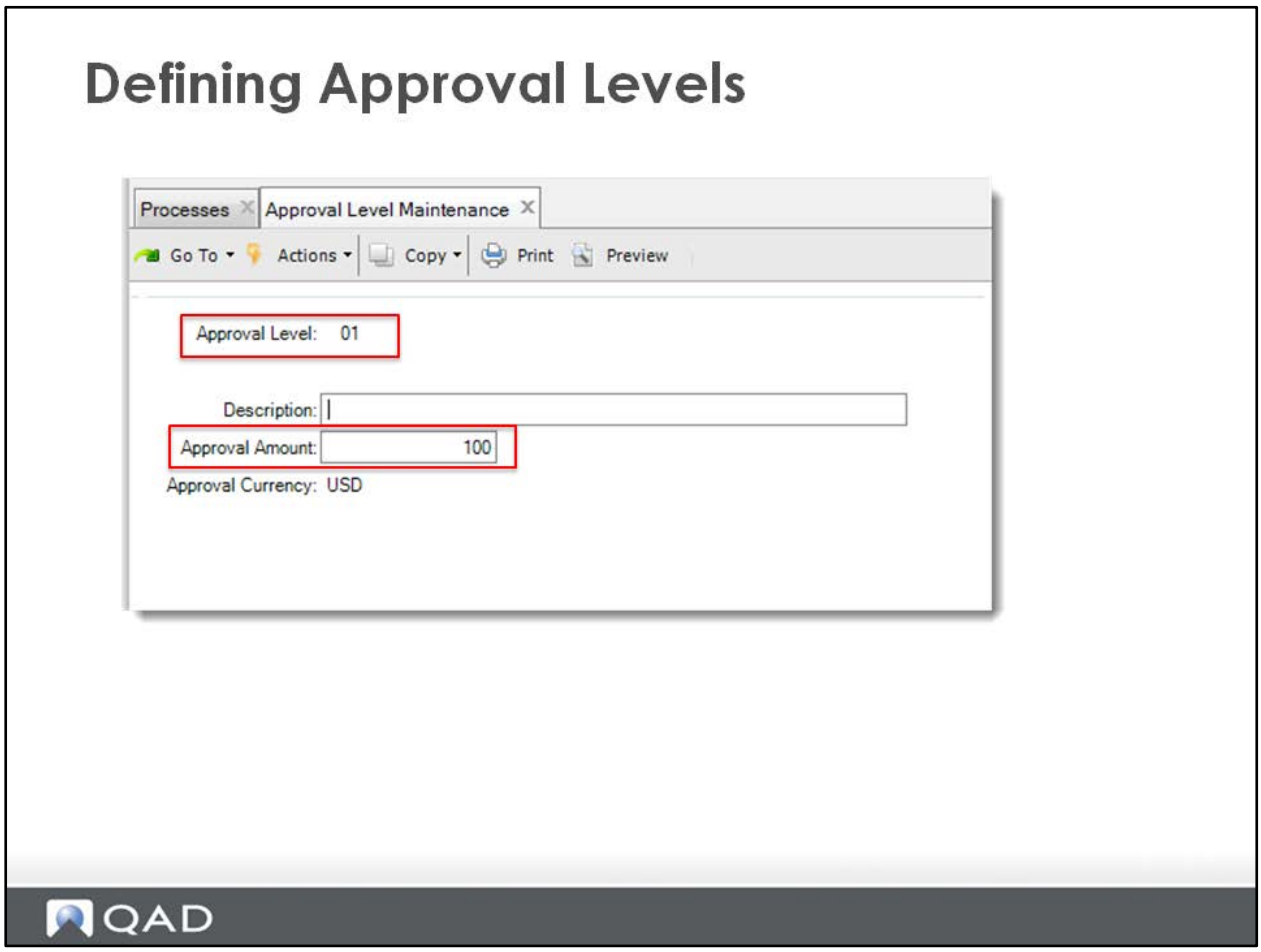
Requisition Accounting Control



In Requisition Accounting Control, you can set:

- The minimum number of approvers who must approve a requisition for MRP direct materials before it can be placed on a purchase order
- The minimum horizontal approvers who must approve each category of a requisition before the requisition can be placed on a purchase order
- The minimum number of vertical (organization) or job approvers who must approve a requisition before it can be placed on a purchase order
- Whether to allow changes to approved requisitions

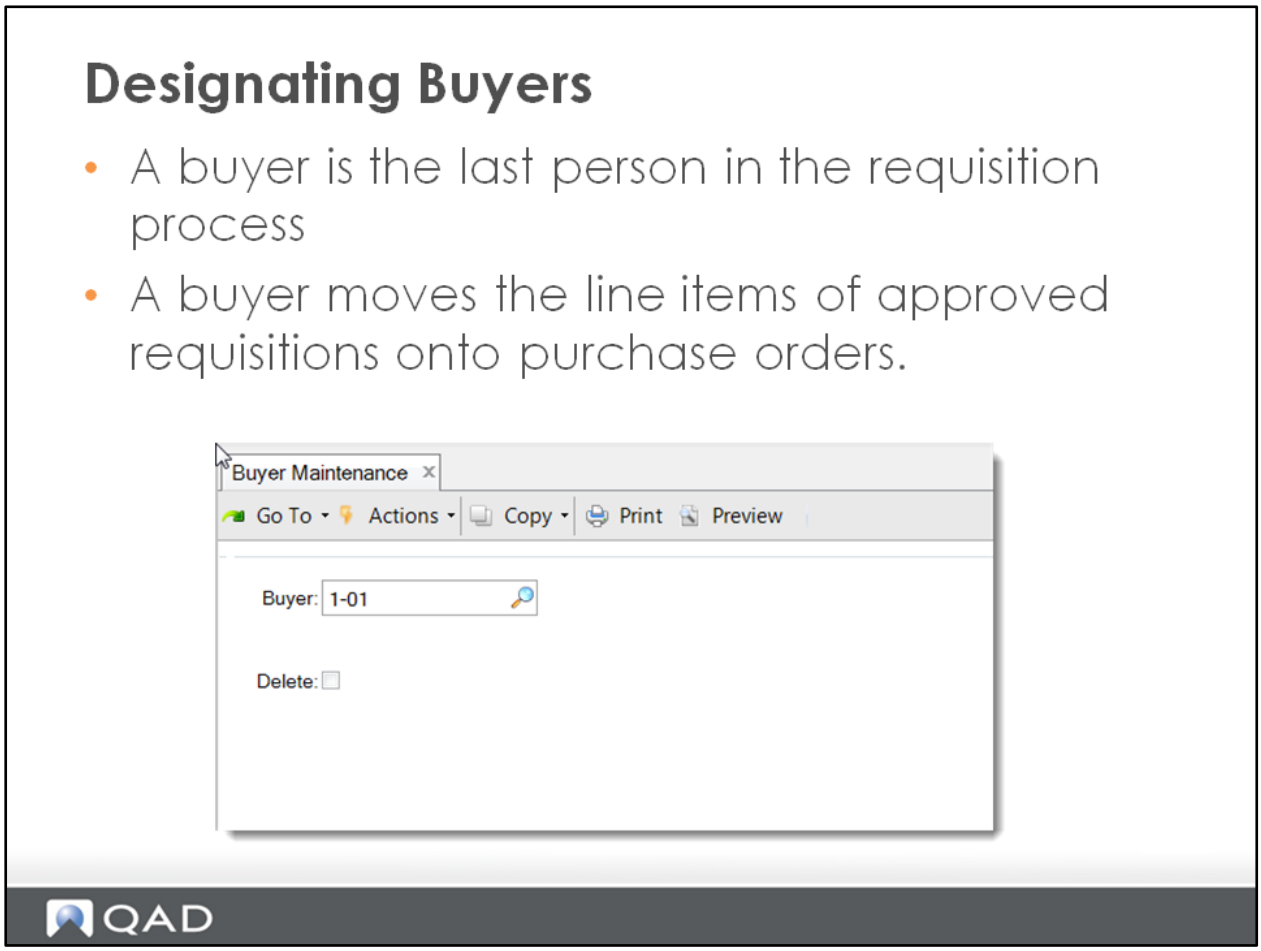
Defining Approval Levels



An approval level within GRS is defined as the maximum amount of approval currency a person assigned that level is authorized to approve. You define approval levels in Approval Level Maintenance.

- Define a level with a two-digit number.
  At initial system setup, you should consider establishing the levels in increments of 5 or 10 so that you can later insert intermediate levels.
  Approval Level 00 is system-reserved and indicates that a person is not an approver or reviewer. Individuals with this level are not included when reports are generated. Although you can route requisitions to zero-level approvers, their approvals do not count toward the number of required approvals specified in Requisition Accounting Control.
- Enter the monetary amount that a person assigned this level is authorized to approve or required to review. This amount is expressed in the approval currency defined in Requisition Accounting Control.

Designating Buyers



The buyer—an individual who places purchase orders with suppliers—is the last person in the requisition process. After a requisition has passed through final approval, it is routed to the buyer, who references approved requisition line items on purchase orders. Use Buyer Maintenance to add and delete buyers.

Note: The user you designate as a buyer must be a valid user in the system.

Defining Approvers



GRS provides the flexibility to set up approvers based on the way your company wants to manage the approval process. You can set up four types of approvers—horizontal, vertical, job, and product line—using approver maintenance programs.

Approver Types

- Horizontal Approver
  Approvers can be set up horizontally based on the categories of items they are approving. For example, one manager in your company might approve all computer purchases, regardless of which department creates the requisition. You use Category Maintenance (5.2.1.4) to assign a range of accounts to a category such as Computers. You can then require all computer requisitions to be sent to the approver named for this category, regardless of the requestor's sub-account or department.
- Vertical Approver
  Many companies approve purchases on a group or department basis. Normally, a department manager or supervisor approves requisitions for the department. If it is the way your company works, you can

define approvers vertically through the organization; the approval levels can be related to combinations of entities, sub-accounts, and cost centers.

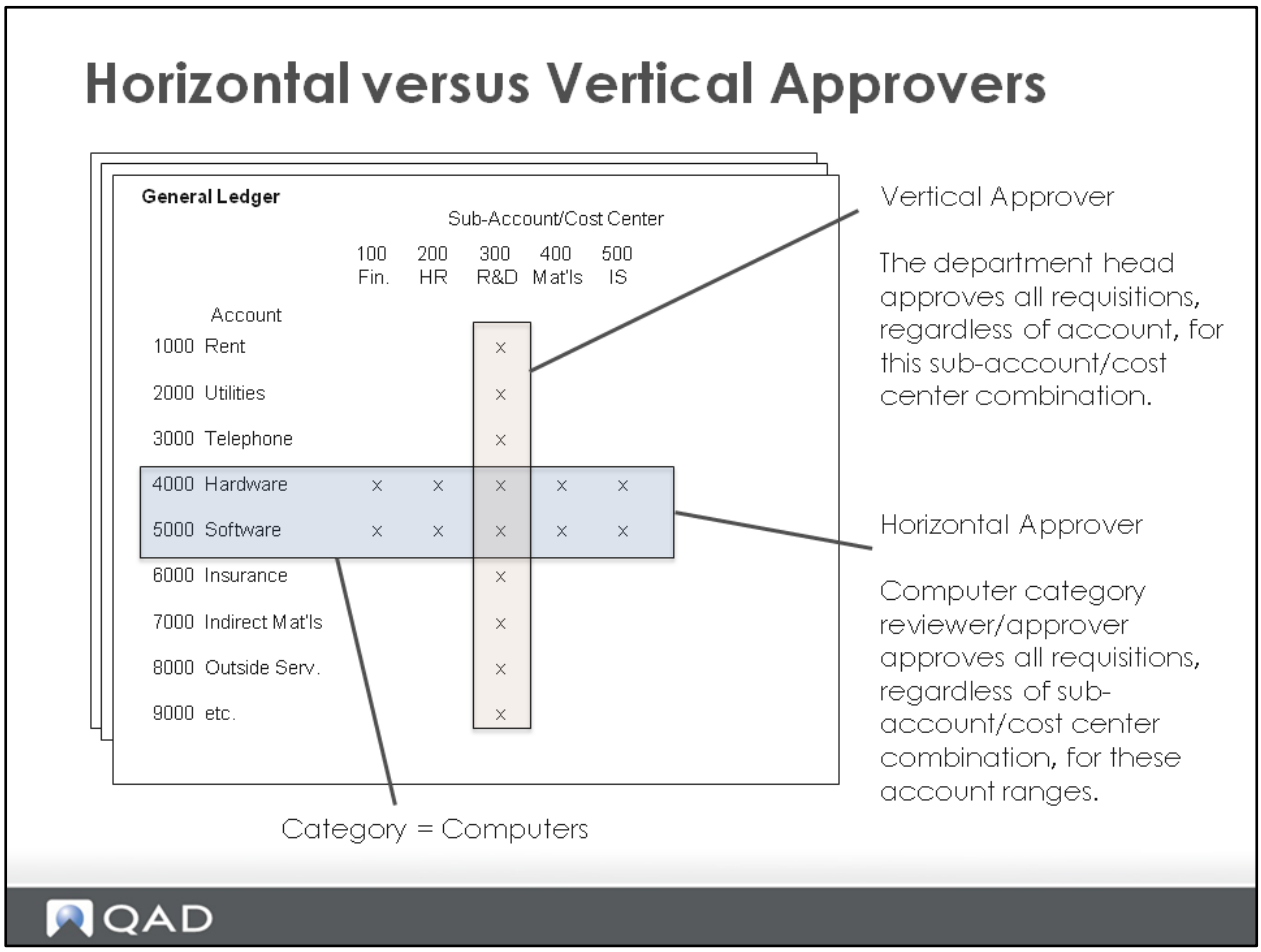
Even if you use vertical approvers, you might want to have someone else review specific types of purchases across all organizations to make sure that purchases conform to company policy. Then, you can also define categories and set up horizontal approvers with different ranges of account authorizations.

- Job Approvers
  Sometimes, you might need to set up projects or other relatively short-term tasks that do not require long-term approval authority. In this case, you can set up one person—usually the program manager—as a job approver.

  This approver can authorize requisitions within specified ranges of sub-accounts and cost centers—but only if the requisitions are associated with a specific job. This way, a single approver can authorize project-specific purchases originated by several departments (multiple sub-accounts).

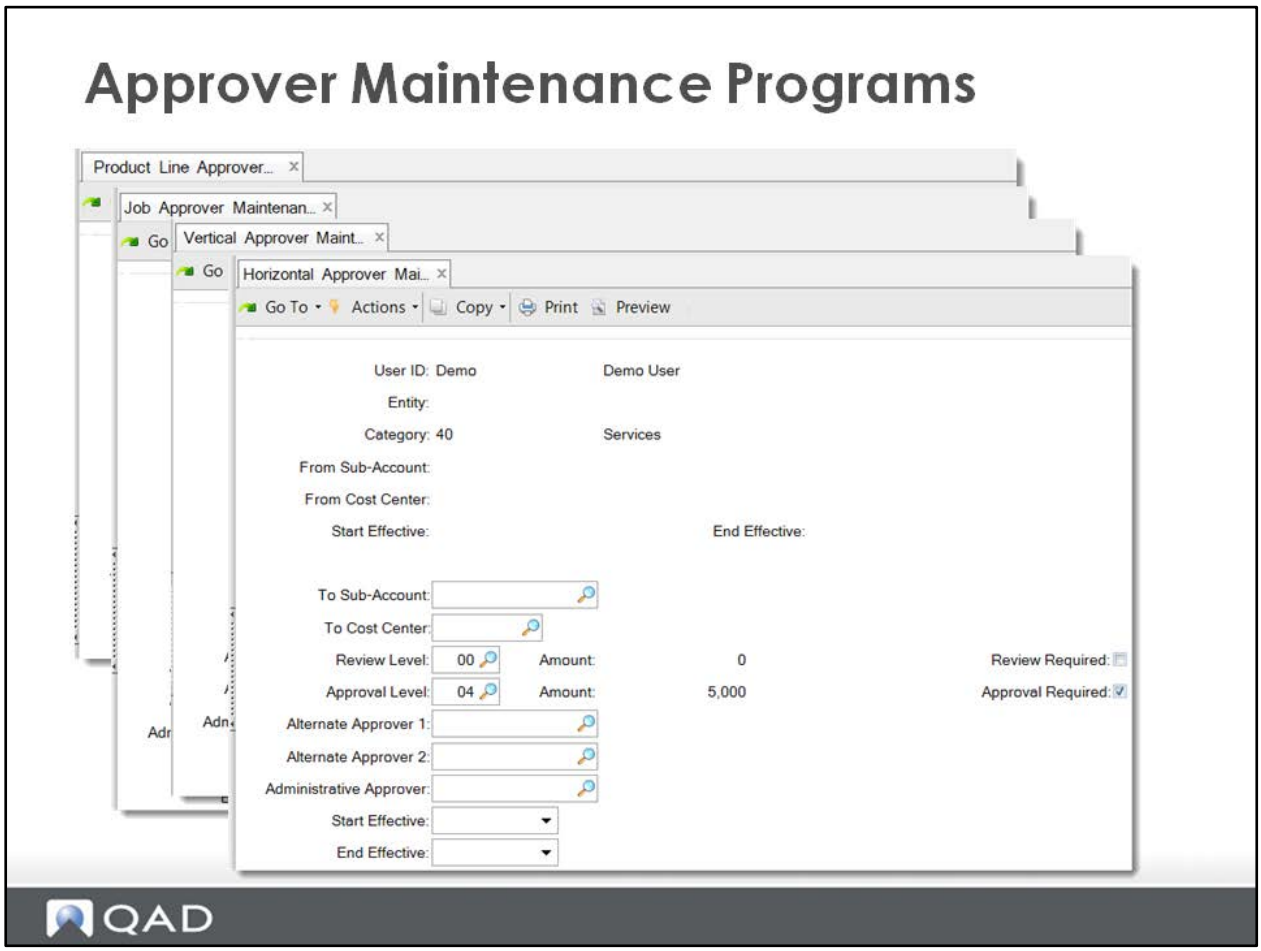
- Product Line Approvers
  Product lines group items for reporting, planning, and accounting purposes. A product line approver authorizes inventory purchases for direct materials associated with specific sites and product lines. A person who approves MRP-planned material purchases must be defined as a product line approver.

Horizontal versus Vertical Approvers



The figure is a simplified overview of the difference between horizontal and vertical approvers. It also illustrates how a requisition requires both types of approval.

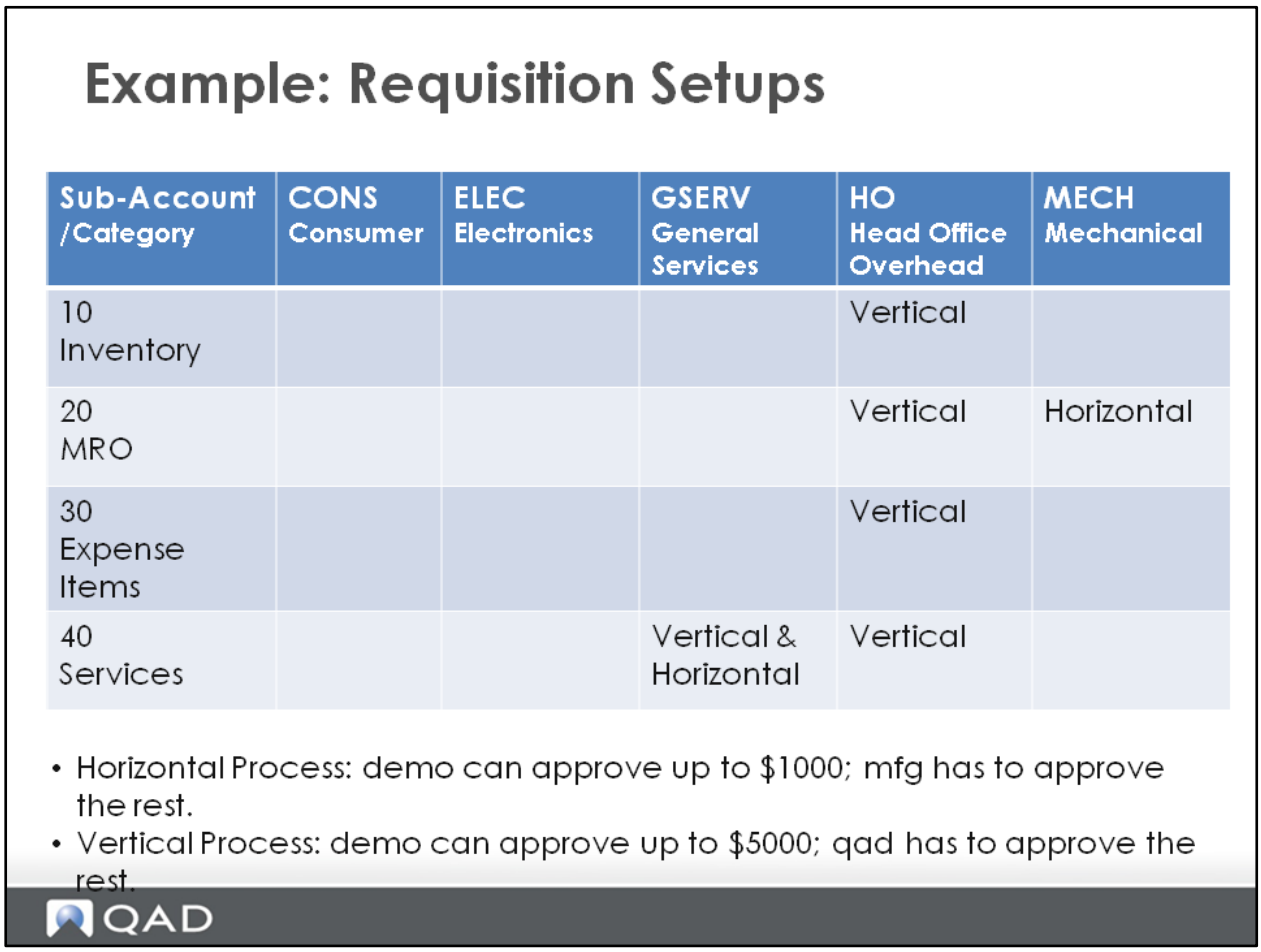
Approver Maintenance Programs



Approver Maintenance Programs

- Horizontal Approver Maintenance
- Vertical Approver Maintenance
- Job Approver Maintenance
- Product Line Approver Maintenance

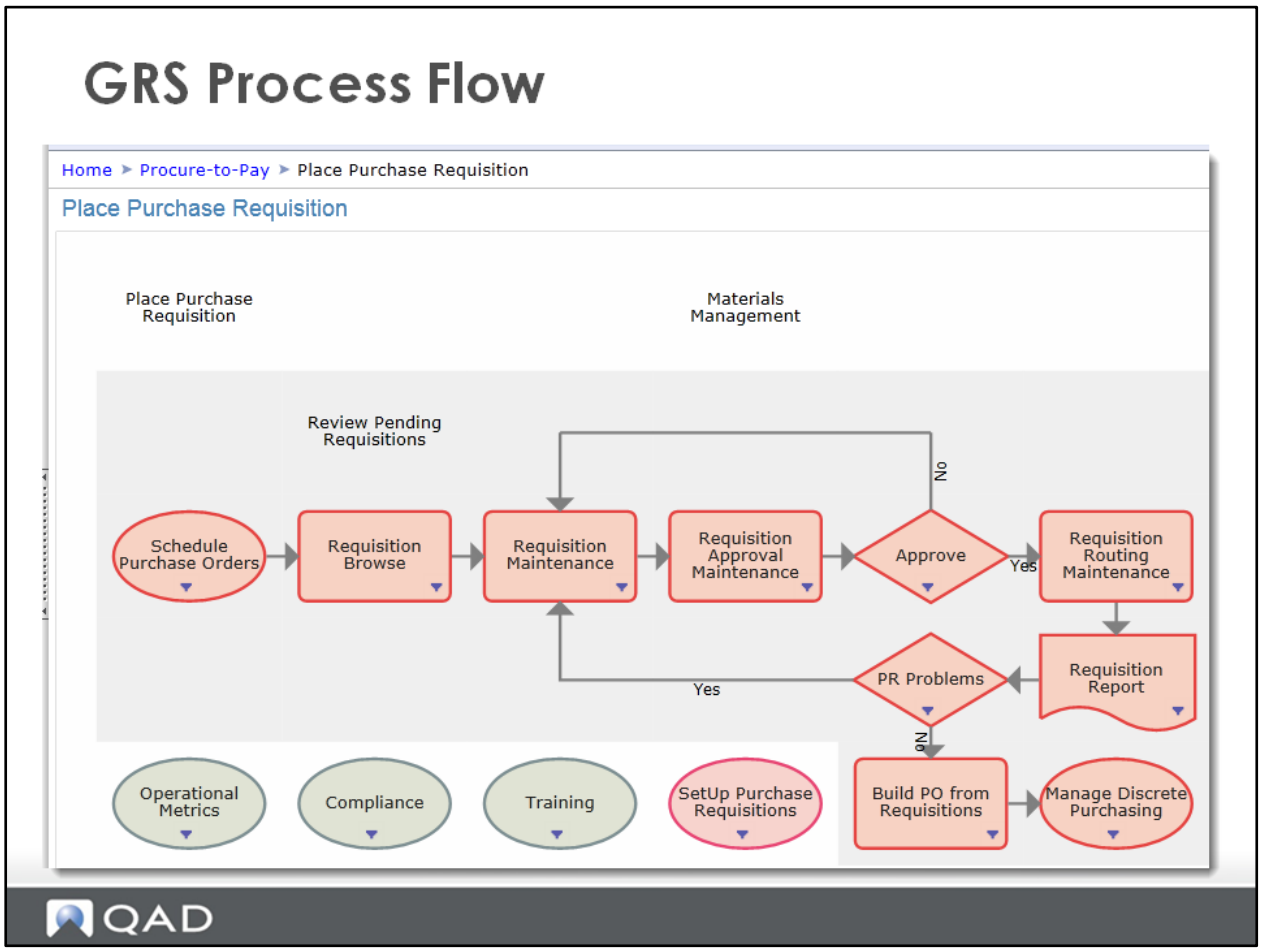
Example: Requisition Setups



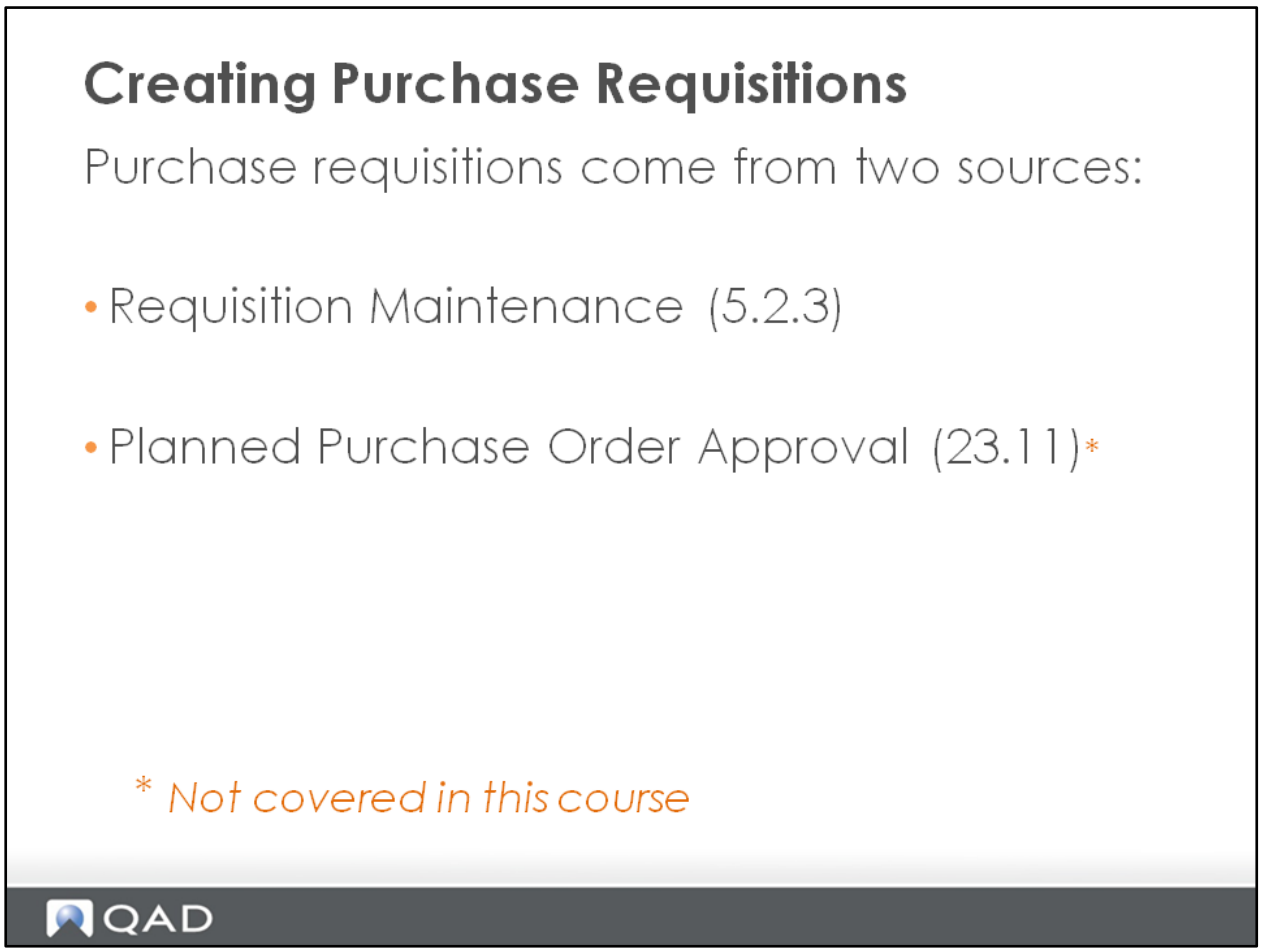
This example shows the settings of approvers and their level in the training environment.

In the training environment, demo can approve up to $1000 in a horizontal process and $5000 in a vertical process. The rest of amount has to be approved by mfg (horizontal) or qad (vertical).

GRS Process Flow



Creating Purchase Requisitions

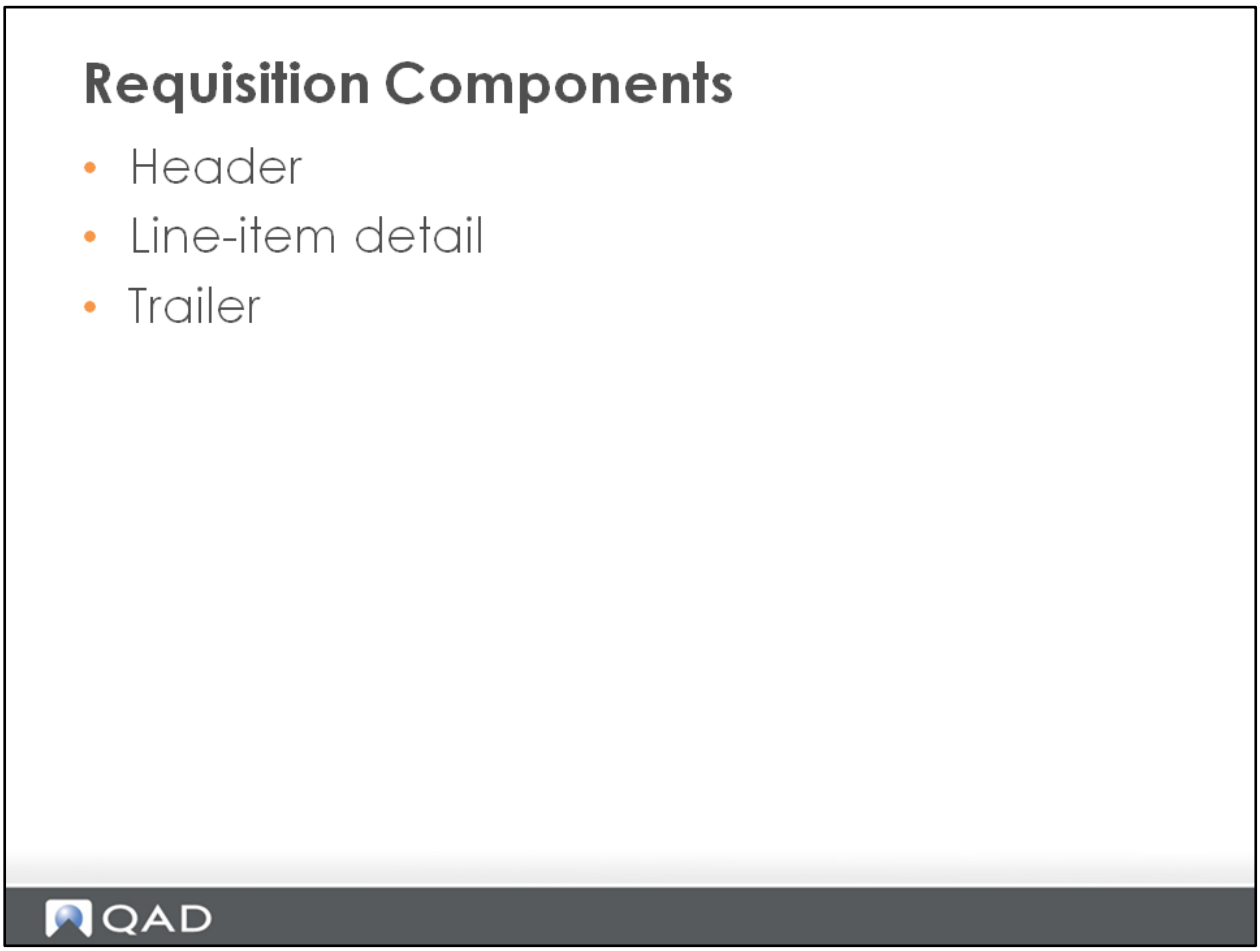


Purchase requisitions come from two sources:

- Manually entered requisitions built in Requisition Maintenance (5.2.3)
- Requisitions created by approving MRP planned orders with Planned Purchase Order Approval (23.11)

In this section, we introduce how to create purchase requisitions using Requisition Maintenance.

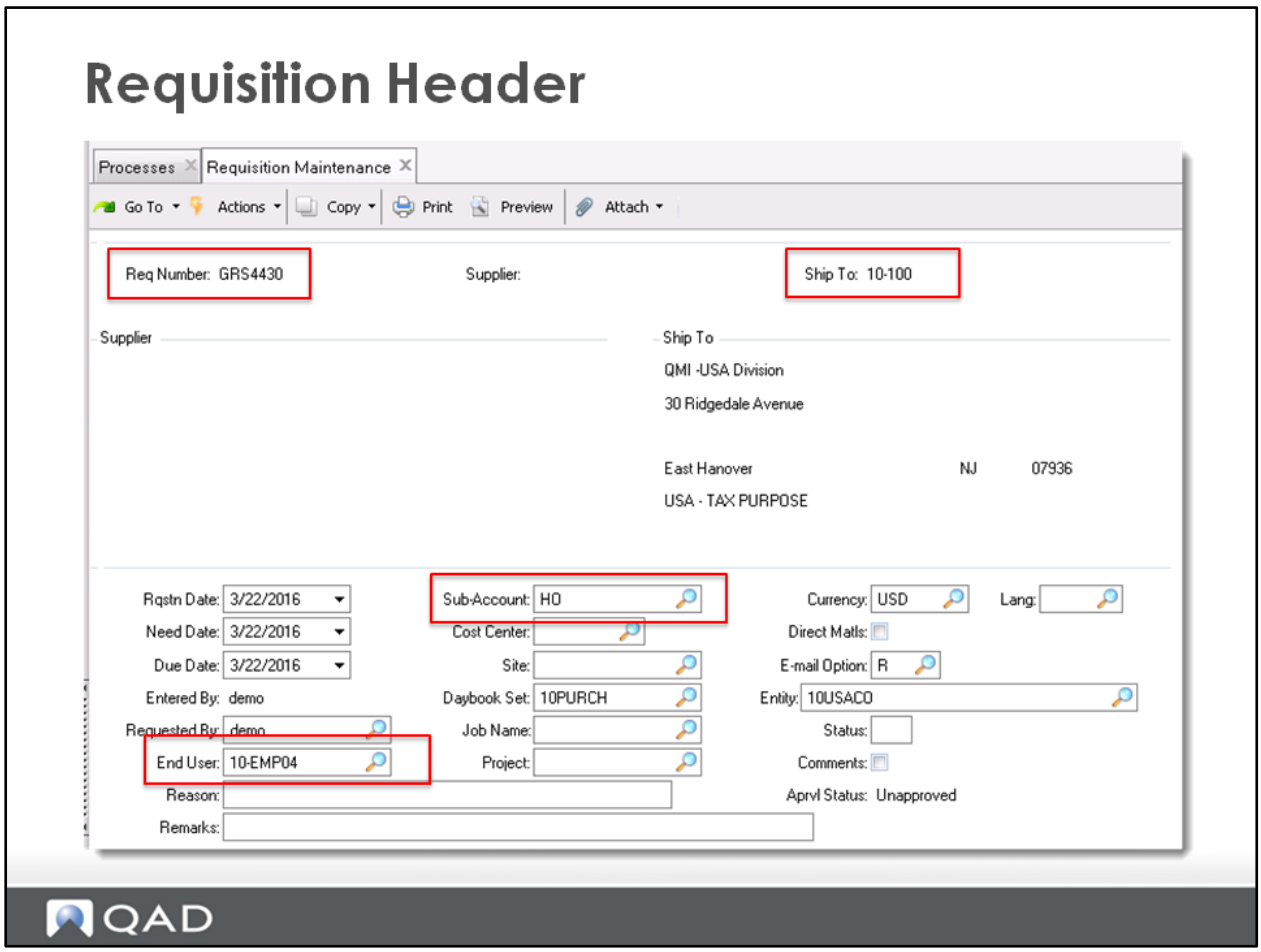
Requisition Components



Use Requisition Maintenance to create a purchase requisition.

A purchase requisition contains three sections: header, line-item detail, and trailer.

Requisition Header



Key fields in the requisition header:

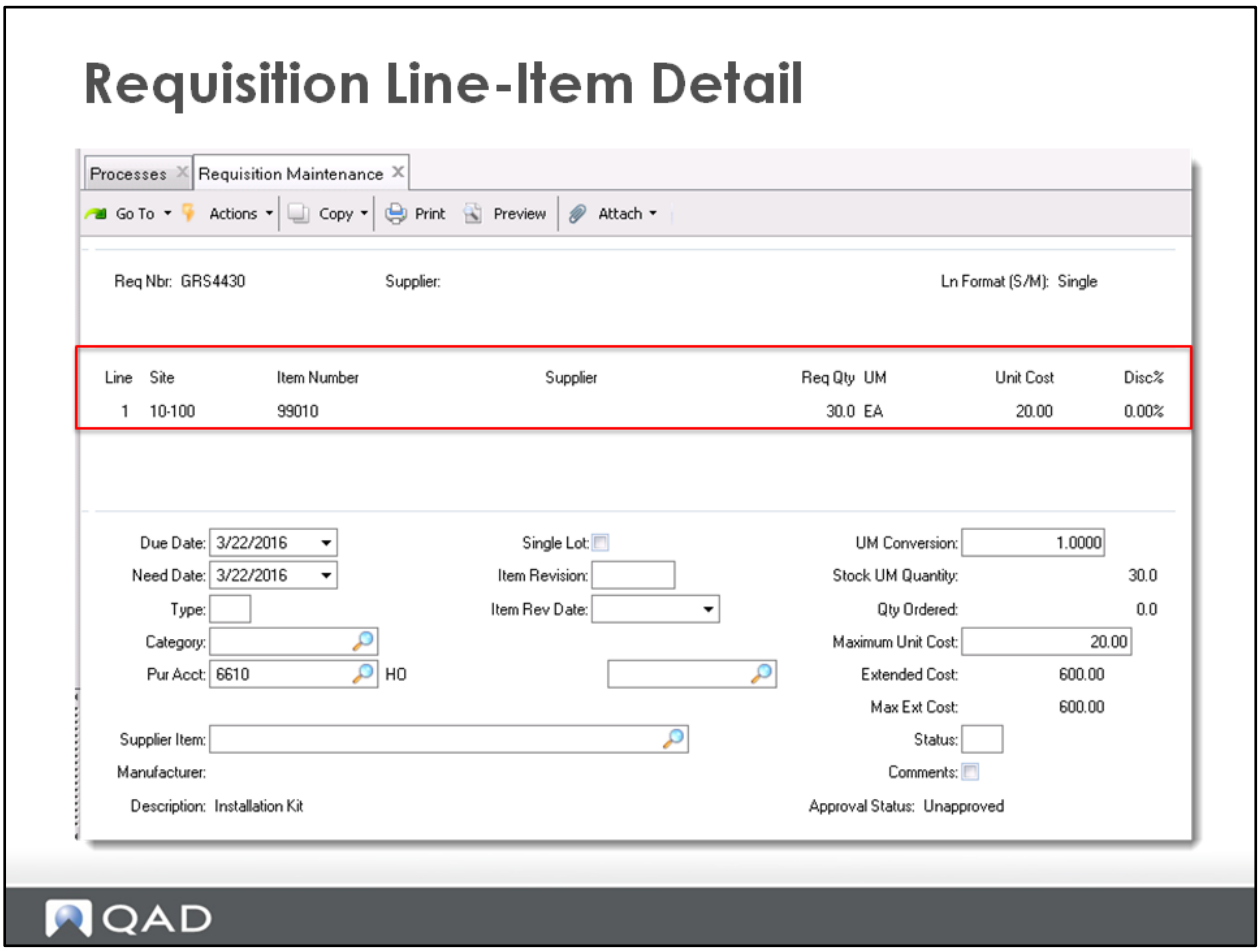
Req Number: Leave it for the system to generate. The format depends on the settings in Requisition Control.

Ship To: The ship-to address defaults from Purchasing Control. You can override it.

Sub-Account: Enter the general ledger (GL) sub-account code used to track non-inventory purchases.

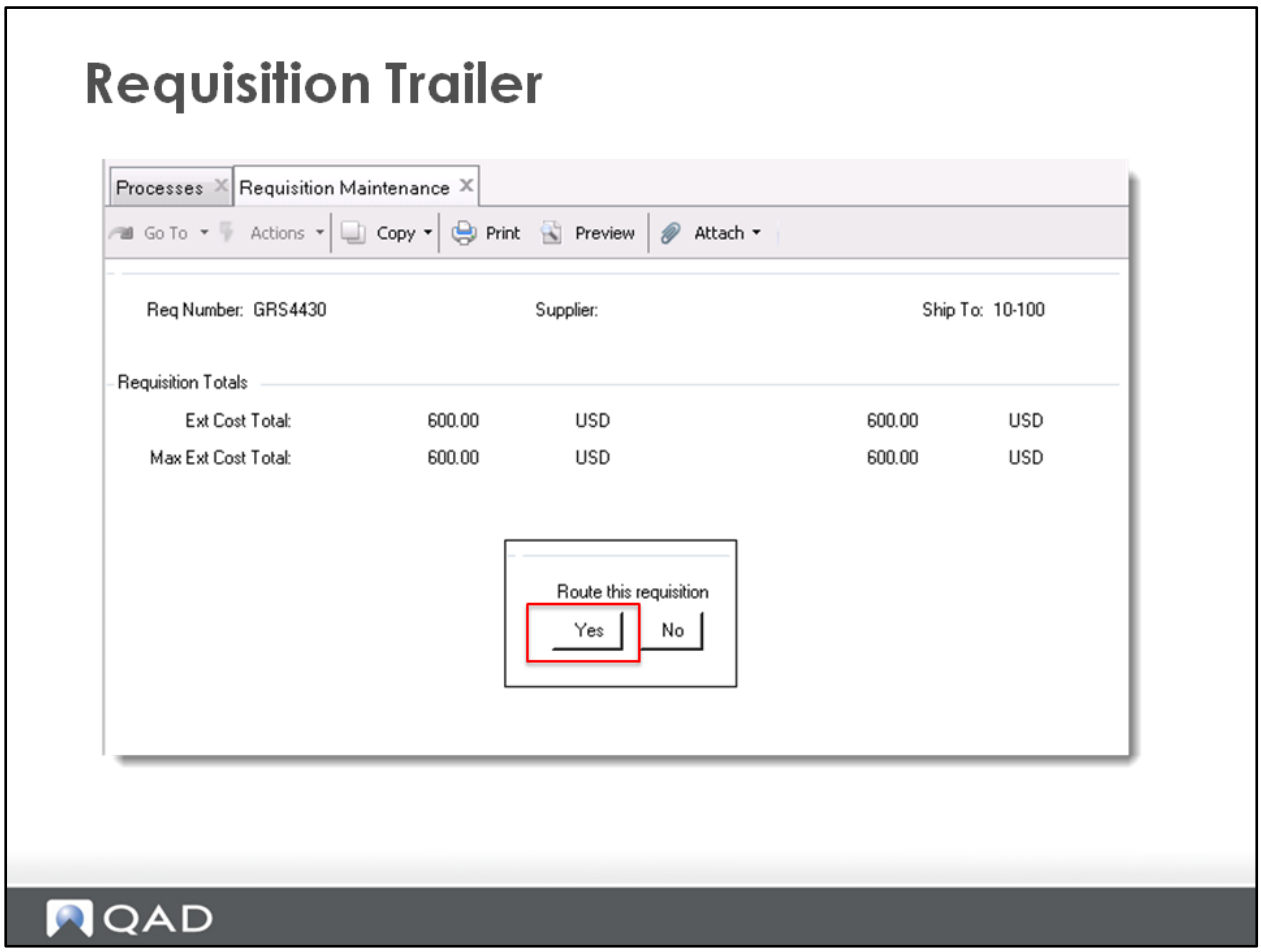
End User: Enter the end user for the items to purchase.

Requisition Line-Item Detail



In the line-item details, specify the site, item number, and quantity to purchase.

Requisition Trailer

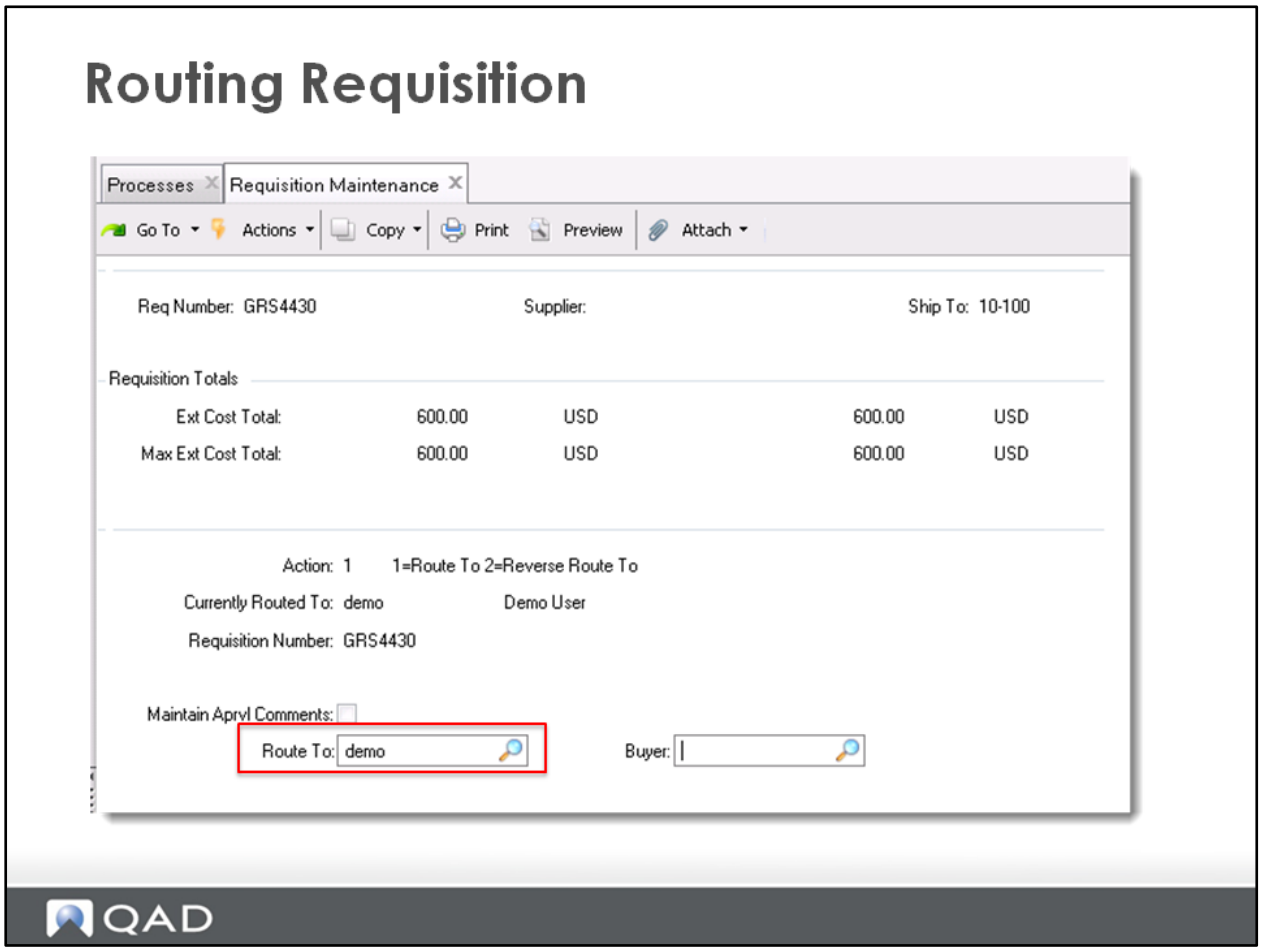


When you complete the line-item details, you can review the requisition totals in the trailer and decide whether the requisition is ready to enter the approval process.

The approval process does not start until you route the requisition to the first approver or reviewer.

- If you choose Yes, the routing frame is displayed. See the next page.
- If you choose No, the requisition remains in your queue. You can return to it later to modify it or to route it to a reviewer or approver using Requisition Routing Maintenance.

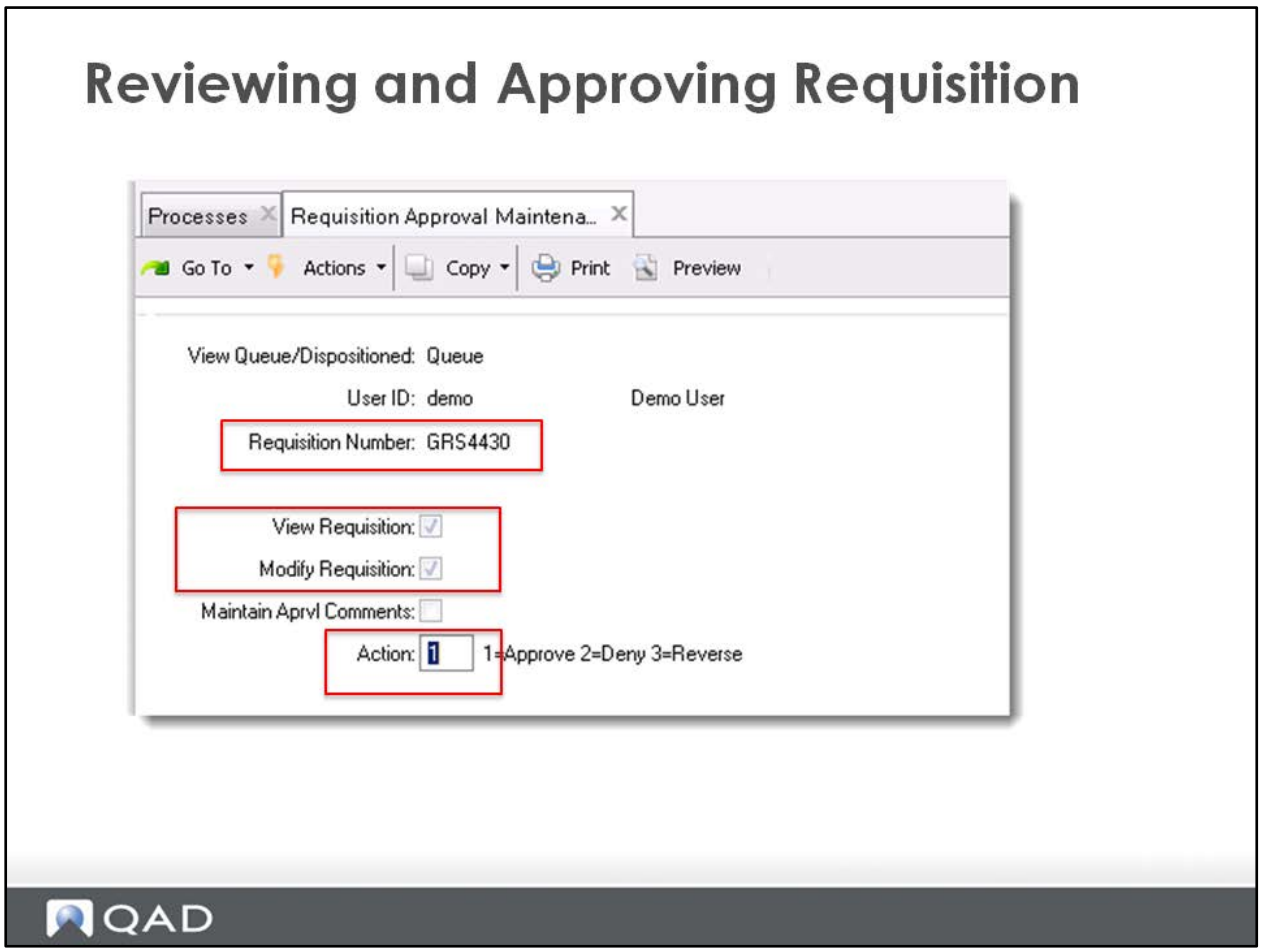
Routing Requisition



In the Route To lookup browse, select the next reviewer or approver in the process. Only the eligible reviewers and approvers are available in the lookup browse. Alternatively, you can route it to a reviewer or approver not listed in the lookup.

You can also assign a buyer who is responsible for issuing a purchase order for approved requisition items. You can leave this field blank. However, a purchase reviewer or approver must complete the field before final approval.

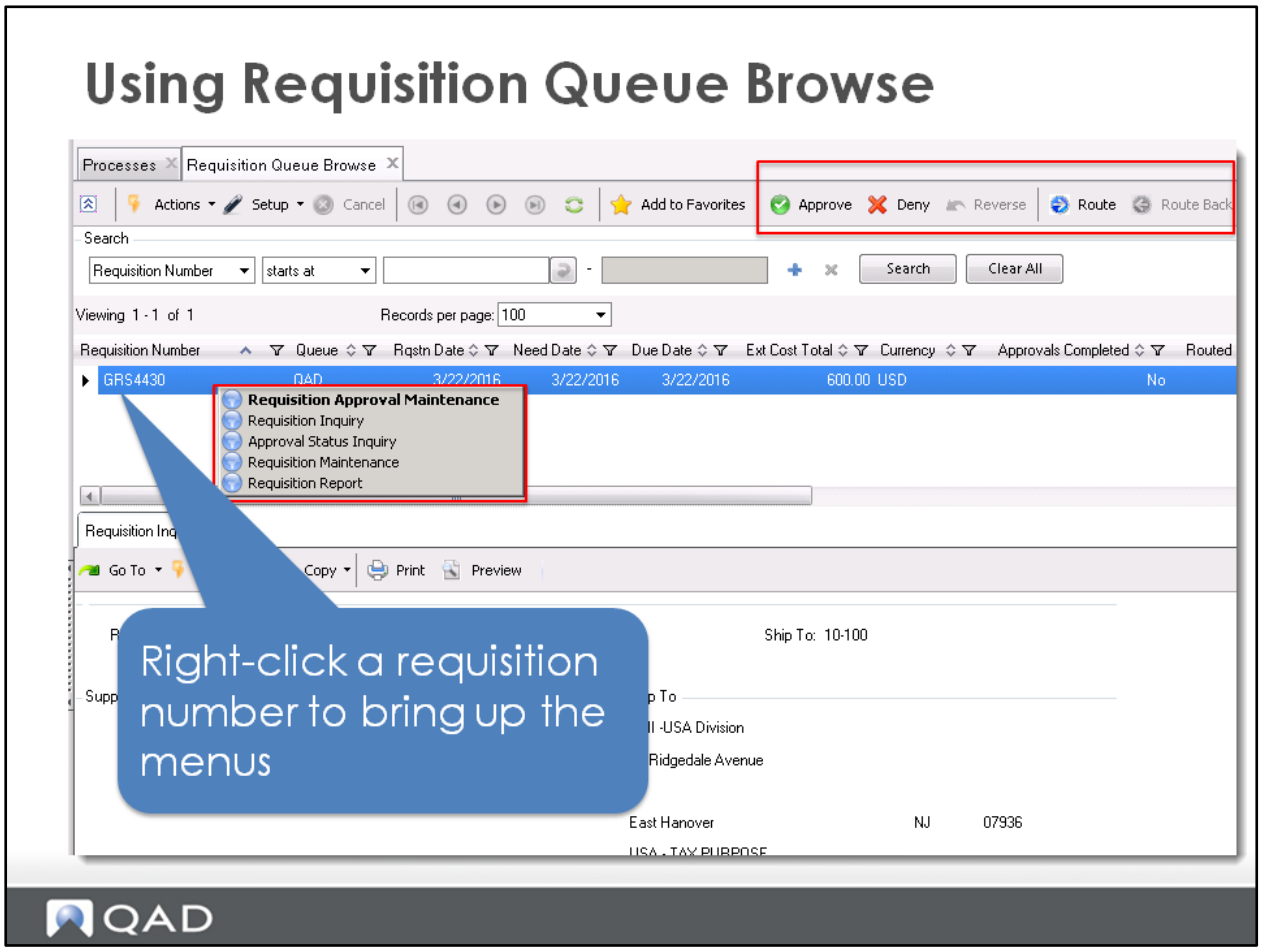
Reviewing and Approving Requisition



Requisition Approval Maintenance (5.2.13) is used to review and approve or deny a requisition. It also provides tools for viewing and modifying the requisition. As the first approver, user *demo* has to route the requisition to the next reviewer or approver after approval.

- To locate the requisitions that are routed to you, use the lookup browse in the Requisition Number field. You can also use Requisition Queue Browse to view the requisitions for your review or approval.
- To view the requisition details, choose View Requisition and click Next. The details are displayed. When you finish review, click Back until you are back to the approving frame.
- To modify the requisition, choose Modify Requisition. The requisition is displayed in editing mode. When you finish modification, click Back to return to the approving frame.
  Note: If the Prohibit Changes to Approved Requisitions field is set to Yes in Requisition Accounting Control, anyone other than the buyer cannot edit an approved requisition.
- In the Action field, you can approve, deny, or reverse the requisition.

Using Requisition Queue Browse



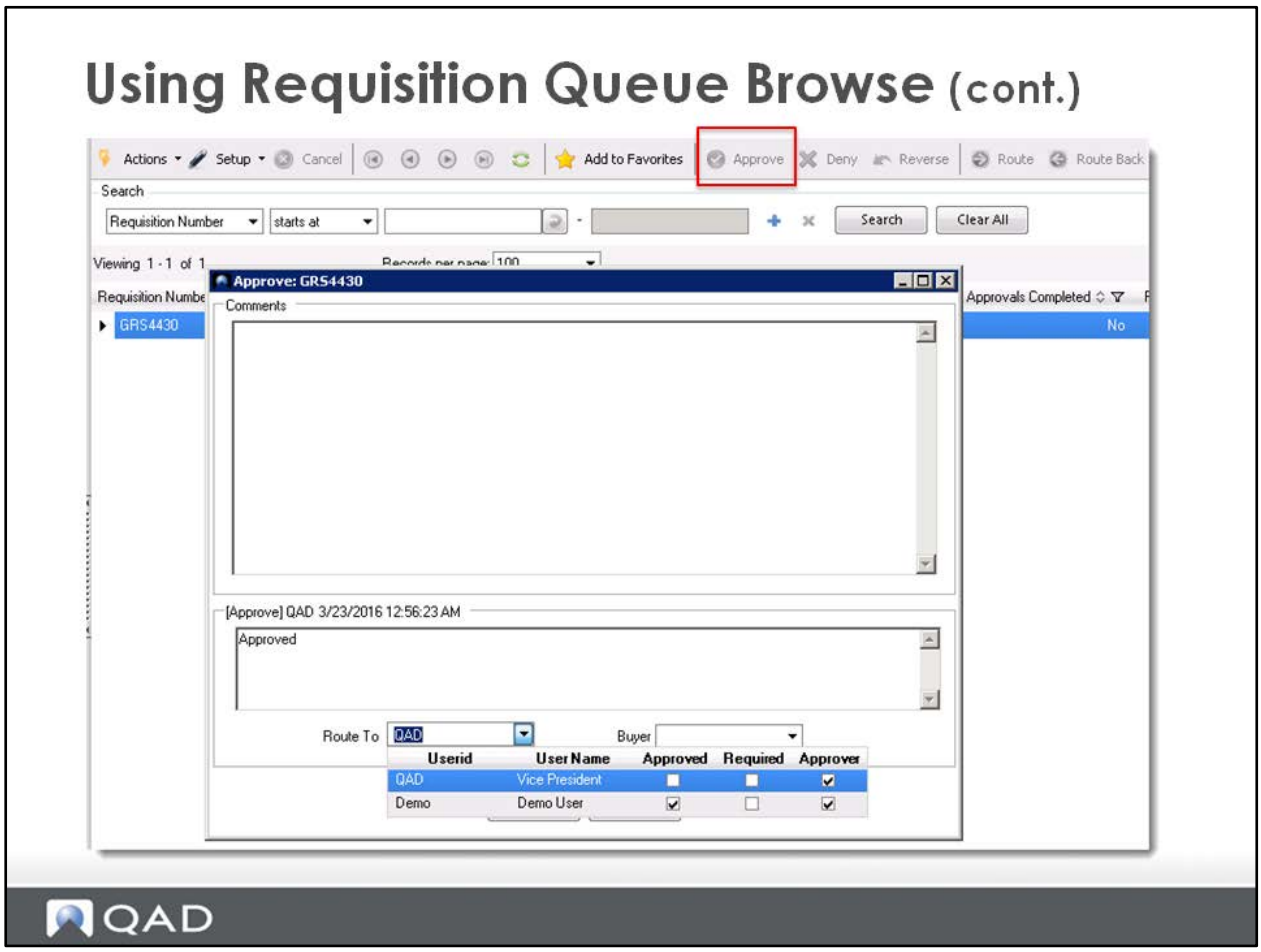
Now the requisition is routed to user QAD. We are going to see how the user QAD approves the requisition using Requisition Queue Browse (5.2.10).

Log in QAD Enterprise Application as QAD (Username: qad; Password: qad).

The Requisition Queue Browse lists all requisitions that are in the user-specific queue. In the browse, you can:

- Approve/deny requisitions
- Route requisitions
- View requisition status, reports, and details
- Modify requisitions by going to Requisition Maintenance

Using Requisition Queue Browse (cont.)

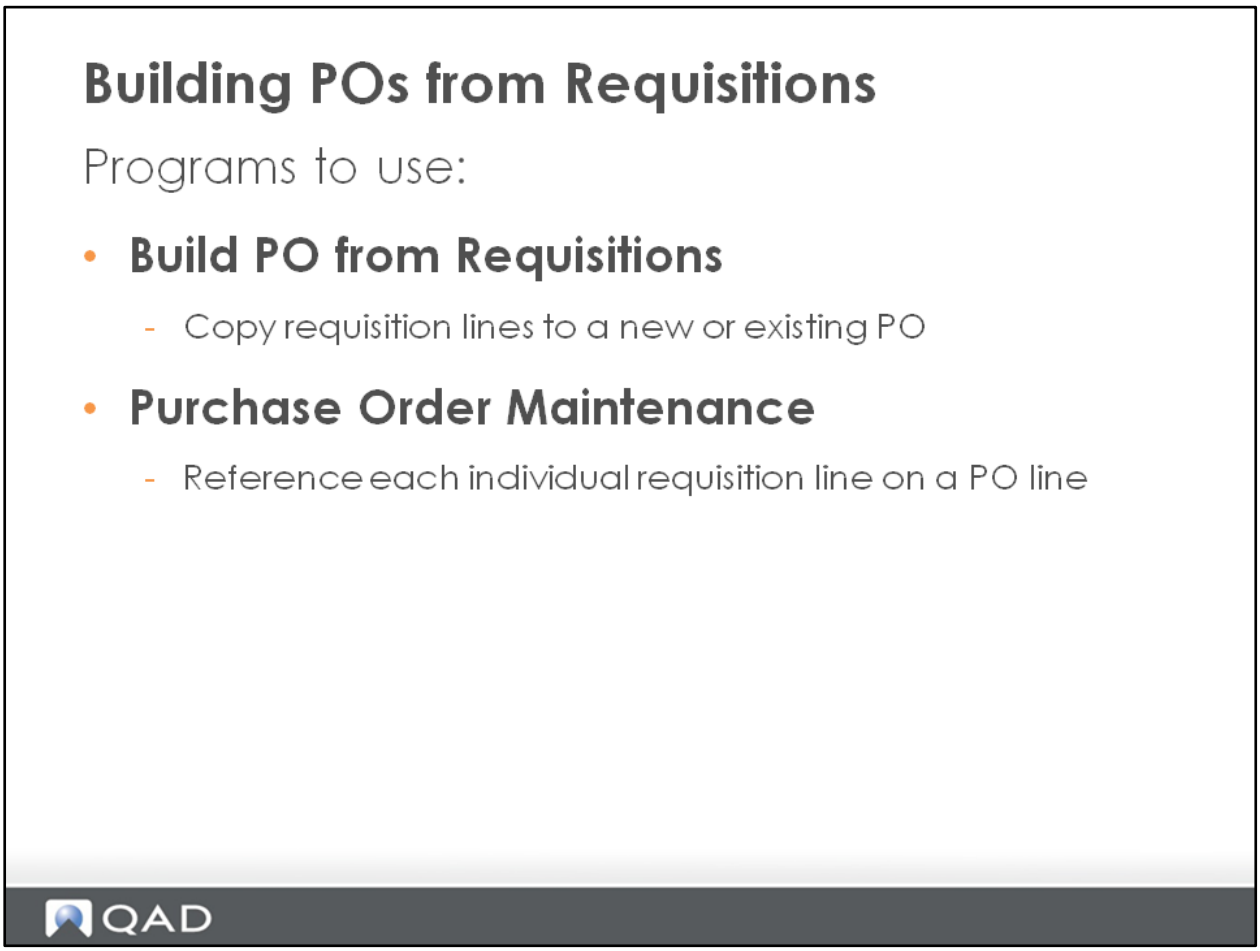


Click the Approve button to approve the requisition. In the Route To dropdown list of the Approve window, you can see all the reviewers or approvers and whether they have approved the requisition.

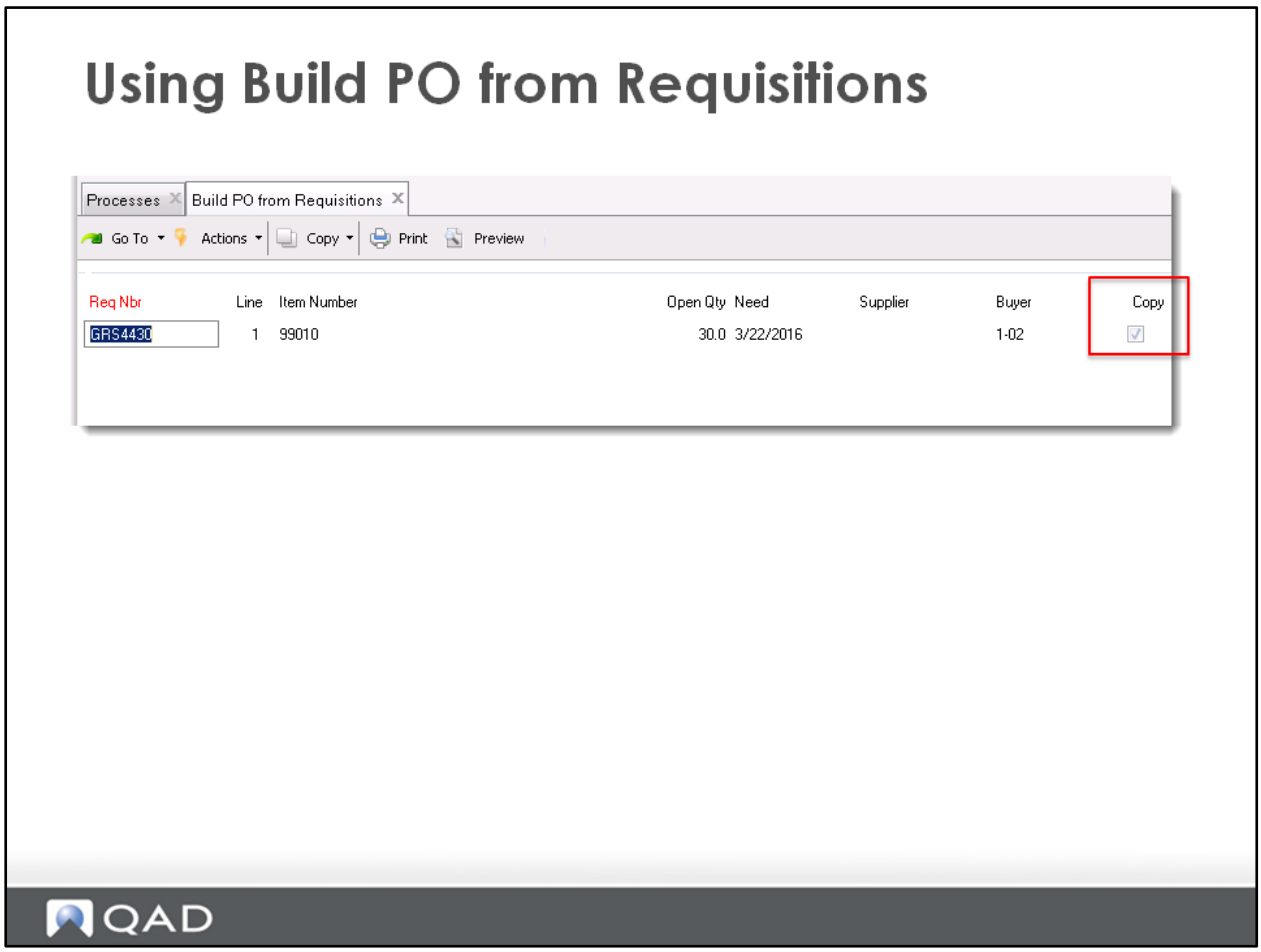
- If there are other approvers or reviewers who have not approved the requisition, route it to the next approver.
- If you are the last approver in the process, assign a buyer after your approval.

When a requisition is routed to a buyer, the requisition approval process is complete. The next step is to build POs from the approved requisition.

Building POs from Requisitions



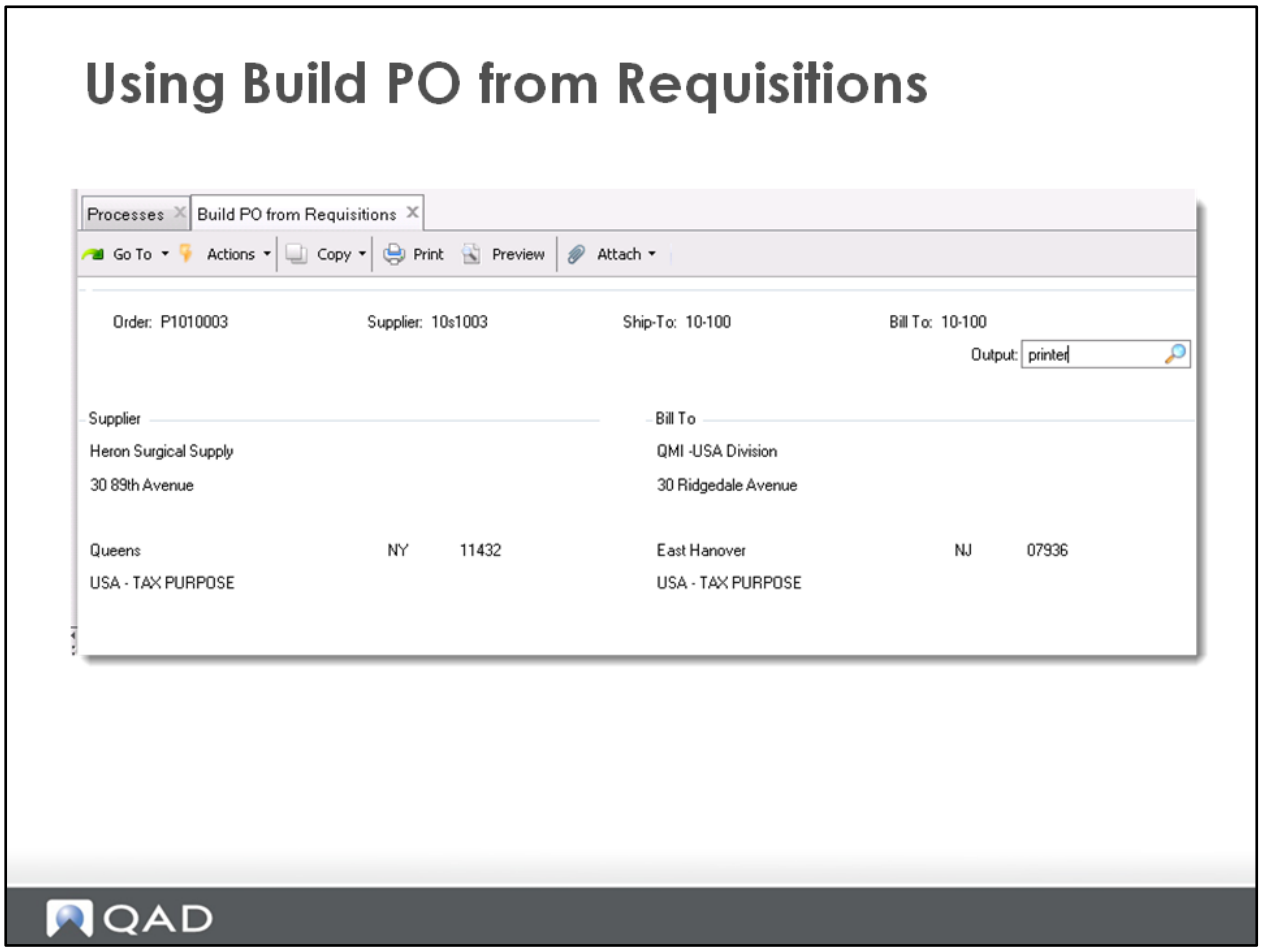
Using Build PO from Requisitions



In Build PO from Requisition:

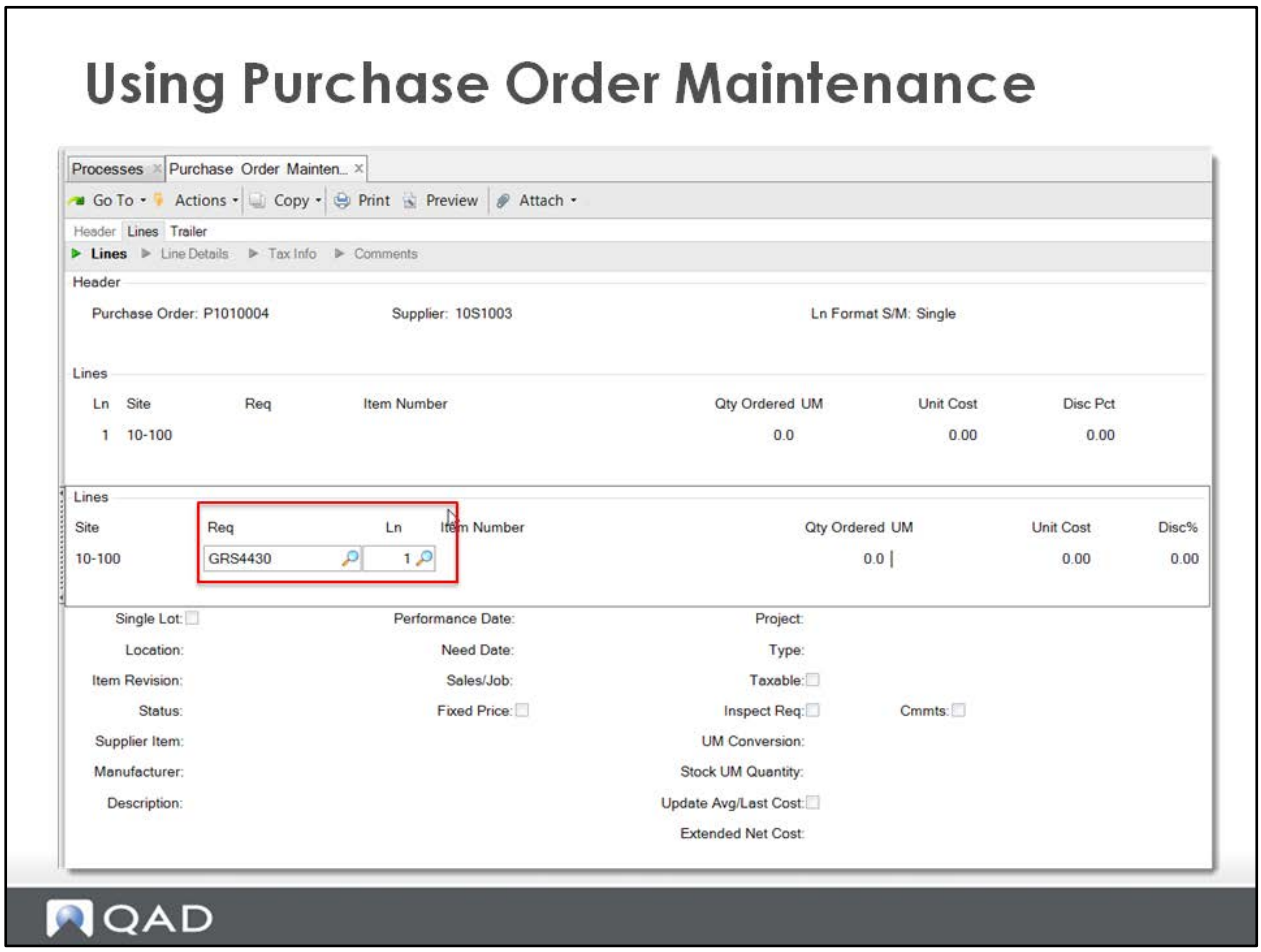
- Filter out the requisitions that you want to build the PO from.
- Check the Copy checkbox for the requisition lines to copy the requisition line details to purchase order lines.

Using Build PO from Requisitions



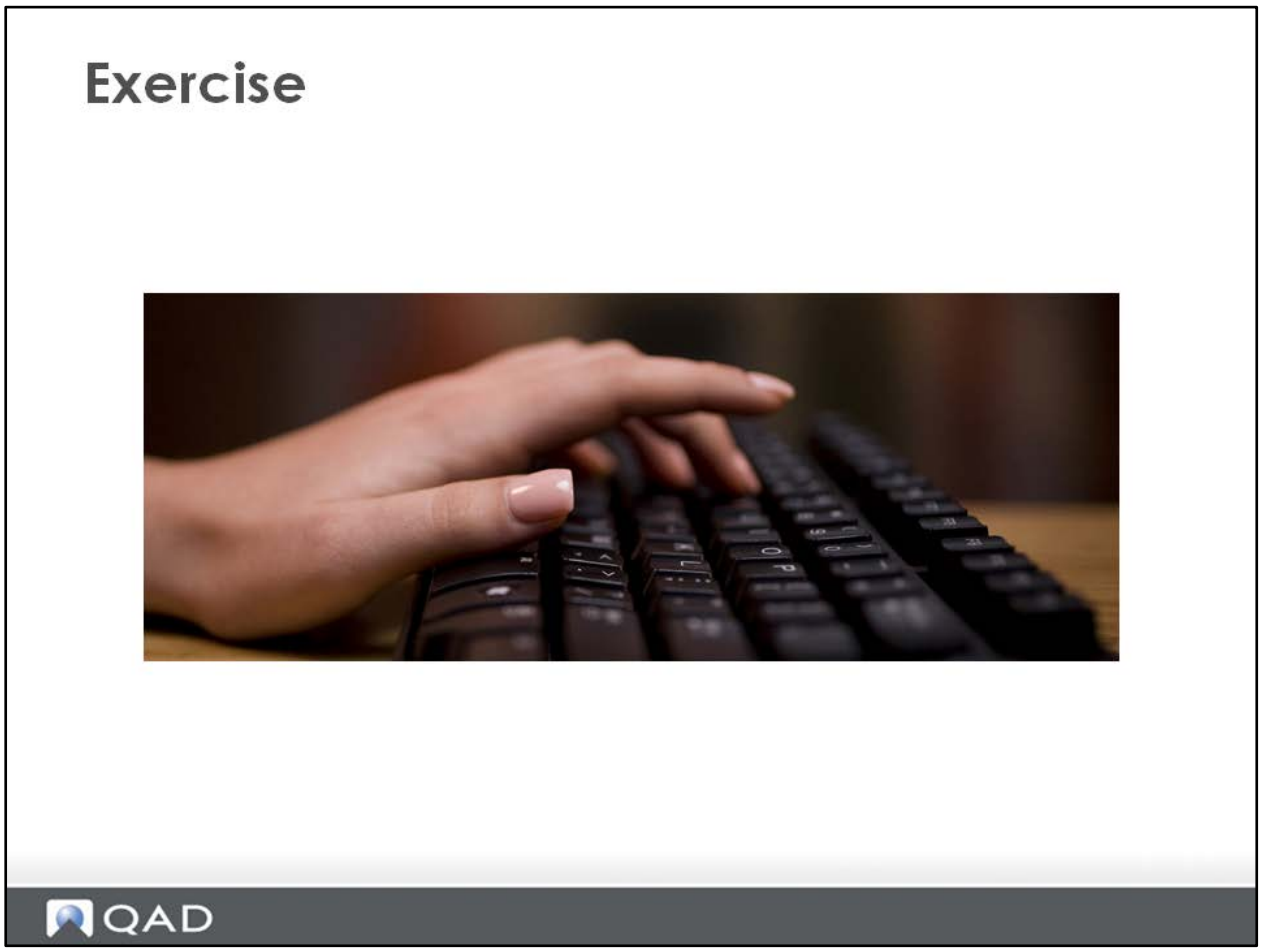
- To copy the requisition lines to a new purchase order, leave the Order field blank for the system to generate an order number.
- To copy the requisition lines to an existing purchase order, enter the PO number in the Order field.
- Enter the supplier for the items to purchase.
- Use the Output field to select the way you want to display the PO report.
  Note: Sending this report to a printer is not the same as printing the PO for the supplier. When you are ready to issue the PO, print it with Purchase Order Maintenance (5.7) or Purchase Order Print (5.10).

Using Purchase Order Maintenance



To build a PO from a requisition using Purchase Order Maintenance, go to the Lines frame, and select a requisition line from the Req lookup browse, which contains all the approved requisitions currently routed to Purchasing.

Exercise



Exercise: GRS Process

Use the process map of Place Purchase Requisition to complete this exercise.

1. In Requisition Accounting Control, set Vertical Approvals Required to 2.
2. Set up two vertical approvers, using Vertical Approval Maintenance with the following data:

Approver 1

User ID: demo

From Sub-Account: Elec

Approval Level: 05

Approver 2

User ID: CFO

From Sub-Account: Elec

Approval Level: 06

3. Set *demo* as a generalized code for the Buyer field, using Generalized Codes Maintenance.

Field Name: po_buyer

Value: demo

4. Set *demo* as a buyer, using Buyer Maintenance.

5. Create a purchase requisition with Requisition Maintenance and do not route this requisition.
   Requisition Number: <blank> Leave blank for the system to generate. Write down the generated requisition number for later use.
   Supplier: 10S1002
   Ship To: 10-100
   End User: 10-EMP01
   Sub-Account: Elec
   Site: 10-100
   Item Number: Copying machine
   Req Quantity: 1
   UM: EA
   Unit Cost: 10,000
5. In Requisition Approval Maintenance, view and approve the requisition that is created in step 5. Then, route it to the next approver CFO.

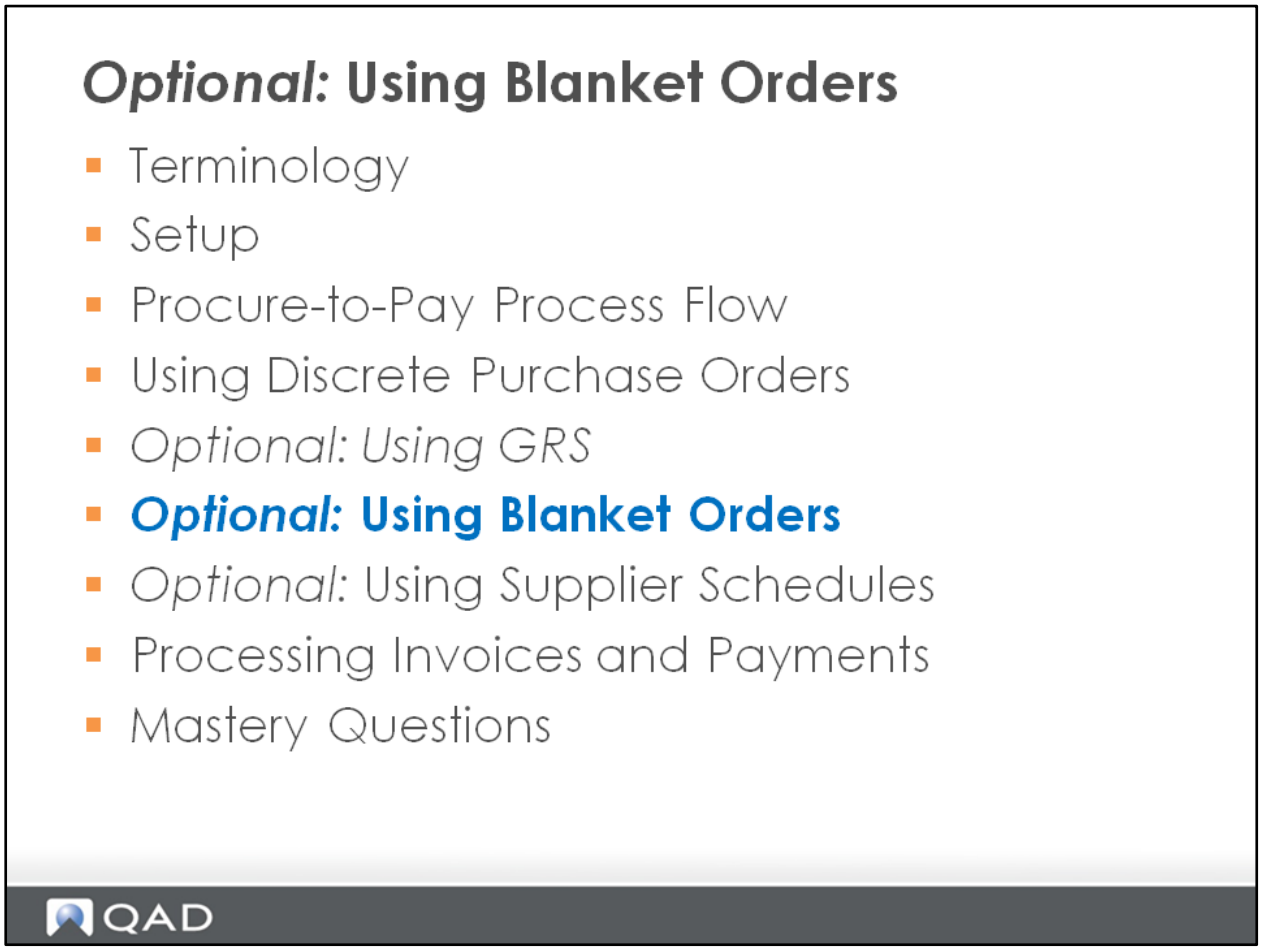
6. Log in to the system with username *CFO* and password *qad*.

7. Go to Requisition Queue Browse, approve the requisition, and route it to purchasing by assign a buyer.

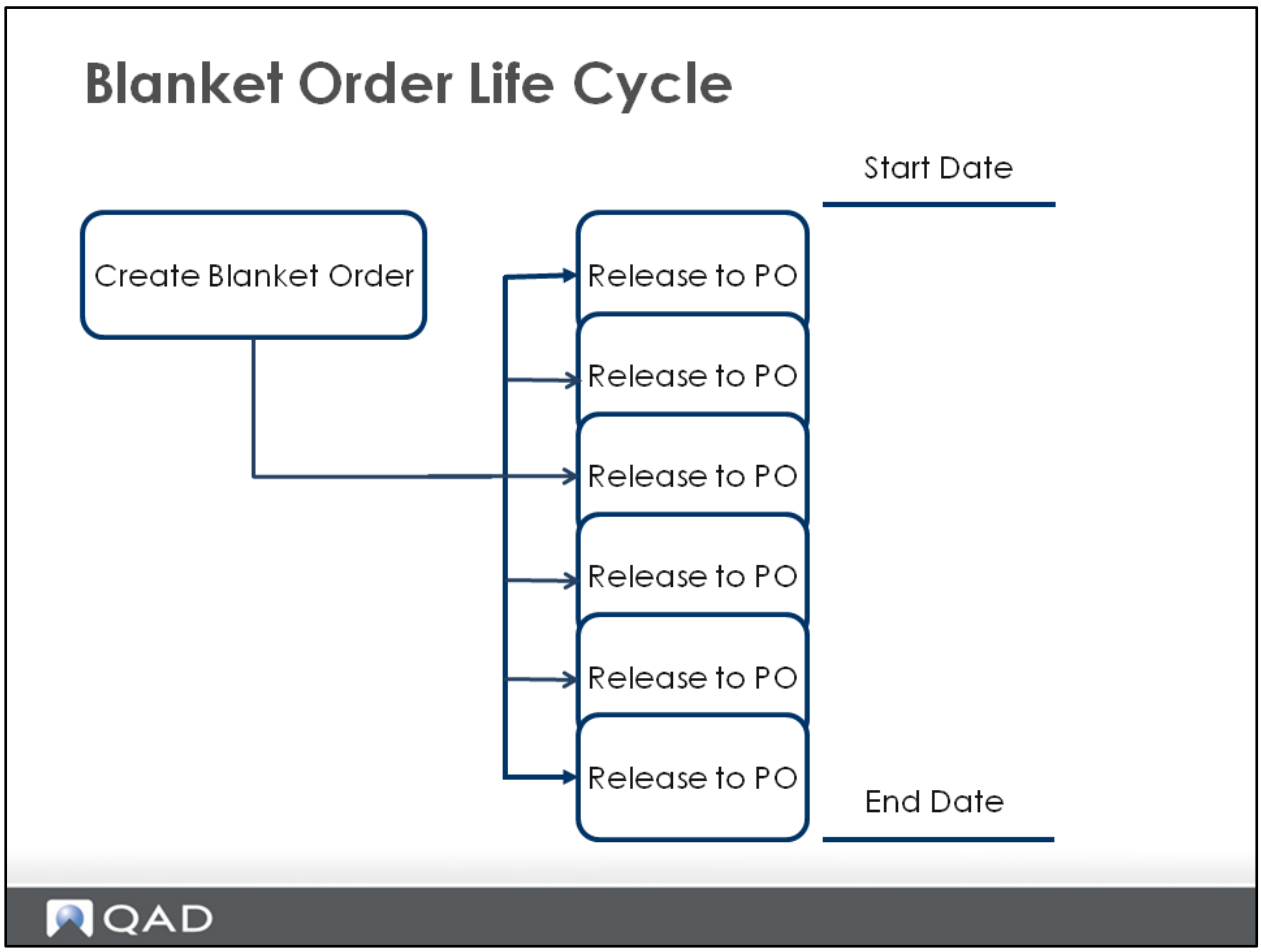
8. Log in back to the system as the user *demo*.

9. Create a purchase order from the approved requisition using Build PO from Requisitions.

Optional: Using Blanket Orders



Blanket Order Life Cycle

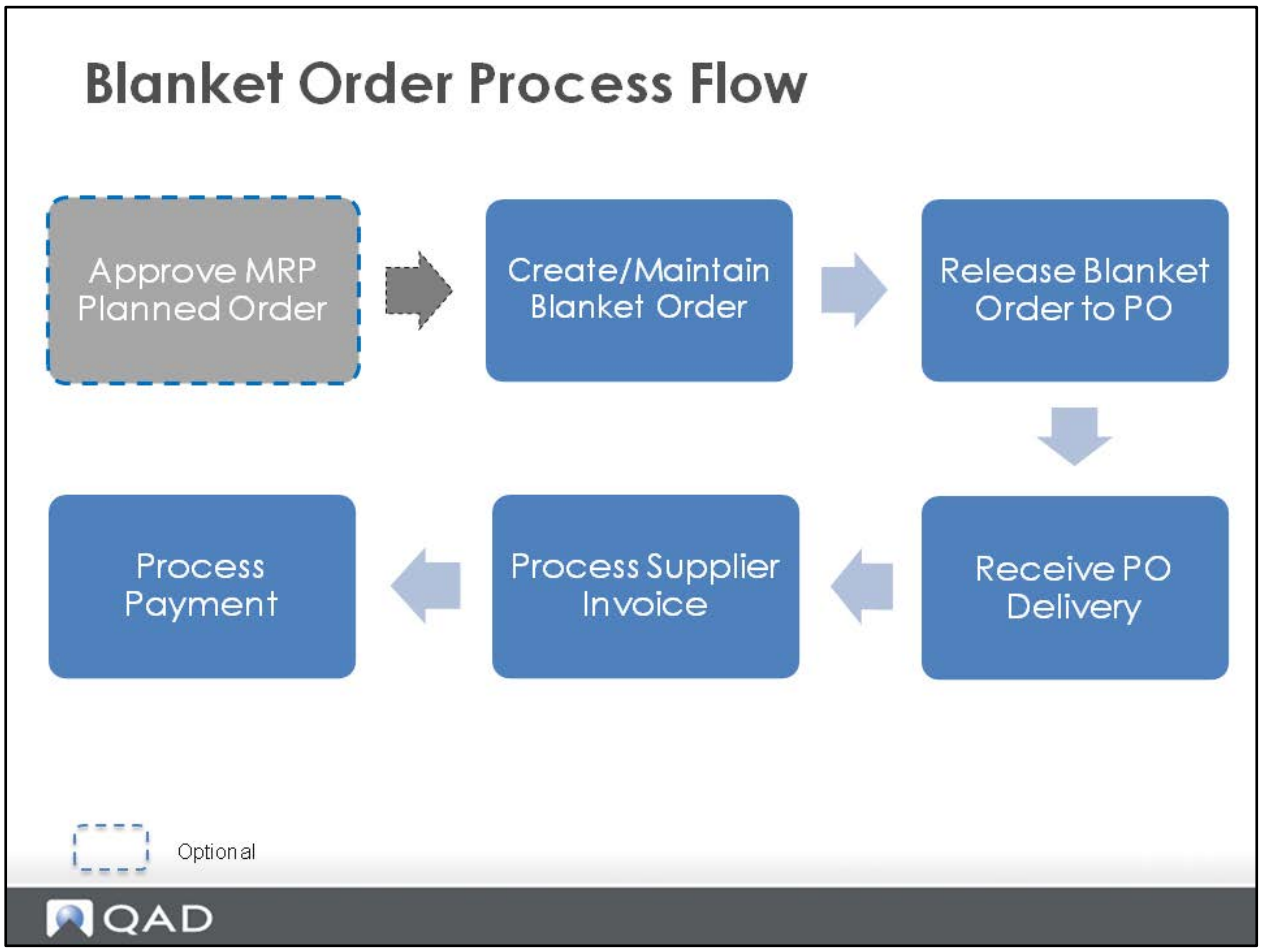


Use blanket orders to request multiple deliveries of stock items, where an ongoing relationship with the supplier is assumed, but the exact delivery dates are unknown. Quantities and due dates can be entered up to the time that a blanket order becomes a purchase order.

For example, QMI buys all of its components from Bridgeville Industries. Each week, the requirements change and are too small to obtain quantity discounts. The purchasing manager negotiates an annual contract with Bridgeville Industries to get better pricing based on the estimated annual usage of the purchased items. This pricing is then documented using a blanket order.

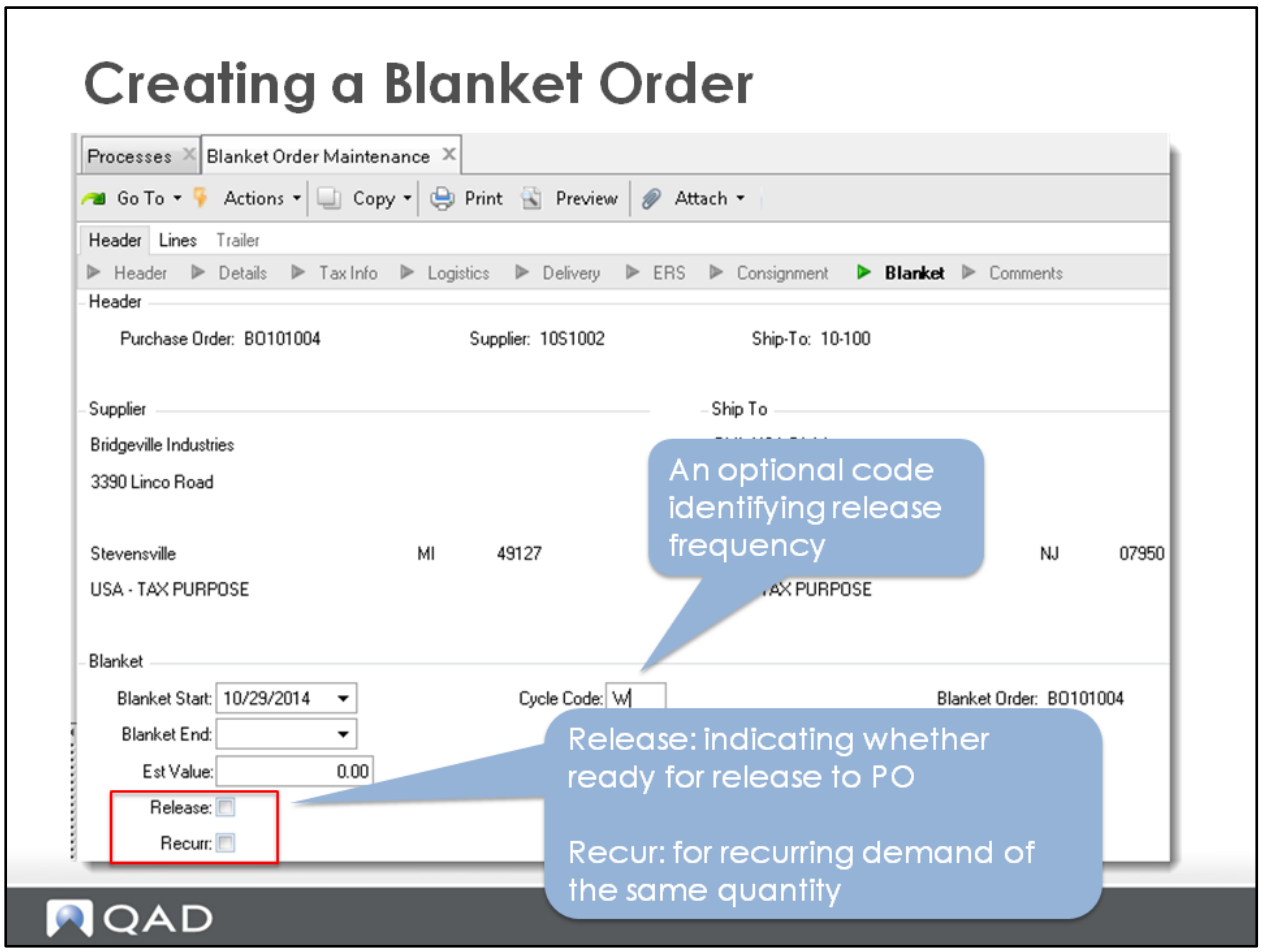
Each week, a discrete purchase order is released from the blanket order for the following week's requirements. A weekly release is just an example; the actual release cycle is user defined. The blanket order tracks the totals ordered to date.

Blanket Order Process Flow



Note: The PO receipt process for blanket orders is the same as that used for discrete purchase orders. For information on the supplier invoice and payment processes, see *Processing Invoices and Payments*.

Creating a Blanket Order



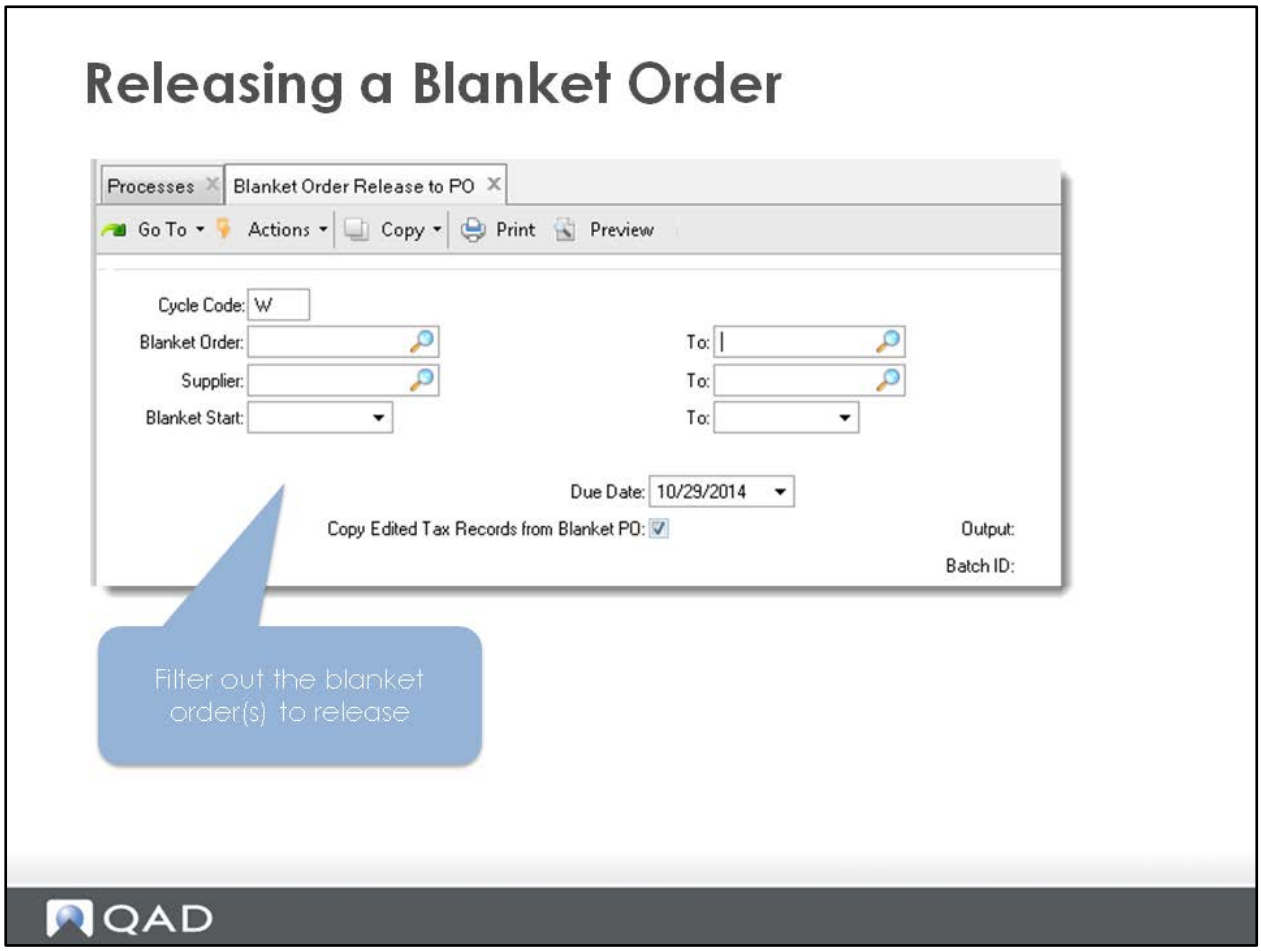
To record or modify blanket orders, go to Home > Procure-to-Pay > Manage Discrete Purchasing > Create Blanket Order. The use of blanket orders saves time when a company places periodic or recurring orders for the same item.

In addition, quantities and due dates can be entered on blanket orders up to the time when you release them to POs.

You can set up a blanket order in one of two ways:

- Irregular: when deliveries are irregular or of varying quantities, set Release = No and Recurr = No. When you need a delivery, set Release = Yes and enter the Qty to Rel (Quantity to Release) in the Lines area of the blanket order, then release it to a PO.
- Recurring: when deliveries are regular, recurring, and of the same size, set Recurr = Yes and Release = Yes and enter the Qty to Rel (Quantity to Release) in the Lines area of the blanket order.

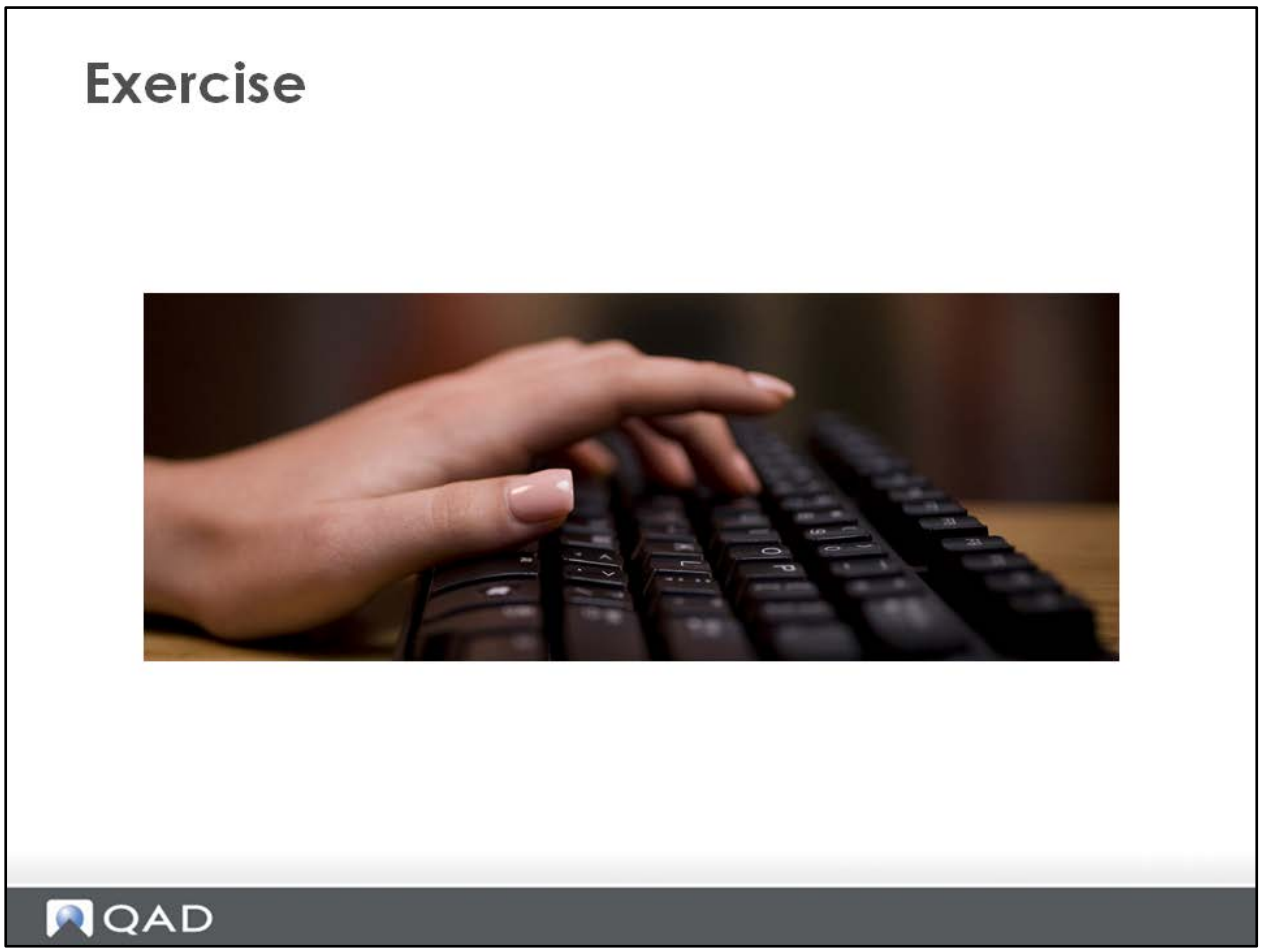
Releasing a Blanket Order



Go to Home > Procure-to-Pay > Manage Discrete Purchasing > Release Blanket Order to PO to release the blanket order.

The releasing generates a purchase order from the specified line items in a blanket order. All receipts are processed against this PO.

Exercise



1. Go to Purchasing Control and verify that the Apprvd Reqs for POs field for site 10-100 is set to No.
2. Locate Create Blanket Order in the Procure-to-Pay process maps and create a blanket order as follows:

   Header
   Purchase Order: <blank> Leave it blank for the system to generate.
   Supplier: 10S1002
   Ship-To: 10-100
   Blanket Start: Default to today.
   Blanket End: Set it to one month from today.
   Release: Yes

   Lines
   Ln: 1

Site: 10-100
Item Number: 60050
Quantity: 200
Quantity to Rel: 10

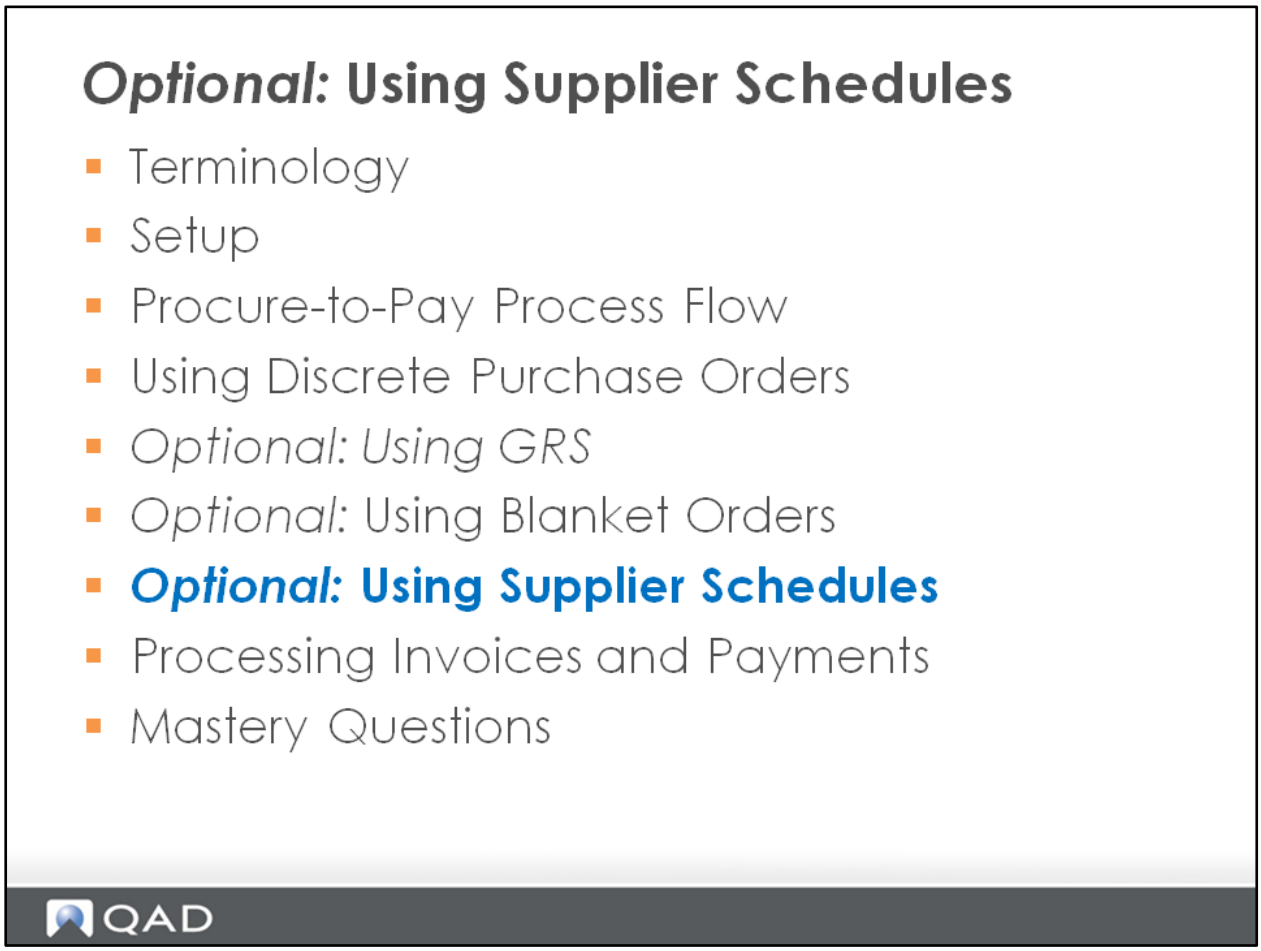
3. Release this blanket order to a purchase order using Release Blanket Order to PO. Locate Release Blanket Order to PO by navigating to Manage Discrete Purchasing > Release Blanket Order to PO in the Procure-to-Pay process maps.
   - The system creates a PO using the data specified in the blanket order.
   - The purchase order number is generated according to the settings in Purchasing Control. Record the PO number for later use in PO receipt, invoice, and payment.
   - The release quantity (ten) is defaulted from the Quantity to Rel field that you entered in Step 2.
4. Receive the PO using Purchase Order Receipts. Locate Purchase Order Receipts by navigating to Manage Discrete Purchasing > Receive Materials > Purchasing Order Receipts in the Procure-to-Pay process maps.

If time allows, practice this process again by continuing to release the remaining quantity of the blanket order to PO.

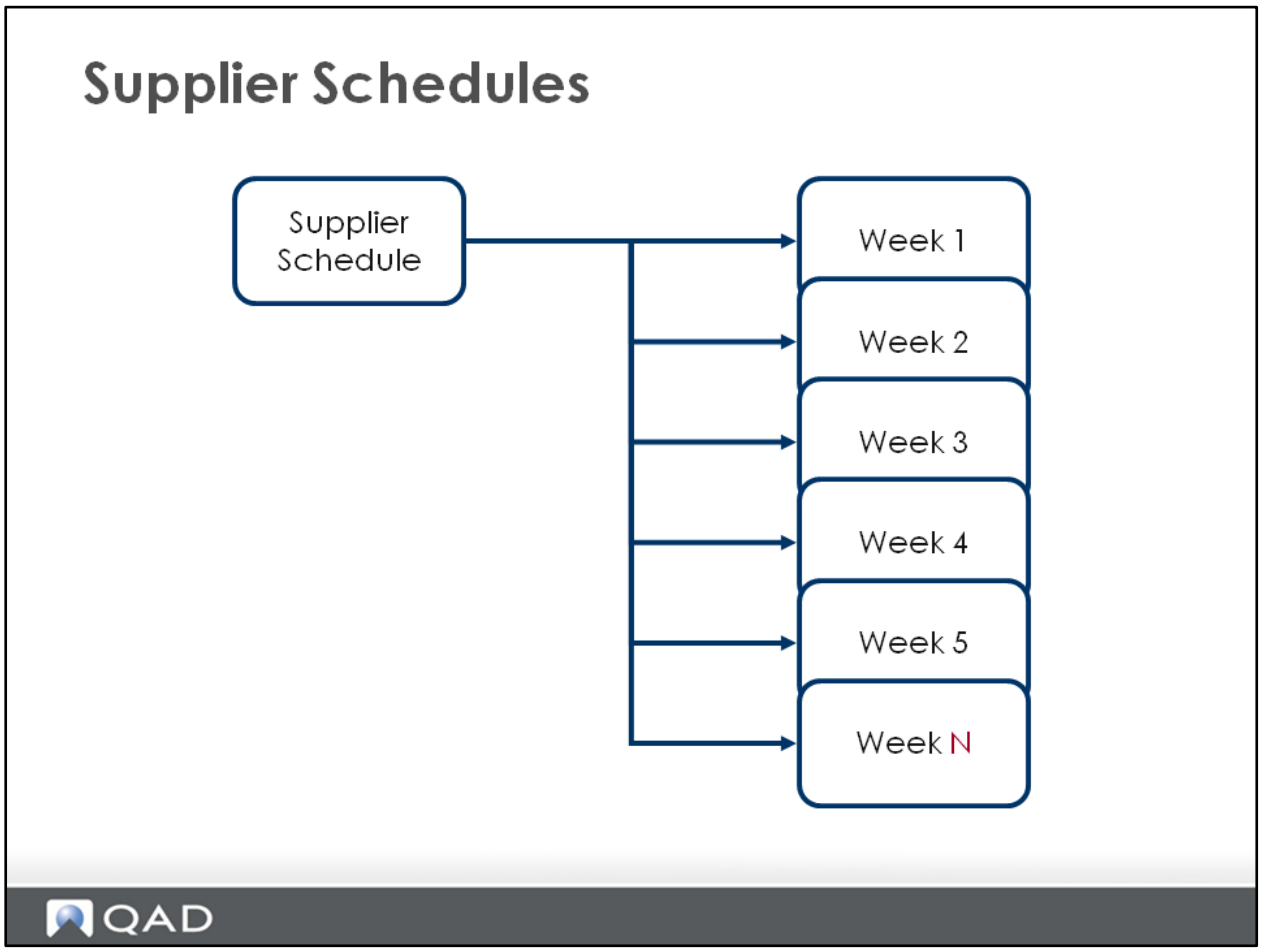
Before releasing the rest, go to Blanket Order Maintenance to set Release to Yes in the header and enter the Quantity to Rel value for Line 1. Otherwise, the release cannot be processed.

Note: For exercises on processing supplier invoices and payments, see Processing Invoices and Payments.

Optional: Using Supplier Schedules

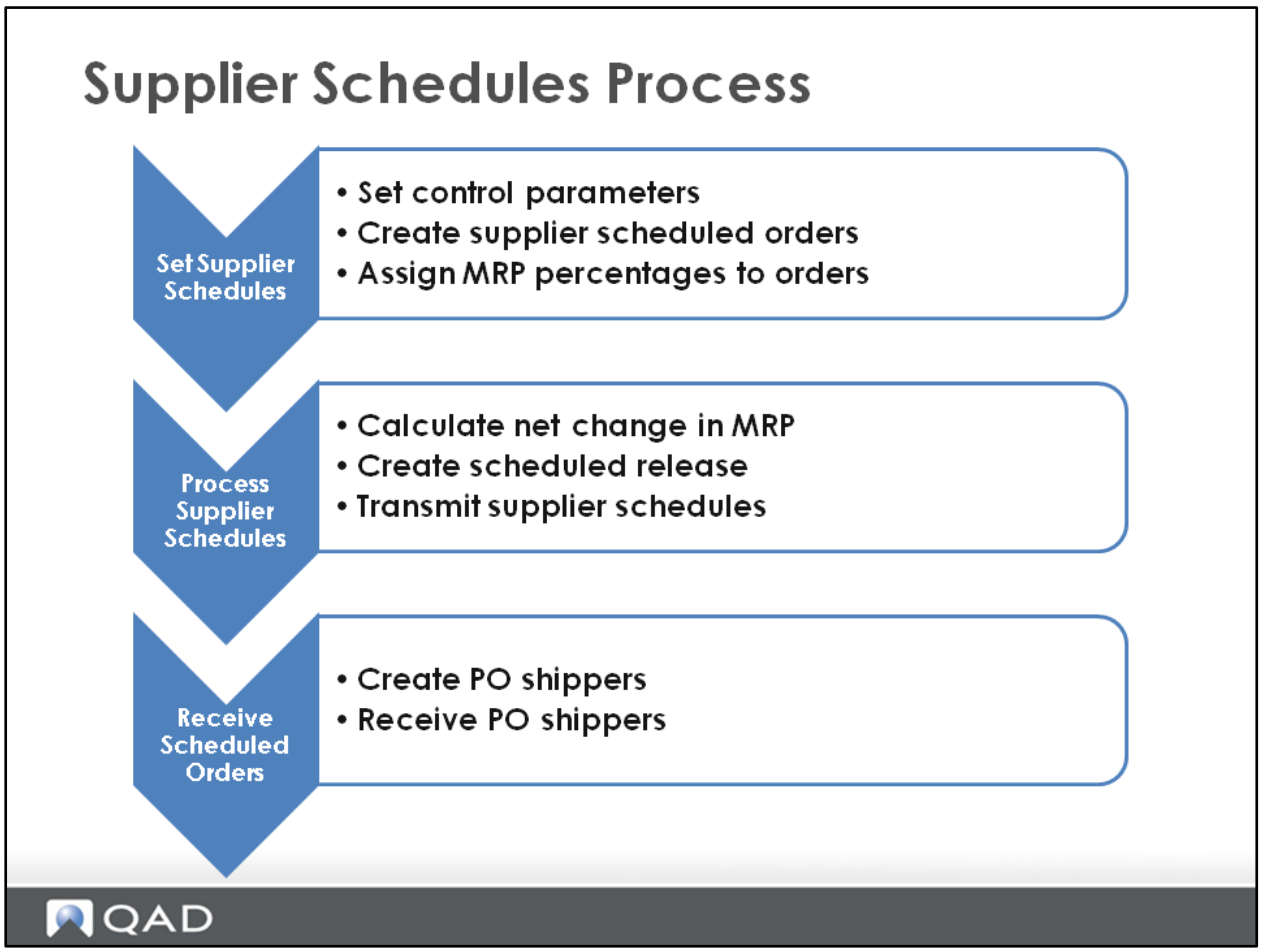


Supplier Schedules



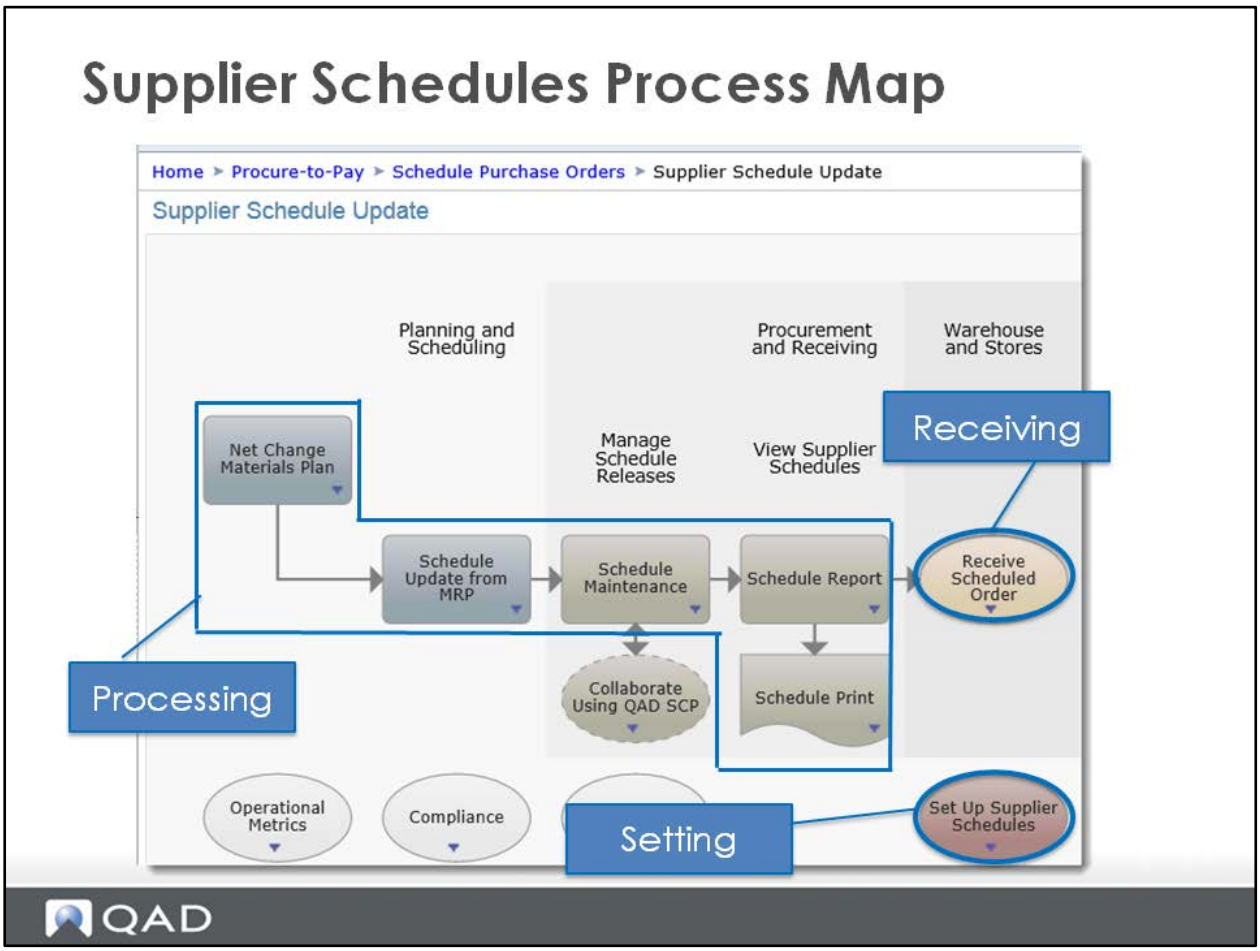
Supplier schedules are cumulative, schedule-driven purchase orders with multiple line items from which releases of requirements and due dates are issued. Supplier schedules are typically used by companies with long-term supplier contracts that require regular weekly or daily deliveries. The schedules specify, for the near term, dates and even hours of delivery, and also update MRP and the supplier regarding long-term plans.

Supplier Schedules Process



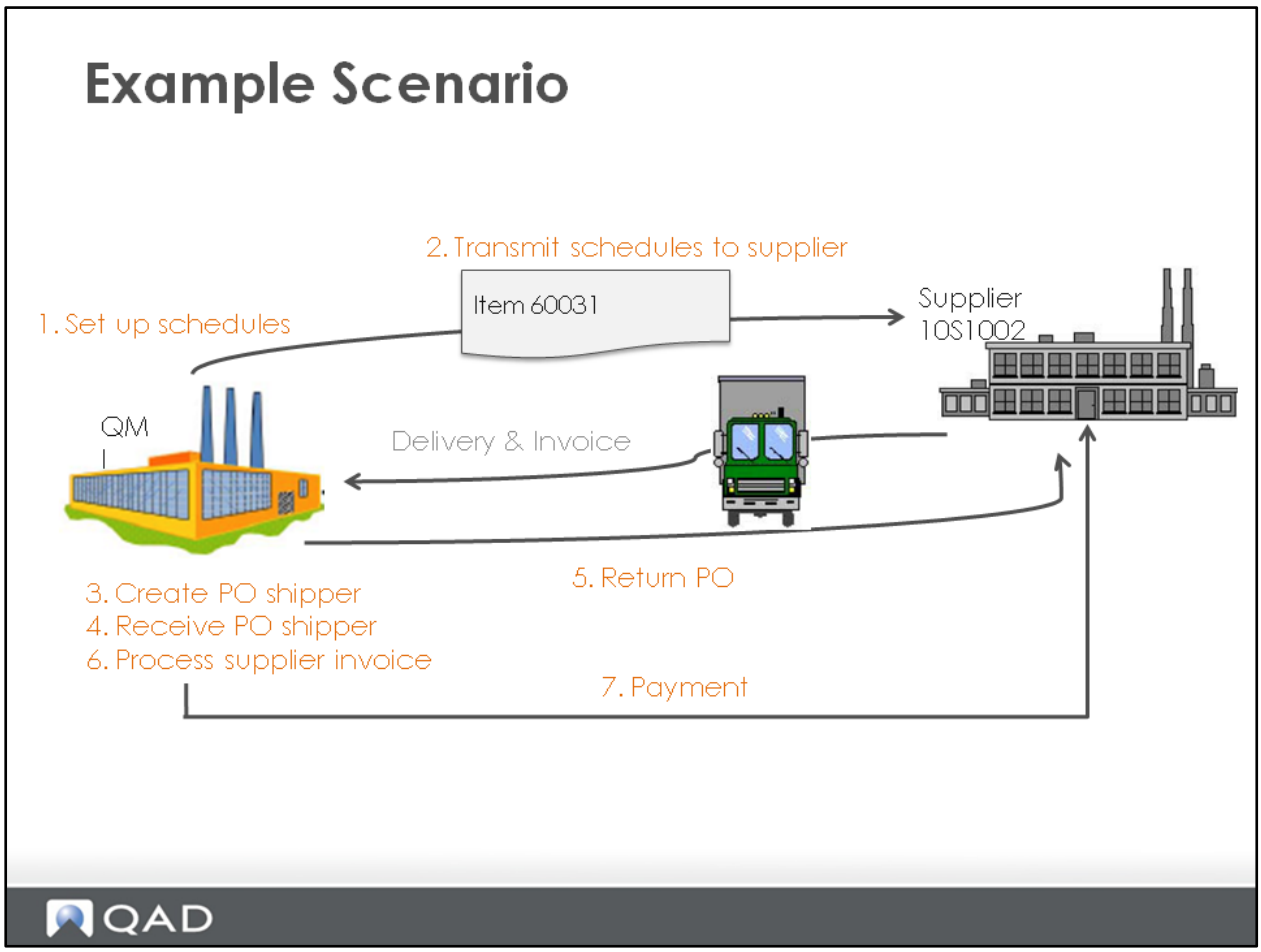
Note: For information on the supplier invoice and payment processes, see *Processing Invoices and Payments*.

Supplier Schedules Process Map



This slide shows the process map that the class is going to use in an example scenario.

Example Scenario

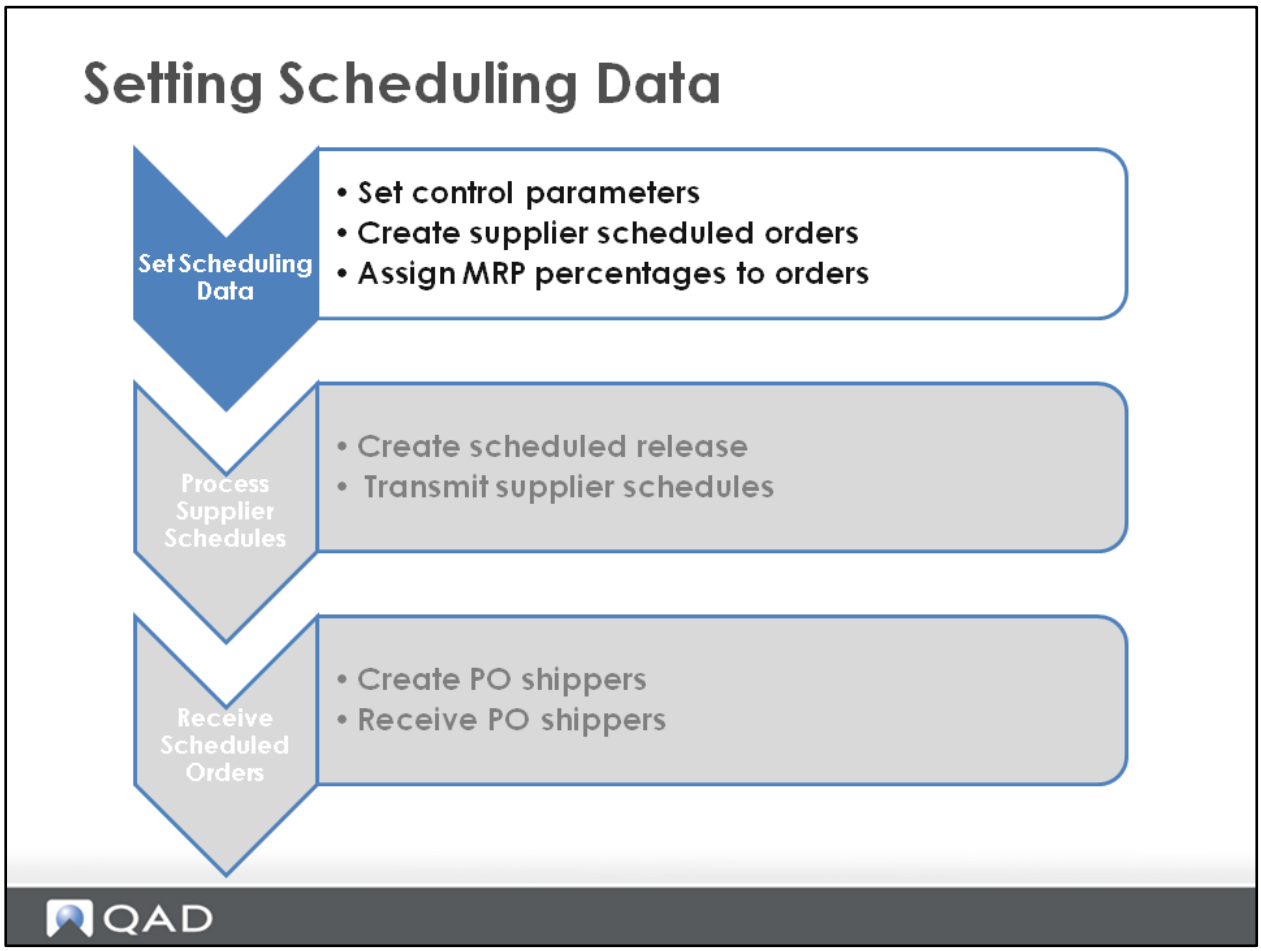


The example shows the following purchasing activities:

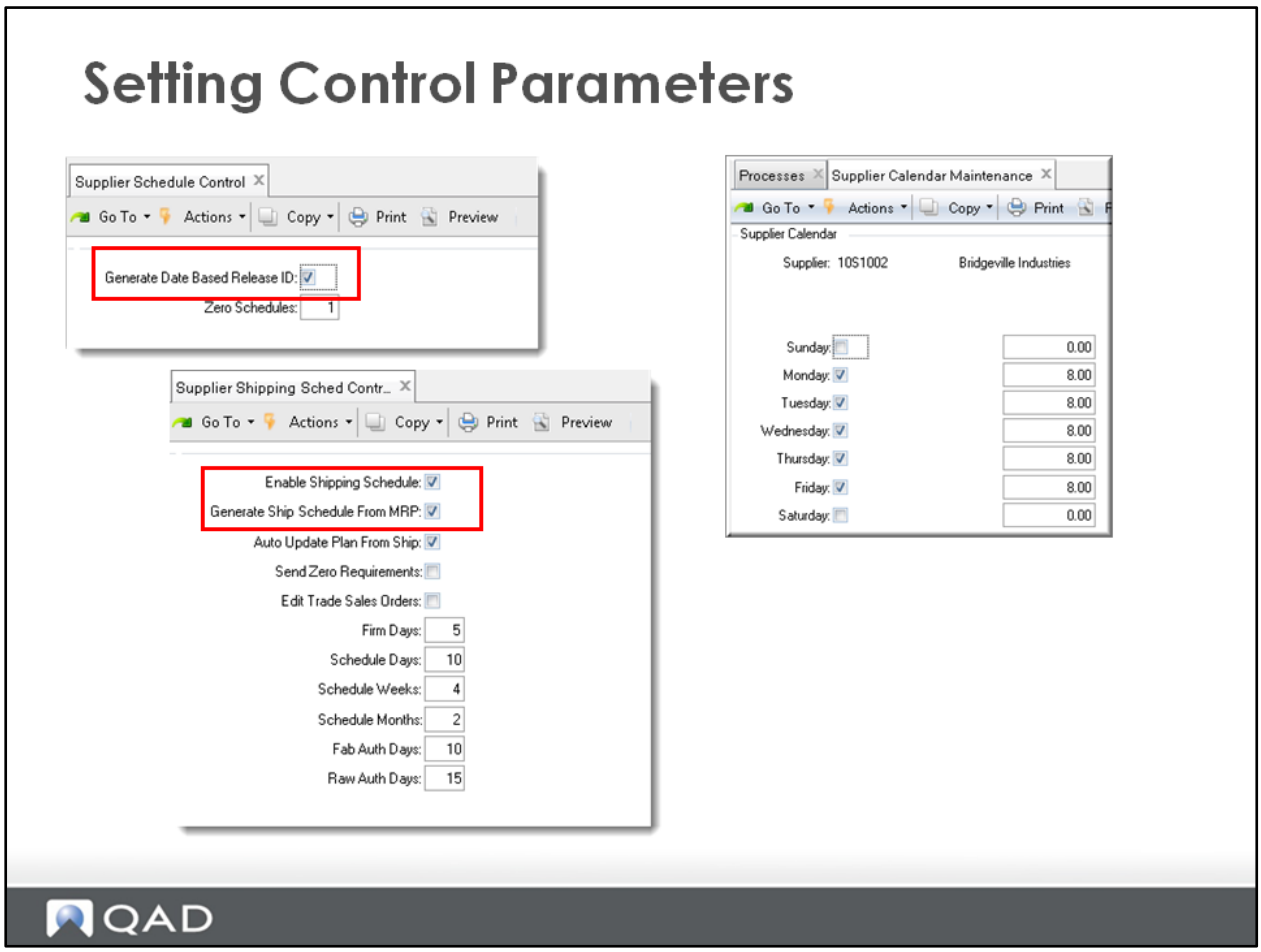
1. Set up schedules.
2. Transmit schedules to the supplier (print schedules).
3. Create PO shippers.
4. Receive PO shippers.
5. Process PO returns.
6. Process supplier invoices.
7. Process payments.

Note: The return process is the same as that used for the discrete purchase order process, and is not discussed in this section. For information on the supplier invoice and payment processes, see *Processing Invoices and Payments*.

Setting Scheduling Data



Setting Control Parameters



Supplier Schedules Control

To allow the system to generate date-based release IDs, set Generate Date Based Release ID to Yes in Supplier Schedule Control.

ERS Control

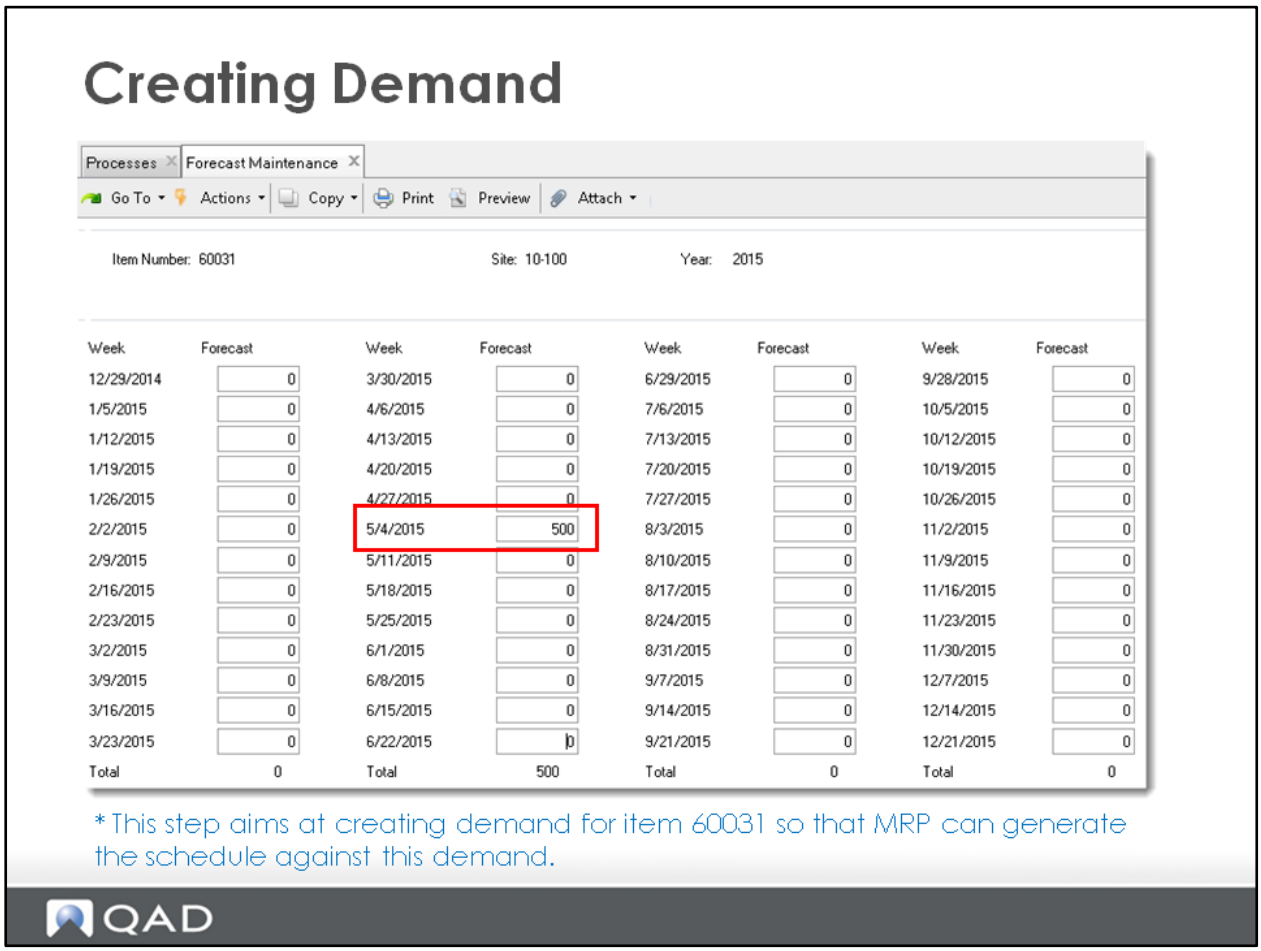
Set Enable Shipping Schedule to Yes in Supplier Shipping Schedule Control (5.5.7.24). Otherwise, you cannot generate planning or shipping schedules.

Use other fields in this menu to set the default values for supplier scheduled orders. You can also ignore the settings here and set them when creating scheduled orders.

Supplier Calendar Maintenance

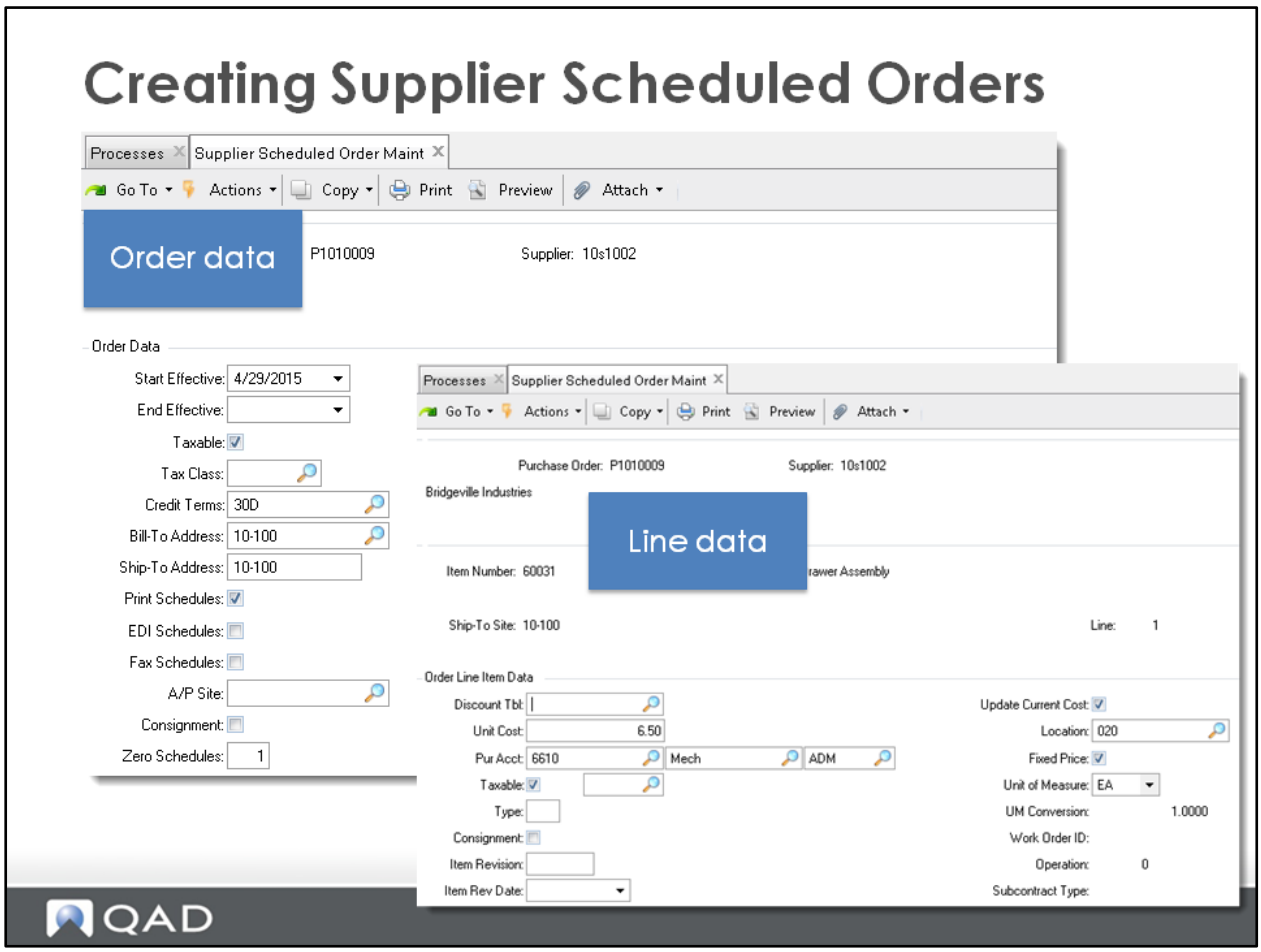
The supplier calendar defines the supplier's standard workweek and exceptions to the normal calendar such as scheduled shutdown periods and holidays. MRP considers these calendars when generating scheduled releases.

Creating Demand



There is no demand for item 60031 in this training environment. You need to create demand by forecasting.

Creating Supplier Scheduled Orders



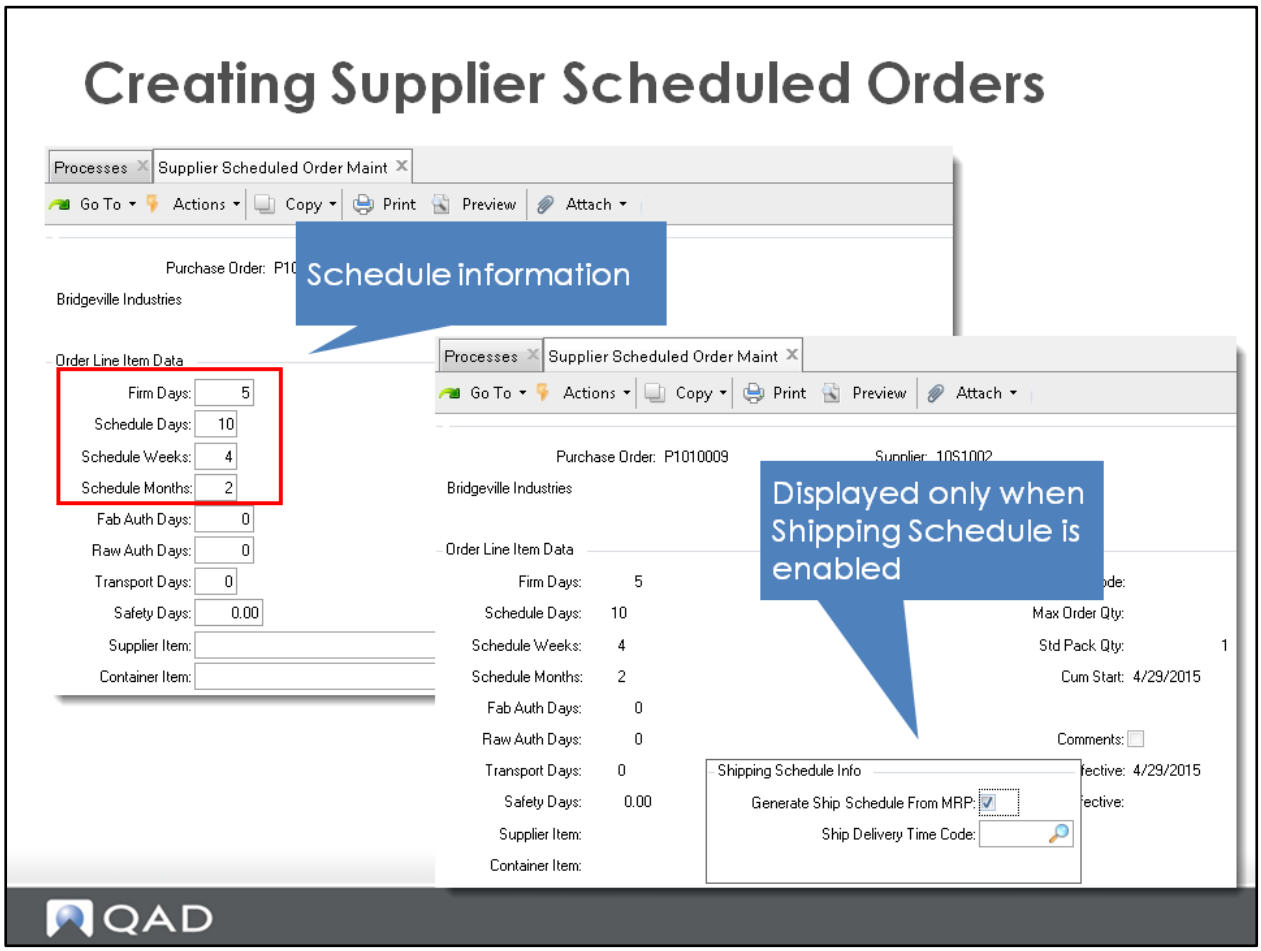
Order Data

Contains the shipping and credit information for the whole order, most of which defaults from the supplier record. Select the schedule format: printed, EDI, and Fax to ensure that the schedules are displayed correctly.

Order Line Item Data Frame ½

Contains line-item details, ship-to data, schedule details, and optional comments. One or more line items can be entered. In the first part of Order Line Item Data frame, you can enter a fixed cost.

Creating Supplier Scheduled Orders



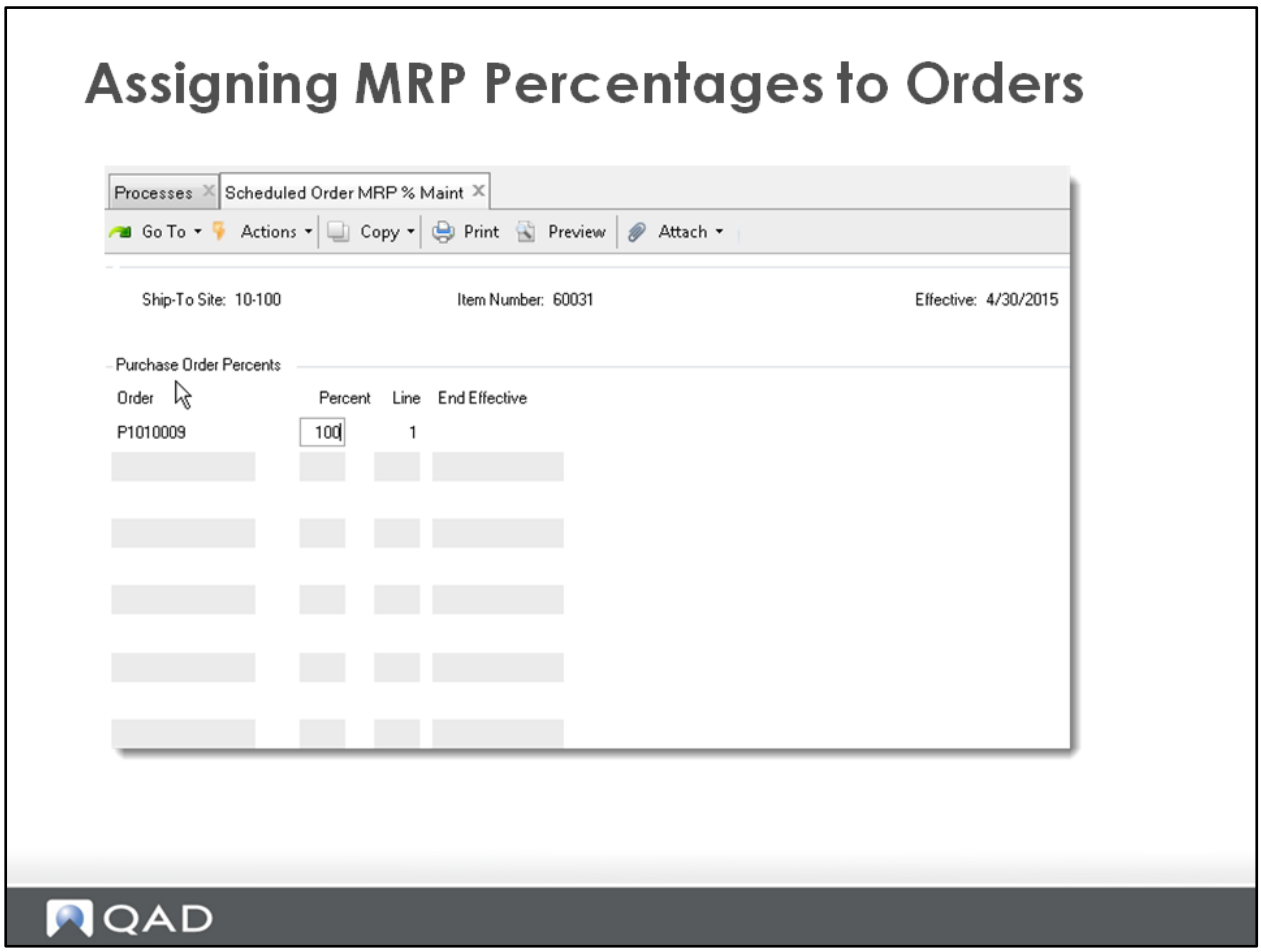
Order Line Item Data Frame 2/2

The second part of the Order Line Item Data frame contains the scheduling and delivery information.

The scheduling information defaults from the settings in Supplier Shipping Schedule Control. You can override the default values by entering specific values for this order.

Use the Scheduled Days, Schedule Weeks, and Schedule Months fields to specify the number of days/weeks/months of discrete data to output when you print a schedule using Schedule Print or export a schedule using Supplier Shipping Schedule. The values are used by Schedule Update from MRP and the supplier schedule export functions to define how to bucket data before being output.

Assigning MRP Percentages to Orders

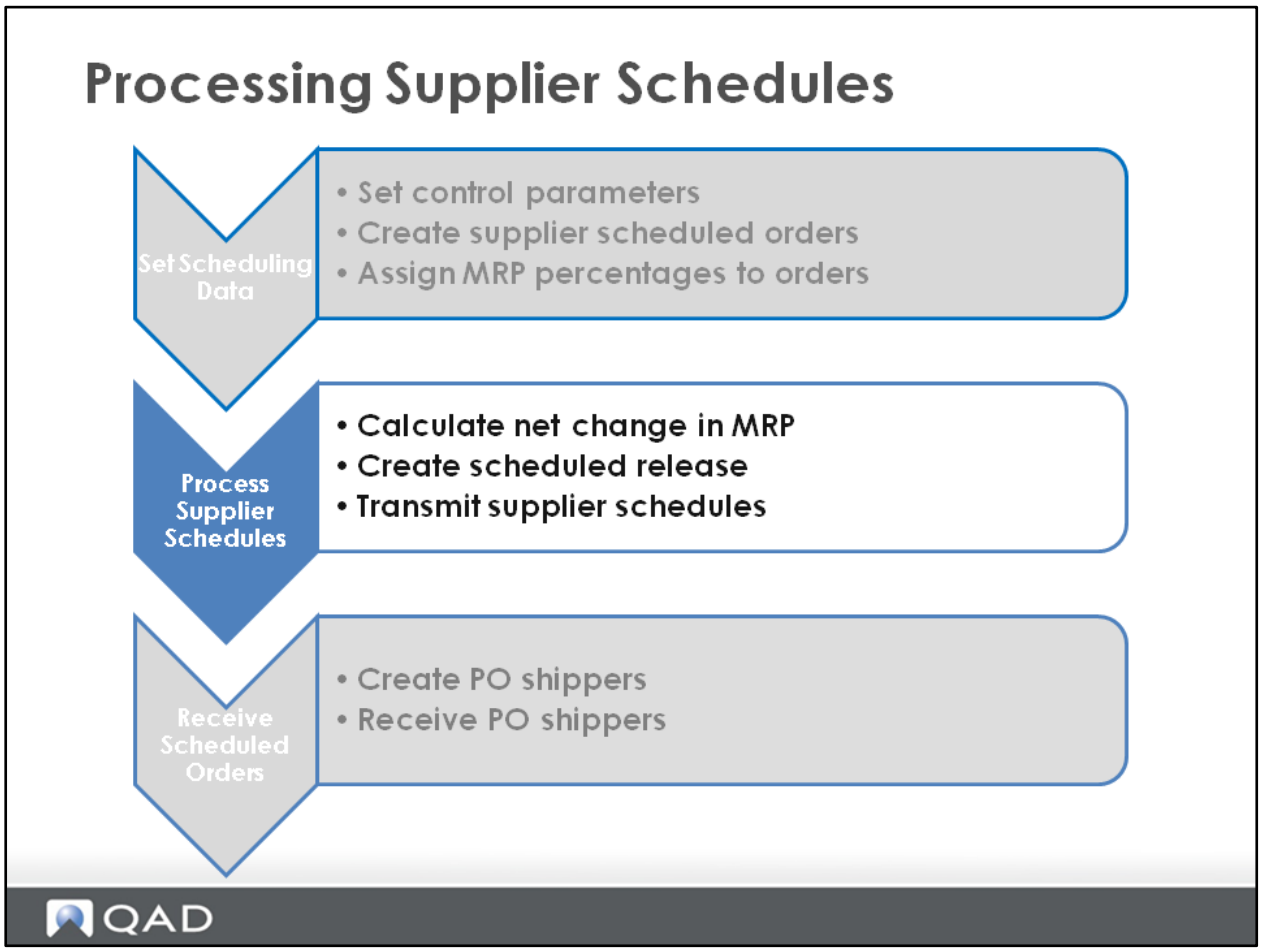


Use Scheduled Order MRP % Maintenance to allocate order percentages among suppliers for the same item.

Schedule Update from MRP uses these percentages to allocate MRP planned orders for the scheduled order among suppliers. If multiple suppliers supply the same item, ensure that the cumulative percentage in this frame is 100%.

For example, you can indicate that 60% of the quantities for a given item should be from supplier A and that 40% of the quantities should be from supplier B. Percentages must equal either 100% for each item or be 0%. If 0%, the system does not allocate planned orders for the scheduled order.

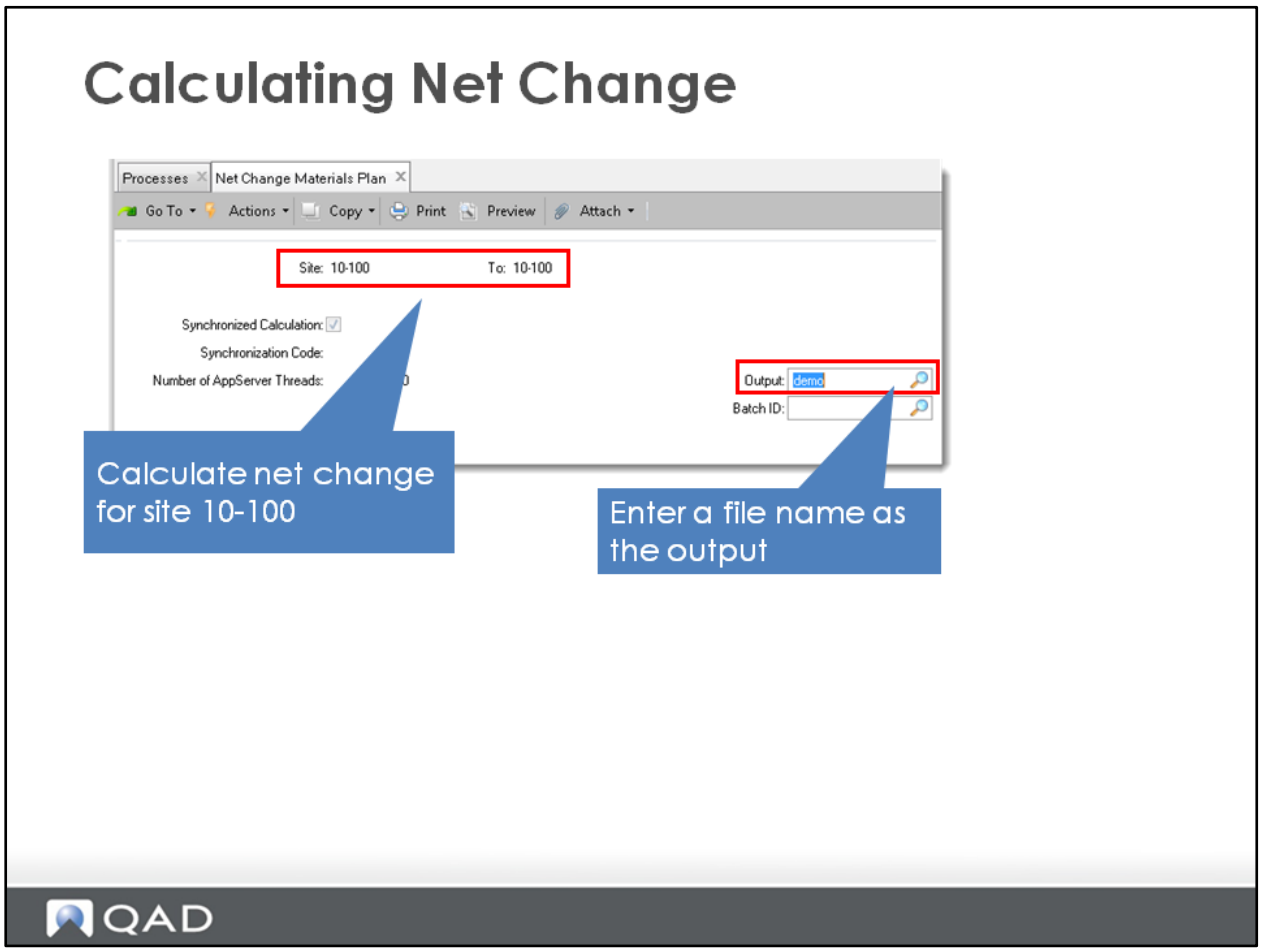
Processing Supplier Schedules



Once you know the MRP demand, you can take the MRP requirements and determine the due dates and quantities for each scheduled order item by supplier. With this information, you are ready to produce a new active schedule release.

- A release is a set of item quantities and requirement dates identified by a release ID number
- The release is what you send to your supplier

Calculating Net Change

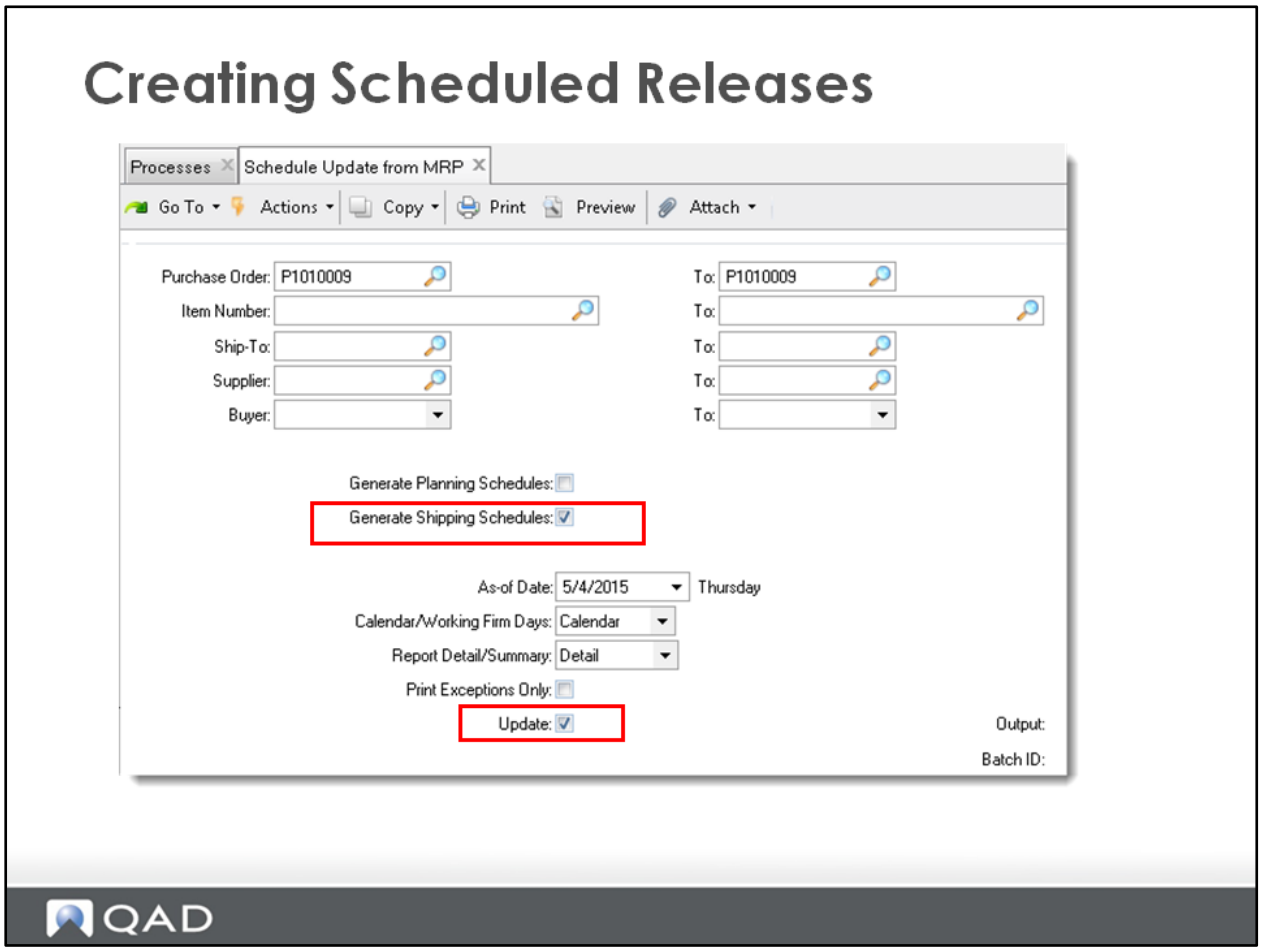


Use Net Change Materials Plan to calculate demand and plan supply for items that have changed since MRP was last run.

MRP lets you plan supply to meet demand for purchased and manufactured items in a time-phased manner. It uses a site's master schedule and all other sources of demand and supply to:

- Calculate gross requirements and projected on-hand inventory
- Schedule and plan orders
- Produce action messages for managing the materials plan

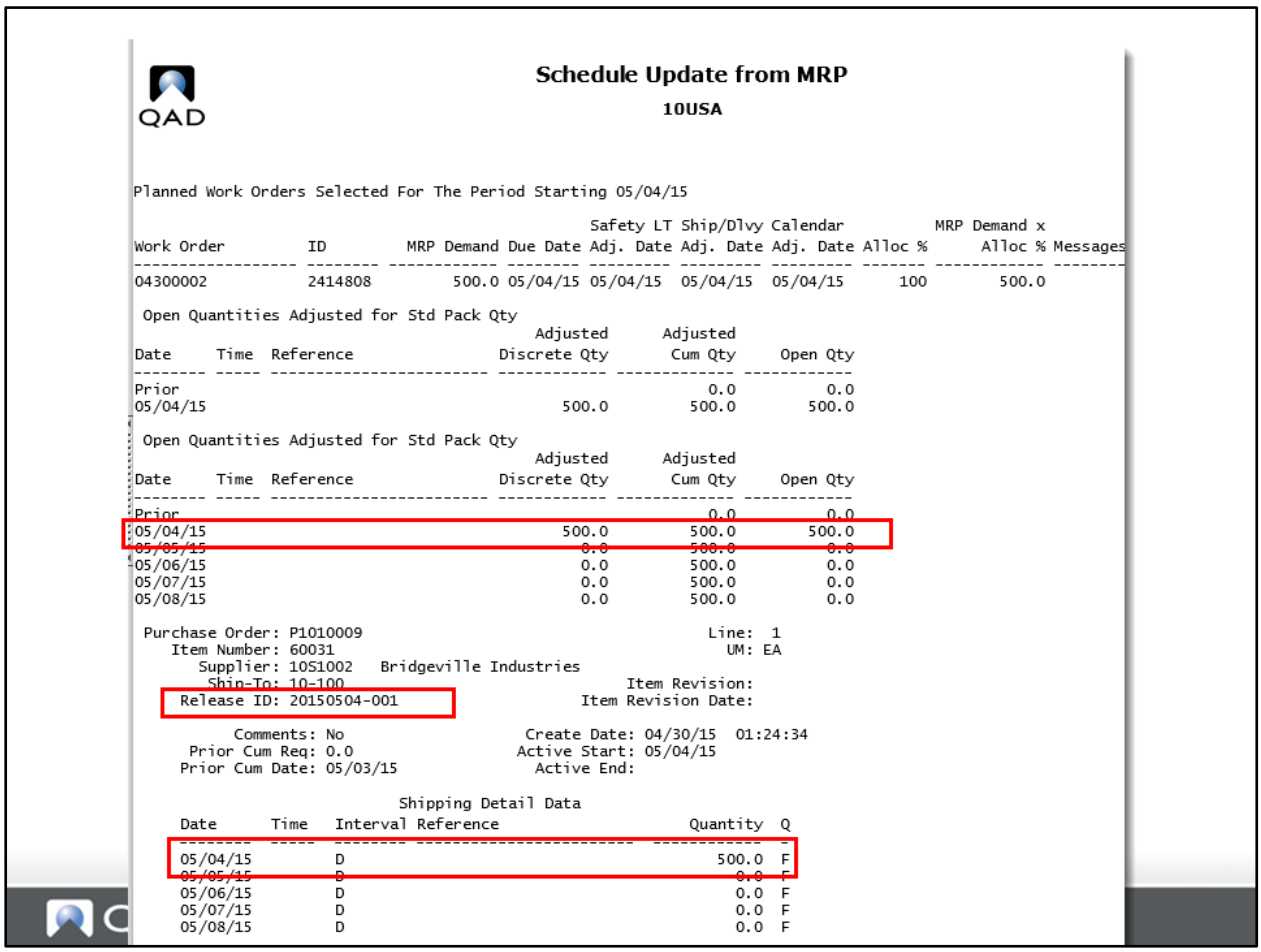
Creating Scheduled Releases



Use Schedule Update from MRP to automatically create a release of a supplier schedule.

If the Generate Shipping Schedules is set to No, no shipping schedule is generated, even though you have set the order line to generate shipping schedule from MRP when creating the order.

Set the Update field to Yes to run this program in update mode, which updates the records in the database. When set to No, the program runs in report-only mode without updating the database.



QAD

Schedule Update from MRP

10USA

Planned Work Orders Selected For The Period Starting 05/04/15

Work Order	ID	MRP Demand	Due Date	Safety LT Adj. Date	Ship/Dlvy Calendar Adj. Date	Calendar Adj. Date	Alloc %	MRP Demand x Alloc %	Messages
04300002	2414808	500.0	05/04/15	05/04/15	05/04/15	05/04/15	100	500.0	

Open Quantities Adjusted for Std Pack Qty

Date	Time	Reference	Adjusted Discrete Qty	Adjusted Cum Qty	Open Qty
Prior				0.0	0.0
05/04/15			500.0	500.0	500.0

Open Quantities Adjusted for Std Pack Qty

Date	Time	Reference	Adjusted Discrete Qty	Adjusted Cum Qty	Open Qty
Prior				0.0	0.0
05/04/15			500.0	500.0	500.0
05/05/15			0.0	500.0	0.0
05/06/15			0.0	500.0	0.0
05/07/15			0.0	500.0	0.0
05/08/15			0.0	500.0	0.0

Purchase Order: P1010009 Line: 1
Item Number: 60031 UM: EA
Supplier: 10S1002 Bridgeville Industries
Ship-To: 10-100 Item Revision:
Release ID: 20150504-001 Item Revision Date:

Comments: No Create Date: 04/30/15 01:24:34
Prior Cum Req: 0.0 Active Start: 05/04/15
Prior Cum Date: 05/03/15 Active End:

Shipping Detail Data

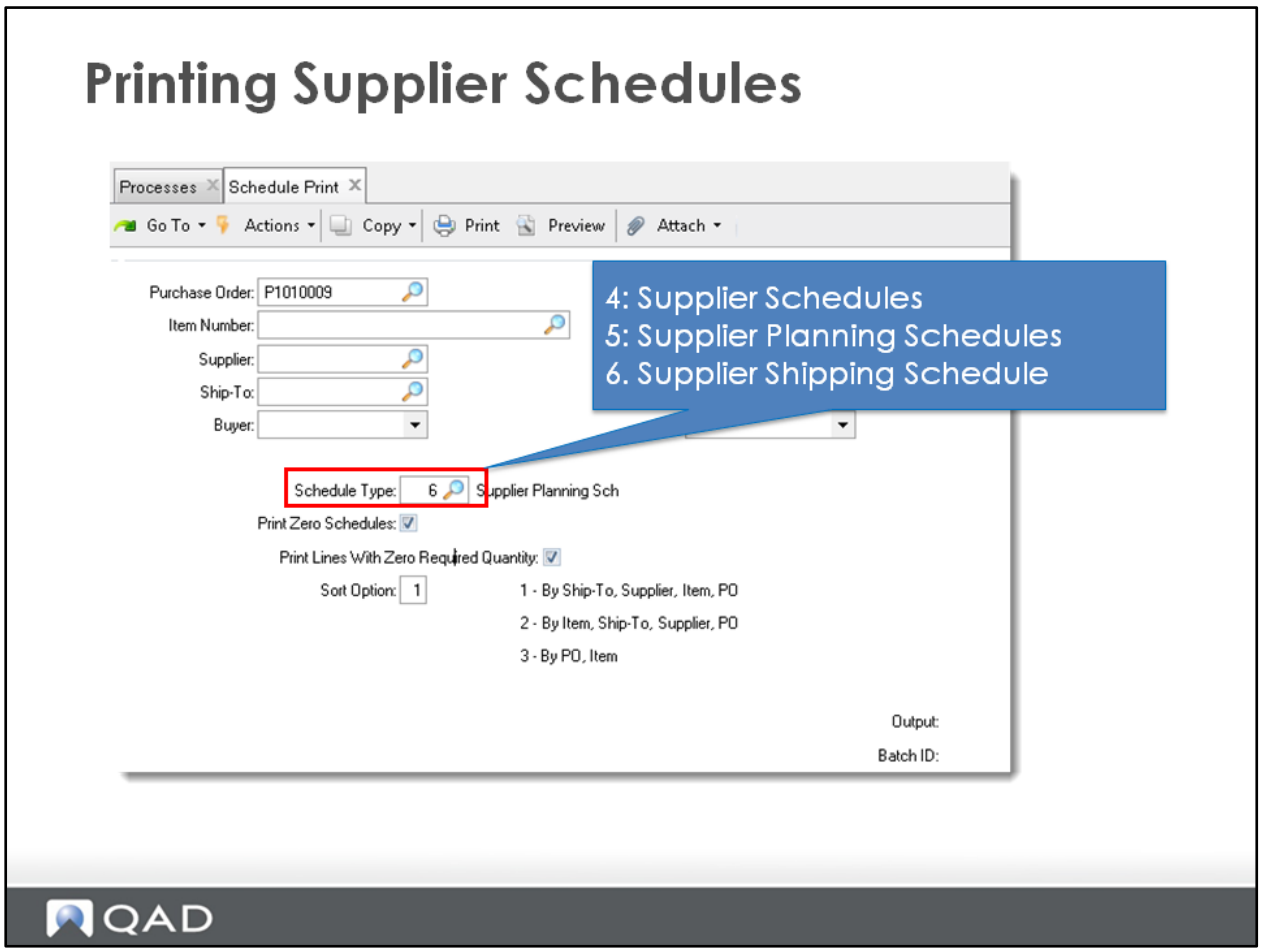
Date	Time	Interval	Reference	Quantity	Q
05/04/15		D		500.0	F
05/05/15		D		0.0	F
05/06/15		D		0.0	F
05/07/15		D		0.0	F
05/08/15		D		0.0	F

Transmitting Supplier Schedules

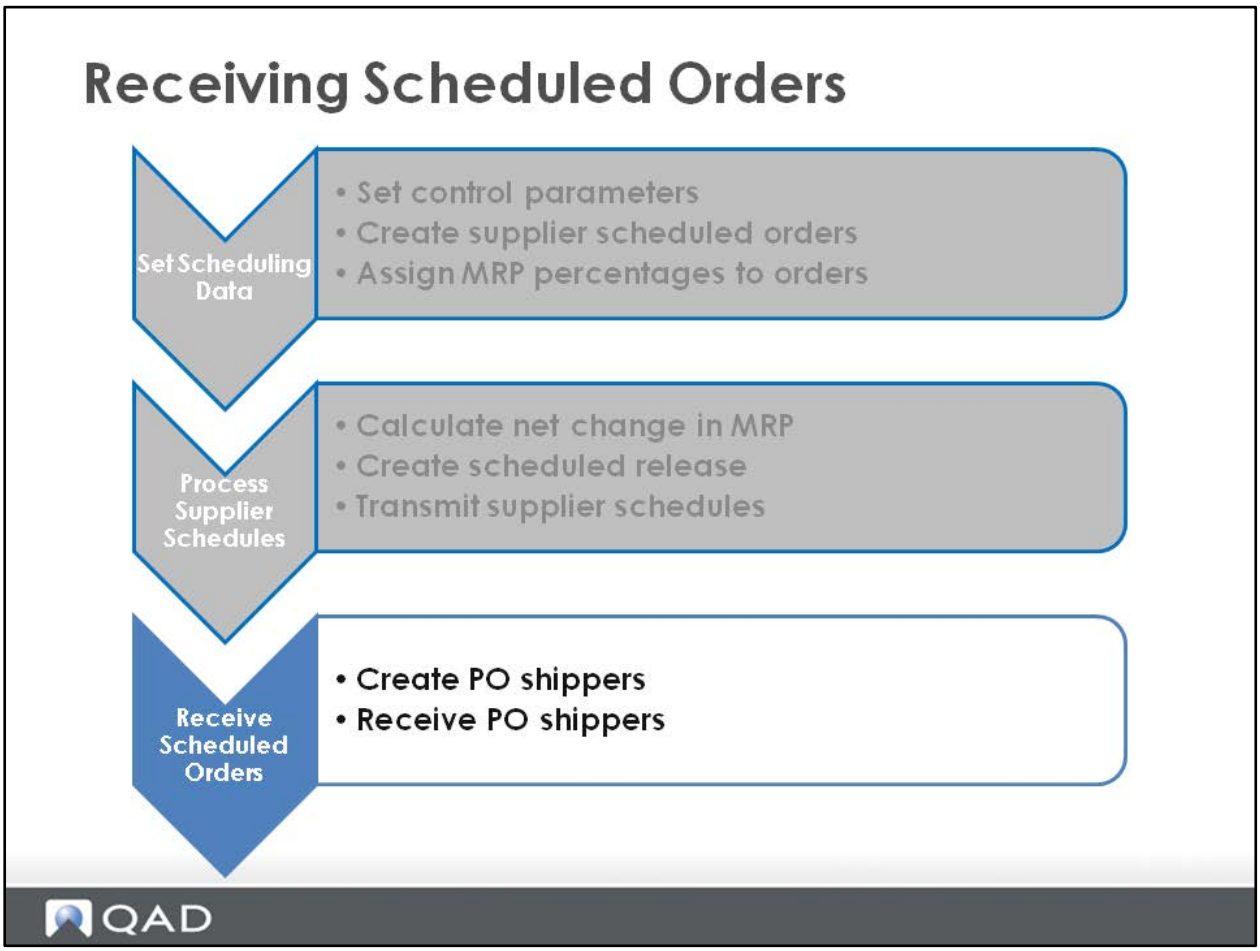


Scheduled releases can be transmitted in various ways. Choose a format that your supplier accepts.

Printing Supplier Schedules



Receiving Scheduled Orders

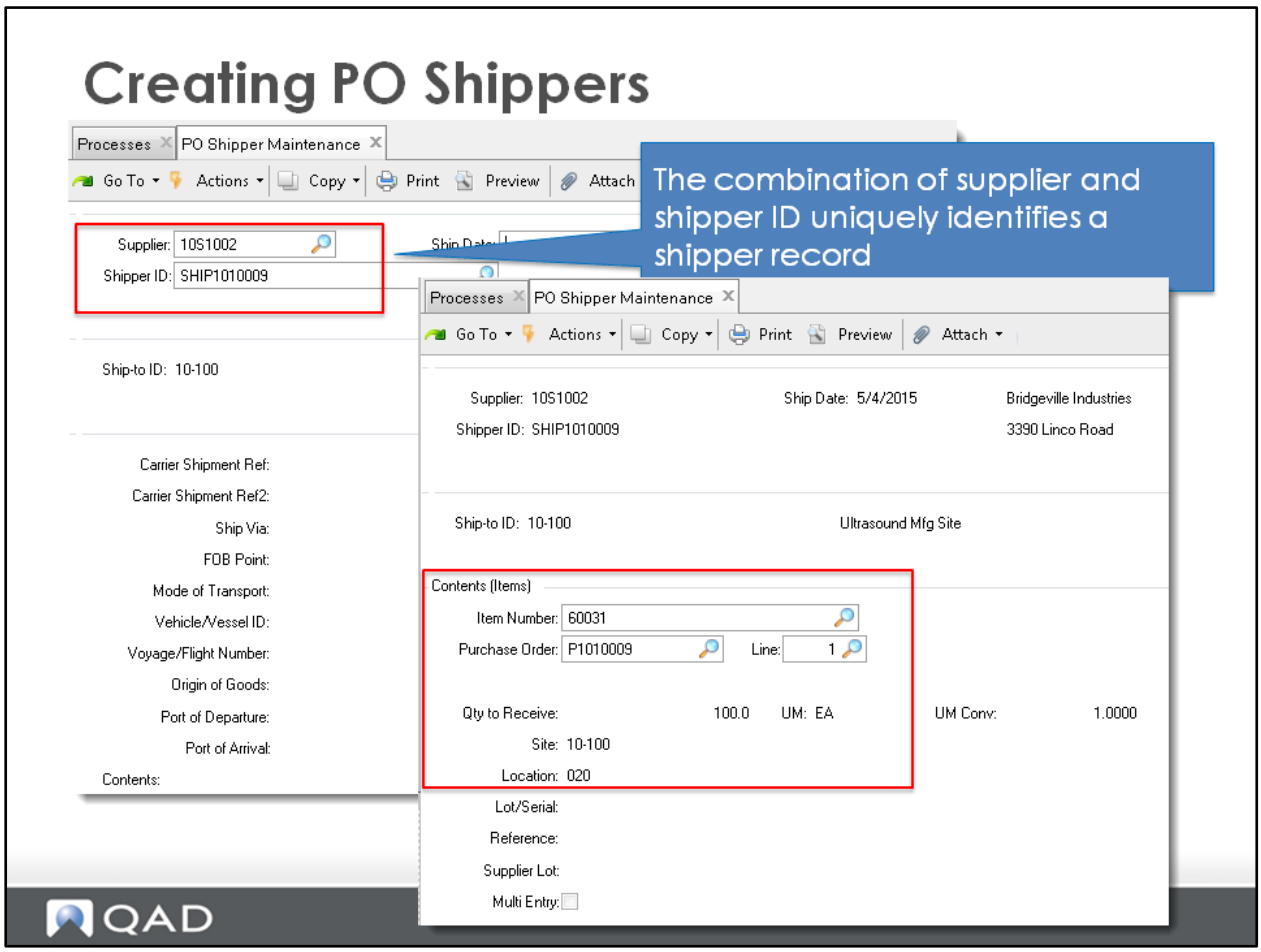


Once you receive notification of the shipment, you have three ways to process/receive the shipment:

- Import, verify, receive, and confirm the ASN
- Manually create, receive, and confirm a shipper
- Create a direct receipt using the Purchasing module

This guide discusses receipts using the shipper method only.

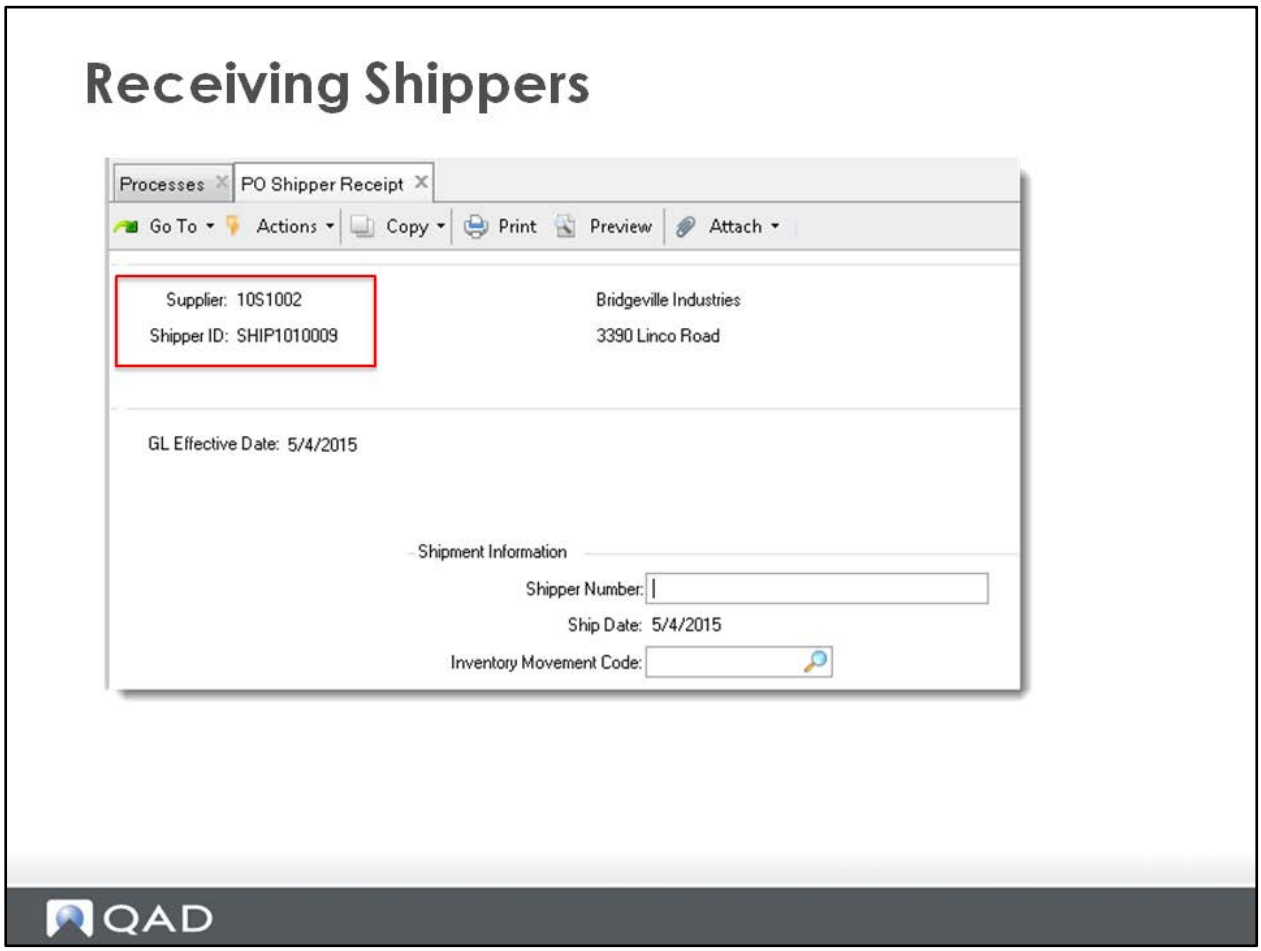
Creating PO Shippers



Use PO Shipper Maintenance to create a shipper.

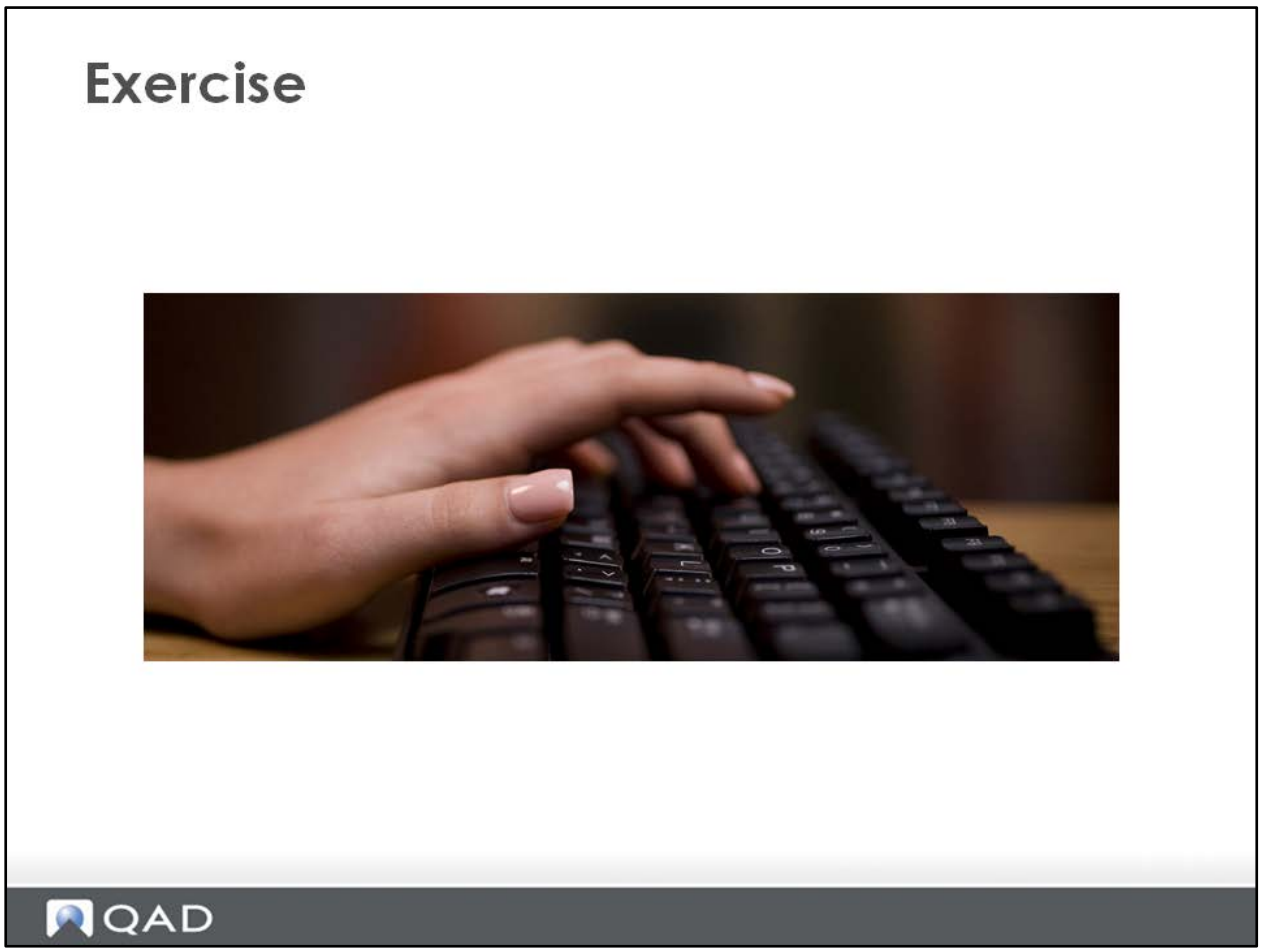
The shipment ID can be an ASN number already in the system, a number obtained through a barcode reading of a shipping label, or a number entered manually from the receiving document.

Receiving Shippers



Use PO Shipper Receipts to confirm the receipt of shipment.

Exercise



Exercise 1: Settings for Supplier Schedules

1. Open Supplier Schedule Control and verify that the Generate Date Based Release ID field is set to Yes.
2. Open Supplier Shipping Schedule Control and set the following fields and leave the others as default:
   Enable Shipping Schedule: Yes
   Firm Days: 5
   Schedule Days: 5
   Schedule Weeks: 4
   Schedule Months: 2
3. Entering a demand for a quantity of 500 for item 60031 in the current week using Forecast Maintenance.

4. Create a scheduled order for item 60031 using Supplier Scheduled Order Maintenance, accessed from the process map.

   Header
   Purchase Order: <blank> Leave it blank for the system to generate.
   Supplier: 10S1002
   Print Schedules: Yes

   Order Line Data
   Item Number: 60031
   Ship-To Site: 10-100
   Copy Data from another order line for this item: No
   Firm Days : 5
   Schedule Days: 5
   Schedule Weeks: 4
   Schedule Months: 2
   Ship Delivery Pattern Code: 10

Notes:

- Record the generated PO number for later use in the procedures that follow.
- In your business model, you can transmit schedules to your supplier in EDI format; then, select EDI Schedules instead of Print Schedules. This training guide only discusses the use of hard copy schedules.

5. Assign a 100% MRP percentage to the scheduled order using Scheduled Order MRP % Maintenance.

Exercise 2: Processing Supplier Schedules

1. Run MRP to update the net change for site 10-100 using Net Change Materials Plan, assessed from the process map. In the Output field, enter any value other than the listed output.
   Note: This step aims to create a demand in MRP for item 60031 because there is no demand for item 60031 in this training system.

2. Create a release of the scheduled supplier using Schedule Update from MRP.
   Purchase Order: Enter the PO number generated in Supplier Scheduled Order Maintenance
   Generate Shipping Schedule: Yes
   Report Detail/Summary: Detail
   Print Exceptions Only: No
   Update: Yes
   Output: Page

3. Assume that you need to send a copy of printed schedules to your supplier. Use Schedule Print to print out the shipping schedules.

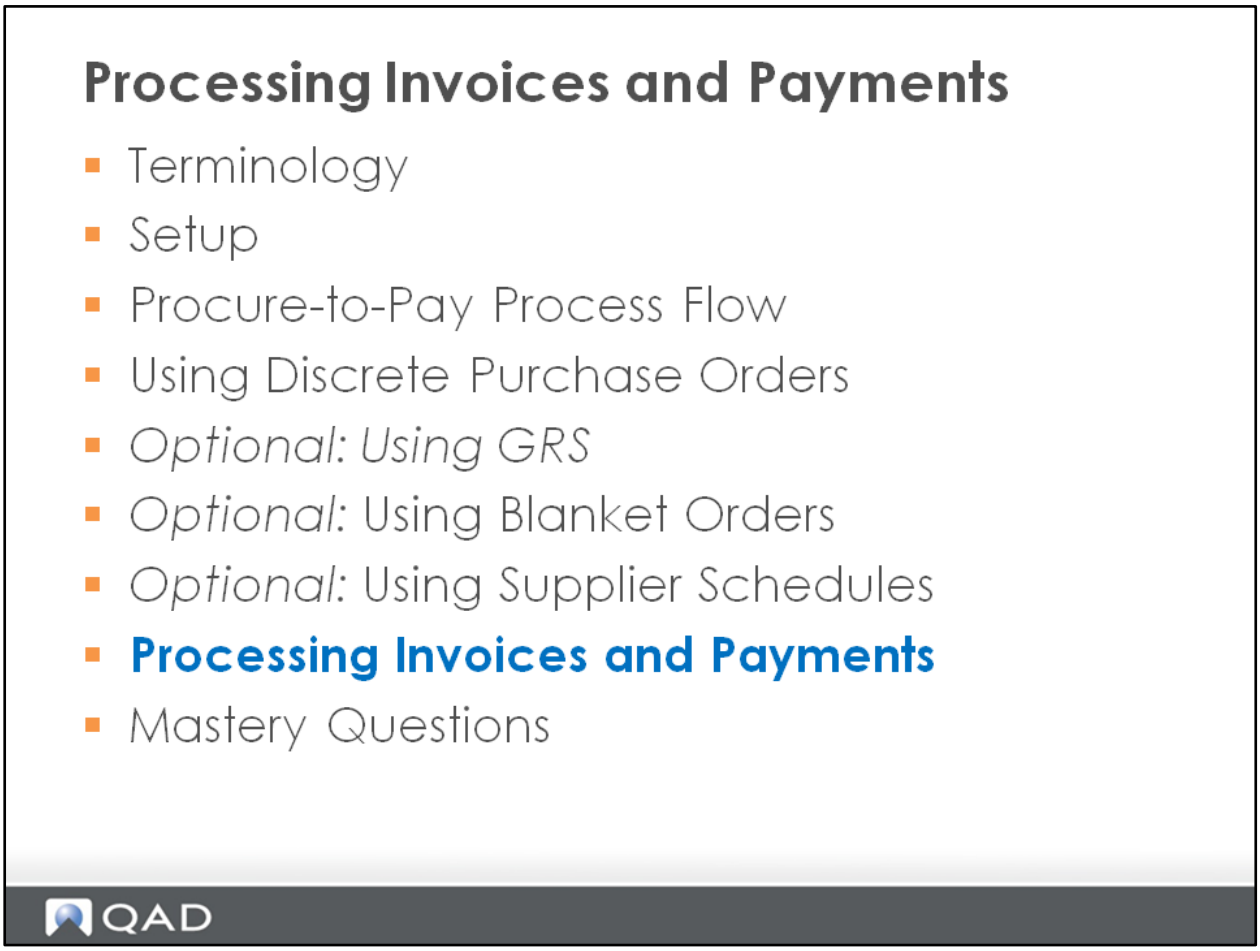
Exercise 3: Supplier Scheduled Order Receipt

1. Assume that you have received 100 of the purchase identified in SHIP1010012. Use PO Shipper Maintenance to create a PO shipper to record the materials received.

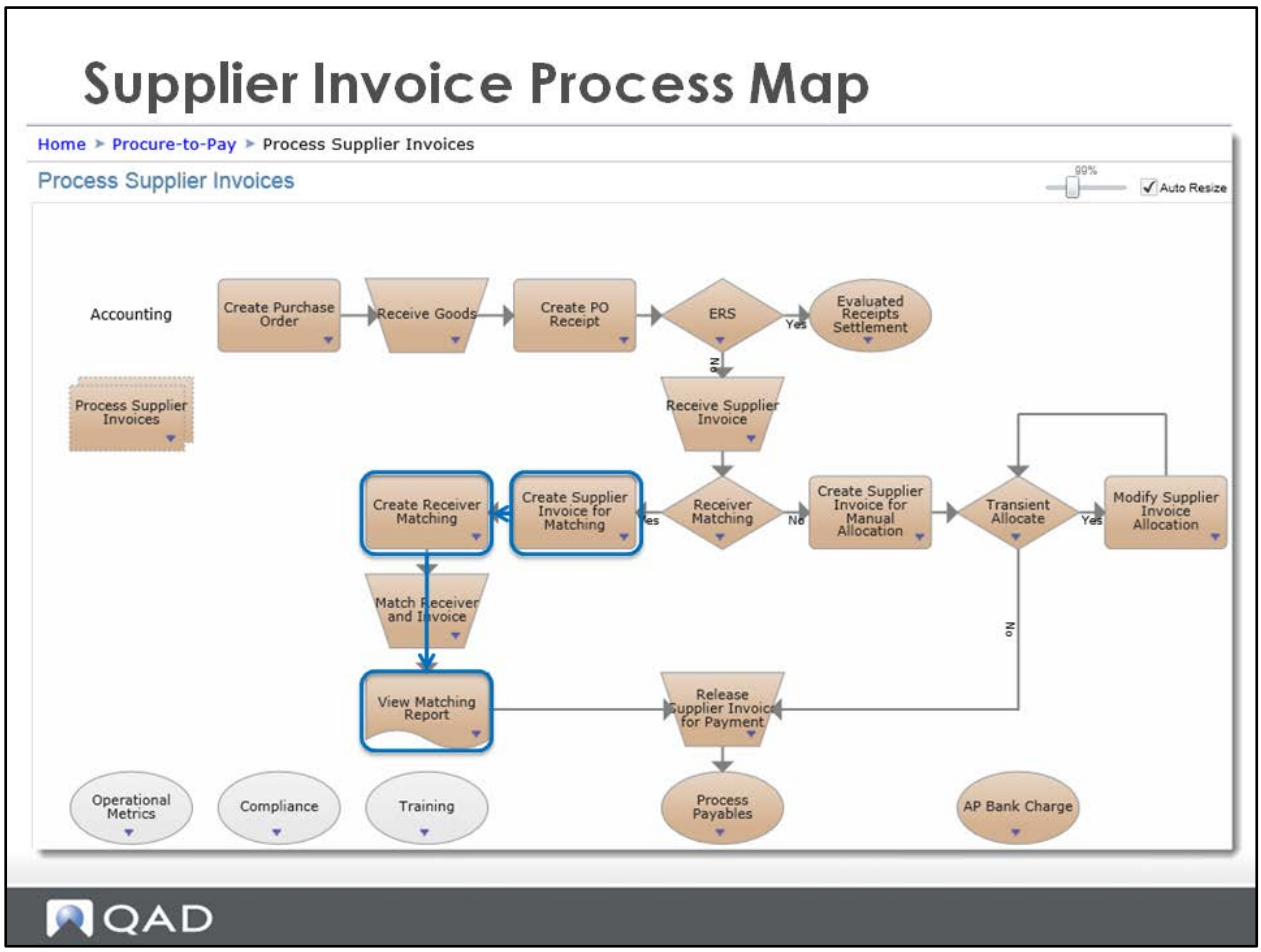
2. Receive the purchase using PO Shipper Receipt.

Note: For exercises on processing supplier invoices and payments, see Processing Invoices and Payments.

Processing Invoices and Payments



Supplier Invoice Process Map

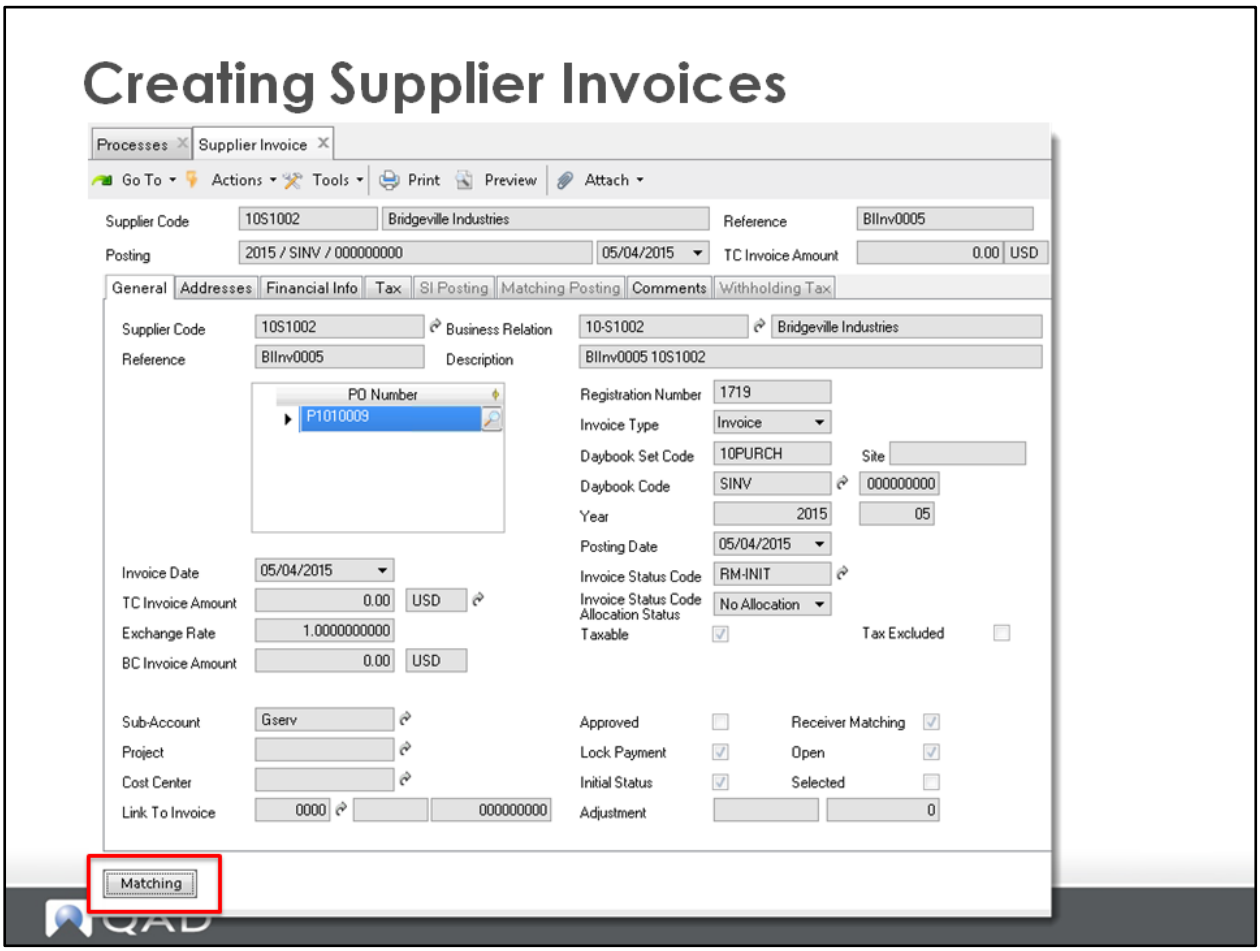


When you receive a supplier invoice, you create a version of the invoice in your system, and then process the invoice in one of two ways:

- Use receiver matching to match the invoice quantities against the original amounts on the purchase order.
- Use financial matching to allocate the invoice amount to accounts (not covered in this guide).

Financial matching is used for payments for products or services that have not been processed through the purchasing cycle. The invoice amounts are not matched against purchase order amounts. Instead, they are posted to an Unmatched Invoices account, and then allocated directly to a cost account. These invoices are typically one-time payments to suppliers for occasional goods or services, or payments for utilities, such as telephone bills and electricity, for which orders are not used.

Creating Supplier Invoices



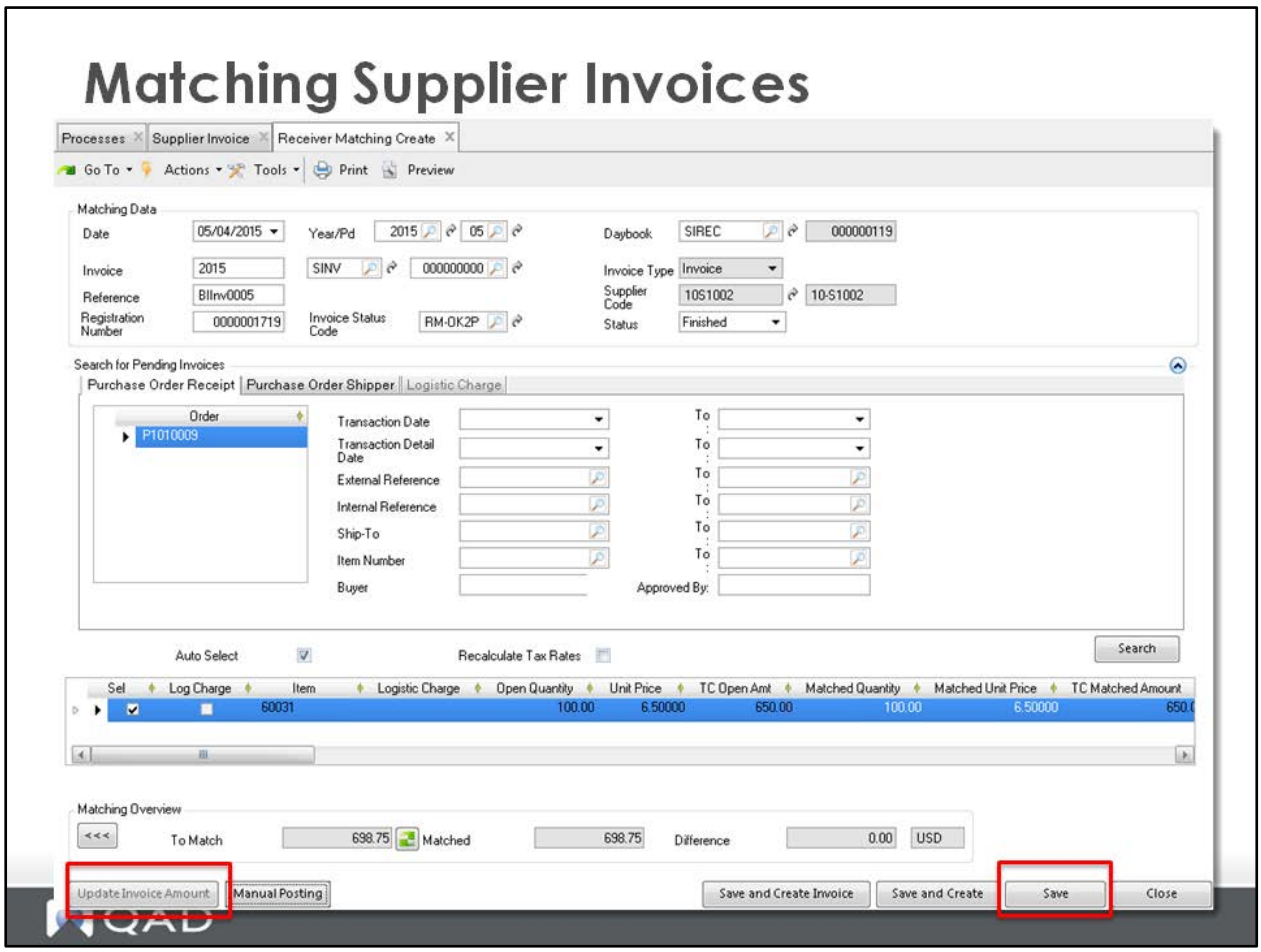
Use the Create Supplier Invoice for Matching process map node to create supplier invoices for POs for which you have processed receipts.

In the General tab, enter the following information and the other information defaults from the PO and the supplier record:

- Reference: Usually the number of the invoice that you received from the supplier
- PO Number

Click Matching at the bottom left of the window to match the supplier invoice to the shipper.

Matching Supplier Invoices

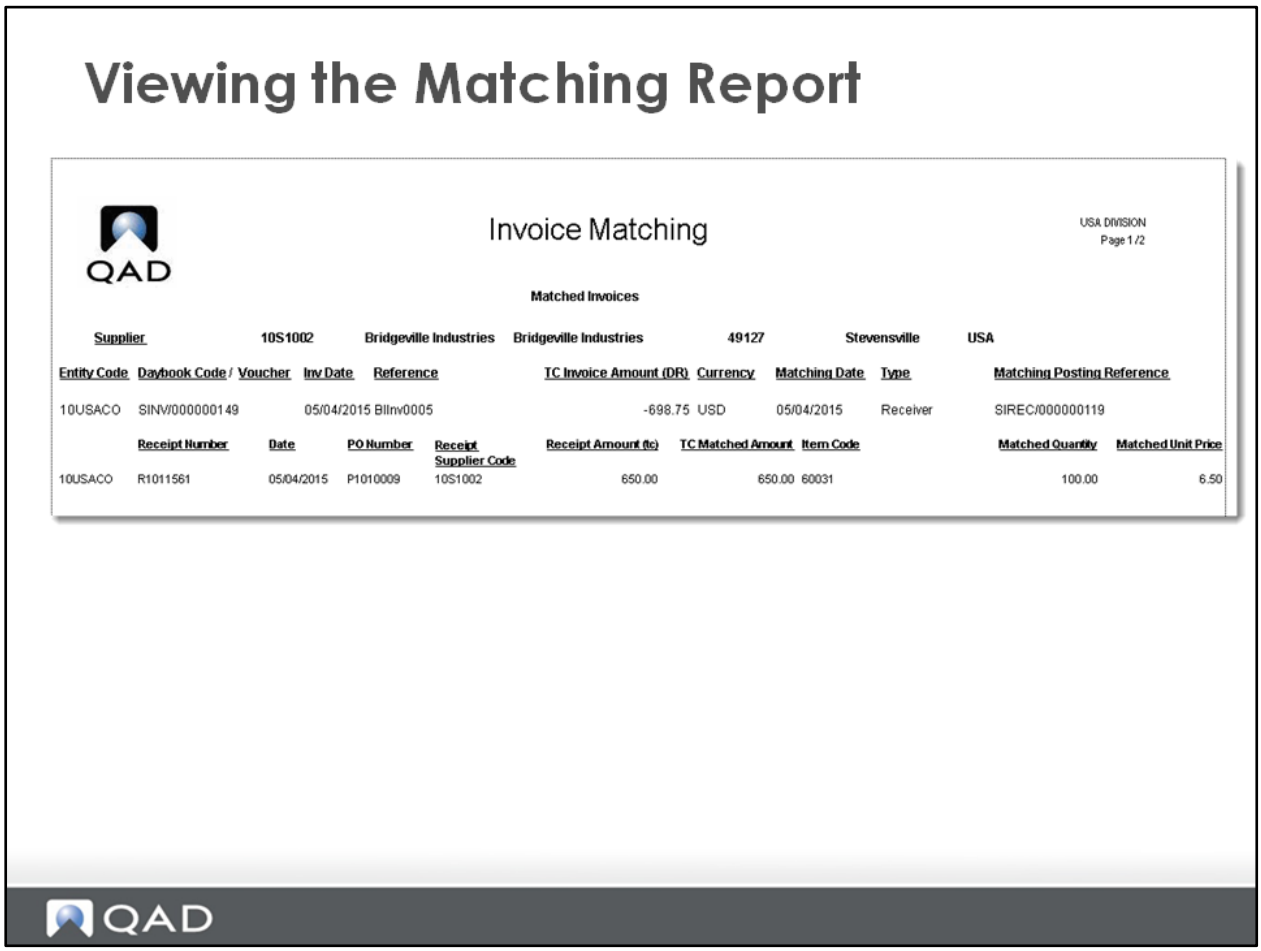


Use Create Receiver Matching or the Matching button on Supplier Invoice Create screen to match the invoice with the receiver.

The Receiver Matching function compares the amounts payable on invoices with quantities and prices on received purchase orders. If the invoiced items and quantities match the receiver, the matching can be finalized and the supplier invoice is released for payment.

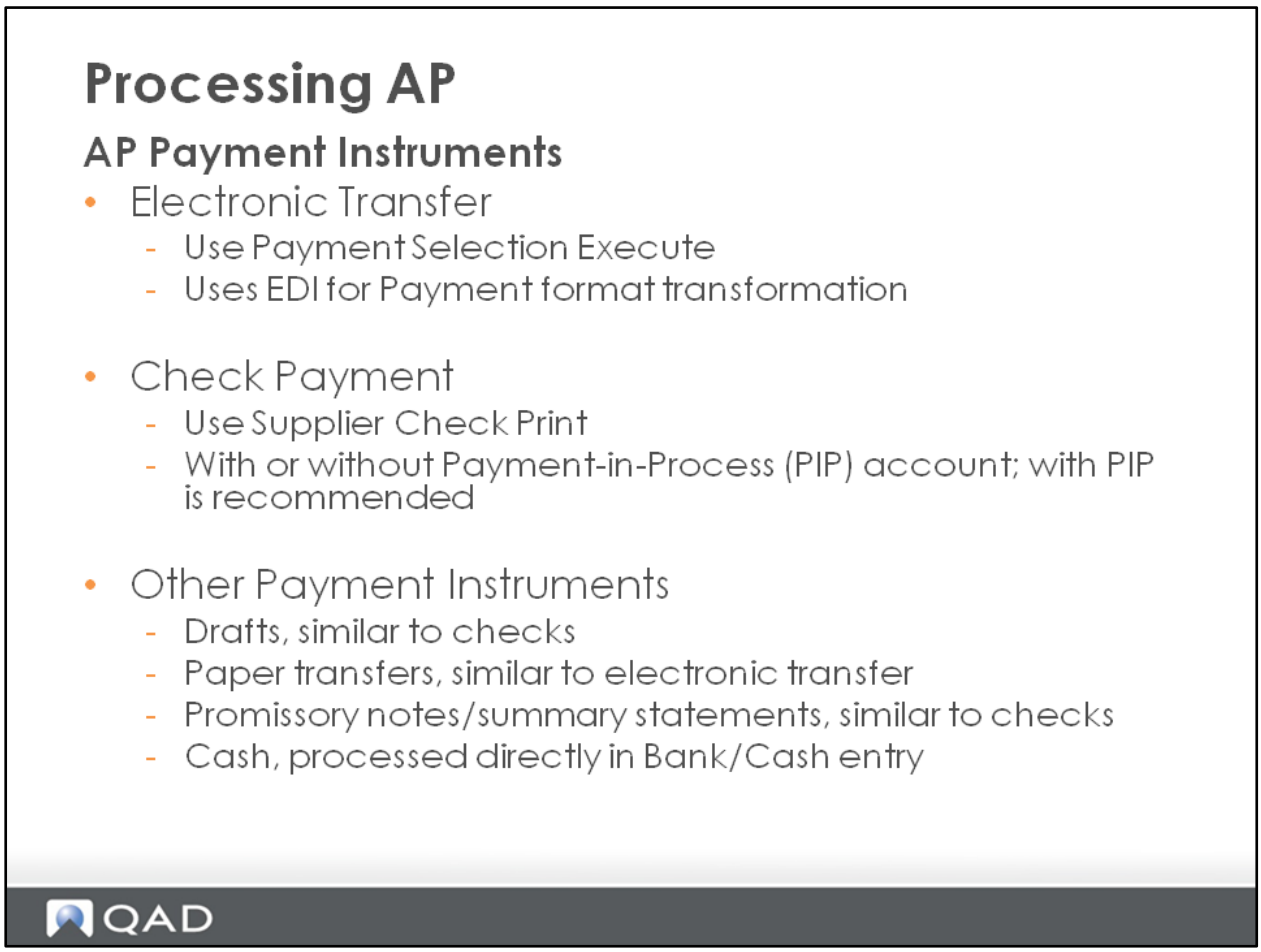
Before matching, you can use the information in the Receiver Matching grids to display variances. GL transactions for variances are then created as a result of finished matches, and you can investigate these data and take appropriate action, such as requesting credit notes. Invoices can then be approved and released for payment.

Viewing the Matching Report



In the Process Supplier Invoices process map, click View Matching Report to view the results.

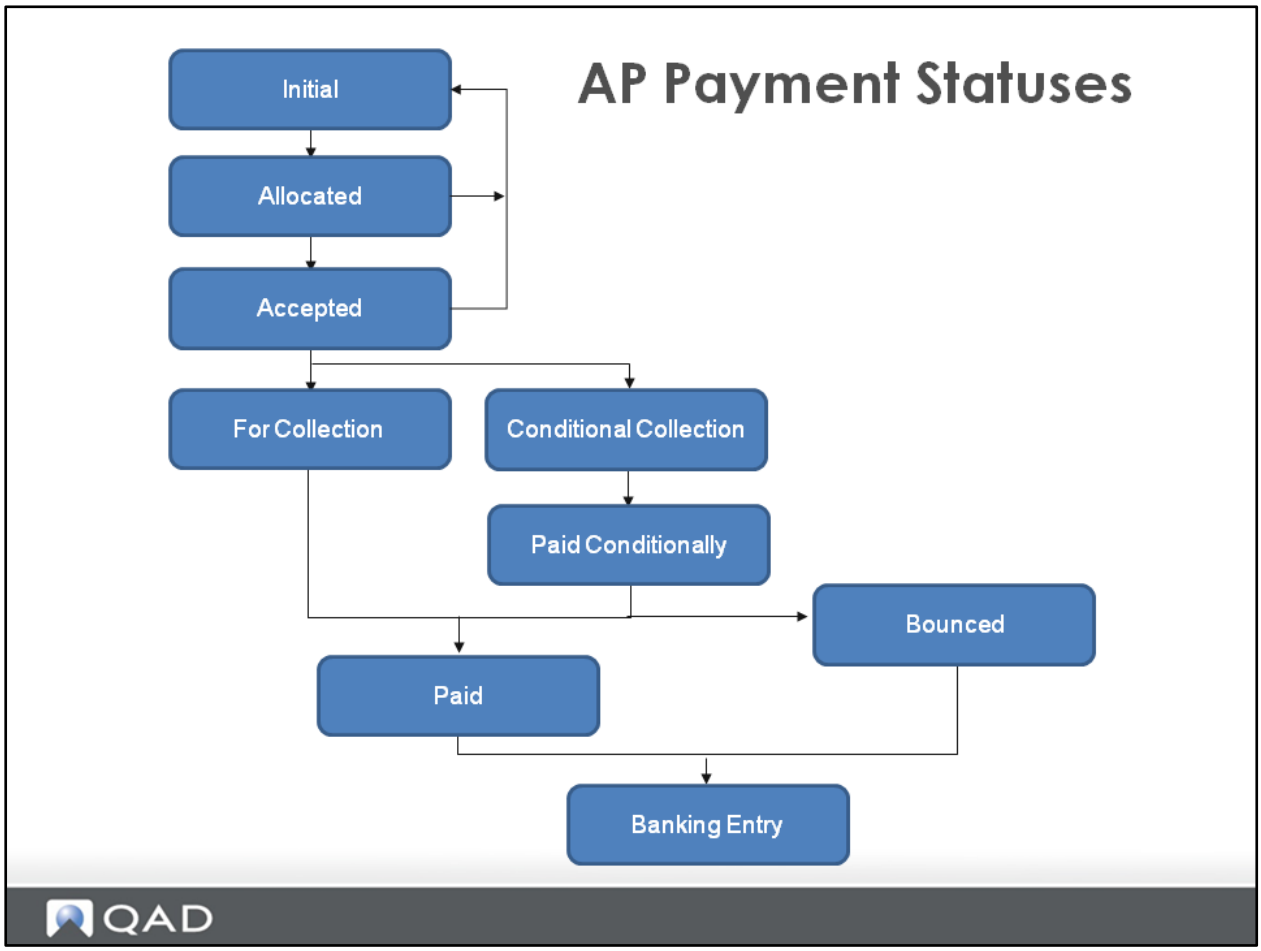
Processing AP



In QAD Enterprise Financials, you process supplier payments in the same way as customer payments. You can:

- Use Supplier Payment Create (28.9.3.1) to create manual AP payments for paper-based documents
- Use Supplier Payment Selection Create (28.9.4.1) to create electronic AP payments containing electronic files for transfer to your bank.

AP Payment Statuses

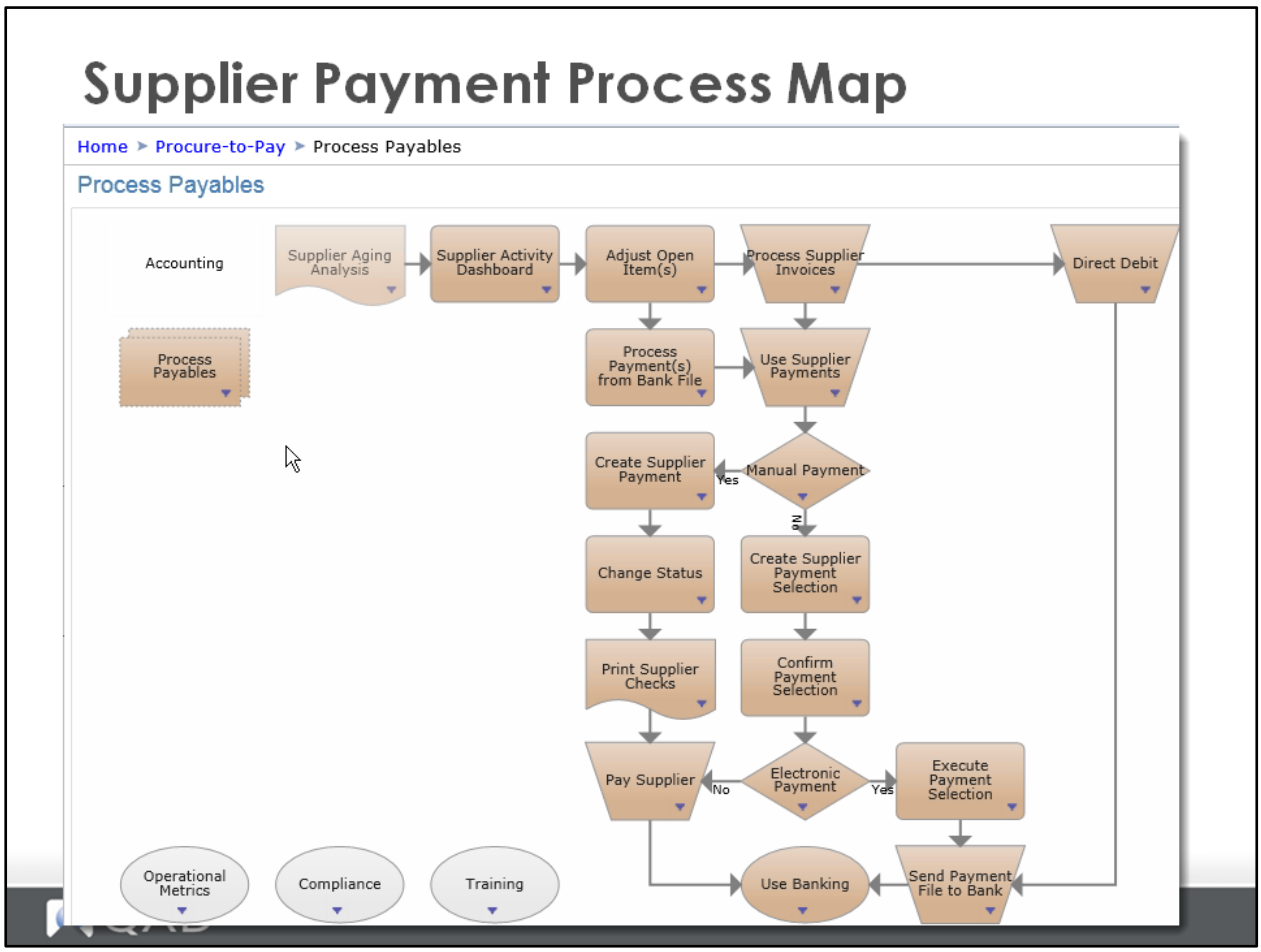


Supplier payments are associated with status codes, which are used to manage the payment process through final collection and updating of accounts. You process the payment by changing the payment status from one status to the next in the sequence that meets your business requirements. Different payment instruments follow different status sequences. The number of statuses you need depends on your particular implementation.

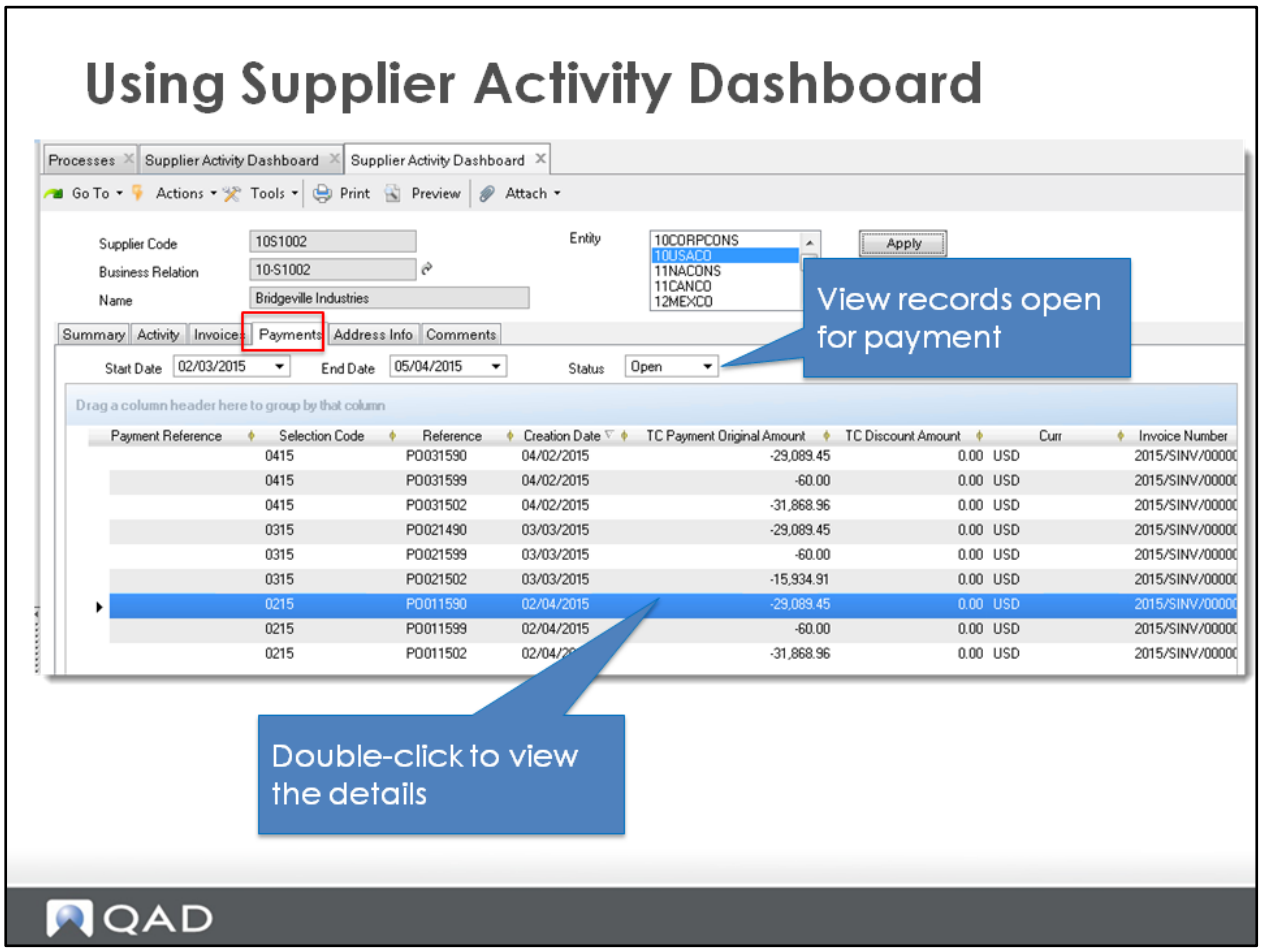
To complete the process, you can create a banking entry to record the payment. However, in some countries, such as the US, payments are created directly at the Paid status, without using banking entry.

Use Supplier Payment Status Create (28.9.1.1.1) to set up payment statuses for each stage.

Supplier Payment Process Map

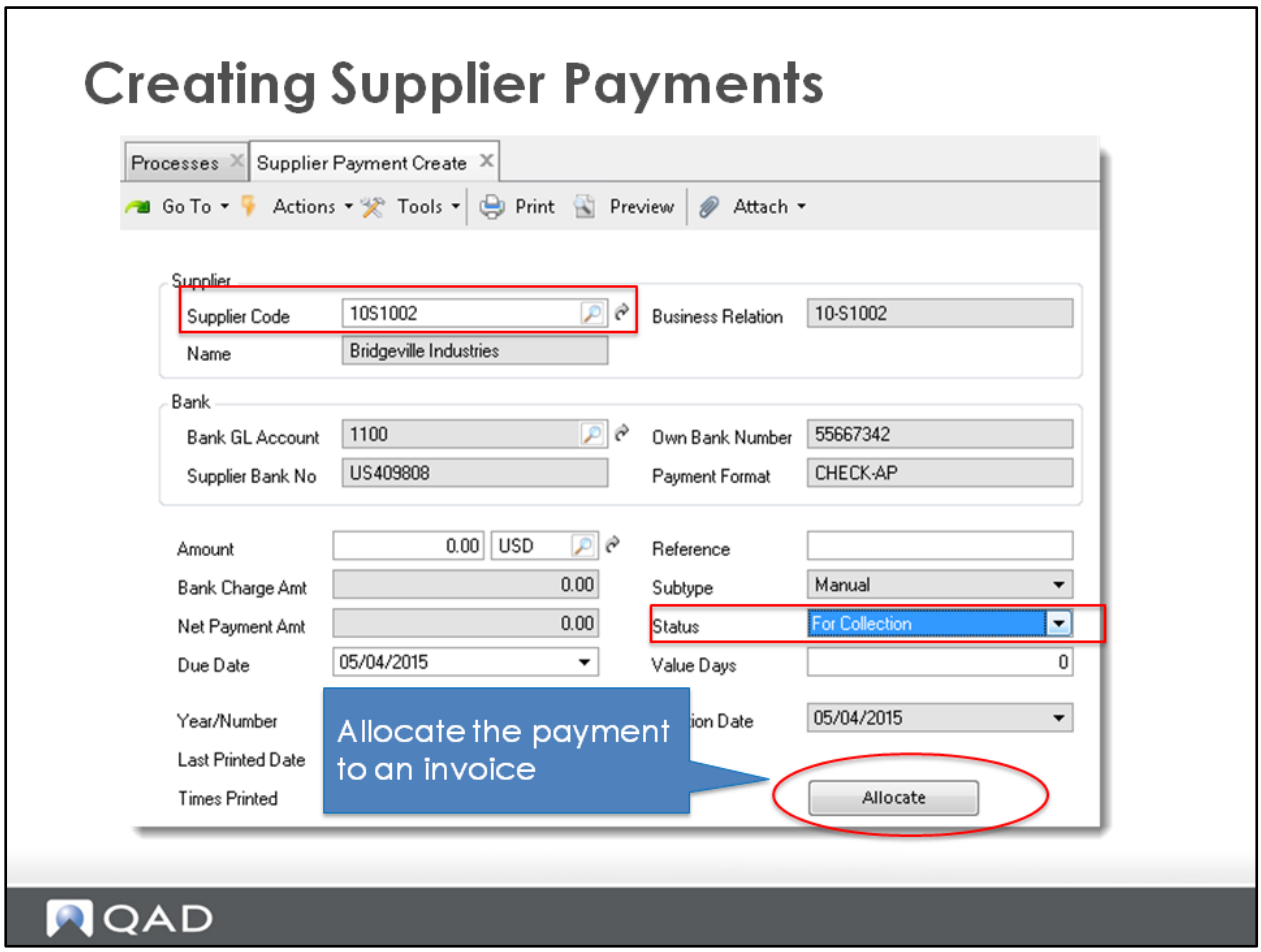


Using Supplier Activity Dashboard



Use Supplier Activity Dashboard to check the open items for payment. In the dashboard, you can view all supplier payment and invoice information, including open items and payments and drill down to the details of the invoices and credit notes.

Creating Supplier Payments

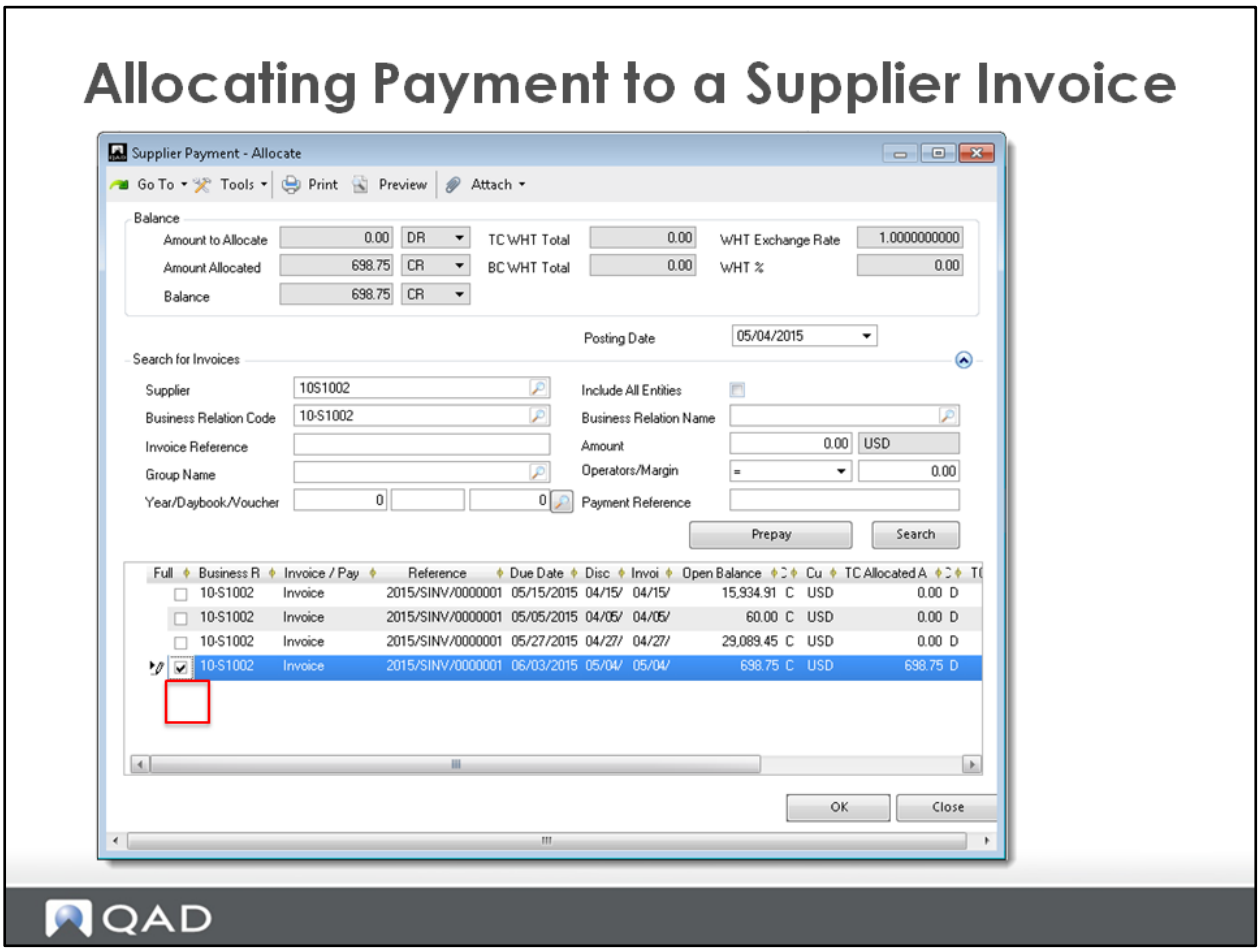


Use Supplier Payment Create to create a supplier payment.

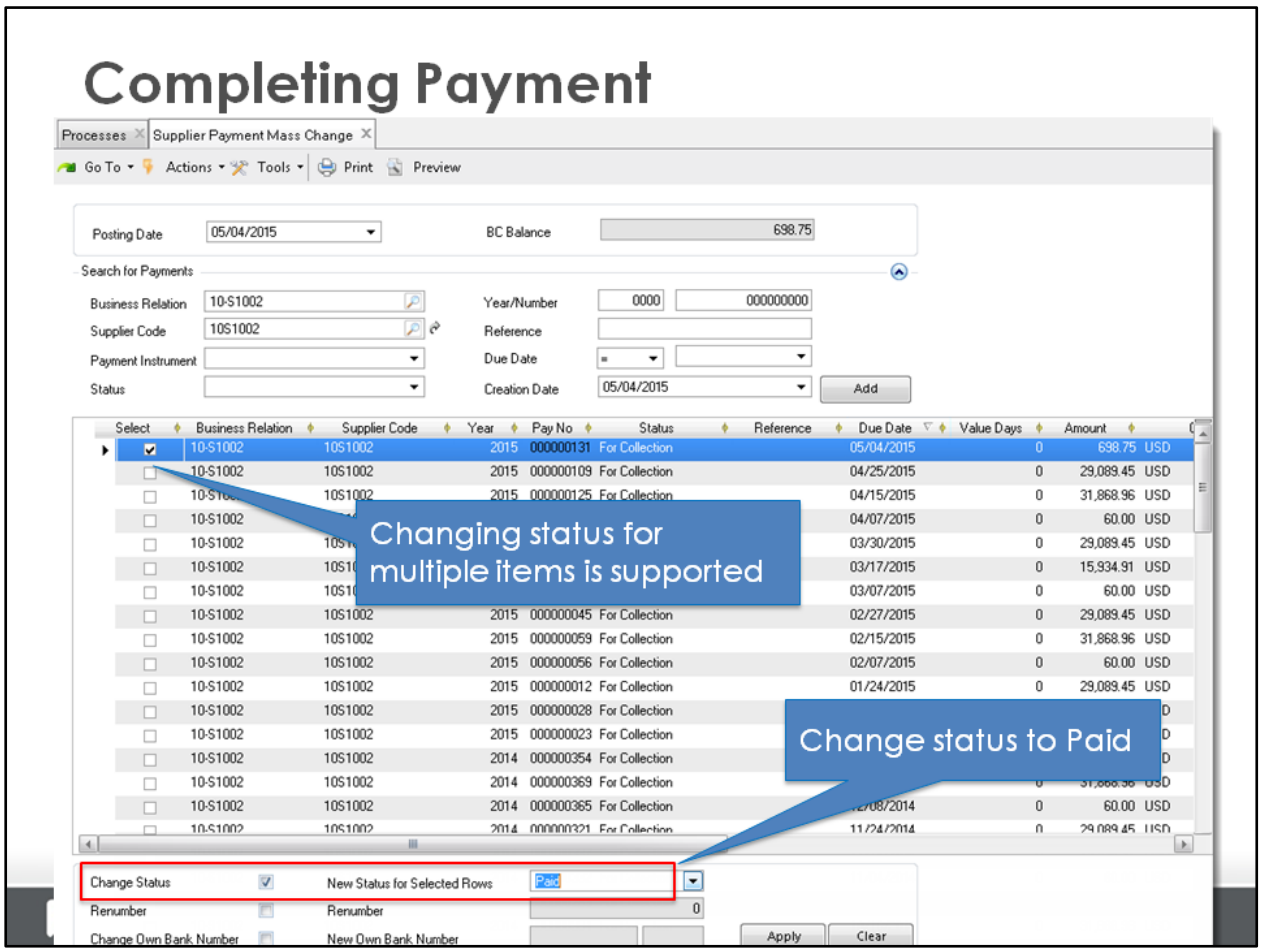
Enter the supplier code and set the status to For Collection. You can see that the bank information is auto-filled. The values default from the supplier record.

To associate this payment with the invoice for the PO, click Allocate and select the invoice.

Allocating Payment to a Supplier Invoice

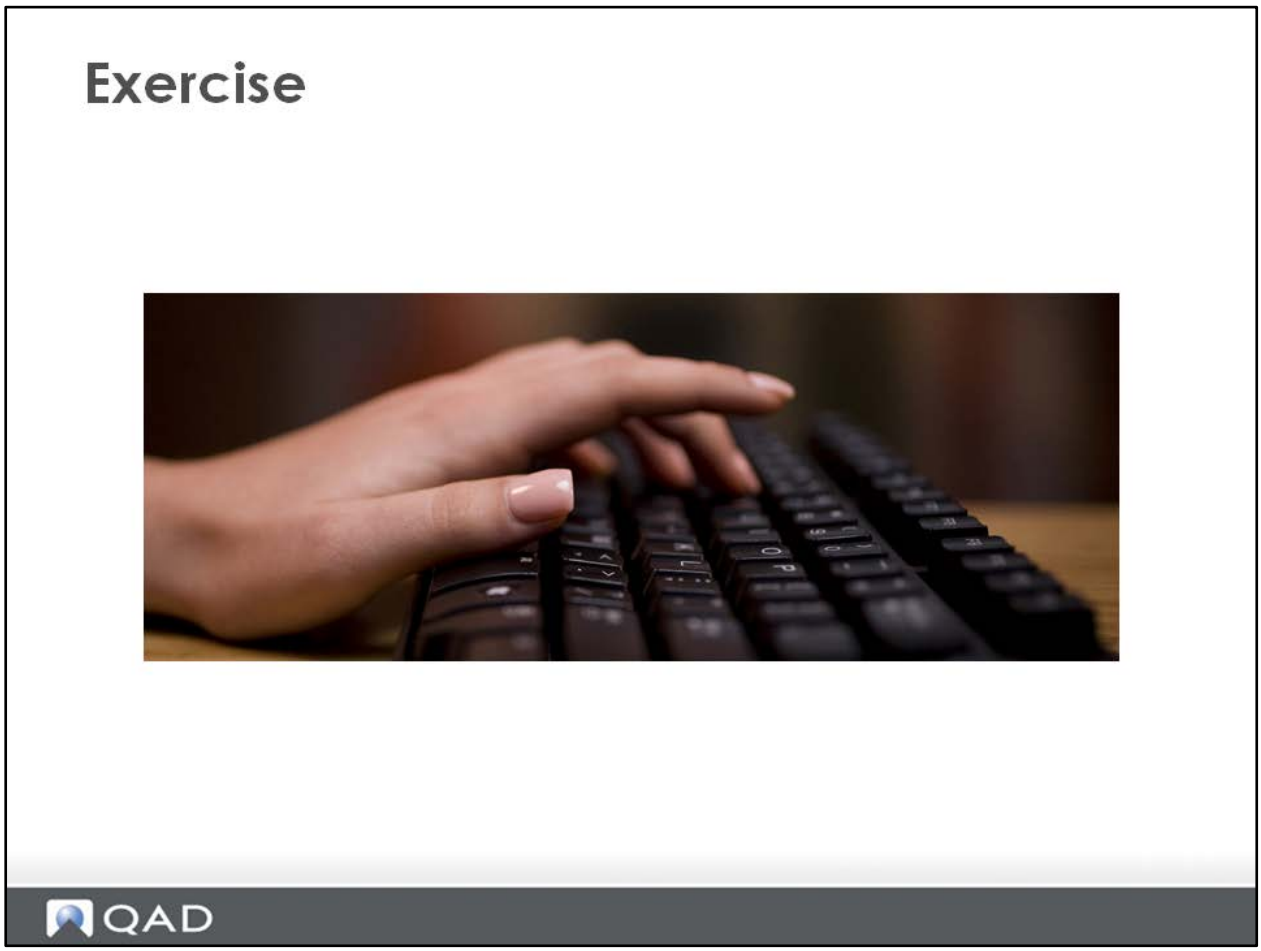


Completing Payment



When you get the notification that the bank has paid the money to the supplier, you can go to Supplier Payment Mass Change (using the Change Status process map node) to change the payment status to Paid. Now, the payment process is complete.

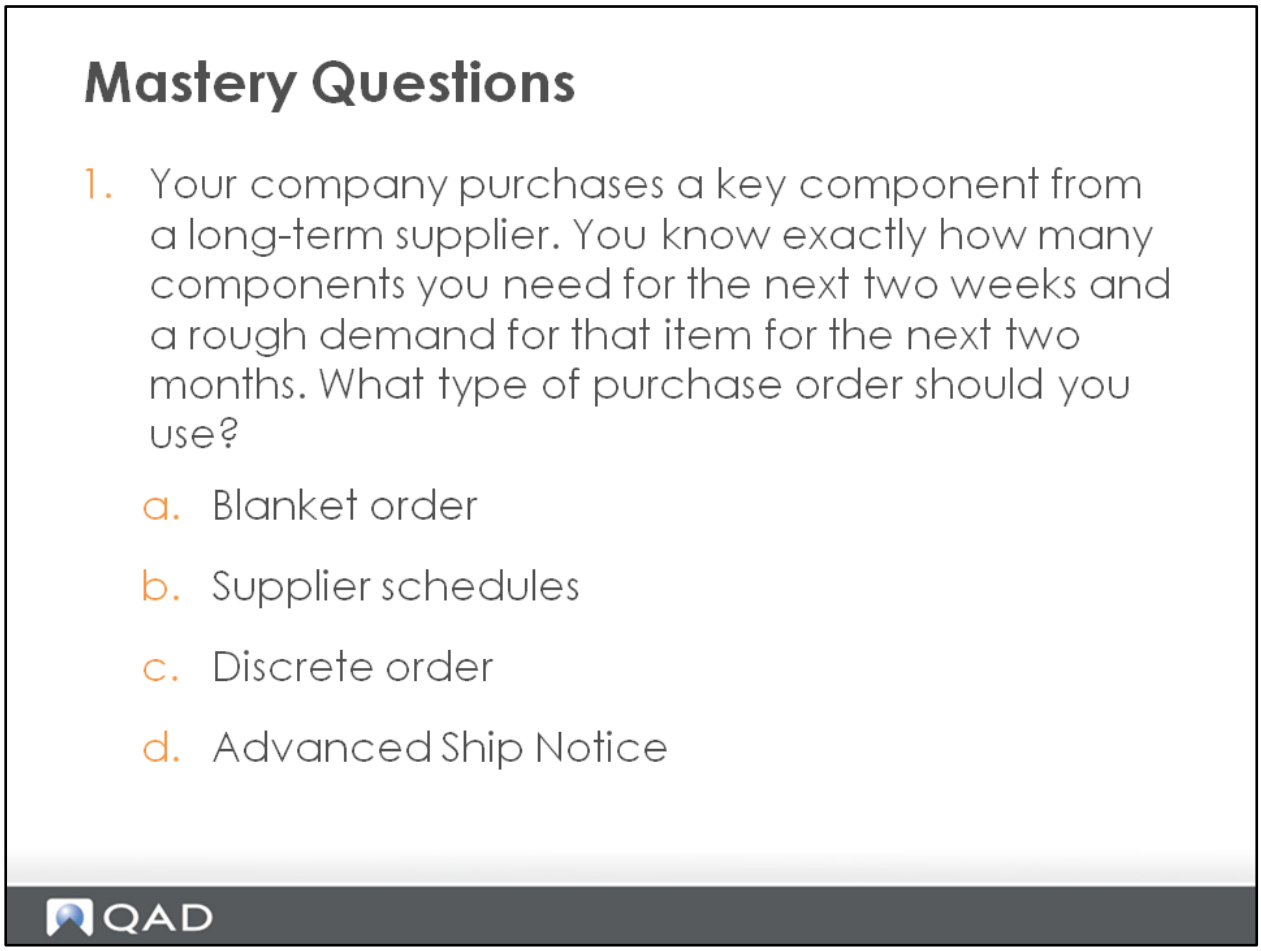
Exercise



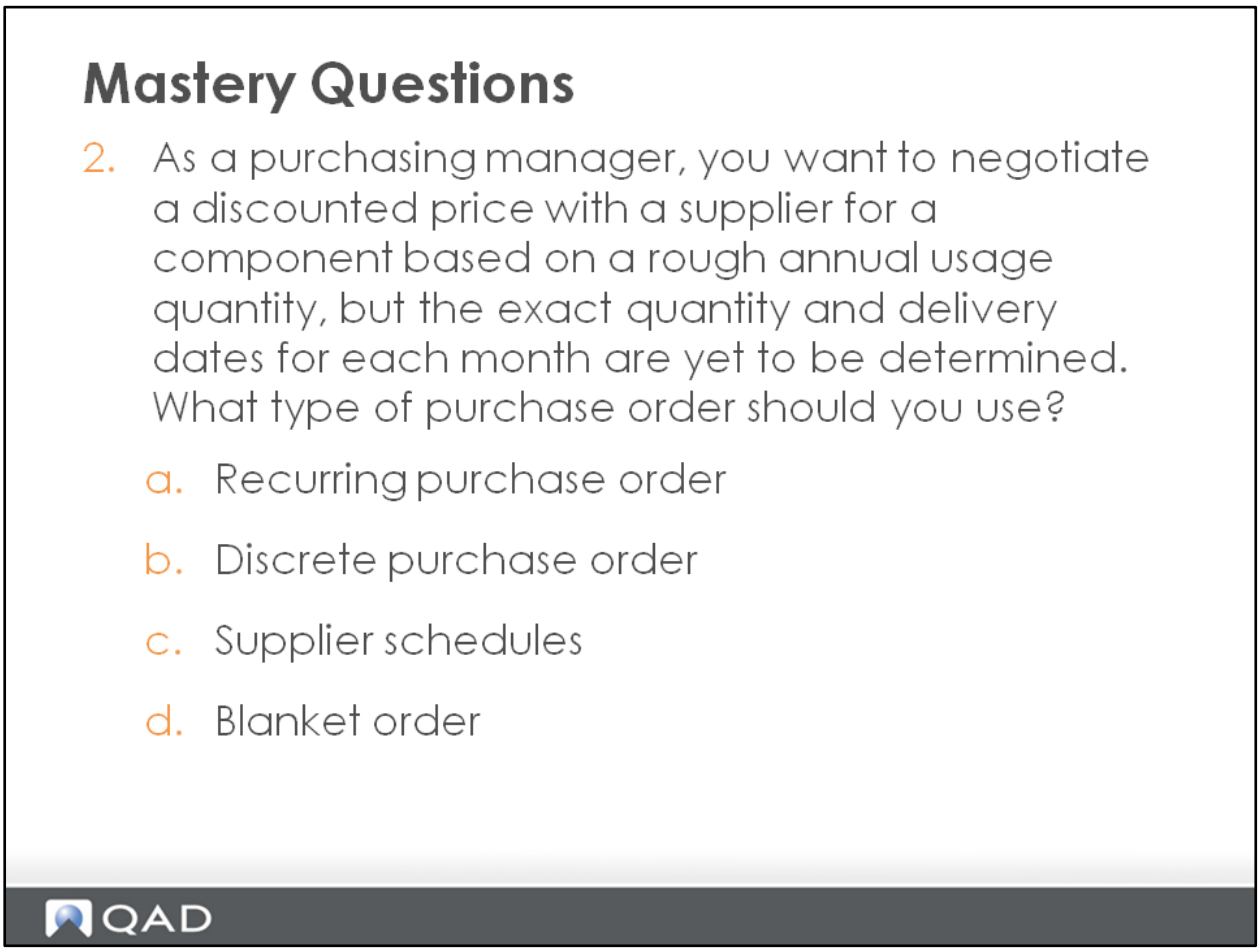
Exercise: Supplier Invoice and AP Payment Process

1. Open the Process Supplier Invoices process map and create a supplier invoice for a received PO that you processed earlier in this training session.
2. Use the Create Receiver Matching process map node to match the supplier invoice with the receiver that the system generated during PO receipt.
3. View the invoices open for payment using Supplier Activity Dashboard.
4. Use the Process Payables process map to create a supplier payment and allocate it to the invoice created against the PO receipt.
5. Assume that you have finished the payment through the bank. It is time to close the payment by changing the supplier payment to Paid status using the Change Status node in the process map.

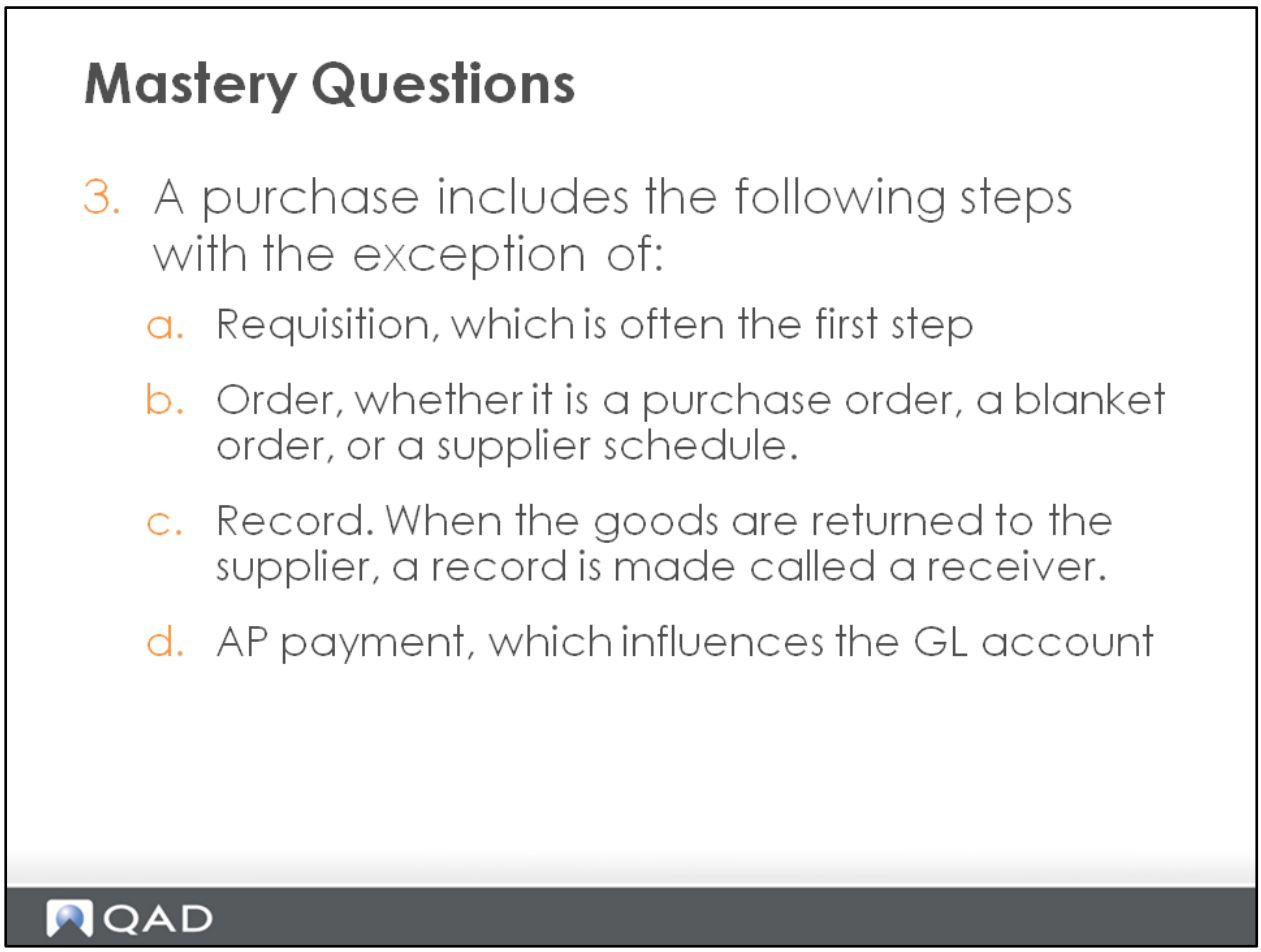
Mastery Questions



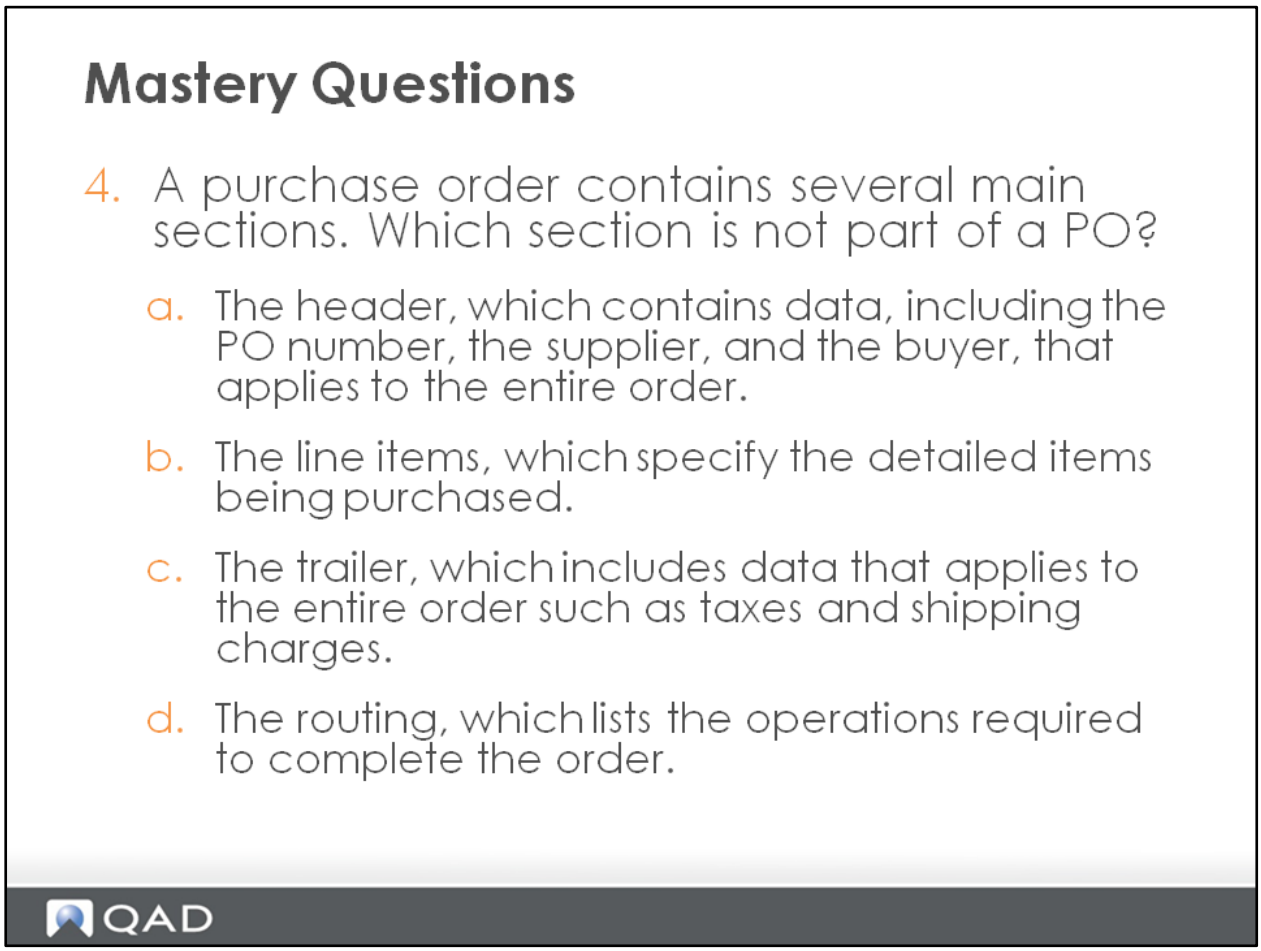
Mastery Questions



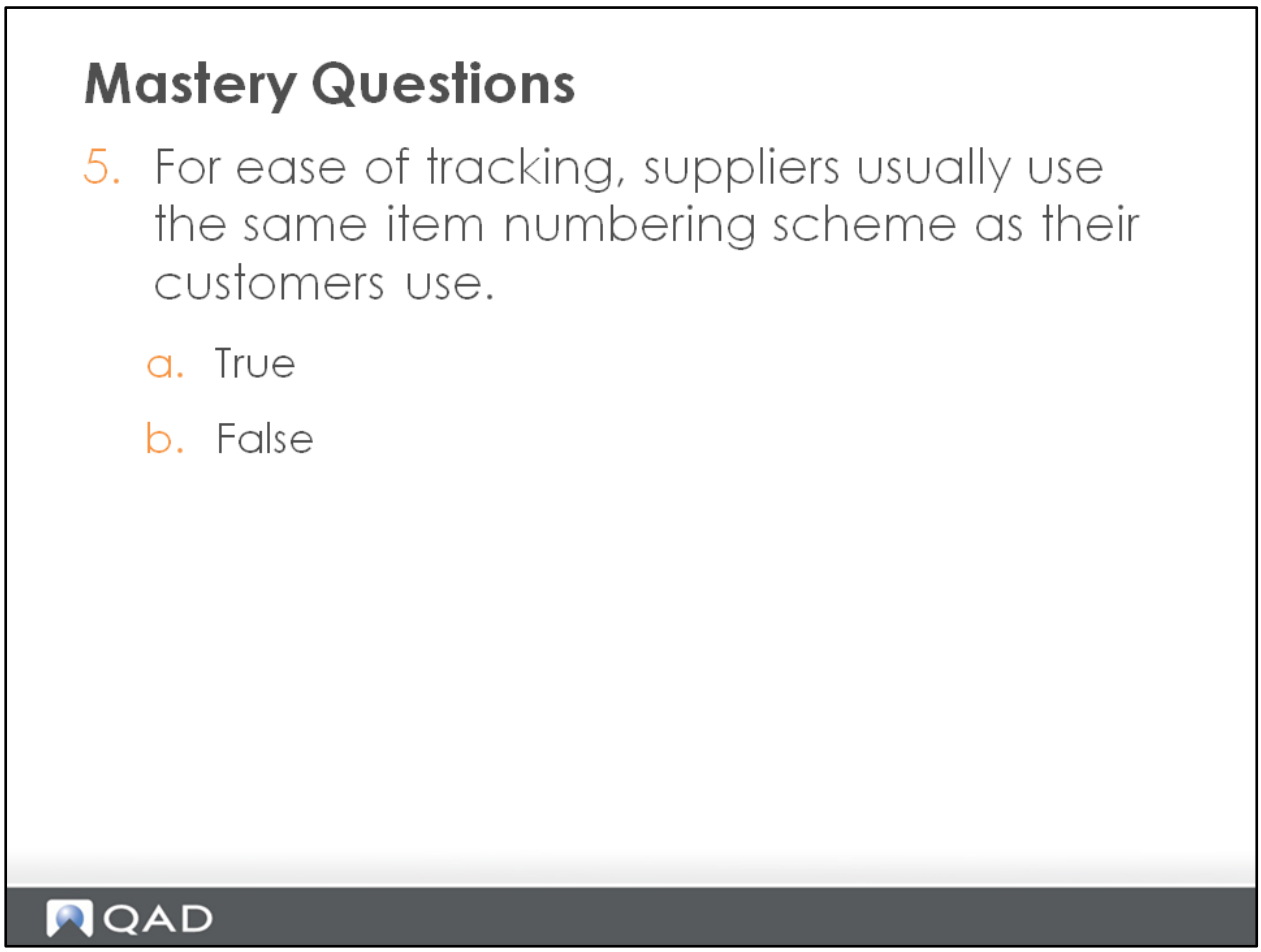
Mastery Questions



Mastery Questions



Mastery Questions



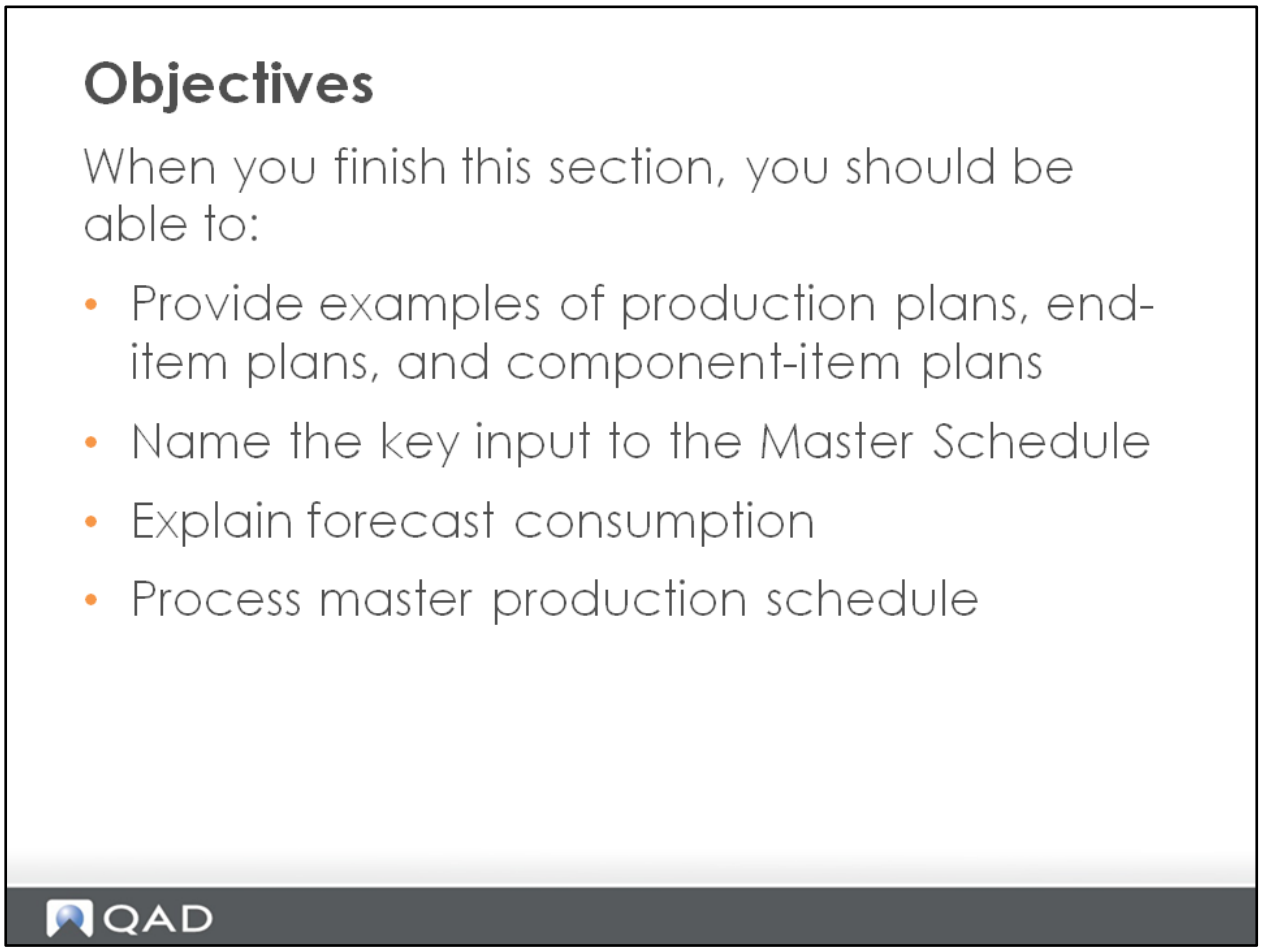
CHAPTER 9

Plan-to-Perform Process

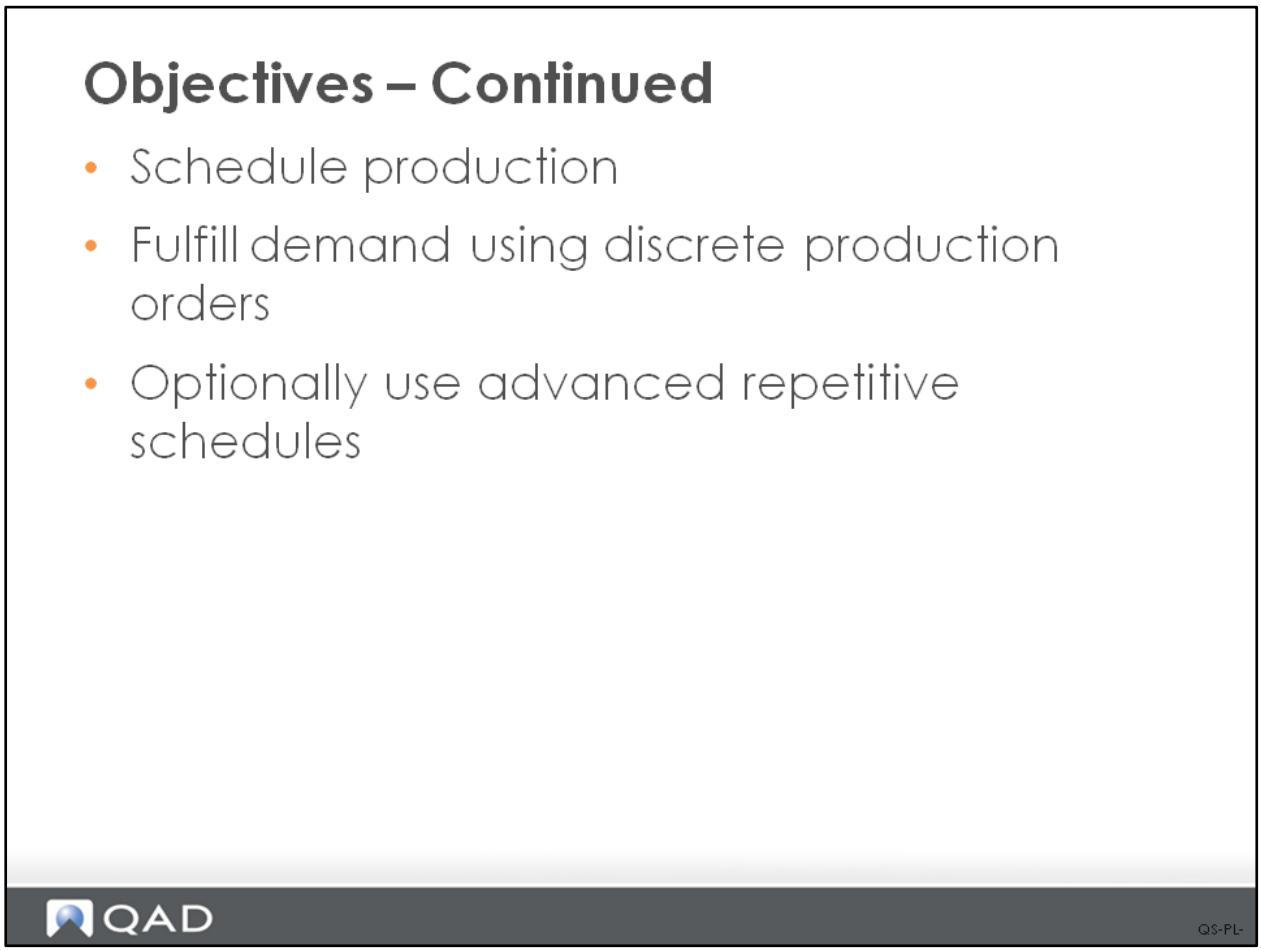
Plan-to-Perform Process



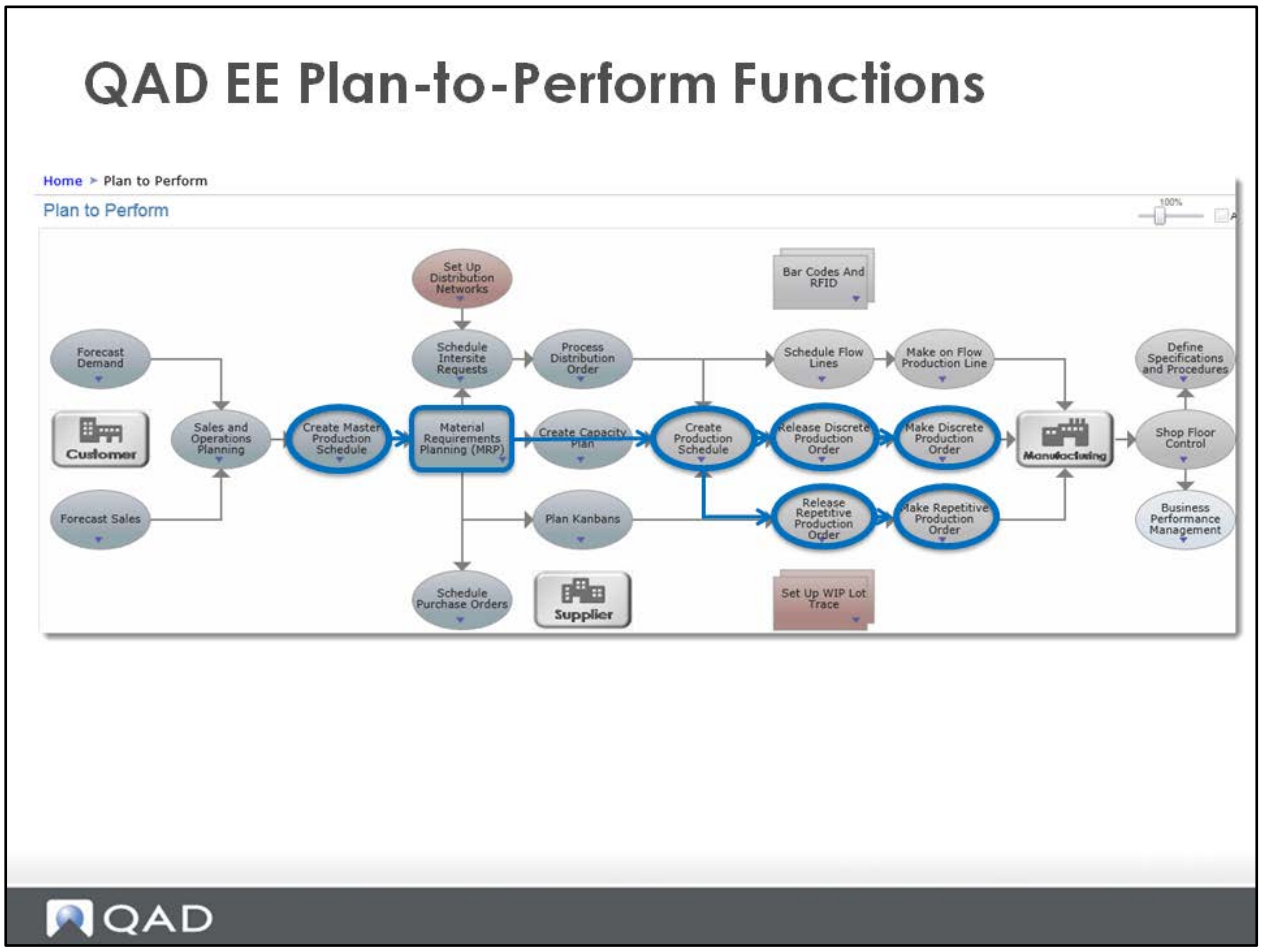
Objectives


Objectives
When you finish this section, you should be able to:
• Provide examples of production plans, end-item plans, and component-item plans
• Name the key input to the Master Schedule
• Explain forecast consumption
• Process master production schedule
QAD

Objectives – Continued



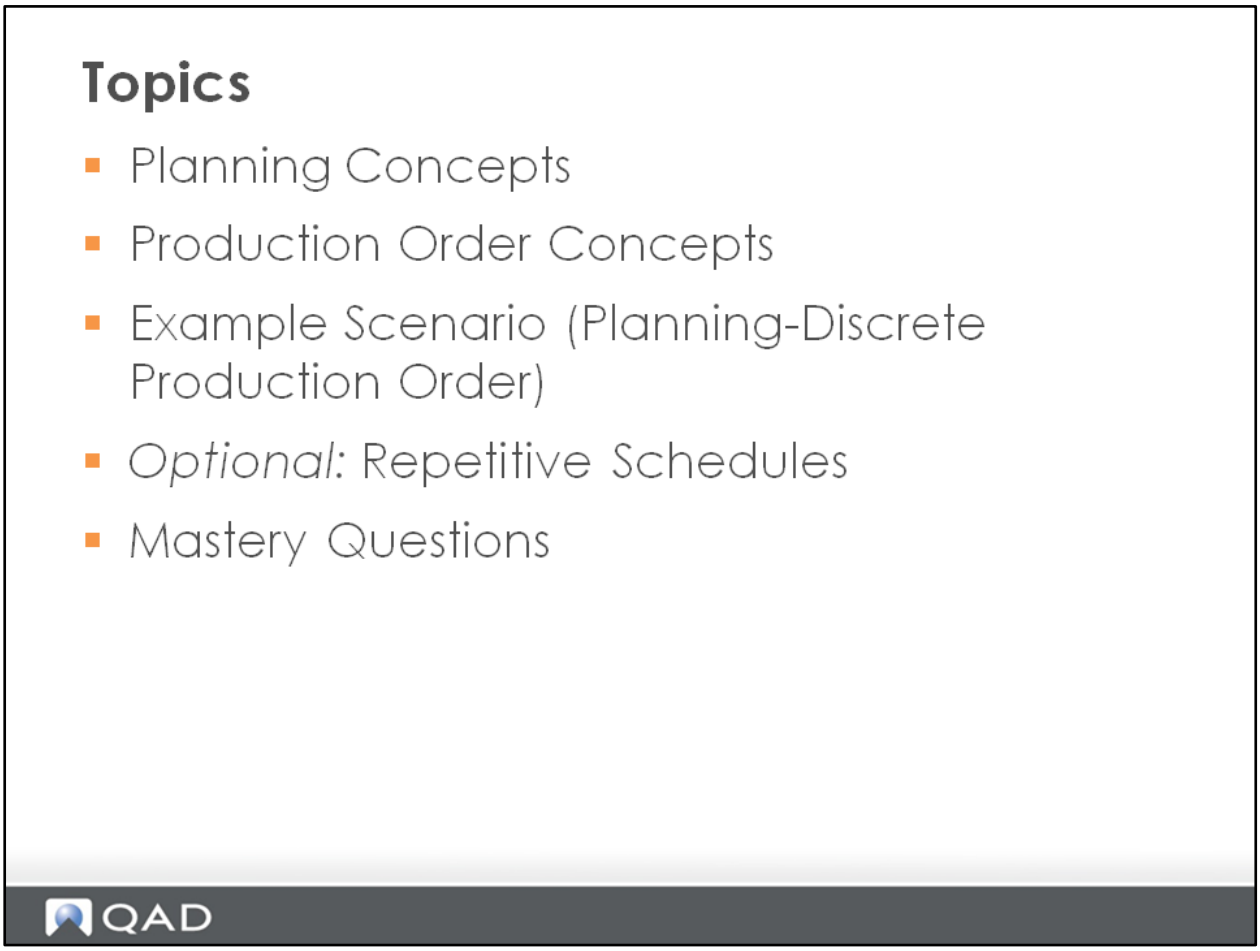
QAD EE Plan-to-Perform Functions



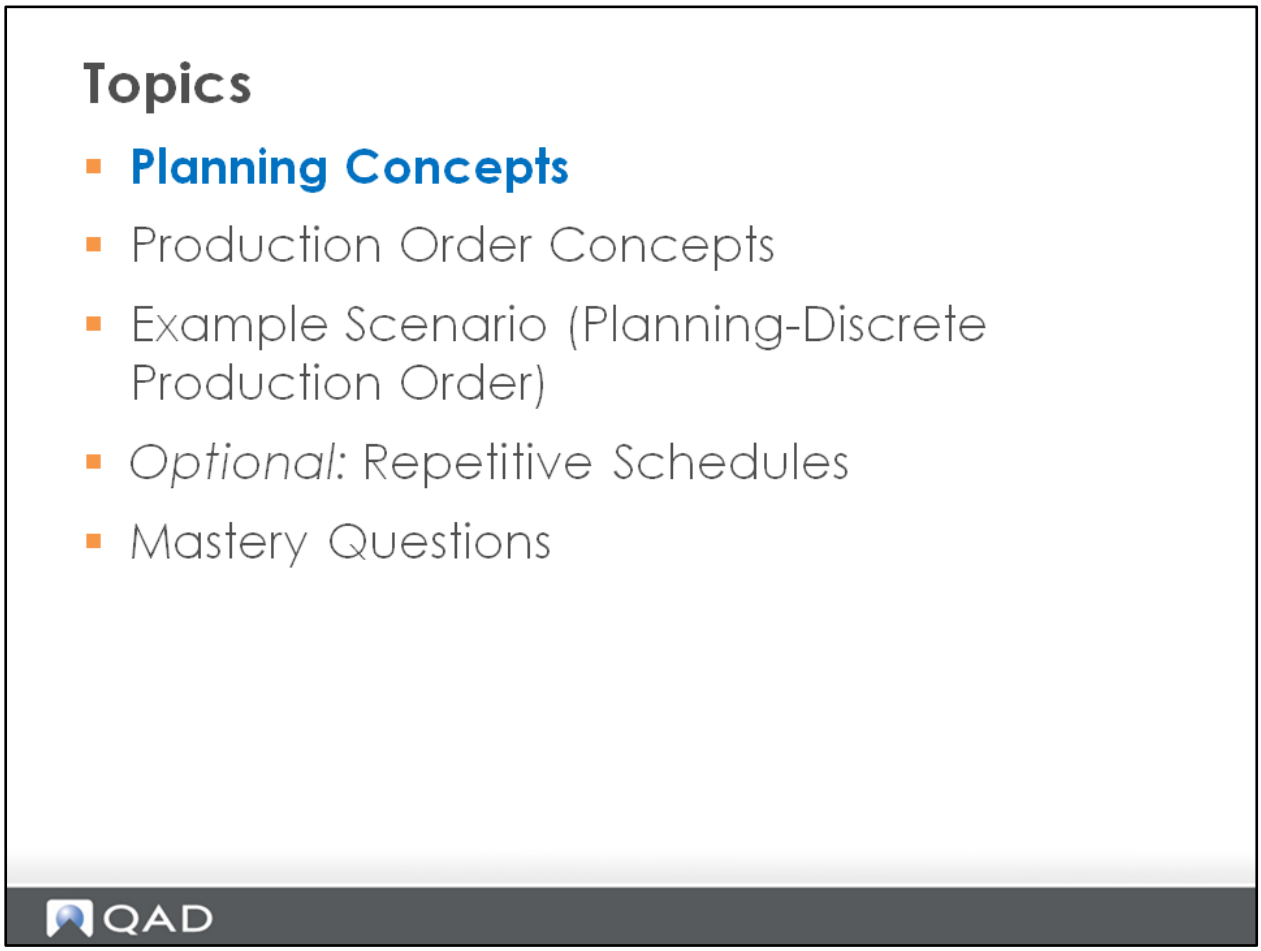
This section introduces QAD EE functions for forecasting, planning, discrete work orders, and repetitive schedules.

For forecasting, the information included in this course is limited to manually entering forecasts and showing how a sales order consumes the forecast.

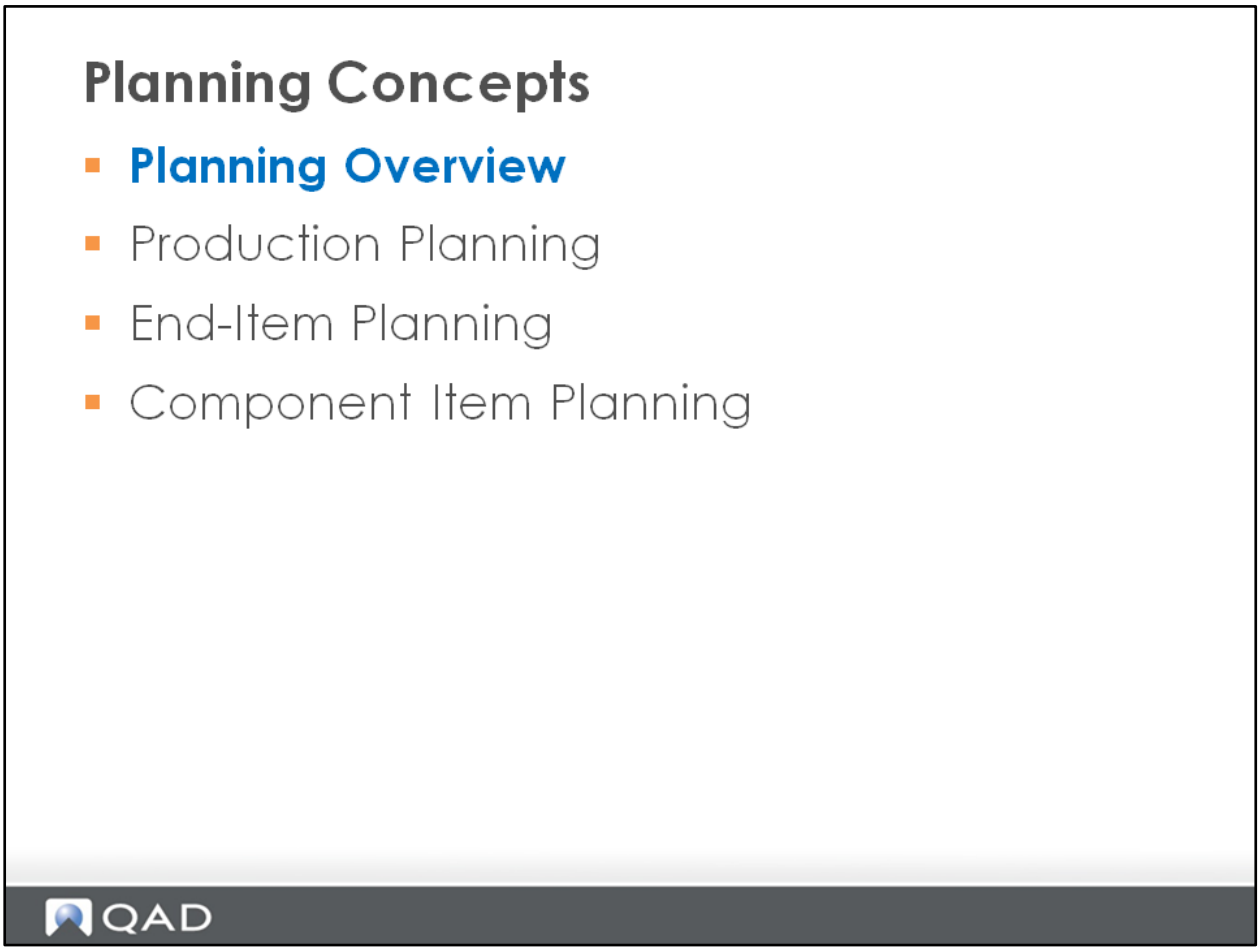
Topics


Topics
Planning Concepts
Production Order Concepts
Example Scenario (Planning-Discrete Production Order)
Optional: Repetitive Schedules
Mastery Questions
QAD

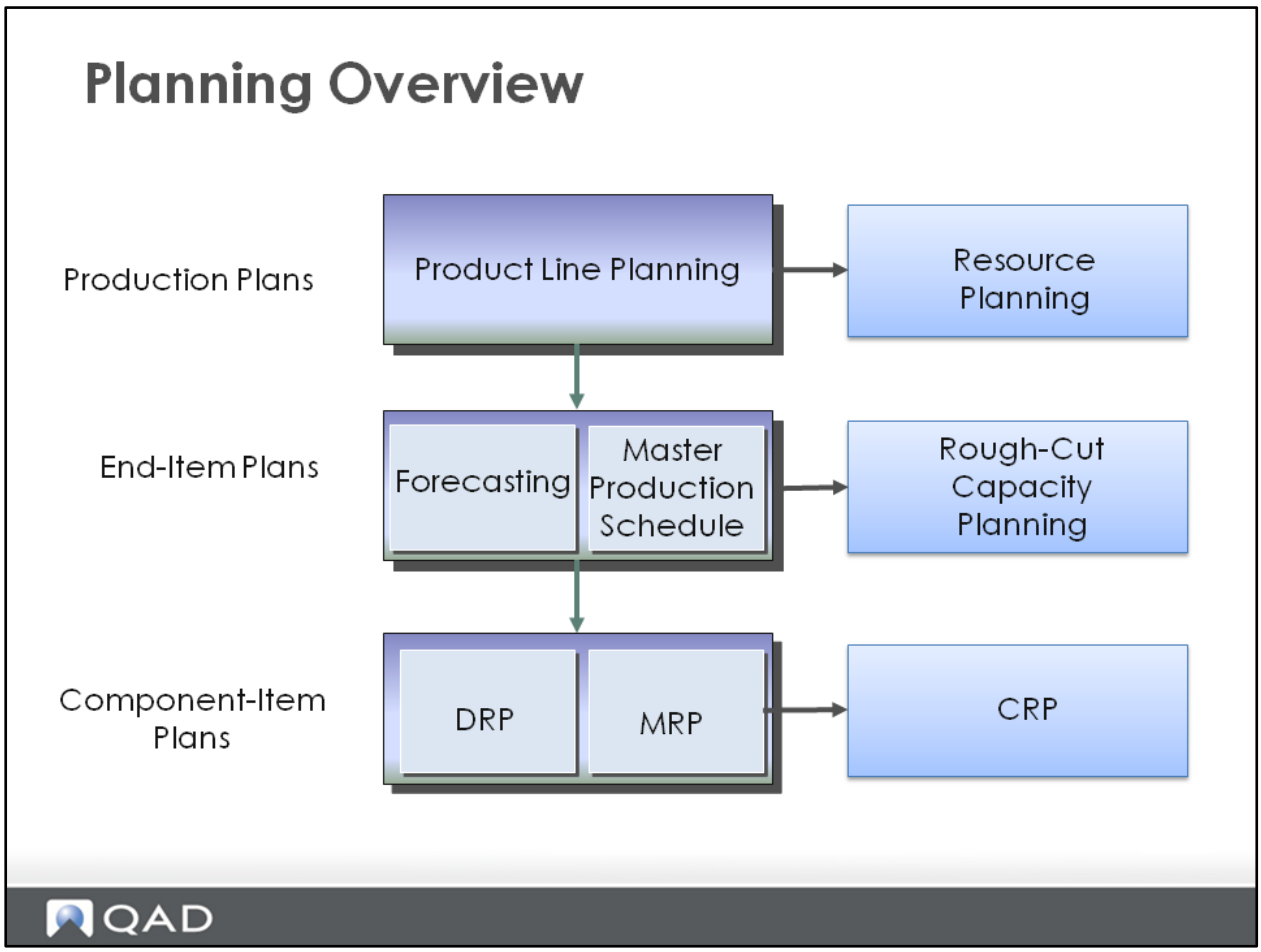
Topics


Topics
Planning Concepts
Production Order Concepts
Example Scenario (Planning-Discrete Production Order)
Optional: Repetitive Schedules
Mastery Questions
QAD

Planning Concepts



Planning Overview



Within a corporation, planning is performed at many levels by many different people. QAD EE provides an integrated set of planning tools that are useful at most of these levels. The primary components of the planning system are production planning, end-item planning, and component item planning.

Production Planning

At this level, product line planning functions are used to balance sales forecasts, production forecasts, and income forecasts for an entire product line, while meeting the profit goals established in the strategic plan. Often, different people create these plans and product line planning brings them together. Resource planning is used to determine whether you have the resources to meet the plans.

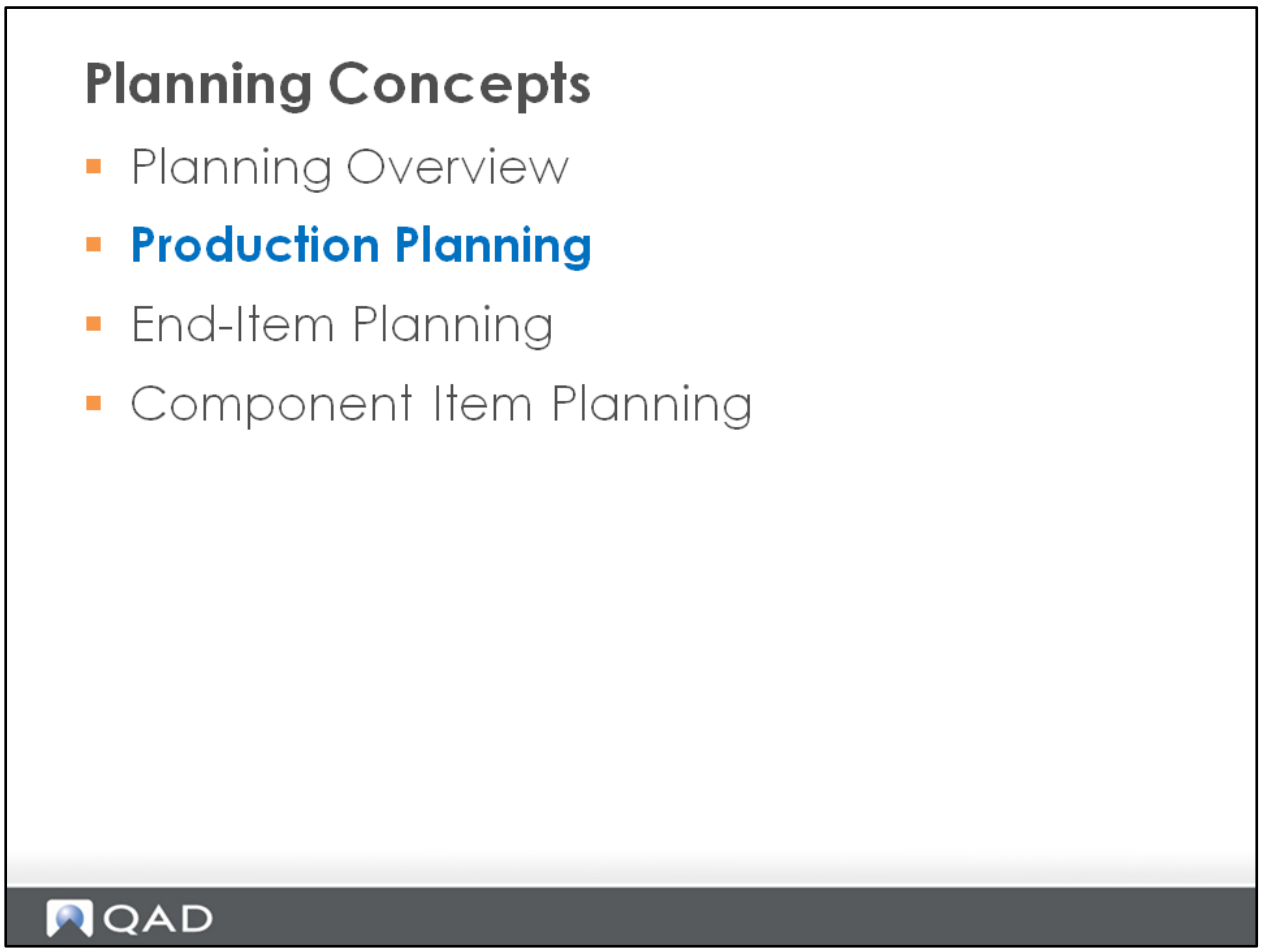
End-Item Planning

Once established, the product line plan is broken down into individual item forecasts. The Master Scheduler reviews actual and forecast demands and sets production levels in response to these demands. Rough-Cut Capacity Planning (RCCP) determines whether you have enough critical resources to meet the master schedule.

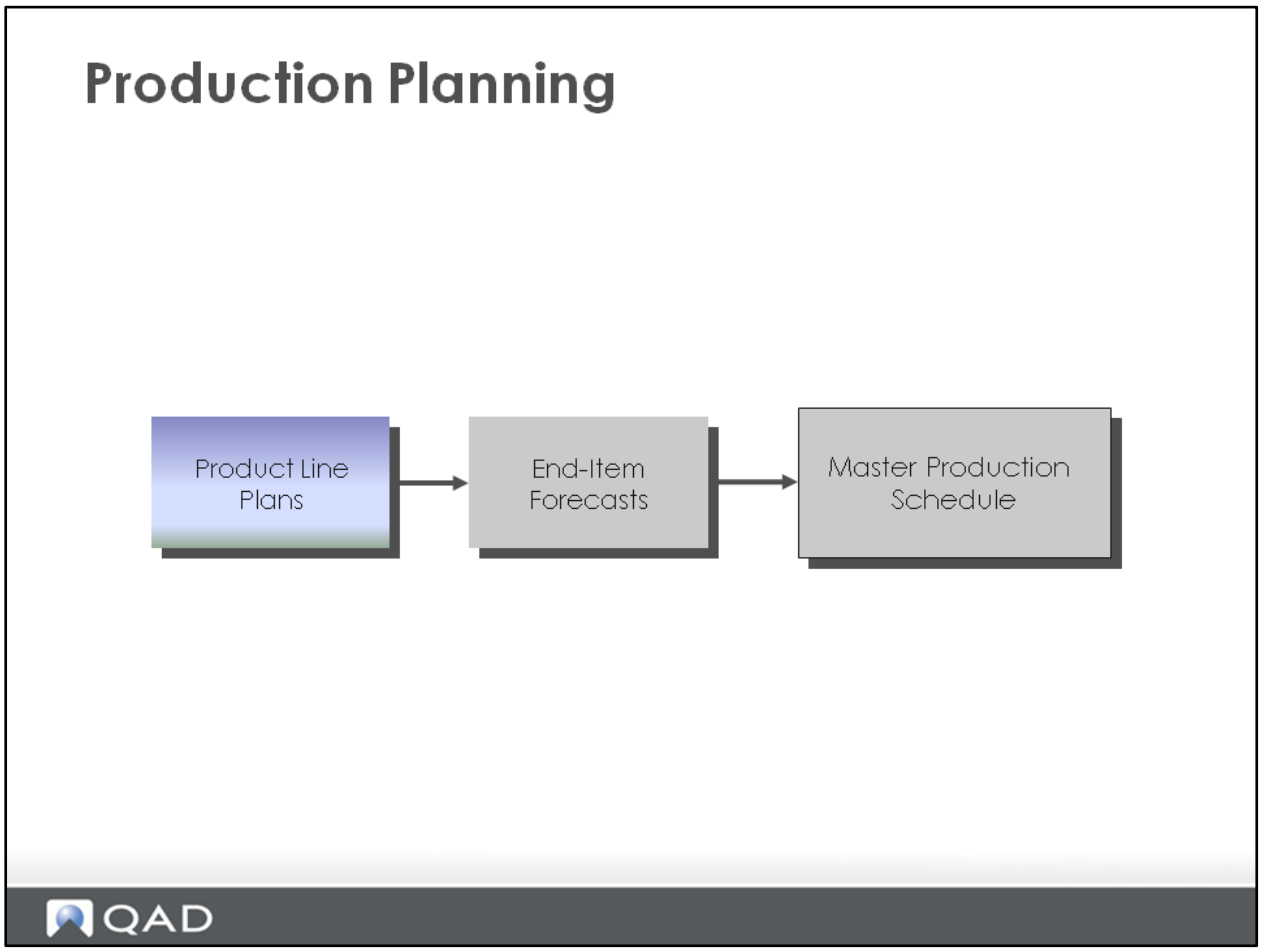
Component Item Planning

Material Requirements Planning (MRP) and Distribution Requirements Planning (DRP) both calculate the quantity of raw materials and components needed for the master schedule. DRP generates planned orders for items to transfer from another site. MRP generates planned orders for purchased and manufactured items. Capacity Requirements Planning (CRP) determines fairly precisely how this plan loads production resources at your site.

Planning Concepts



Production Planning

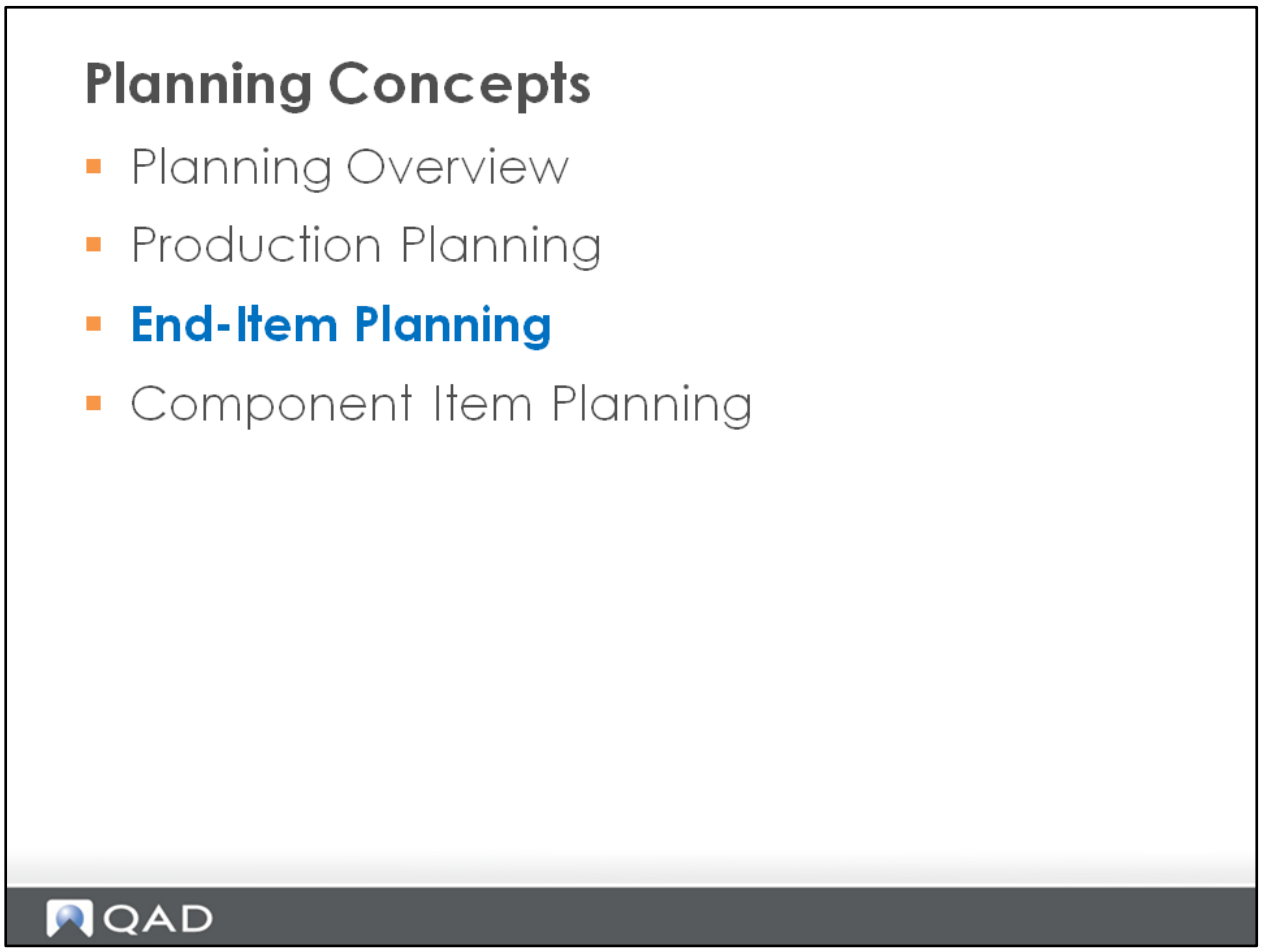


Product line plans generally cover one to three years and are shown in months or quarters. They are composed of aggregate forecasts that are converted into end-item forecasts. These detailed forecasts provide input that the master scheduler uses to create a statement of production.

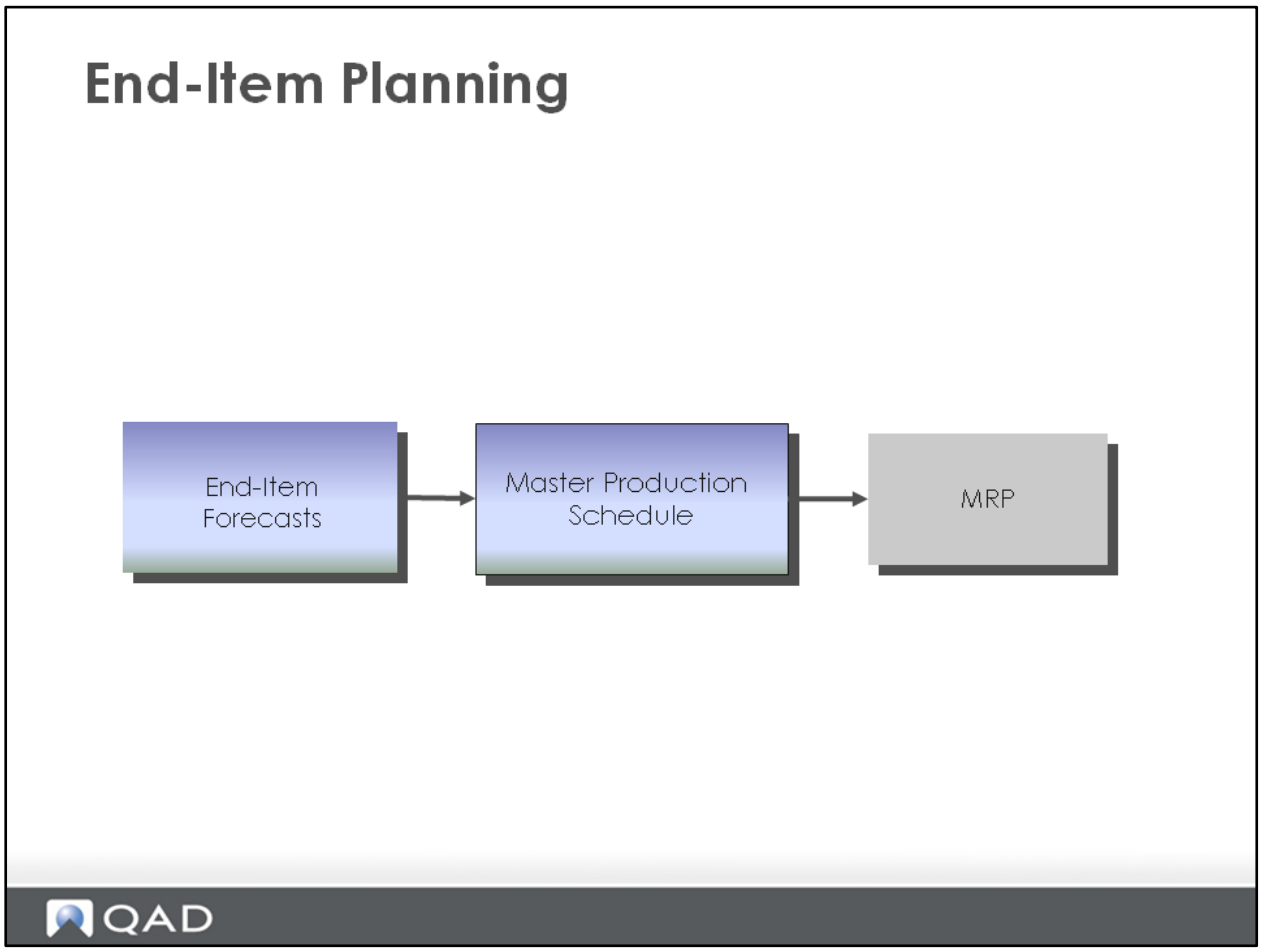
The purpose of a product line plan is to:

- Aggregate forecasts.
- Establish aggregate production goals (aligned to corporate goals).
- Plan efficient and cost effective use of production resources such as machines and manpower.
- Outline the level of planned manufacturing output and its cost.
- Provide input to a master schedule and rough-cut capacity plan.
- Balance sales forecasts, production forecasts, and income forecasts for an entire product line.
- Determine whether there are enough resources, in aggregate, to meet the plan.

Planning Concepts



End-Item Planning



In QAD EE, end-item planning is done in the Forecast/Master Plan module. It begins with the master scheduler, who estimates the demand for a product and determines how many to produce. The planning horizon is at least as long as the longest cumulative lead time in the system. Many companies like to plan and forecast 12-18 months into the future to ensure adequate resource planning and coverage for seasonal products.

Inputs

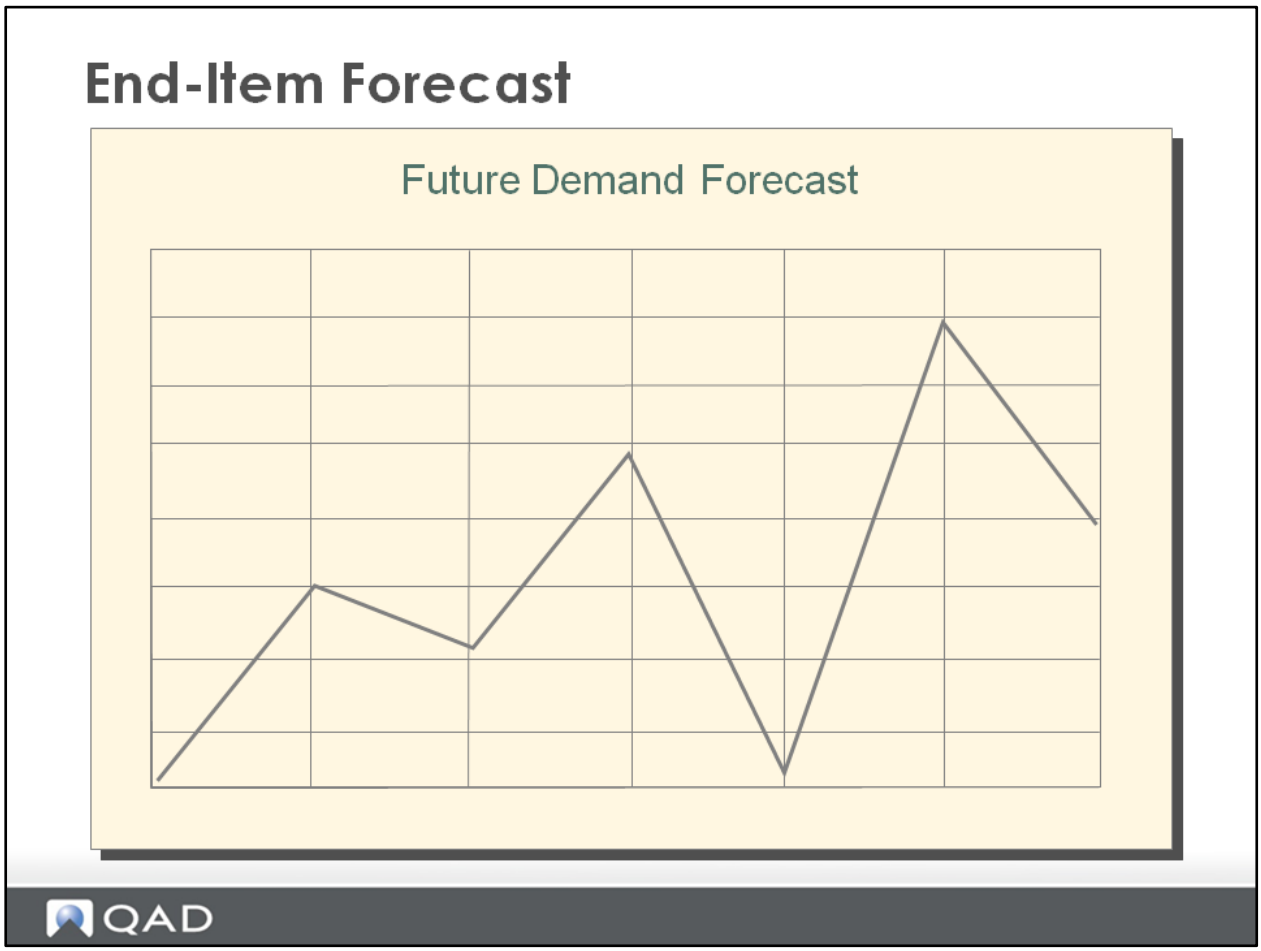
The primary inputs to the master scheduling process are actual and forecast demands. Forecast demands are derived from the product line plans, but are much more detailed. Unlike product line plans, which express forecasts in terms of thousands of dollars of production for a complete line of items by month, forecasts are expressed in terms of quantities for a specific item and site by week. Products subject to seasonal demand can have forecasts that fluctuate widely from week to week. Seasonal build schedules are used to smooth these requirements, increasing production in advance of anticipated spikes in demand.

Output

The output of the master scheduling process is a detailed plan of the number of end items and the schedule for their production. The check on this plan is the availability of critical resources. If you want to make 50 items

next week, but your fabricator only makes 25 in a week, you cannot fulfill the plan. Detailed resource planning is done at this stage, which involves looking at the actual schedule and its demands on resources as specified in item resource bills. In many cases, only bottleneck resources are reviewed.

End-Item Forecast



The forecast is an estimate of future demand for an item at a particular site, stated in terms of quantity per week. It is the starting point for developing an executable plan. In QAD EE, the forecast is a shipment forecast, or the quantity of an item to ship (not ordered) that week. Forecasts are normally entered for items subject to independent demand, from sales orders or spares. Dependent demand, for components and raw materials, is calculated from demand for end items.

The system keeps a running total of the actual quantity to ship each week. The due date on the sales order line item or customer schedule determines the quantity.

In summary, forecasts:

- Estimate future demand for an item
- Are typically a sales function
- Can be an integral part of master scheduling

Represent one point of input to the master schedule Sources of independent demand can be created for any item, but they are usually created for:

- End items
- Critical subassemblies
- Service parts

Forecast Terminology



Abnormal Sales Demand

Some sales order demand cannot be anticipated and is considered abnormal sales demand. Major new accounts or windfall orders, such as orders for roofing materials after a hurricane, can generate abnormal demand. Since the forecast did not anticipate abnormal sales demand, it should not consume the forecast. This fact effectively adds abnormal sales order demand directly on top of the net forecast. A sales order demand is classified as abnormal by deselecting the Consume Forecast option in Sales Order Maintenance.

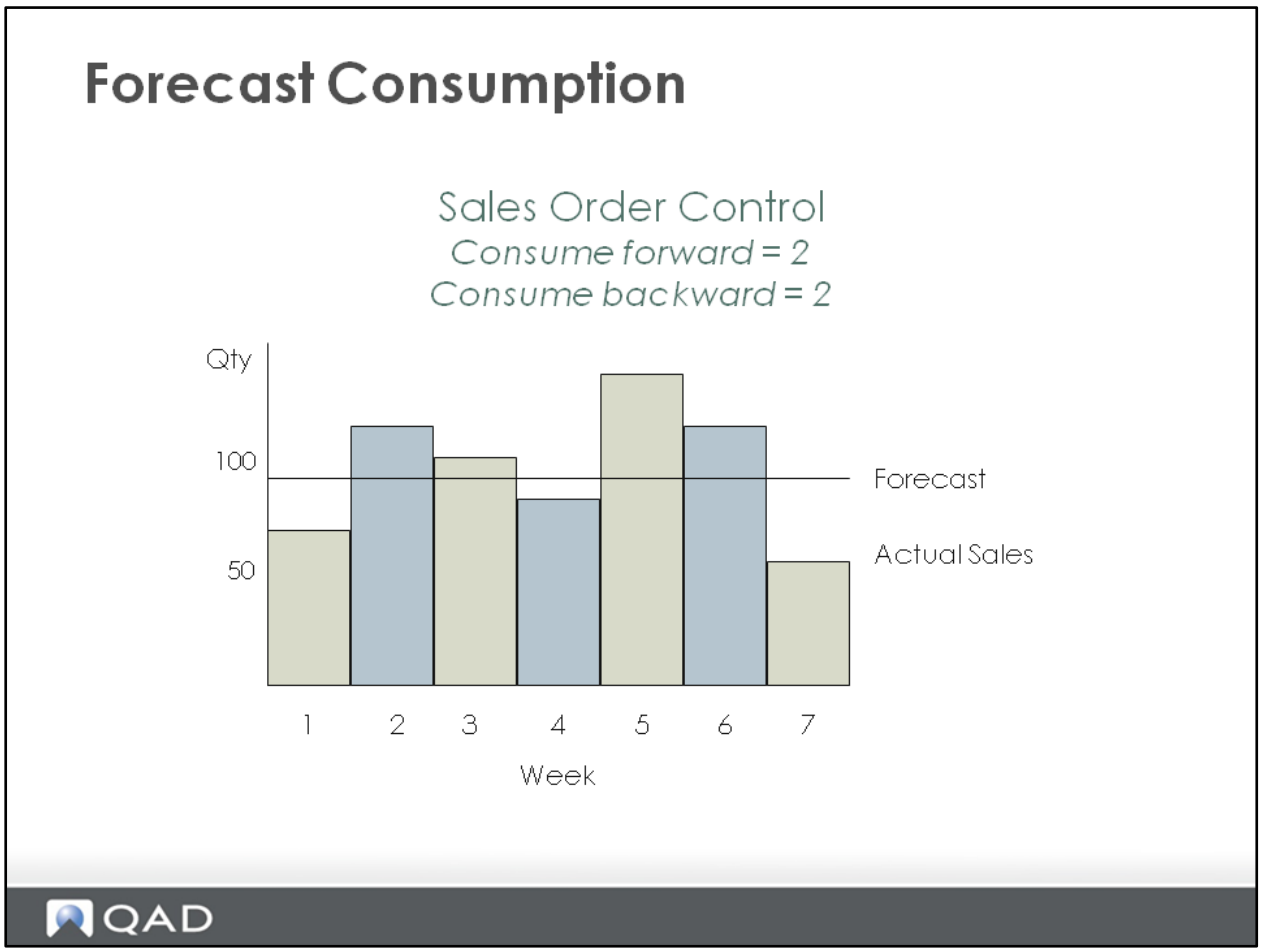
Net Forecast

The net (remaining) forecast is the amount of the forecast not sold in any given week. MRP always plans to make enough product to match actual orders (regular sales and abnormal). However, MRP also plans production to satisfy any remaining forecast, since orders for this amount can still be expected.

Production Forecast

The system calculates the production forecast based on the forecast of sales of another product. For example, sales of disk drives are based on the forecast of computer sales. MRP also plans this demand.

Forecast Consumption



Incoming sales orders and scheduled customer deliveries are netted against the forecast. The net (remaining) forecast is calculated as the original forecast less the quantity sold (except abnormal sales). The planning process considers the total demand to be the actual sales (normal and abnormal), the net forecast, and the production forecast.

Forecast Consumption

The process of netting sales order quantities from the forecast is called forecast consumption. As a rule, forecasts are more accurate in the long term rather than in the short term. Since forecasts are entered for one-week periods, actual shipments seldom correspond to the forecast for a single one-week period. You can predict shipments with more accuracy over a month or over a quarter.

Consume Forward/Backward

One method of managing fluctuation is to expand the forecast window by using forward and backward consumption. As you would expect, when sales orders are booked, they consume the forecast in the week they are due. If there is no unconsumed forecast in that week, the system looks at a specified number of weeks

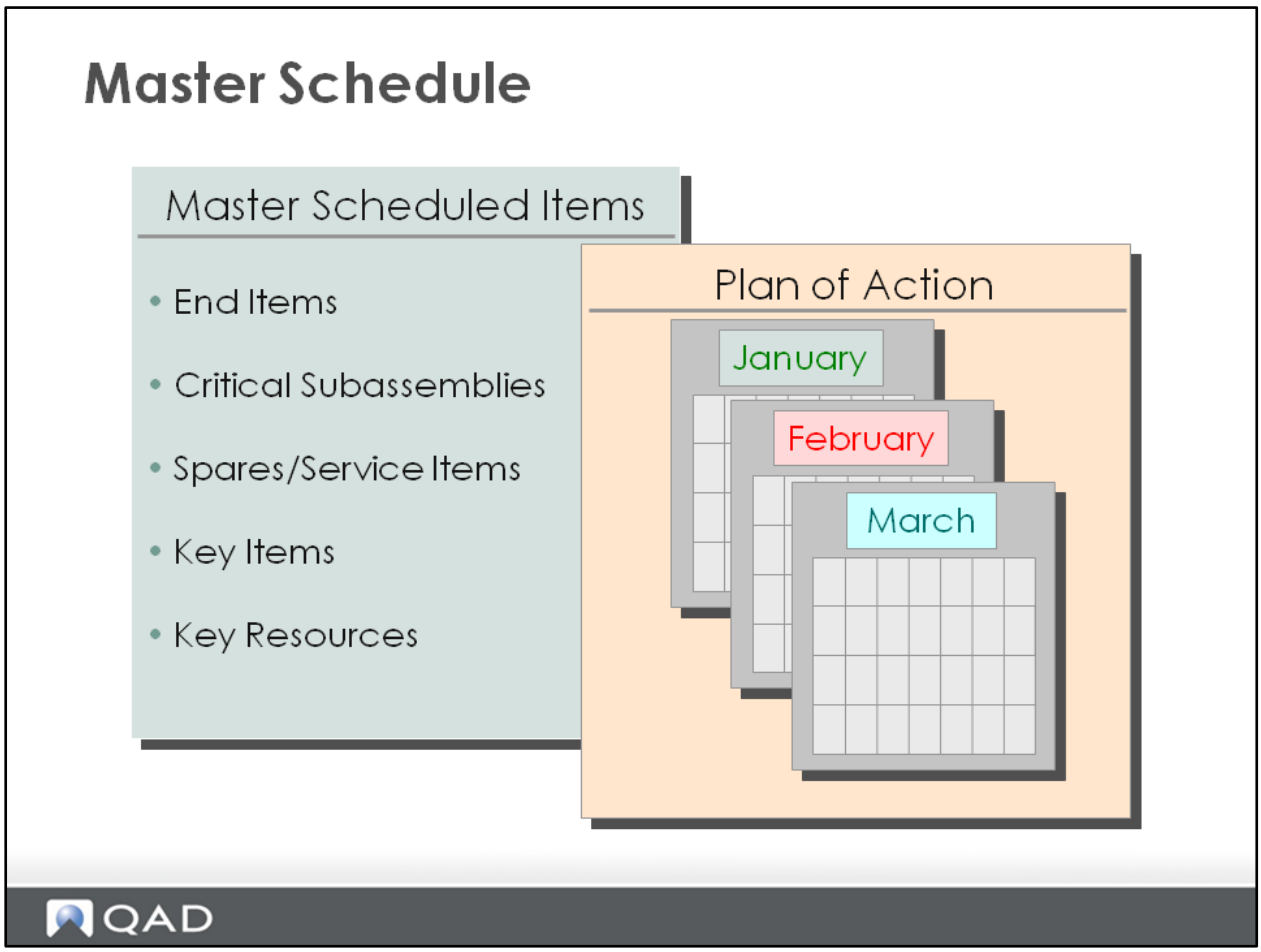
before and /or after the current week to check for an unconsumed forecast. This method recognizes that unsold forecast to be consumed can exist in other weeks.

The rules for forecast consumption are set up in Sales Order Control. Forecasts are often done by month (as in Forecast Simulation), then arithmetically spread to weeks.

- Using a forecast consumption value of forward one week and backward two weeks, plus the current week a sales order is booked in, gives a four week period for the actual sales to equal the original month forecast.
- Forward two weeks and backward one week, or backward three weeks and forward none, gives the same effect.

Most companies would choose to consume unconsumed forecasts from prior periods before taking consumption from future periods.

Master Schedule



A master schedule is developed by site and by item, and is the key plan that provides primary input to MRP. A master schedule is a statement of production that determines which items to schedule, when orders are needed, and how much to produce.

Master scheduling can be done to anticipate sales, as entered in the system, and to control production, if sales orders are not used (in inventory replenishment or build-to-stock environments, for example).

Using master scheduling and MRP is an effective method to set production levels in response to actual and forecast demand (over a period roughly equivalent to the cumulative lead time), and to determine in a rough way (RCCP) whether critical resources will constrain supply.

The master scheduler drives the entire production resource of a site. Producing the master schedule requires manpower, materials, manufacturing capability (capacity), cash flow, and management resources. As such, internal procedures with top-level management commitment control the master schedule process.

Rough-Cut Capacity Planning (RCCP)

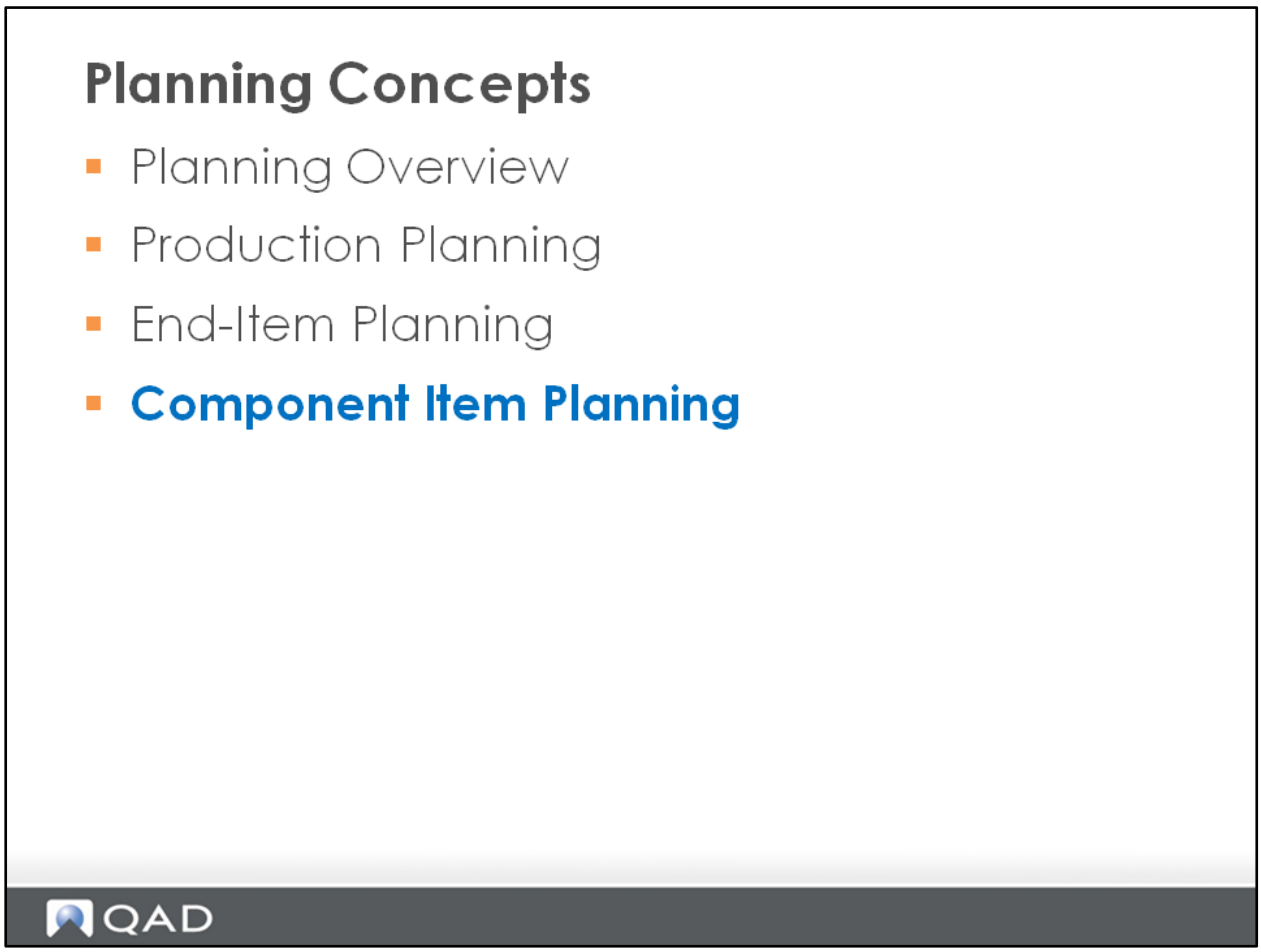
The rough-cut capacity plan provides a tool for:

- Careful evaluation of changes to the master schedule and their impact on material and capacity.
- Rough evaluation of potential capacity issues.
- Proper balancing of customer needs and manufacturing needs.
- Effective stabilization of MRP.

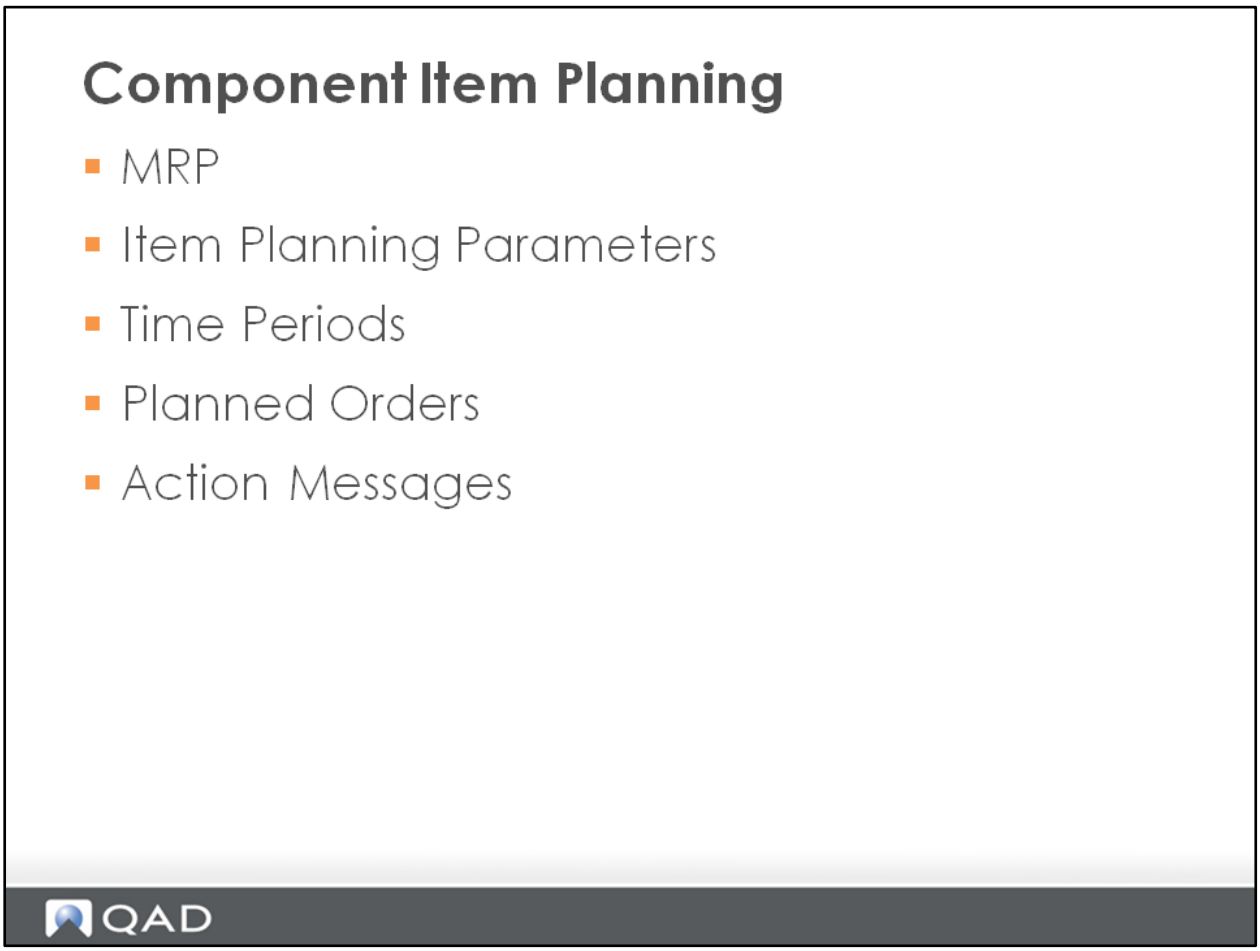
Normal uses of a master schedule include driving RCCP and MRP, and planning future production.

The production plan is broken down into buildable units with specific dates for completion. The production plan is met if the master schedule is developed to support it. RCCP provides a high-level planning process for key resources that can constrain the execution of the manufacturing plan.

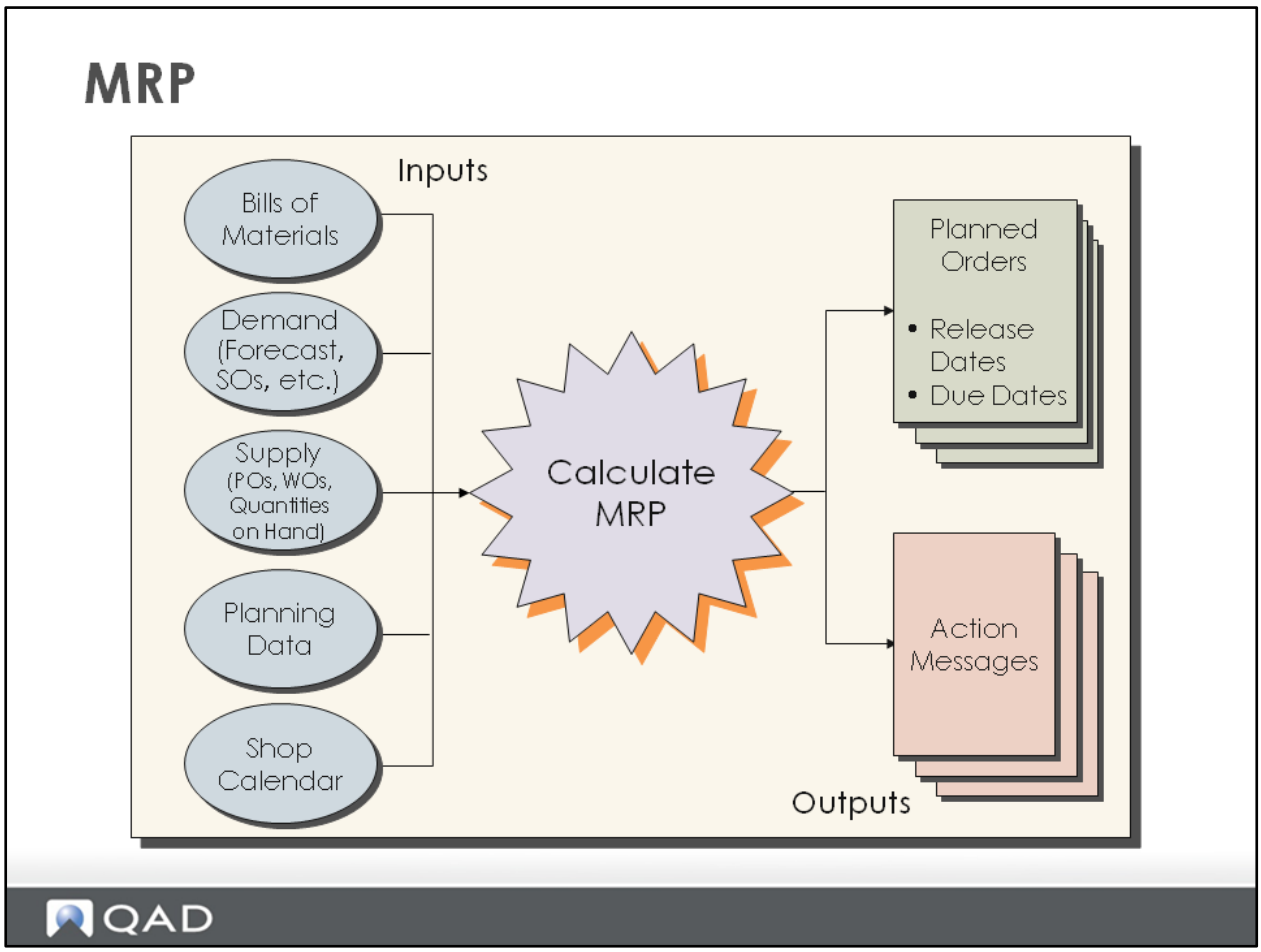
Planning Concepts



Component Item Planning



MRP



The master schedule is a detailed schedule of production, but production can be achieved only if the component materials are available.

MRP and DRP explode the master schedule to calculate the demand for components based on the bill of materials (BOM). These components can be purchased, manufactured, or acquired internally from another site.

MRP Inputs

- Sources of demand (forecast, production forecast, sales orders, gross requirements, seasonal build, safety stock)
- Sources of supply (nettable quantity on hand, purchase orders, work orders, repetitive schedules, quality orders)
- Item planning data, lead times, order policy, whether the item is manufactured or purchased
- Product structures/formulas

- Shop calendar

MRP Outputs

The primary outputs of MRP are planned orders and action messages. Within the time fence, you only get action messages. Planned orders are generated outside of the item's time fence. Usually the planner reviews and approves MRP planned orders as work orders or requisitions.

In summary, MRP is a time-phased priority planning system that calculates material requirements using product structures, inventory status, the master schedule, and open order dates.

Supply is scheduled and rescheduled to meet changing demand and maintain valid due dates.

Capacity Requirements Planning (CRP)

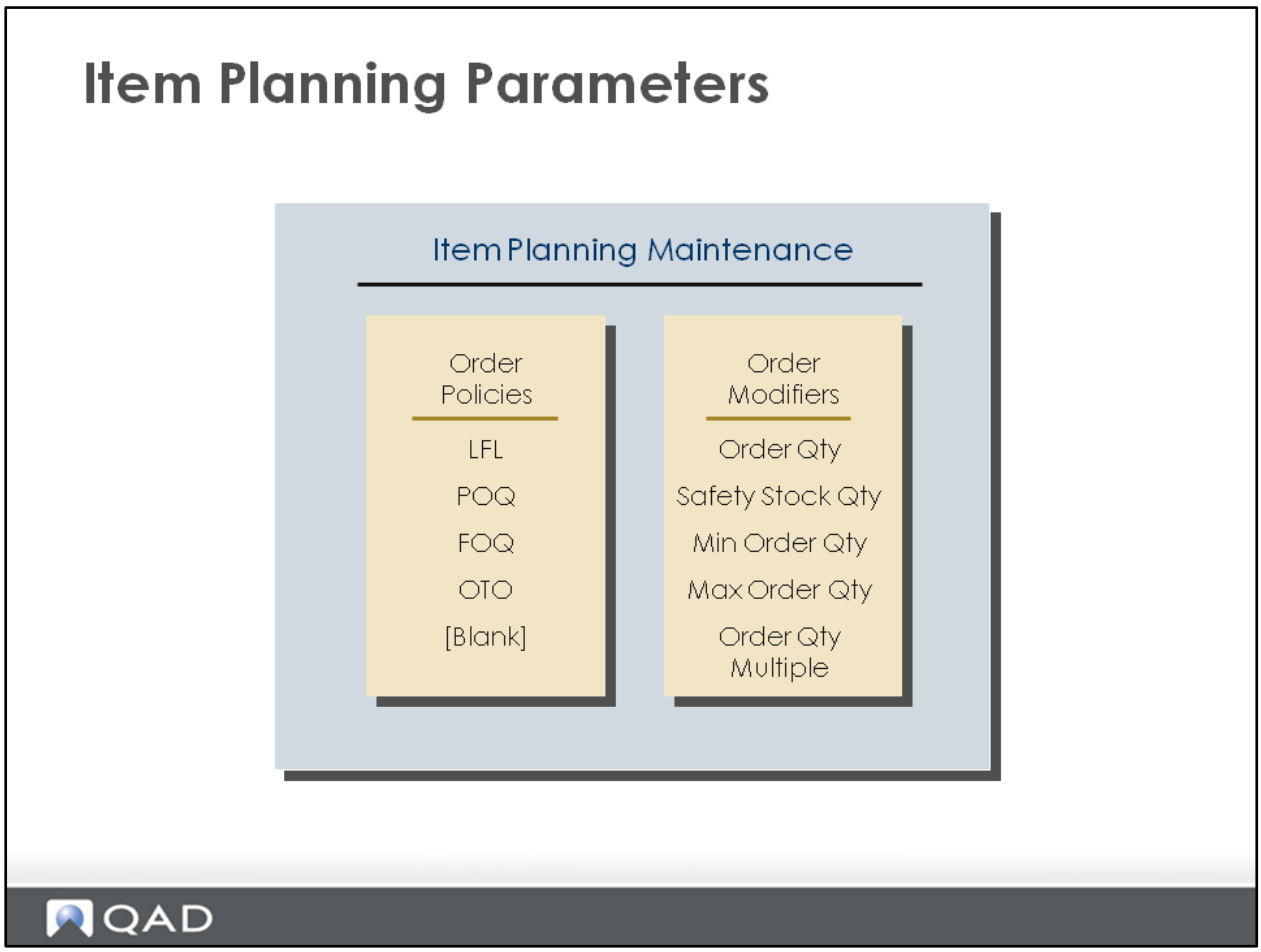
MRP component planning is checked against the capacity requirements plan (CRP). CRP determines how much labor and how many machine resources are required for production, and it calculates workload for a department, work center, or machine. It is used for short to medium-range capacity management to determine and provide the resources required to meet the detailed item schedules in MRP.

Time Fence

Time fence is a policy or guideline established to note where various restrictions for changes in operating procedures take place. For example, changes to the master schedule can be accomplished easily beyond the cumulative lead time. However, changes inside the cumulative lead time become increasingly more difficult (to a point where changes are resisted). Time fences can be used to define these points.

A time fence is expressed in days and is defined in Item Planning Data Maintenance (1.4.7) or Item Site Planning Data Maintenance (1.4.17). It tells the system not to change any planned orders within that number of days, but instead to provide action messages telling the planner what the system suggests be done.

Item Planning Parameters



QAD uses item planning parameters to determine how MRP plans items. General item planning parameters can be defined in Item Master Maintenance or Item Planning Maintenance. Site-specific parameters are entered in Item-Site Planning Maintenance (1.4.17). Any parameters not entered in Item-Site Planning Maintenance default from Item Master Maintenance or Item Planning Maintenance.

Order Policies

Order policy determines the rules for planning orders. Order policies are used together with order modifiers to determine order quantities. There are four types of policies:

- ***Lot for Lot (LFL)***
  A lot sizing technique where MRP plans a separate supply order for each demand order. For example, sales orders exist for the same item with quantities of 5, 10, 15, and 20. MRP plans four orders for 5, 10, 15, and 20 units.
- ***Period Order Quantity (POQ)***
  A lot sizing technique where lot size is equal to net requirements for a given time period expressed in

days (Order Period field). For example, a 30-day order period would create one planned order for all requirements for the next 30 days. The calculation of the period does not begin until the first statement of demand. For example, if MRP is run today for an item with a 30-day period, but the first demand order is five days in the future, the system then counts 30 days from five days from now to create the 30-day period bucket.

- ***Fixed Order Quantity (FOQ)***
  A demand rate lot sizing rule where a fixed quantity (Order Quantity field) must be ordered. For example, FOQ is 100 and demand is 105. MRP plans two orders for 100.

- ***One Time Only (OTO)***
  A lot-sizing technique that produces an order only once, based on the due date of the first item required. This technique is typically used for projects, such as creating an engineering drawing, that occur only once during the manufacturing of a product.

- ***Order Policy Blank***
  A blank order policy is used to prevent MRP from planning an item.
  Note: An order policy that the system does not recognize (EOQ for example) defaults to LFL.

Two other parameters are used with the order policy:

- ***Order Quantity***
  This specified quantity is used with the Fixed Order Quantity (FOQ) order policy. It is also used for all item cost and lead time calculations as the standard order quantity.

- ***Safety Stock Quantity***
  This specified quantity is used as an inventory reserve to compensate for unexpected demand and to maintain desired service levels. This applies to all order policies, including a blank.

Order Modifiers

Order modifiers change planned order quantities. Minimum quantities, maximum quantities, and multiples are order modifiers.

- ***Minimum Order Quantity***
  This quantity is the smallest order that is planned. Only use minimum quantities with items that have continuing demand, since the minimum order quantity could exceed the actual current demand. Items that have decimal demand values from yield or scrap calculations can be forced to whole numbers by setting this parameter to 1 or to any whole number. Often, the minimum quantity is a vendor-required minimum for purchased items.

- ***Maximum Order Quantity***
  MRP generates a warning message when a planned order quantity is larger than the specified maximum order quantity. Excessively large lot sizes can tie up a resource so that other orders are delayed unnecessarily. Further, setting a quantity limit can uncover data entry errors (for example, entry of 1,000 instead of 100).

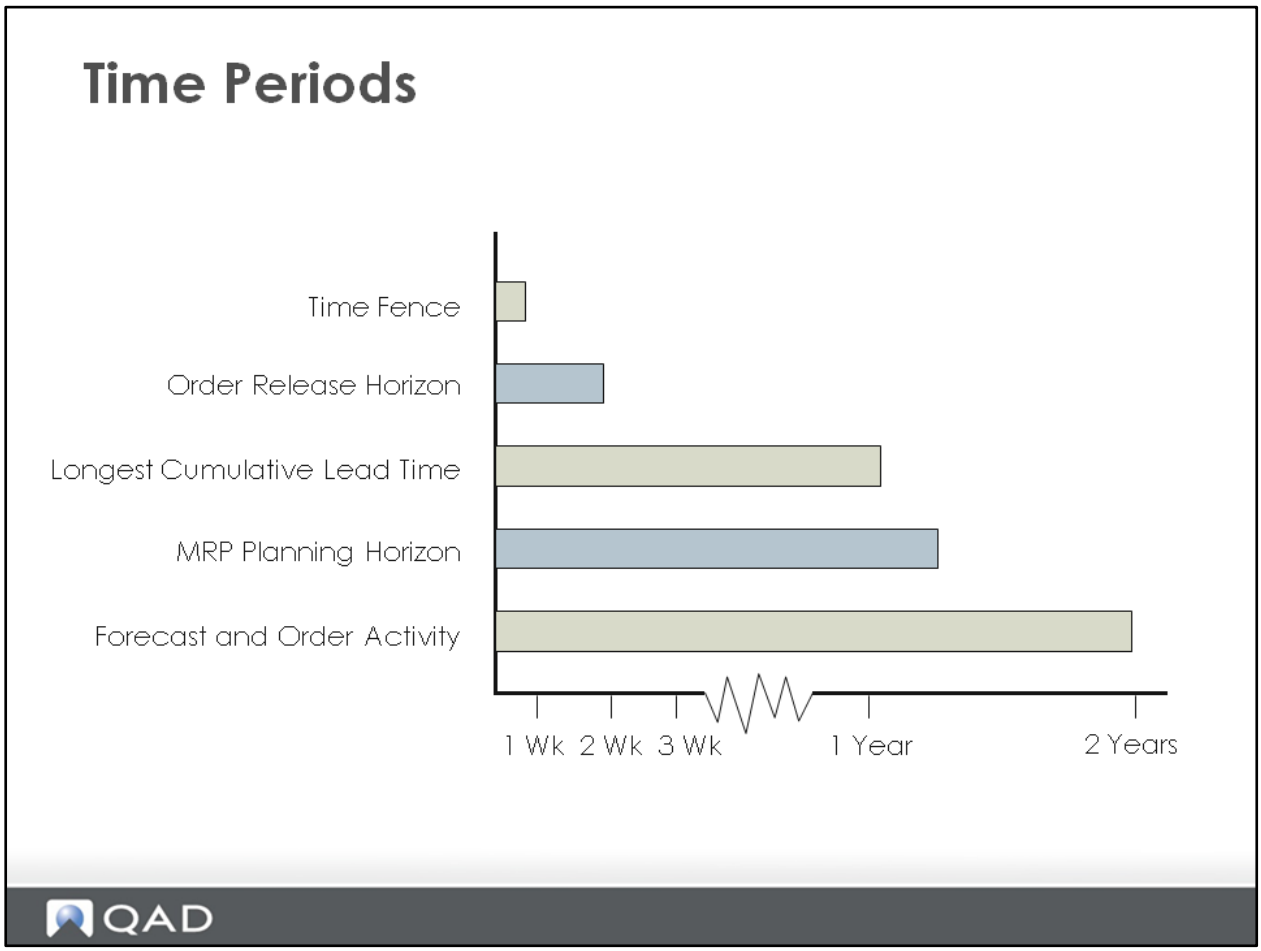
- ***Order Quantity Multiple***
  Planned orders are created in multiples of this quantity. That is, if the order multiple is 100, planned

orders are only created for quantities of 100, 200, 300, and so on. Order multiples are appropriate for multiple cavity molding applications, packaging, and so on.

Lead Time

Lead times determine when to release orders so that they are available on their due dates. Manufacturing lead time applies to manufactured items; purchasing lead time plus inspection lead time applies to purchased items. Safety lead time can be added to both manufactured and purchased items. The system calculates lead time using the operation times in the route and the standard order quantity for manufactured items. The planner enters the lead time for purchased items.

Time Periods



Planning Horizon

Before you run MRP, you set the MRP planning horizon. This specifies a period, in calendar days, over which MRP has to plan. MRP only processes material requirements within this horizon. The longer the horizon, the longer it takes MRP to plan. However, the planning horizon is at least as long as the longest cumulative lead time, plus any associated preparation times. Usually, the master schedule also covers a time frame that is at least as long as the planning horizon.

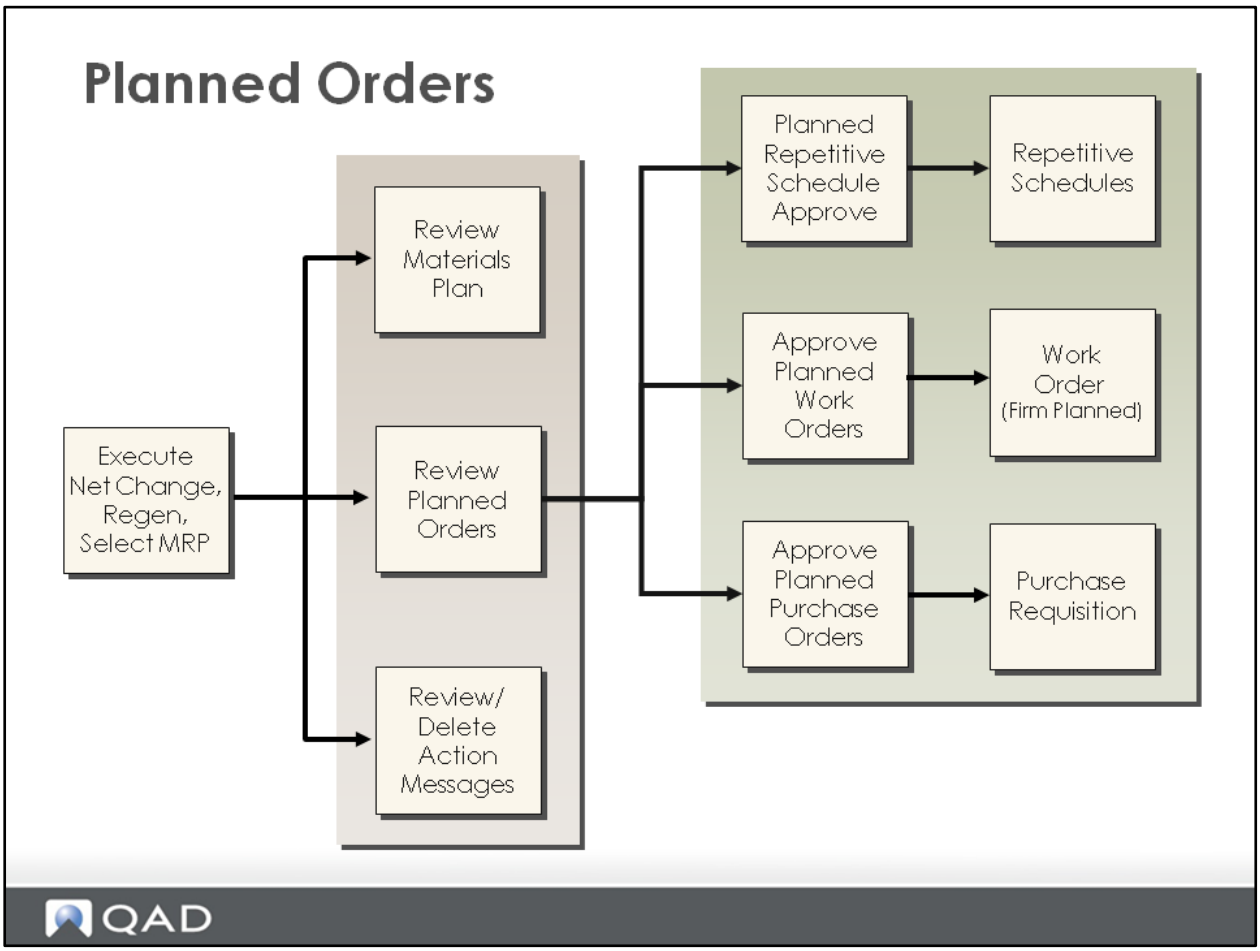
Cumulative Lead Time

Cumulative lead time represents the longest planned length of time required to obtain an item, if the item and any of its components (if any) are not in stock. For a manufactured item, the lead time includes the time it takes to acquire raw materials, inspect them, make any subassemblies or components, and assemble and inspect the finished product. These times are recorded in the Mfg LT, Pur LT, and Ins LT fields in Item Planning Maintenance for each item.

Order Release Horizon

To provide visibility on what orders are due for release, MRP generates Release Due action messages. Typically, you need to view these messages in advance, not just on the day that an order is due for release. You can set the release horizon to any number of days. MRP generates Release Due messages only for orders due for release within this number of days from today’s date.

Planned Orders



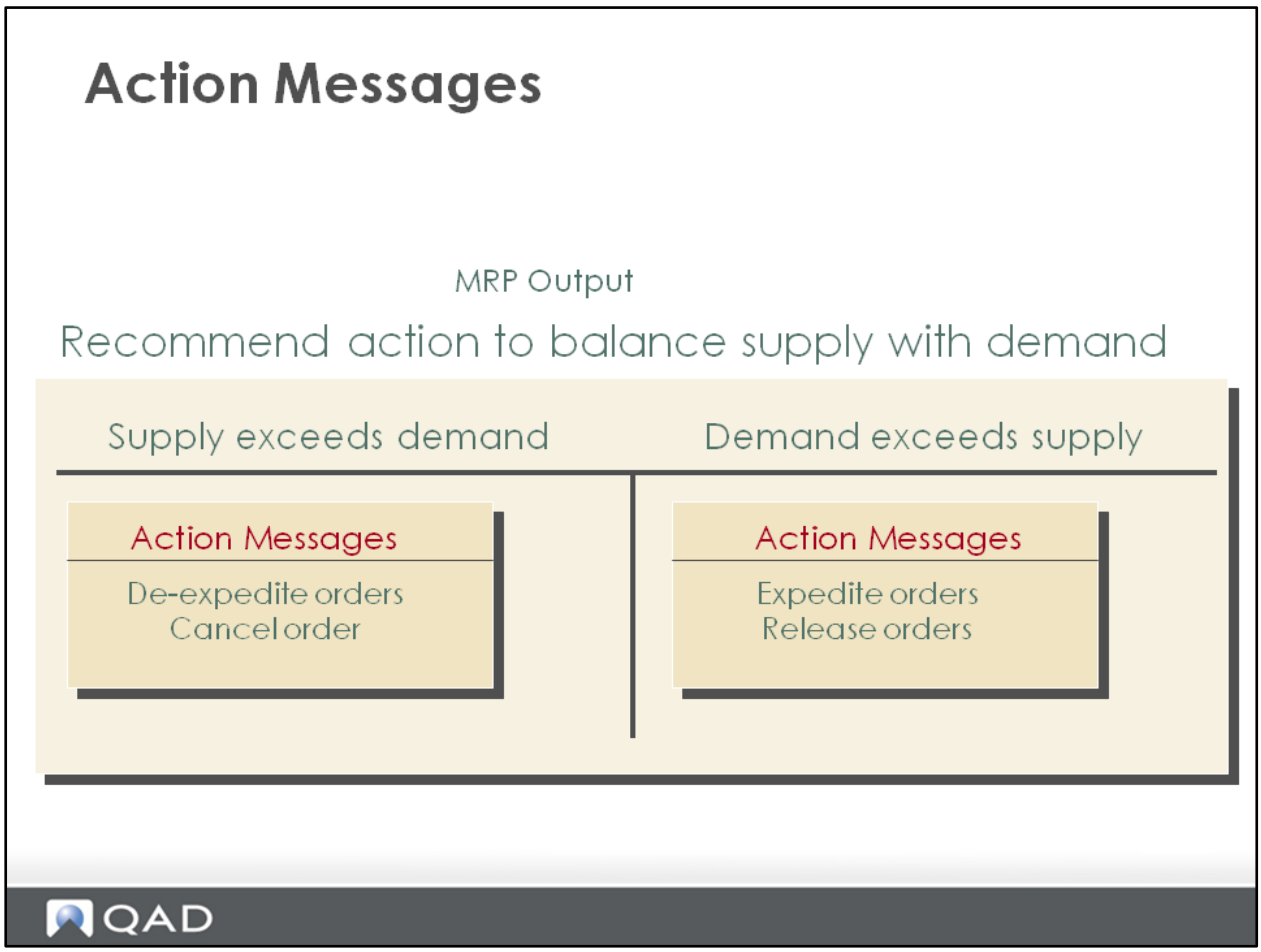
If the parameter for order policy is not blank, and Plan Orders is set to Yes in Item Master Maintenance, MRP creates planned orders to satisfy net requirements. The system creates either planned work orders or planned purchase orders, based on the Pur/Mfg code. Internally, both planned work orders and planned purchase orders are stored as work orders with the status Planned. The primary difference between them is that orders for purchased items are created without work order bills.

Planned Order Approval

The process of approving planned work orders changes the status of work orders from Planned to Firm Planned. While each successive MRP run can modify or delete planned orders, firm planned orders have due dates and quantities that are fixed with respect to the MRP planning process. The due dates and quantities for firm planned orders can be changed manually in Work Order Maintenance.

The process of approving planned purchase orders deletes the planned purchase orders and creates purchase requisitions. Purchase requisitions can be reviewed by buyers or purchasing agents, and filled by purchase orders. Once the purchase order is released, it creates a supply for the item at that site.

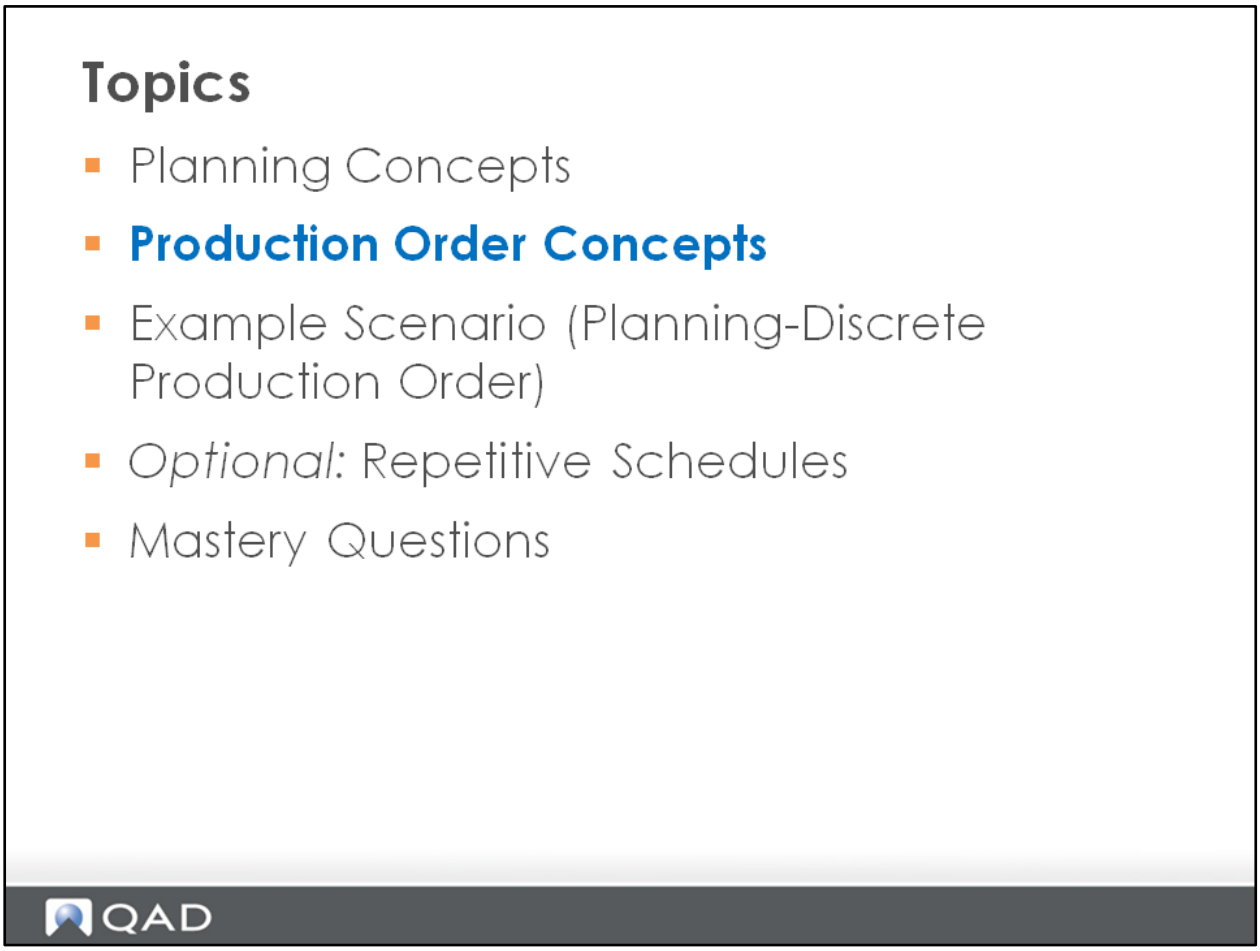
Action Messages



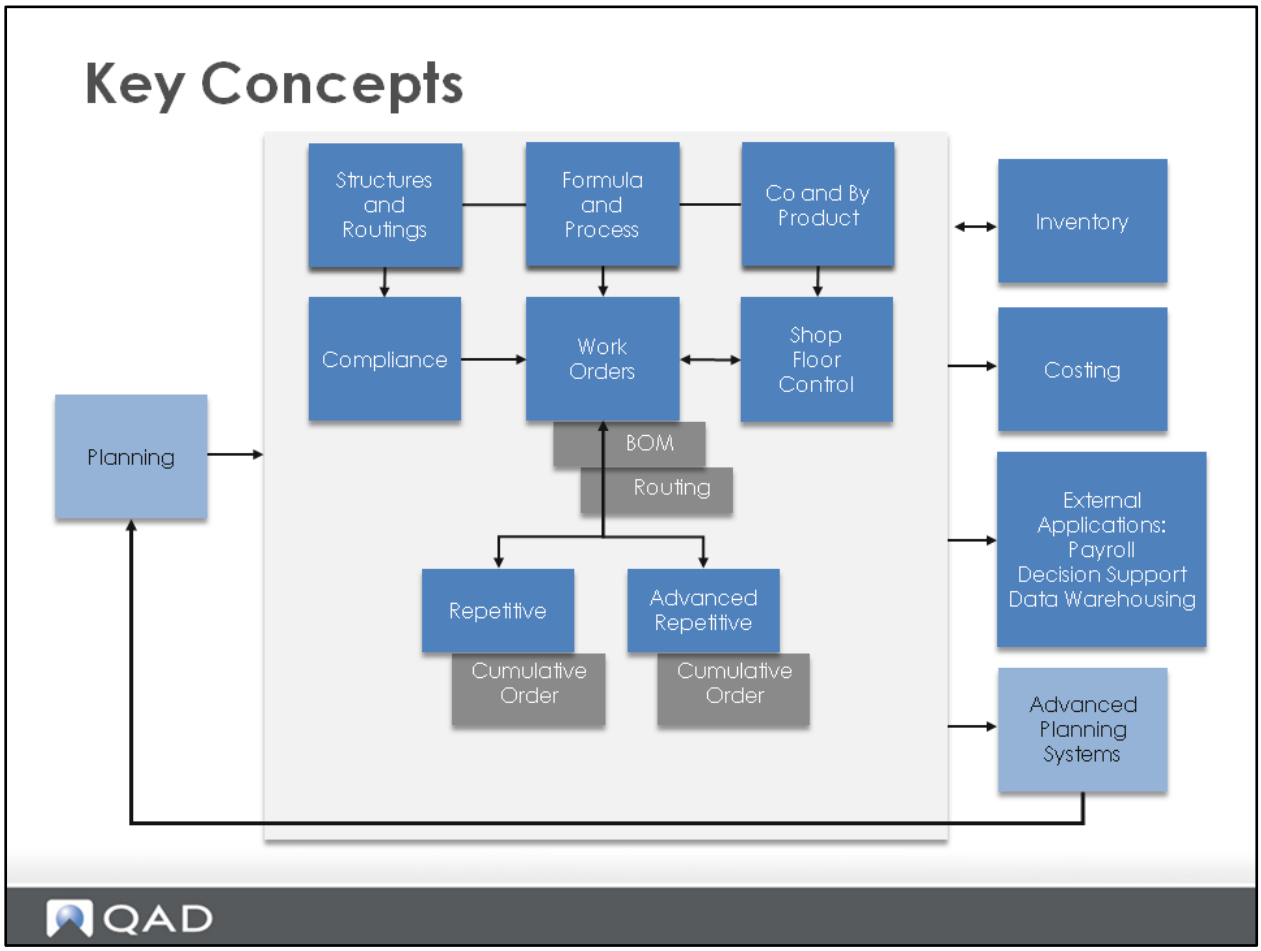
To project inventory balances and calculates net requirements, MRP reschedules purchase orders, work orders, and repetitive schedules, and plans all activity based on the revised schedule. After calculation, MRP also generates action messages to alert planners to actions to take to execute the plan such as rescheduling, canceling, and releasing orders.

Usually, the first thing that the planner does after running MRP is to look at the action messages. You can review action messages online and then delete them when the required action is taken. You can also print action messages, along with the detailed plan.

Topics


Topics
Planning Concepts
Production Order Concepts
Example Scenario (Planning-Discrete Production Order)
Optional: Repetitive Schedules
Mastery Questions
QAD

Key Concepts



Manufacturing Overview

QAD EE manufacturing modules handle internal supply and demand. Material is moved out of inventory into production, processed, or assembled; and returned to an inventory location. At the center of much of this activity is the Work Orders module, as shown in the slide. In the process of using work orders, you:

- Define bills of material and product structures in the Product Structures module.
- Define routings and operations in the Routings/Work Centers module.
- Create planned orders to fill demand with Material Requirements Planning.
- Monitor and report on the progress of work orders in the Shop Floor Control module.

Manufacturing Environments

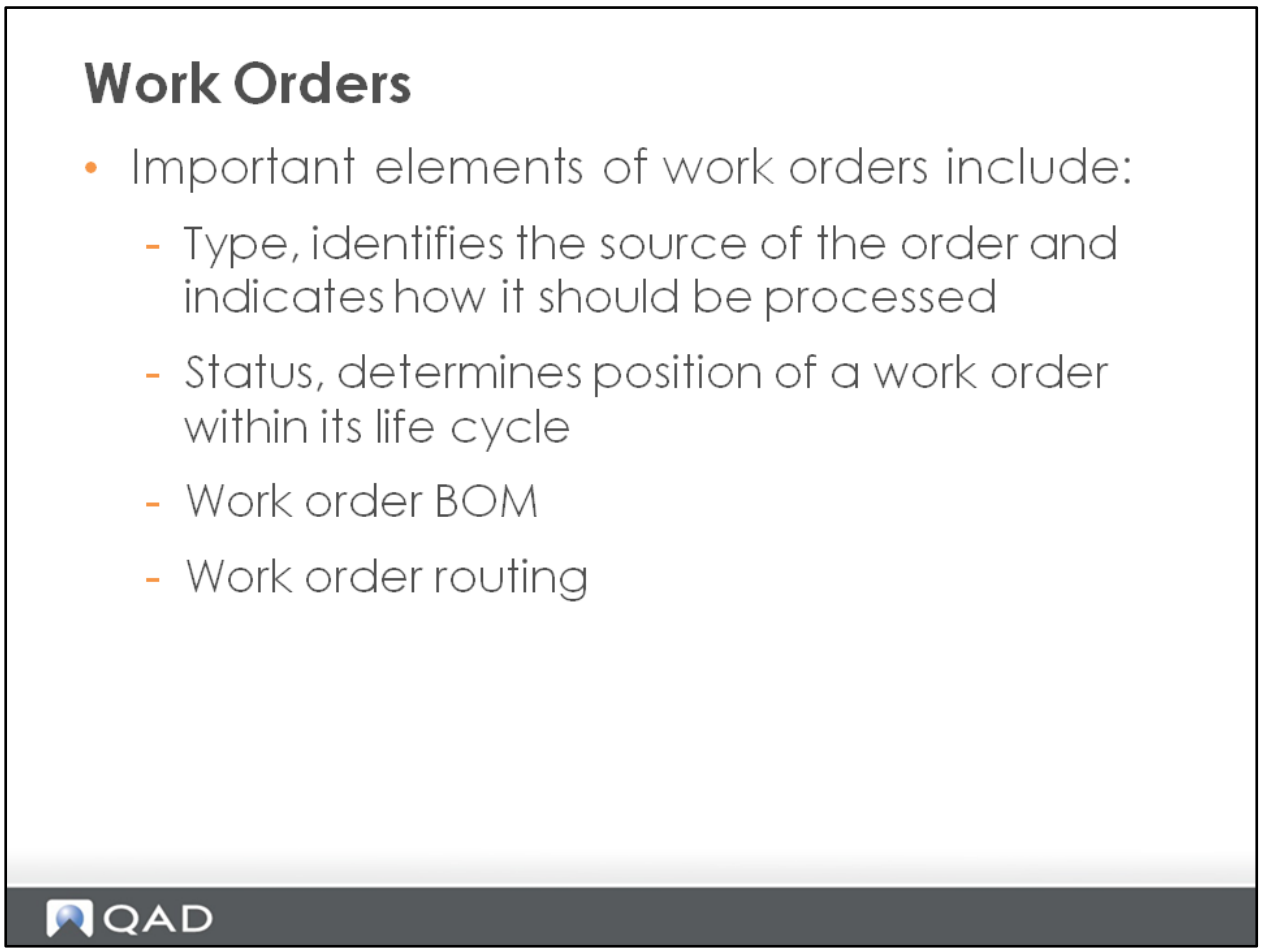
QAD EE provides features that support different manufacturing environments.

The Work Orders and Shop Floor Control modules are typically used to manage job shop type manufacturing and low-to-intermediate-volume mixed product manufacturing. The Advanced Repetitive or Repetitive modules manage manufacturing in an assembly line or in a process flow environment.

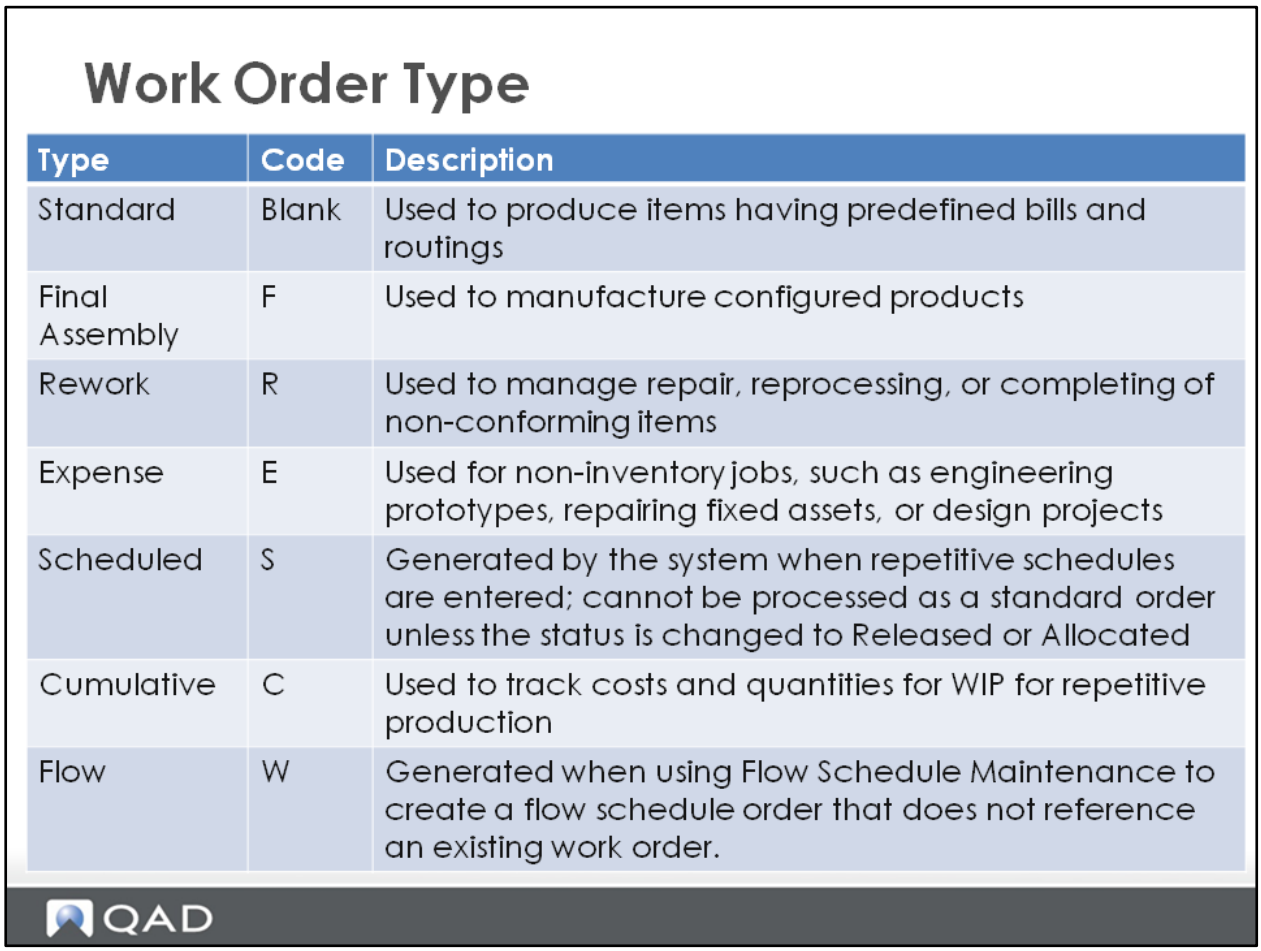
Formula and process routings and structures are used to support formula- or recipe-based processes. These routings and structures can also use co-product and by-product structures to facilitate disassembly processes or for processes that create a main product and related products. The Lean Manufacturing module provides support for Kanban and Flow manufacturing. These advanced functions are covered in detail in their own training materials and are not covered in this course.

This class focuses on discrete work orders and advanced repetitive. Understanding the concepts behind work orders is critical to understanding the other manufacturing processes.

Work Orders


Work Orders
• Important elements of work orders include:
- Type, identifies the source of the order and indicates how it should be processed
- Status, determines position of a work order within its life cycle
- Work order BOM
- Work order routing
QAD

Work Order Type

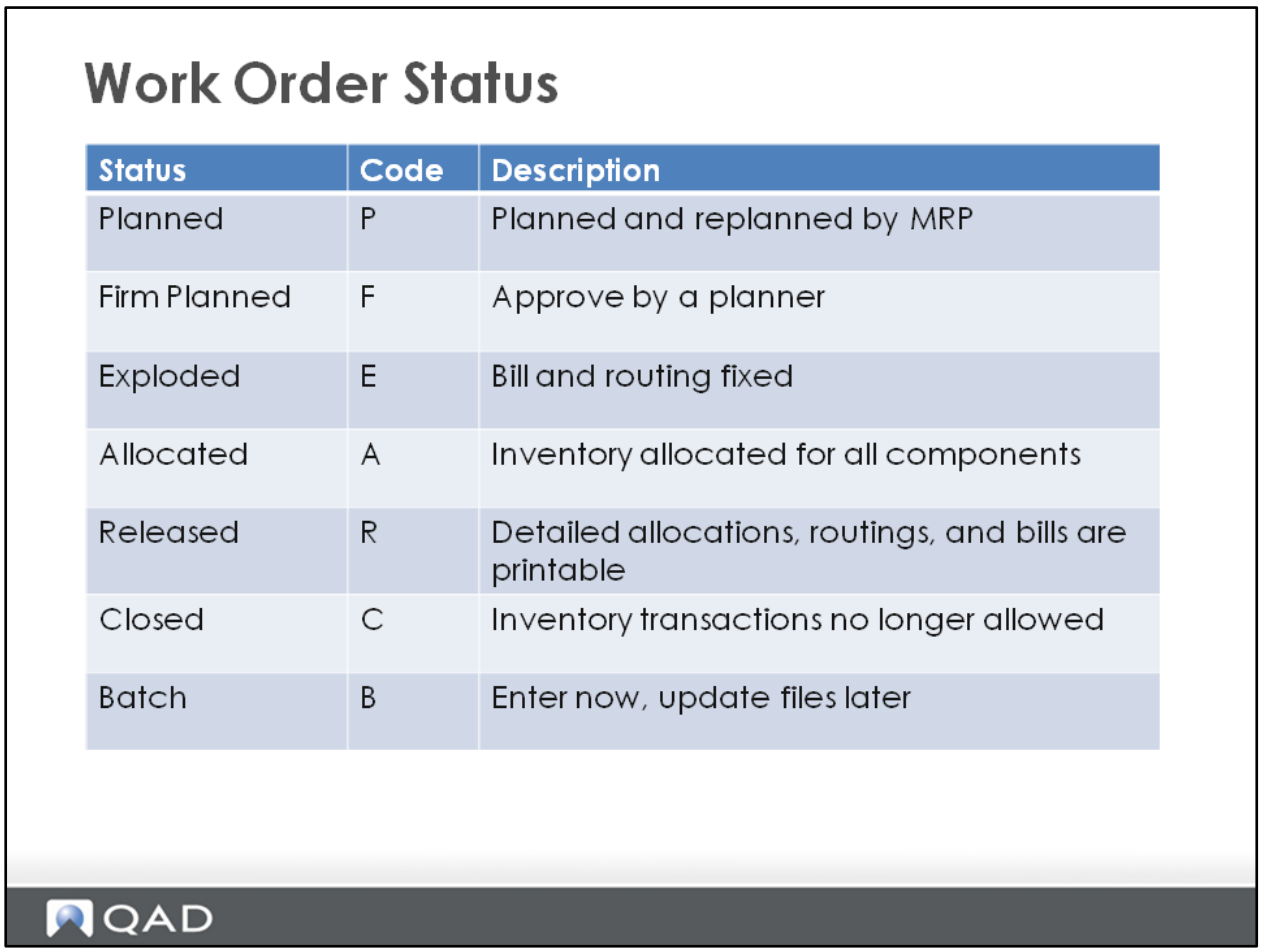


The work order type indicates how the work order moves through production and how it affects other modules, especially the financial modules.

Most work orders are entered with a blank type. These represent normal manufacturing orders with a standard product structure and routing. The other types indicate special kinds of work orders. All work order types are similar in terms of planning, inventory, and accounting. However, work order types can differ in their default bills, routings, and status codes.

Note: The combination of the work order number and the work order ID number uniquely identifies each work order. For scheduled orders, the work order number is typically the number of the item being scheduled, and the work order ID becomes the unique identifier.

Work Order Status



Work order status codes correspond to stages in a work order's life cycle.

- MRP usually creates a standard work order. MRP treats the work order as a source of supply. At this point, the order status is Planned.
- When someone reviews the MRP output and confirms the order, it is Firm Planned. Any work order created manually has, by default, a status of Firm Planned.
- The supply that the work order creates also generates demand for component items; when that demand is calculated, the work order status is Exploded.
- At this point, the demand that the order represents has not affected inventory; when inventory is set aside for the order, the status is Allocated.
- When work is ready to begin, the work order status is set to Released.
- When work is finished, the status is set to Closed.

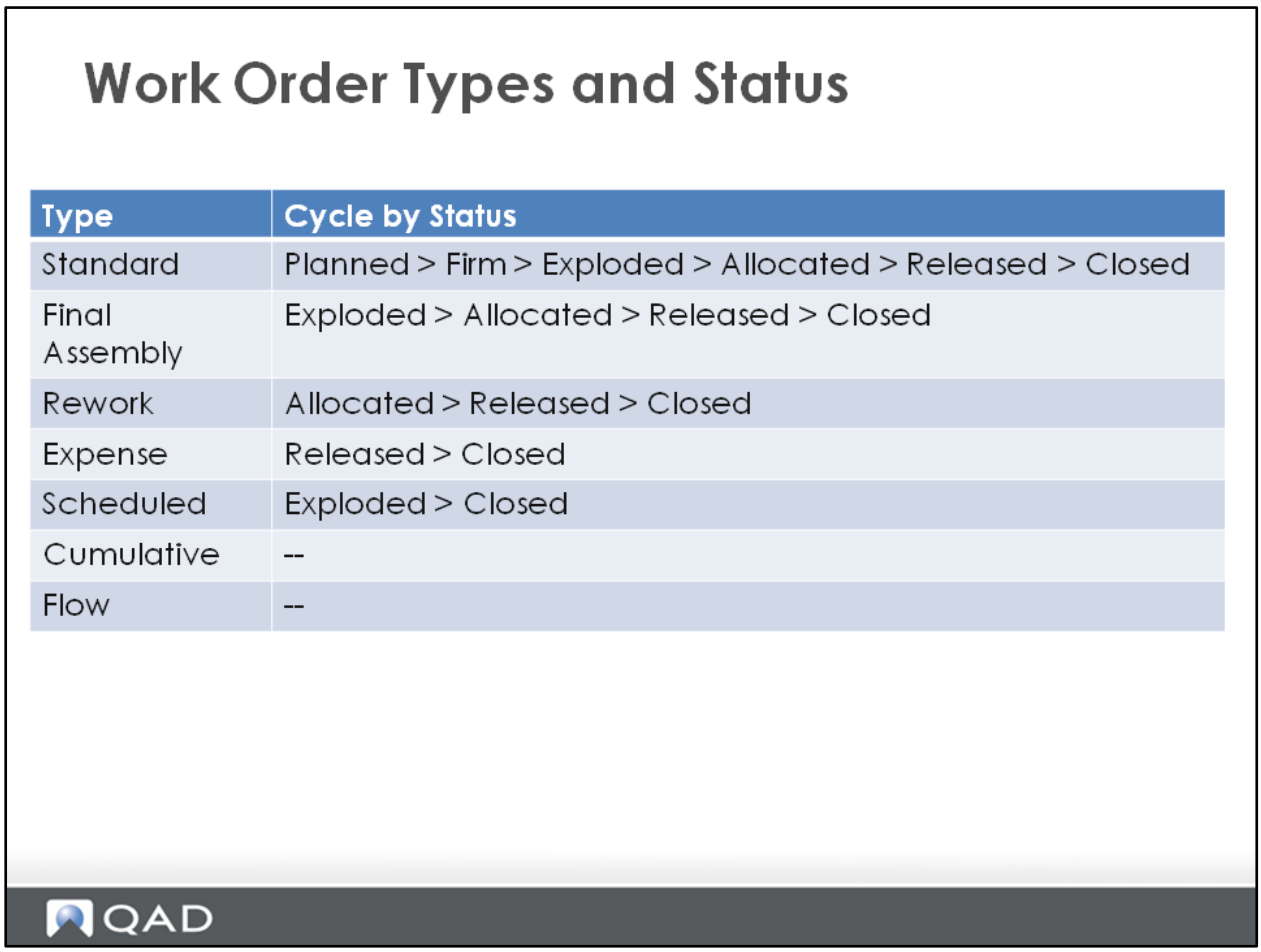
The status of a work order determines how much control you have over its bill, routing, inventory allocations, inventory transactions, and labor feedback.

- You cannot changes orders with a status of Planned. MRP manages these orders.
- For orders with a status of Firm Planned, you can change the dates and quantities as needed, and specify an approved alternate bill or routing.
- For orders with a status of Exploded, Allocated, or Released; bills and routings can be modified or alternate ones specified.

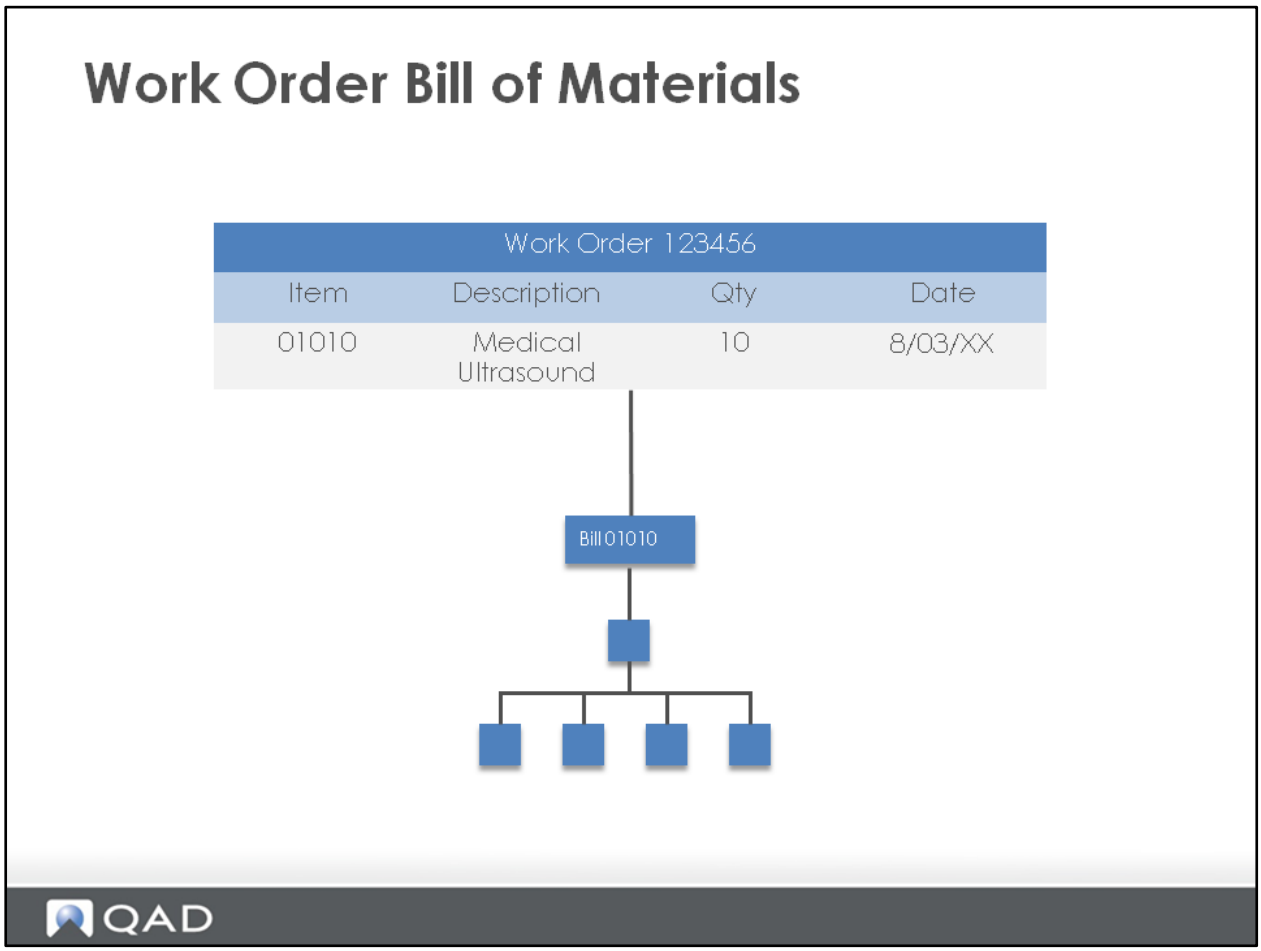
A work order progresses from one status code to the next and, unless prematurely released, does not return to an earlier status. Most orders progress from the status Firm Planned to the status Released in one step using the function Work Order Release/Print.

Note: A work order is manually exploded in special cases to capture the current bill of material before an impending engineering change. Manually allocating a work order is often done to consume the last of a component item that is being phased out. In this case, the inventory of the component would be allocated for that specific order.

Work Order Types and Status



Work Order Bill of Materials

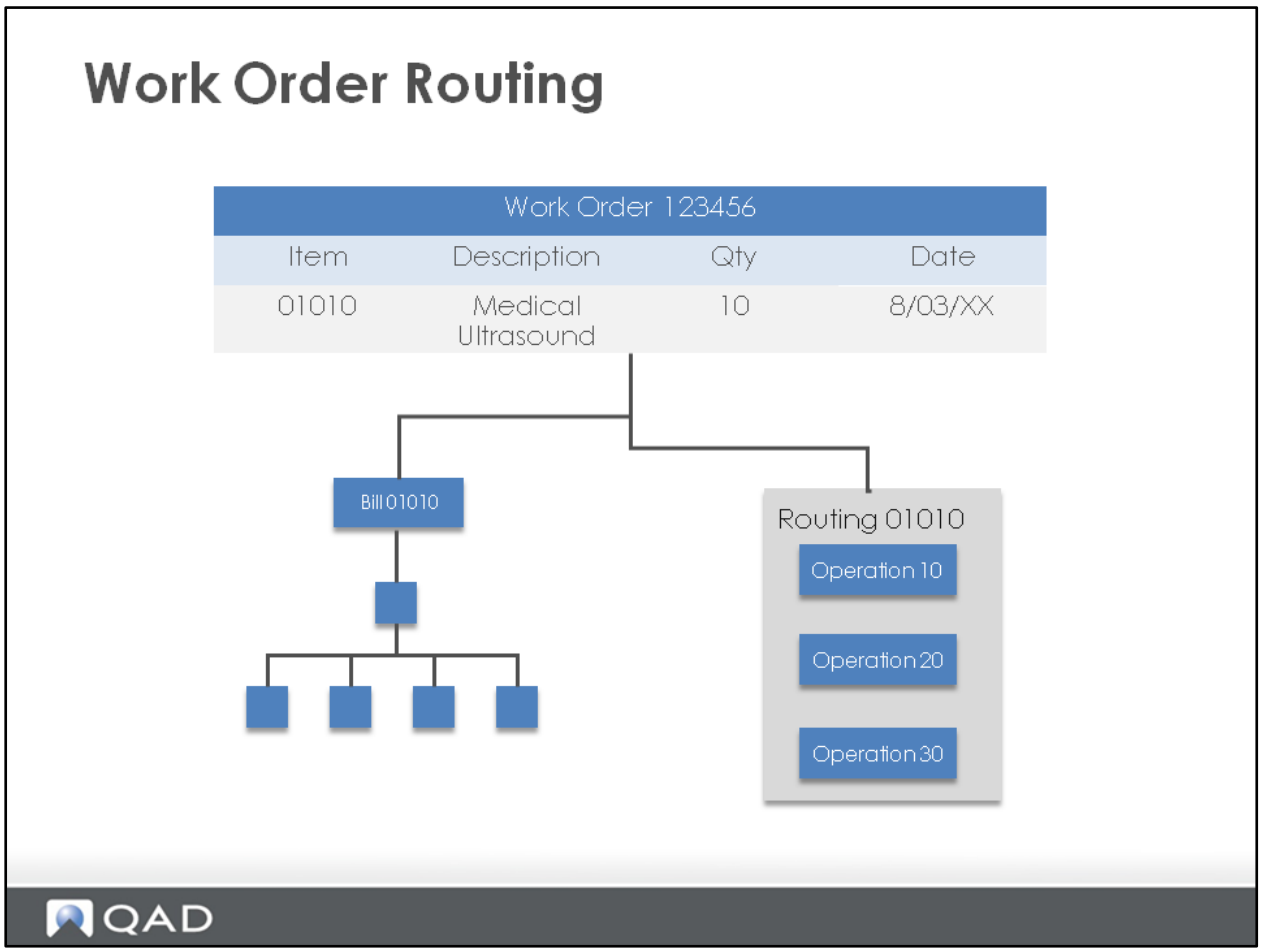


The work order bill of material (BOM) is derived from the item's product structure, defined in Product Structure Maintenance (or Formula Maintenance), and from the quantity ordered. Inventory allocations and issues are based on the bill. MRP uses the bill of materials to calculate component demand.

When a work order is created, the product structure for the item is copied into it. The product structure with the order quantity of the work order then becomes the work order bill of material and is specific to that work order. As work progresses, required changes can be made to this copy using Work Order Bill Maintenance. This way, you can compare the changes that occur to the standard. When many substitute items are available for assembly, this feature supports what is often called "as built" documentation.

Once the work order bill of material is created, changes to the product structure do not affect the bill.

Work Order Routing



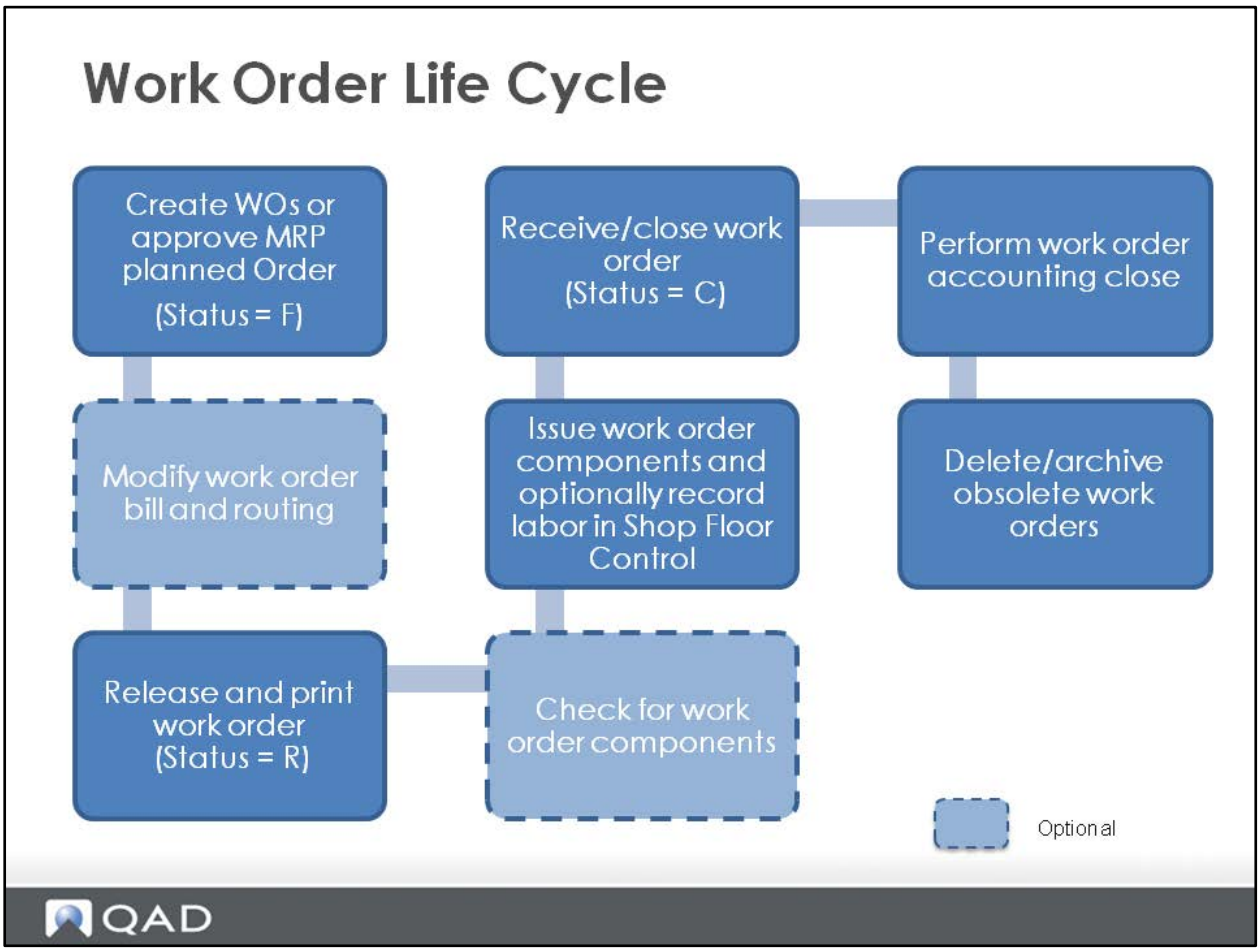
Work order routings specify the operations, or steps, required to manufacture an item. Routing codes identify work order routings. You set up routings and operations using the Routings/Work Centers module. Routings are automatically linked if the item number and routing number are the same. Or, you can manually link them in Item Master Maintenance or Item Planning Maintenance.

When a work order is created, the standard routing is copied into it. As work progresses, required changes can be made to this copy using Work Order Routing Maintenance. This way, the changes and operations that actually occur can be compared to the standard. You can monitor work order operations using the Shop Floor Control module.

Once the work order routing is created, changes to the item routing do not affect the work order.

Together the work order bill and routing let you capture “as built” documentation and otherwise record the changes and operations that actually occur, as opposed to what was planned. This capability does not prevent manufacturing variances, but it does explain them.

Work Order Life Cycle



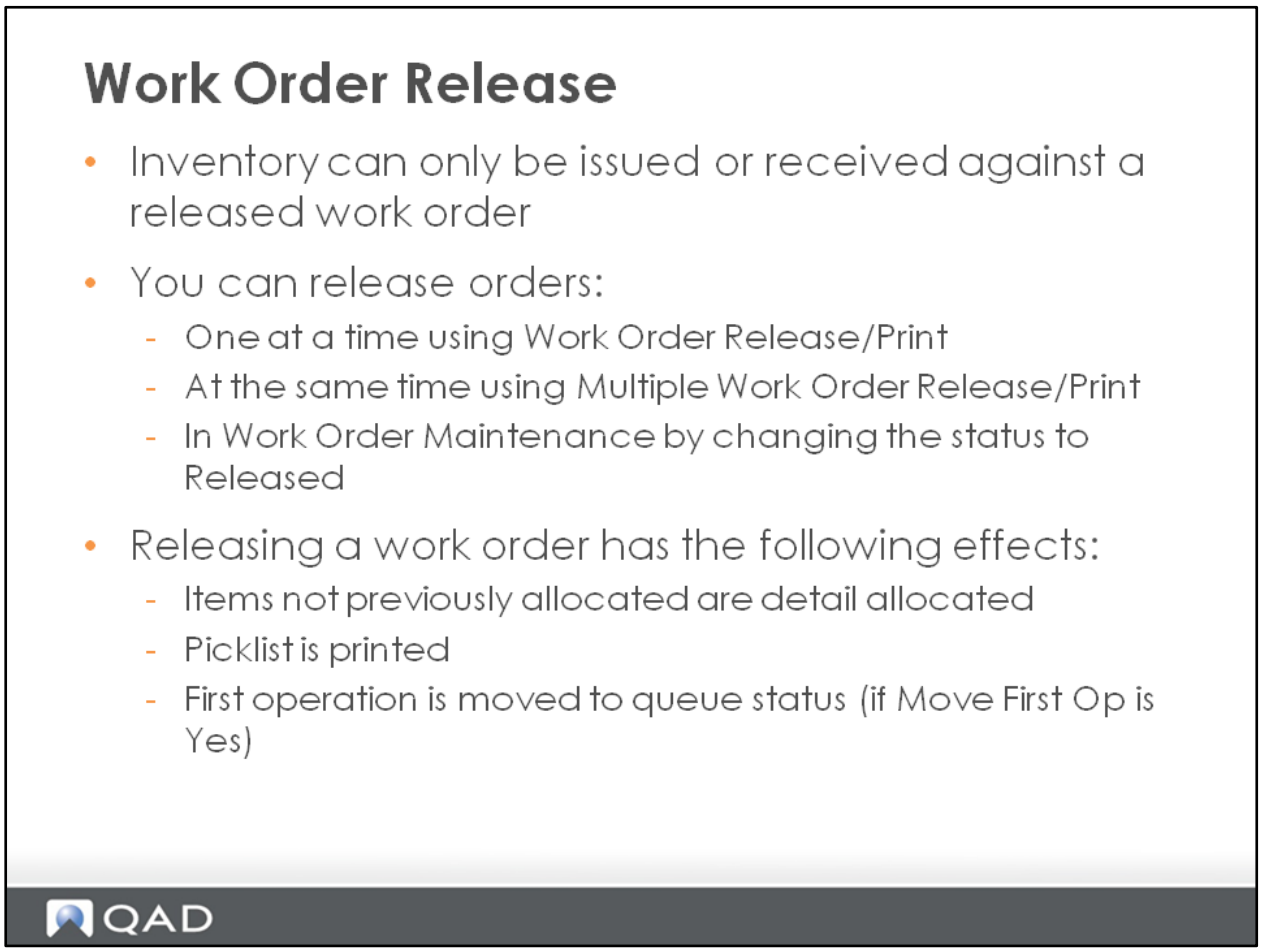
Work orders are created manually (using Work Order Maintenance) or generated from MRP, repetitive, schedules, or configured sales orders. Work orders are also generated when another work order is split, or when one is released that requires a routable component.

In a standard sequence, as shown on this slide, after a work order is created, it is released. Then, the materials are issued and received, the work order is closed, and the items are shipped.

On the next few pages, the following stages in the work order life cycle are examined in detail:

- Release
- Issue of components
- Shop floor control
- Receipt
- Close

Work Order Release



Creating Picklists

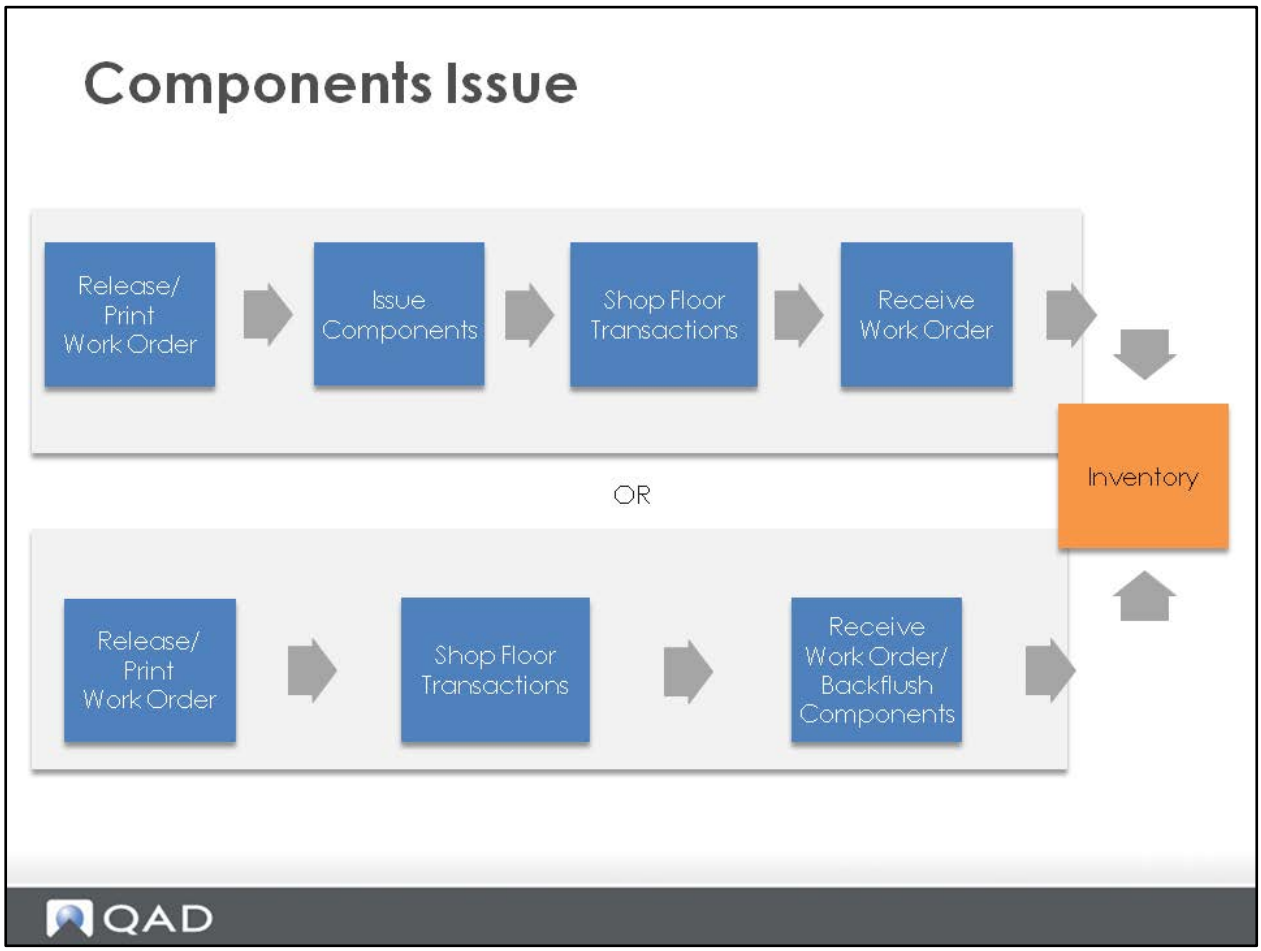
After you release a work order, you can print its picklist. The picklist lists the component requirements and the sites, locations, lot/serial numbers, and reference numbers for the items to issue. The system creates detailed allocations when an order is released, regardless of whether you print a picklist. Detailed allocations reserve specific quantities in inventory for a work order.

Printing the Routing Sheet

At the time of release, you can also print the routing for the work order. The routing is the detailed list of operations and work centers through which the work order must be processed. The combination of the work order, the picklist, and the routing sheet is often referred to as the shop or job packet.

You can release an order without printing a picklist and routing, but you cannot print a picklist for an order without releasing it.

Components Issue



Work order operations begin when a work order is released and its components are issued. You can issue inventory to a work order in three ways:

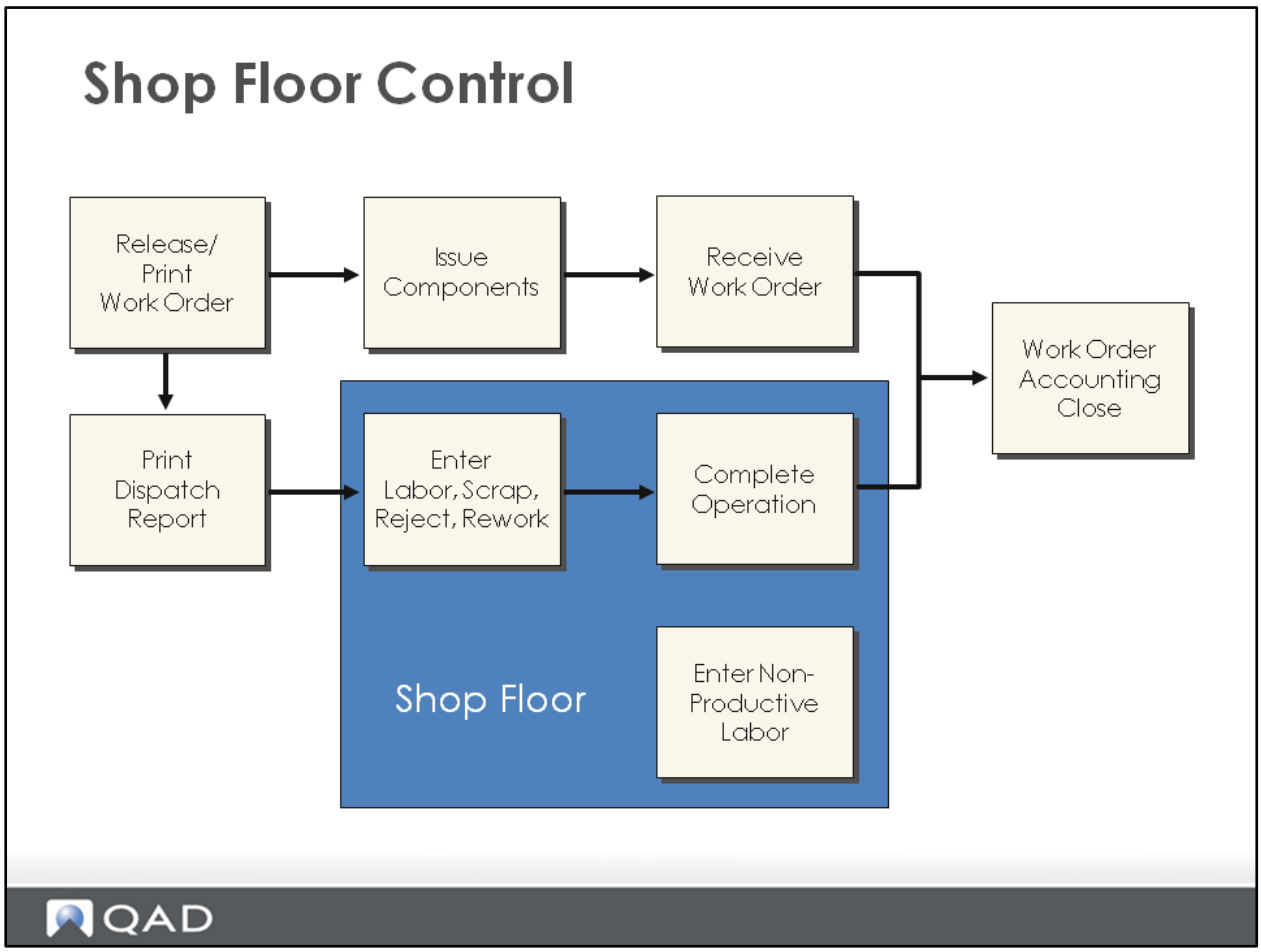
- Directly using Work Order Component Issue, as illustrated in the top row of the graphic
- When completed products are received using Work Order Receipt Backflush, as illustrated in the bottom row
- Issue inventory, report labor, and receive items using Work Order Operation Backflush, as illustrated in the bottom row of the graphic

Inventory transactions occur at different points, depending on the method you use. Component quantity on-hand is reduced at a later time using the backflush method.

Work Order Receipt Backflush combines the functions of Work Order Component Issue and Work Order Receipt. Either method tracks the inventory transactions used to issue components to a work order and excludes floor stock, which is issued using an unplanned issue transaction.

You can monitor work order operations using the Shop Floor Control module.

Shop Floor Control



Once a work order is released, shop floor functions track its progress to record labor and to record material usage and completions. Shop floor requires that at least one employee is set up. The slide shows the relationship between shop floor reporting and the work order process flow.

Operation Status

Labor feedback is done by work order, employee, or work center/machine. In all cases, you must identify a released work order. When labor is recorded, the operation status is updated to either Setup, Run, or Complete. When work moves to the next operation, its status changes to Queue.

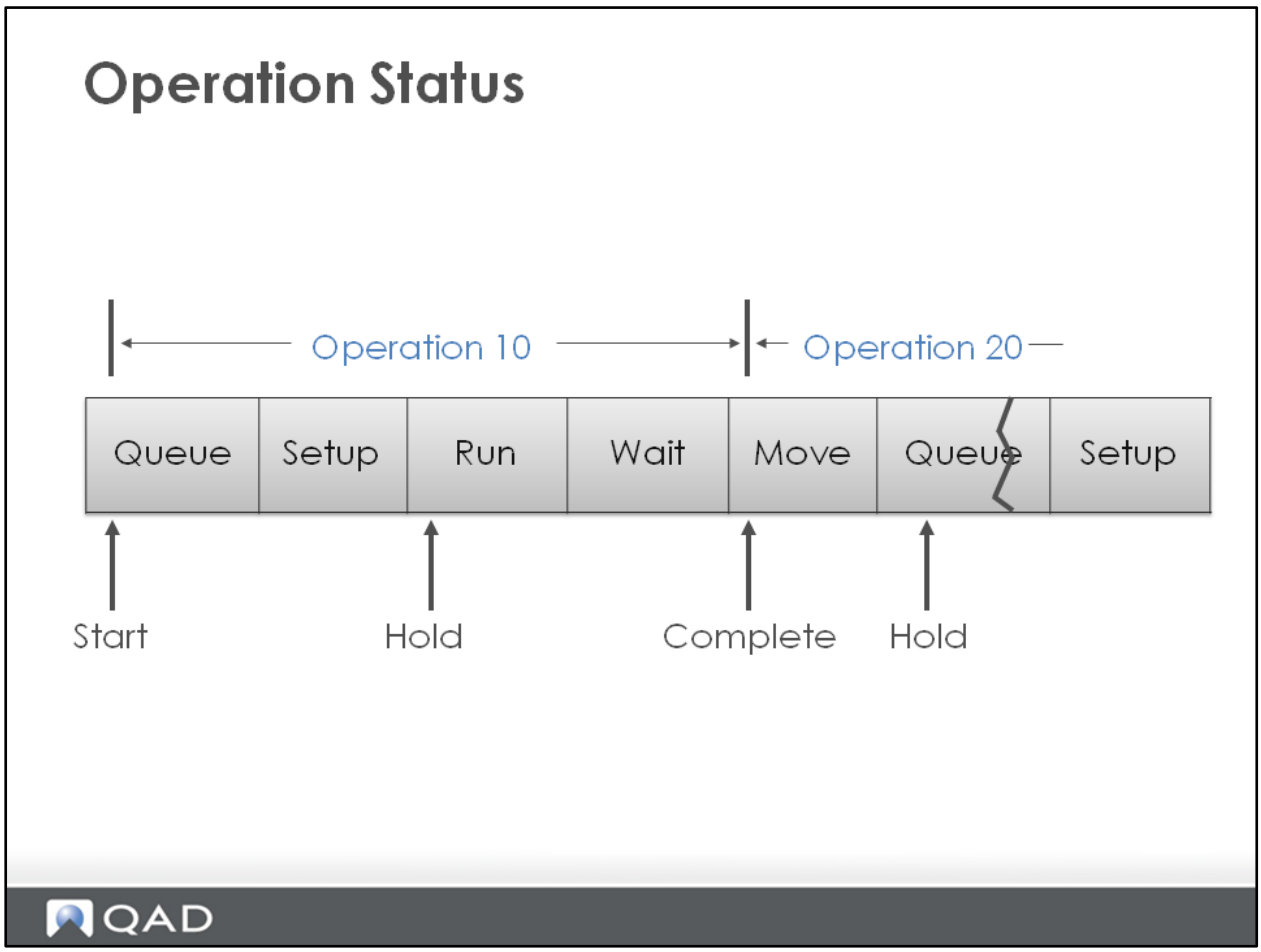
Labor Reporting

If labor is reported only at a few key operations, called milestones, the Operation Complete Transaction can be used to complete the current operation and the operations that have come before it. If no labor was reported against the previous operations, actual labor is set to anticipated labor to make the quantity reported complete. This labor is referred to as earned labor.

Nonproductive Time

To account for all work hours, you can also record nonproductive time. Nonproductive time is time not spent working on a specific manufacturing order such as cleanup time, downtime, meetings, breaks, or time spent waiting for work.

Operation Status

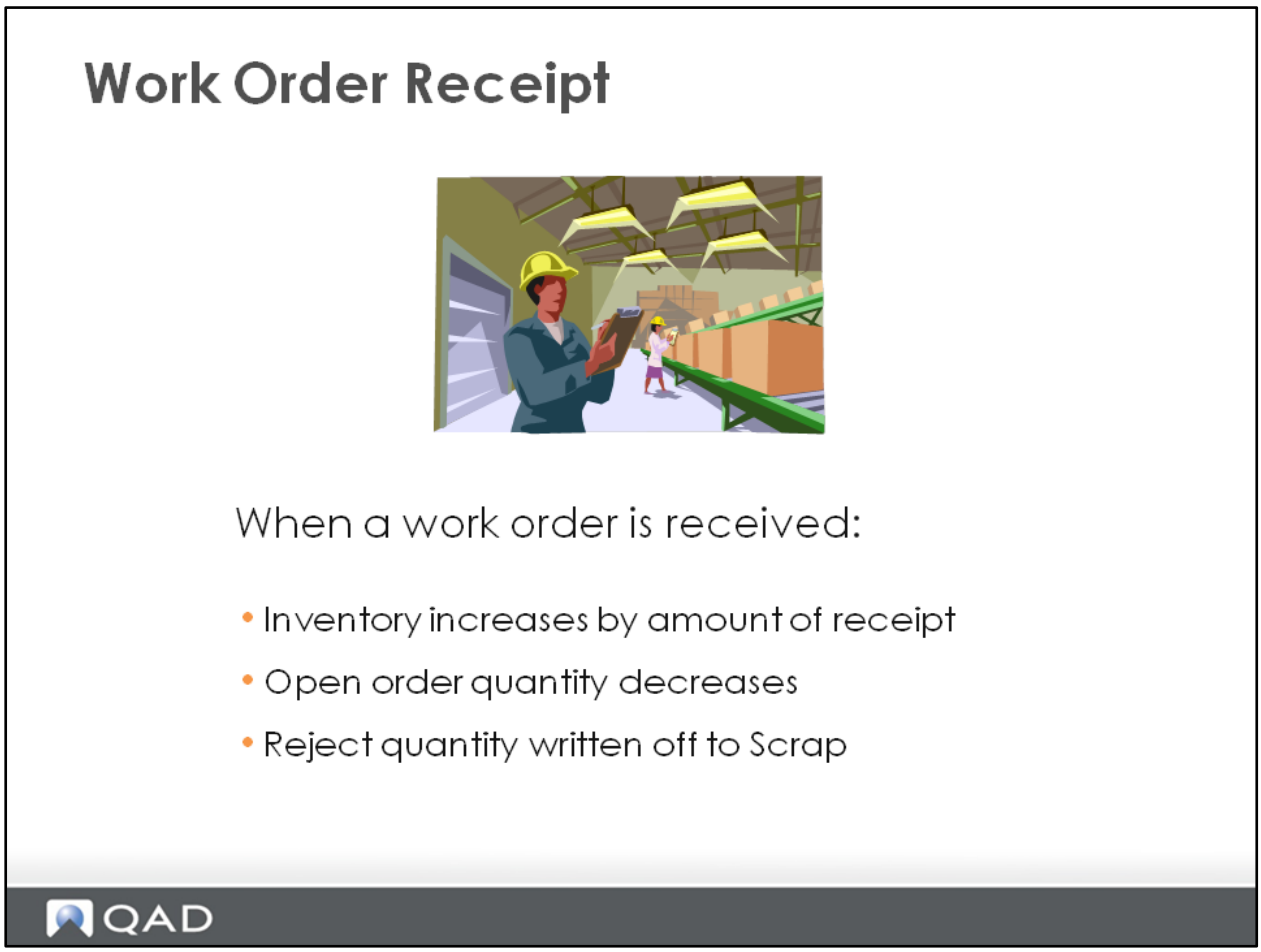


Operation status codes are used to indicate the detailed status of an individual operation. The status codes can be entered manually using Work Order Routing Maintenance or automatically set when the Shop Floor Control labor feedback transactions are used. The system uses the following status codes:

- *Queue [Q]:* If Move Next Operation is Yes in Shop Floor Control, you can set the first operation to Queue automatically upon release of the work order. You can set succeeding operations to Queue automatically when the previous operation is reported as Complete.
- *Setup [S]:* If setup time is reported, the operation status is changed to Setup.
- *Run [R]:* When run time is reported, the operation status is updated to Run.
- *Complete [C]:* The operation status is Complete when all work at that operation is finished.
- *Hold [H]:* An order can be manually placed on hold at any time. An order is manually placed on hold when work is stopped for some reason. Reasons can include running out of material, equipment malfunctions, or because the worker is reassigned to another task.

Not all operations use all lead-time elements, nor do all status codes need to be reported. A short operation can be at status Queue and then reported as Complete, with any setup and or run time reported at time of completion. The wait and move times are not status codes, but elements of lead time. They are referred to as inter-operation times since they have no labor content, but do require that time be scheduled. Examples are paint drying time or transport time between operations in different buildings.

Work Order Receipt

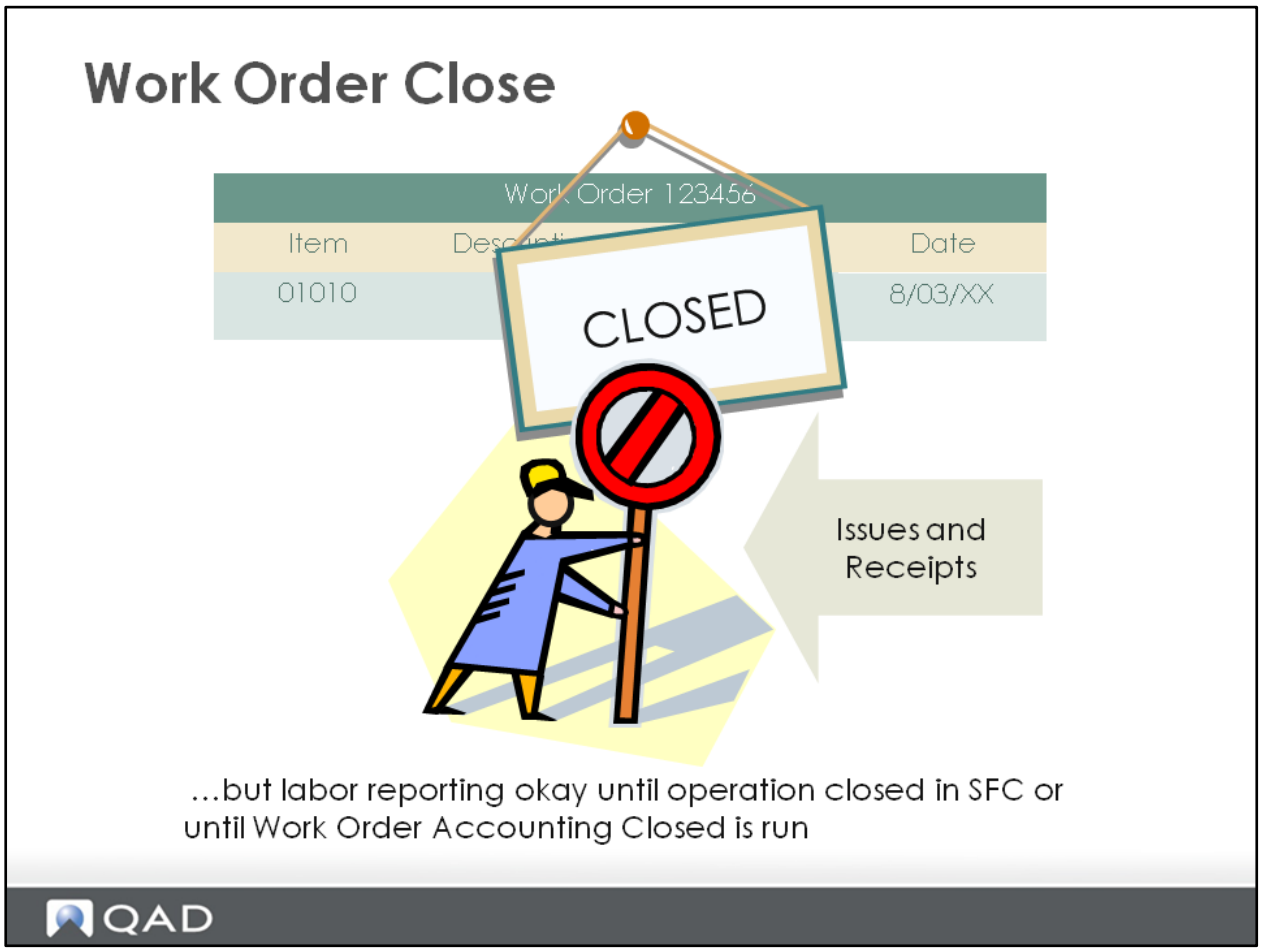


When a work order is completed on the shop floor, the items are typically sent to the stockroom.

- Use Work Order Receipt to receive items, close the order, and backflush components of final assembly work orders.
- If you did not issue items previously, issue them when completed products are received using Work Order Receipt Backflush.
- Use Work Order Operation Backflush to issue items, report labor, and receive completed items at an operation.

If you use the Shop Floor Control module, you can enter labor feedback and test results at receipt, and report individual operations as they are completed. When a work order has been received, it is ready to close.

Work Order Close



Work orders are typically closed when all the items are received. For most purposes, the receipt of all items ends the life cycle. If a partial receipt is made, the work order can remain open to receive the balance of the items at a later time. To close a work order:

- Change the order status to Closed. When completed units are received, you can change the order status to Closed by setting Close to Yes using Work Order Receipt or by using Work Order Maintenance.
- Run Work Order Accounting Close to post variances, clear WIP, and close outstanding operations. Execute this program regularly, at least at the end of each fiscal month, for completed orders.

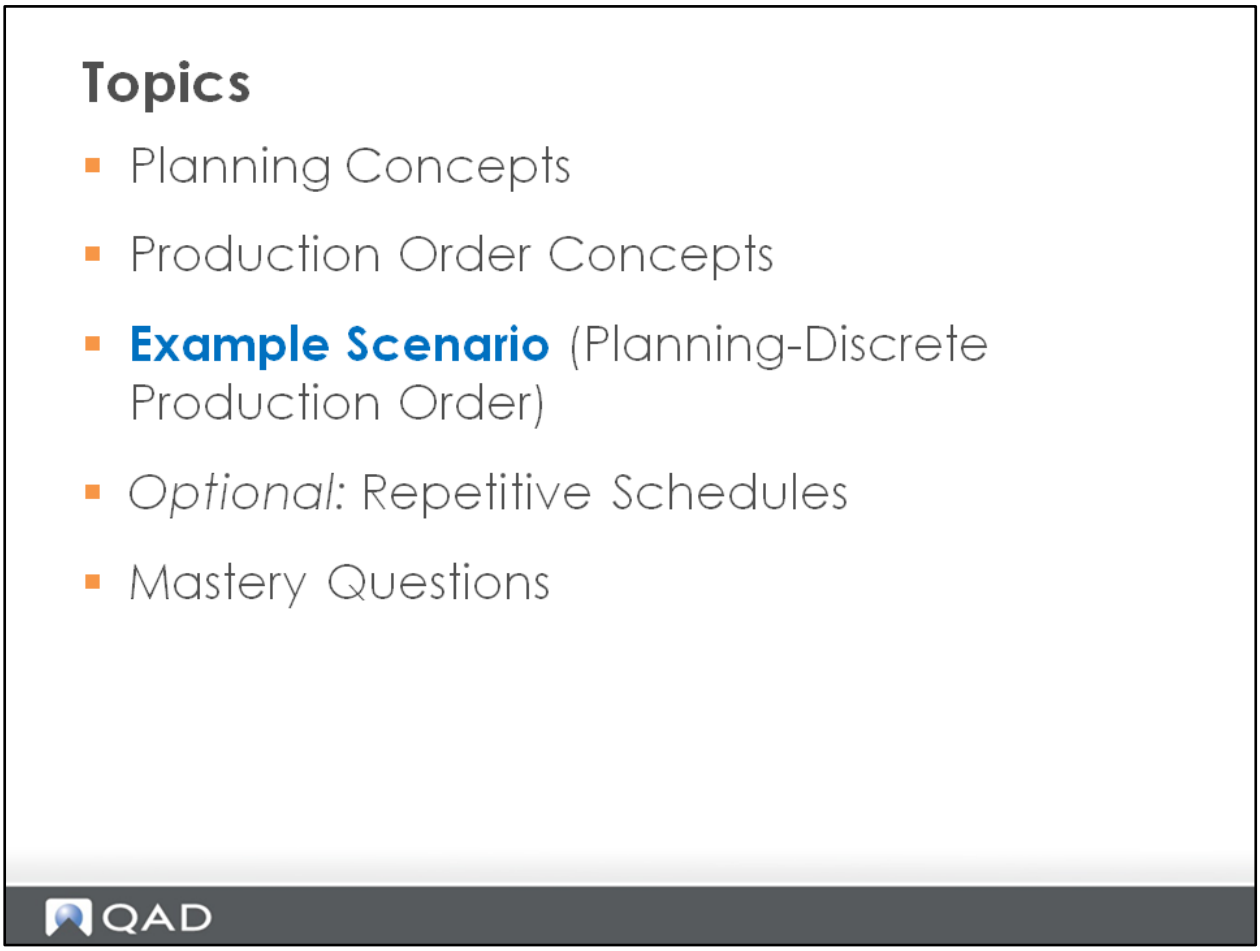
The system prevents component issues and work order receipts for a closed work order. However, additional labor can be reported until either the operations are closed in Shop Floor Control, or until Work Order Accounting Close is executed. To process inventory for a closed work order, change its status back to Released.

Executing Work Order Accounting Close:

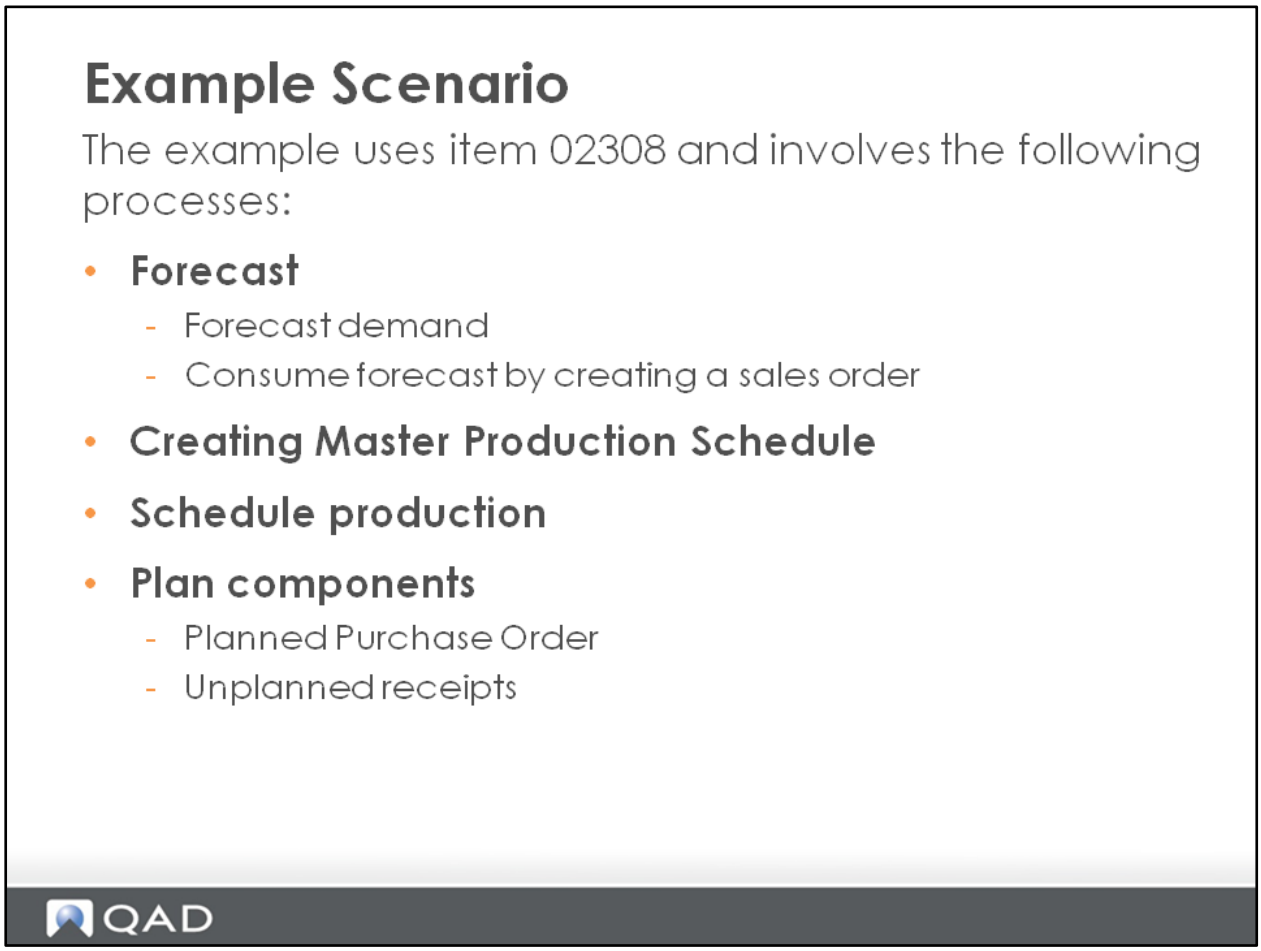
- Completes open work order operations.
- Calculates and posts work order variances for material, labor, burden, and subcontract costs.
- Calculates and posts usage variances when the labor quantity used differs from the standard. For example, if an operation scheduled for five hours took six, a one-hour labor usage variance is posted.
- Calculates and posts rate variances for material and subcontracts when the cost used differs from the standard cost. If pay rates are defined in Actual Pay Rate Maintenance, rate variances are also calculated for labor. For example, when the standard subcontract cost is $10 and the PO cost is $12, the subcontract rate variance is $2.
- Reconciles the WIP account for closed work orders by calculating and posting method change variances for any residual variances. WIP balances cannot be changed after the work order variances are posted.
- Updates current labor and subcontract costs.
- Posts floor stock amounts.

Note: Work Order Accounting Close is normally an accounting or finance function performed at period end close. It is carefully coordinated with other period end accounting processes, and controlled by internal procedures.

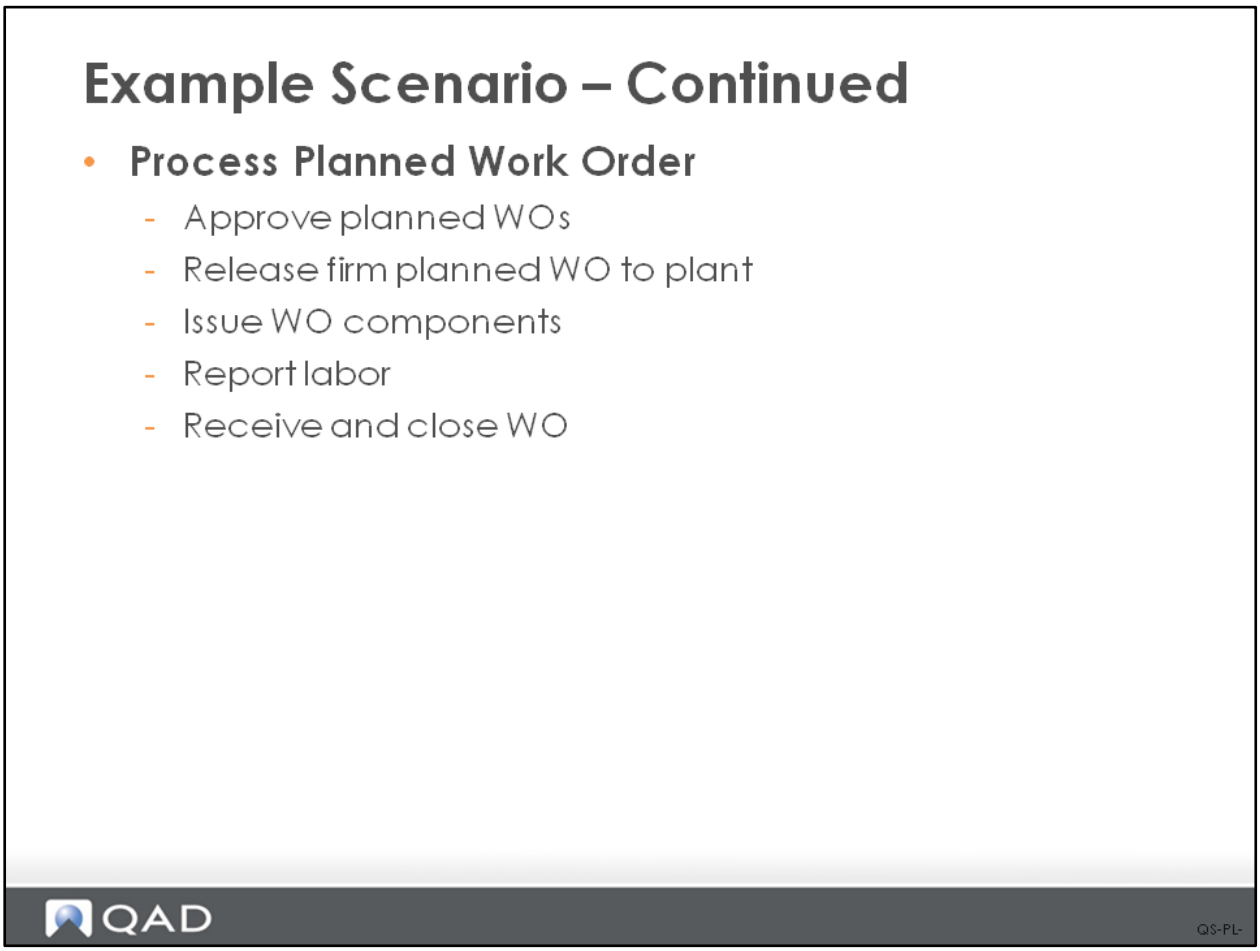
Topics


Topics
Planning Concepts
Production Order Concepts
Example Scenario (Planning-Discrete Production Order)
Optional: Repetitive Schedules
Mastery Questions
QAD

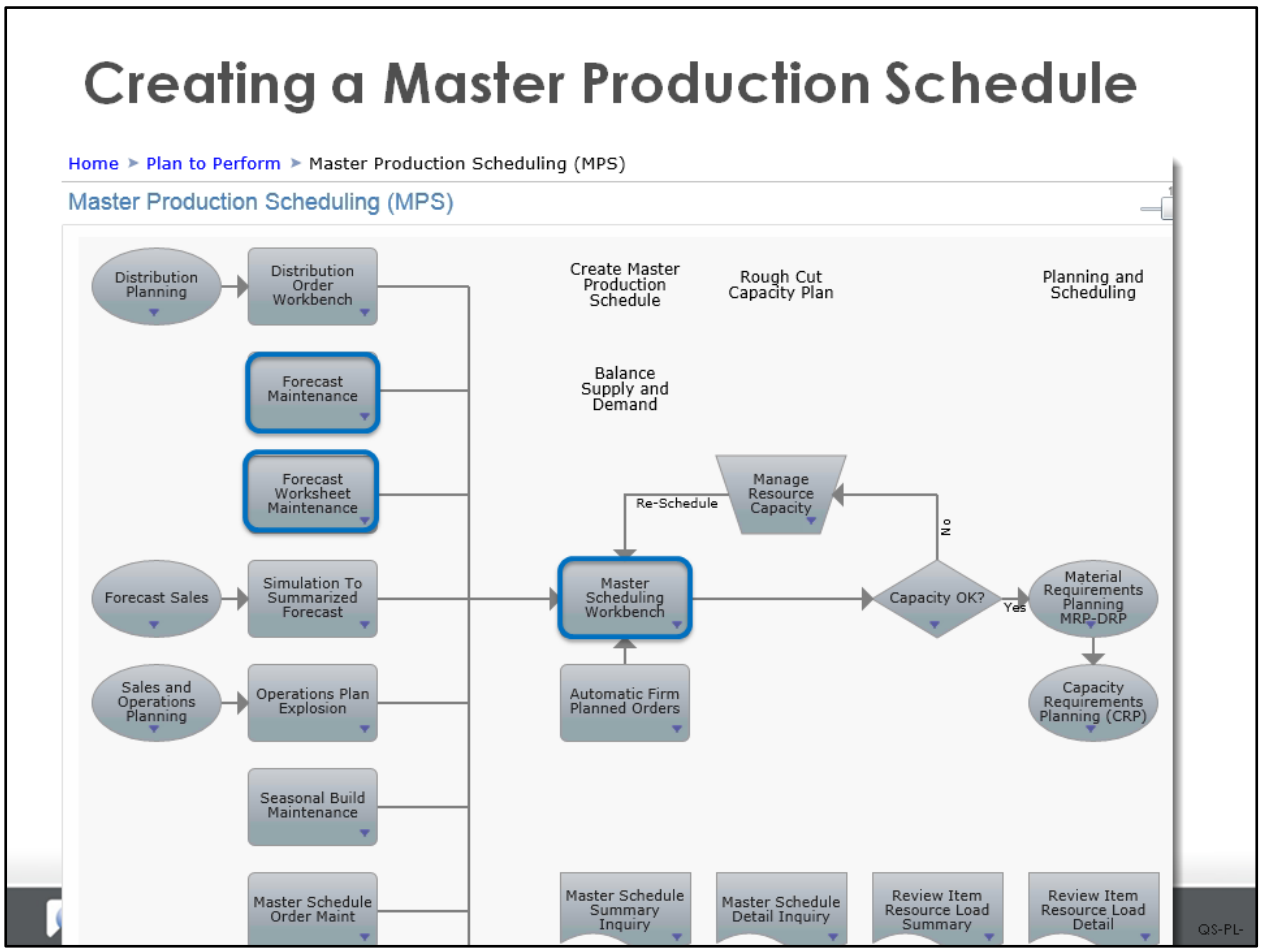
Example Scenario



Example Scenario – Continued



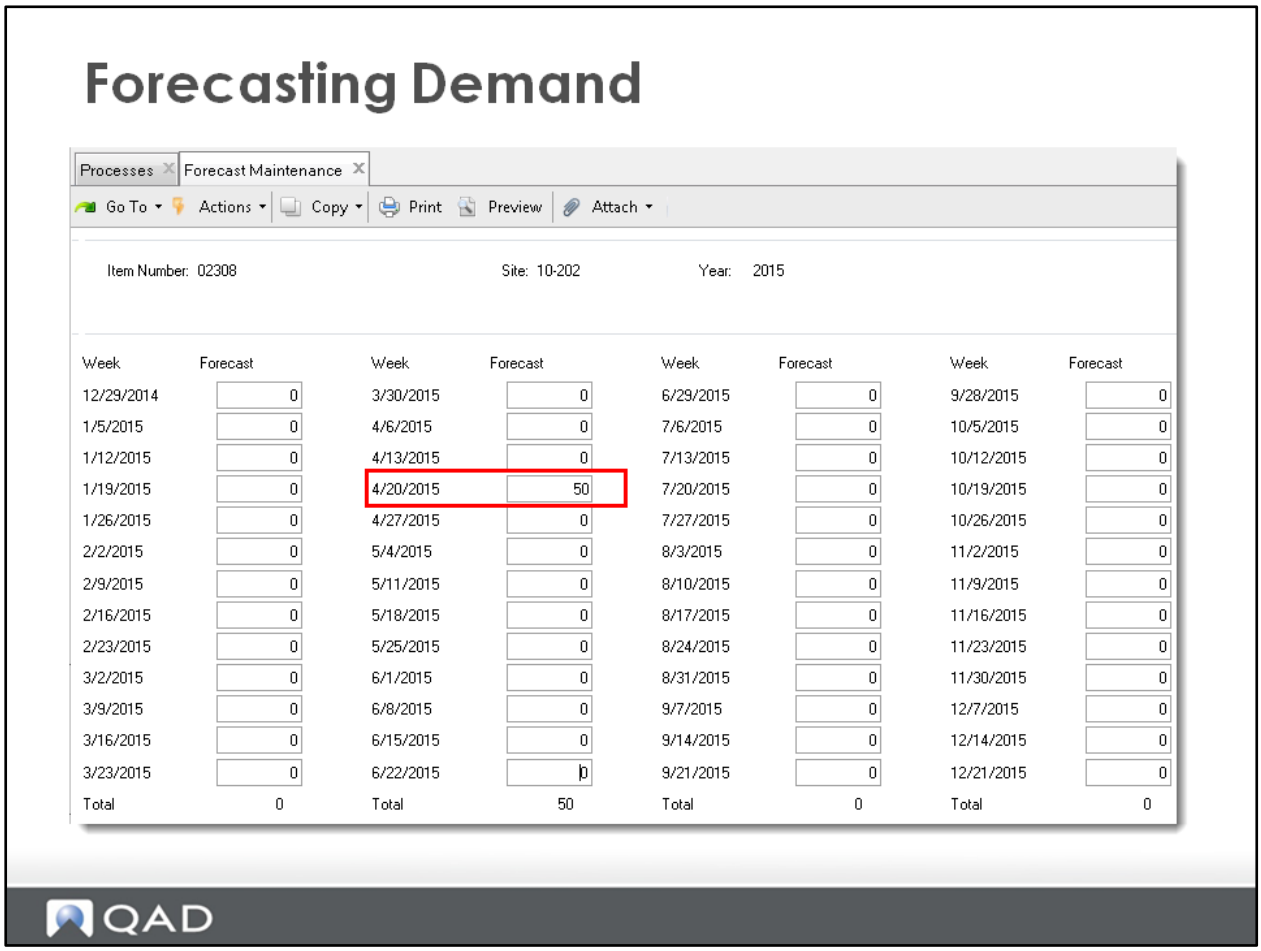
Creating a Master Production Schedule



The following sections describe how:

- To create a master production schedule
- A sales order consumes the forecast
- The forecast and sales orders are reflected in the master production schedule

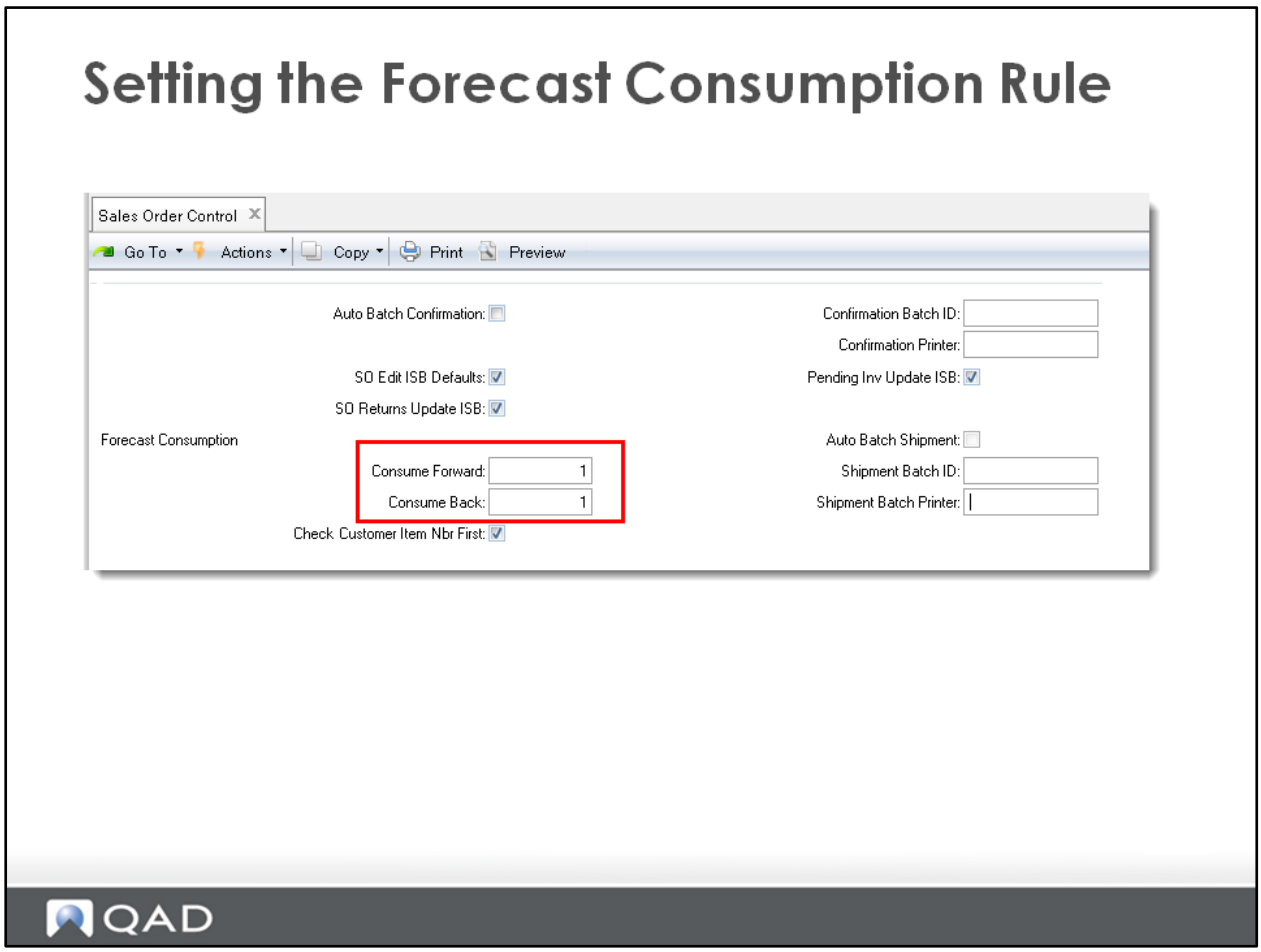
Forecasting Demand



Forecast Maintenance provides 52 weekly buckets, so an entire year's forecast for a given item and site can be entered in one screen. If you are using forecast simulation, this screen can also be populated automatically with data from the forecast simulation calculation.

In this example, 50 units are entered for the week of 4/20/2015.

Setting the Forecast Consumption Rule

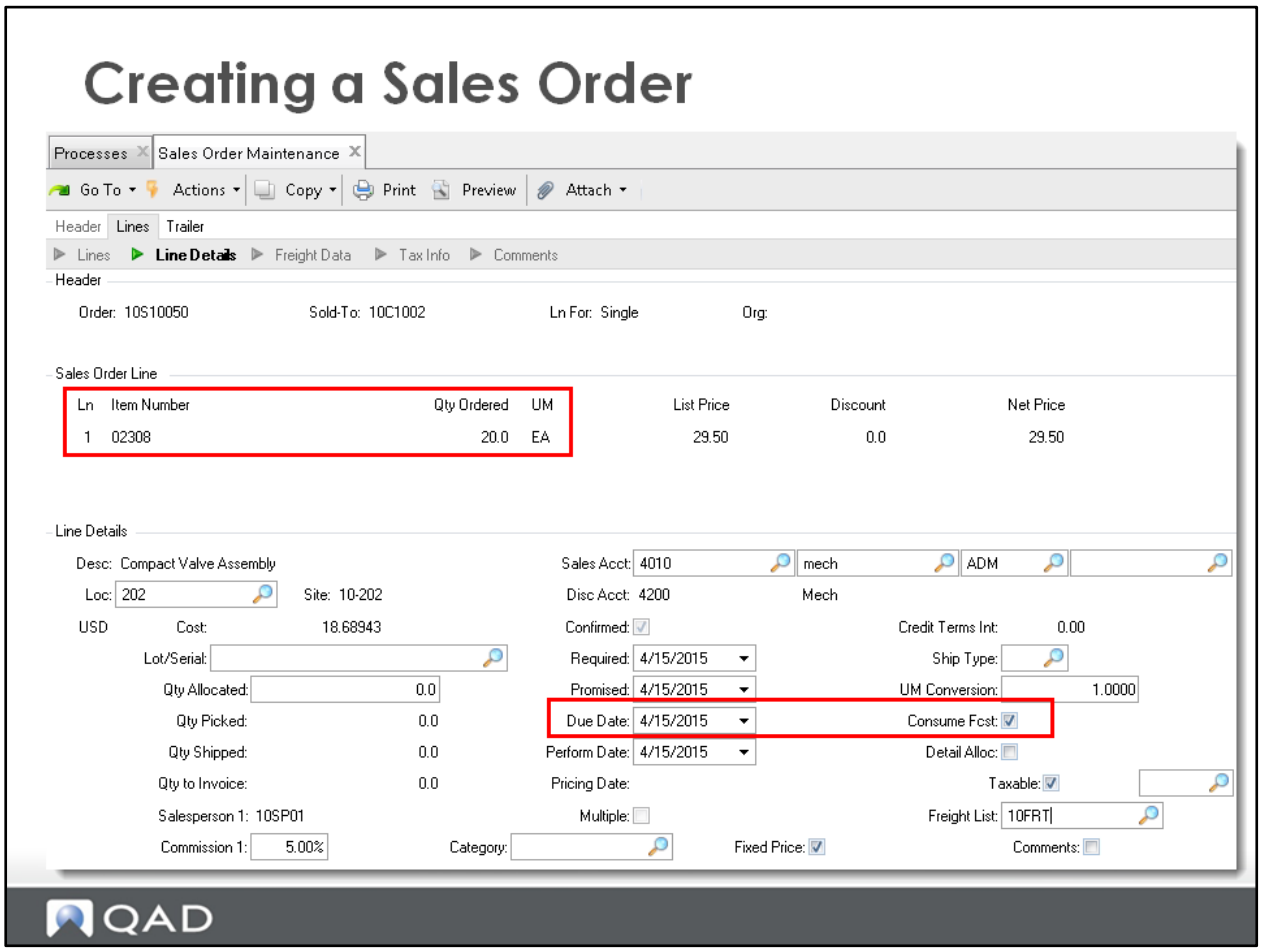


As orders are entered, they consume the forecast in the week they are due. But if there is no unconsumed forecast remaining in that week, the system looks at a specified number of weeks before and/or after the week to check for unconsumed forecast. This process recognizes that there may be unsold forecast in other weeks that could be consumed.

The system consumes the forecast for the specified number of periods, first by going back, then forward, one period from the original forecast period. It then continues to search backwards and forwards until the specified number of previous and future periods have been examined, or the entire sales order quantity has been applied.

Only confirmed sales orders consume the forecast.

Creating a Sales Order

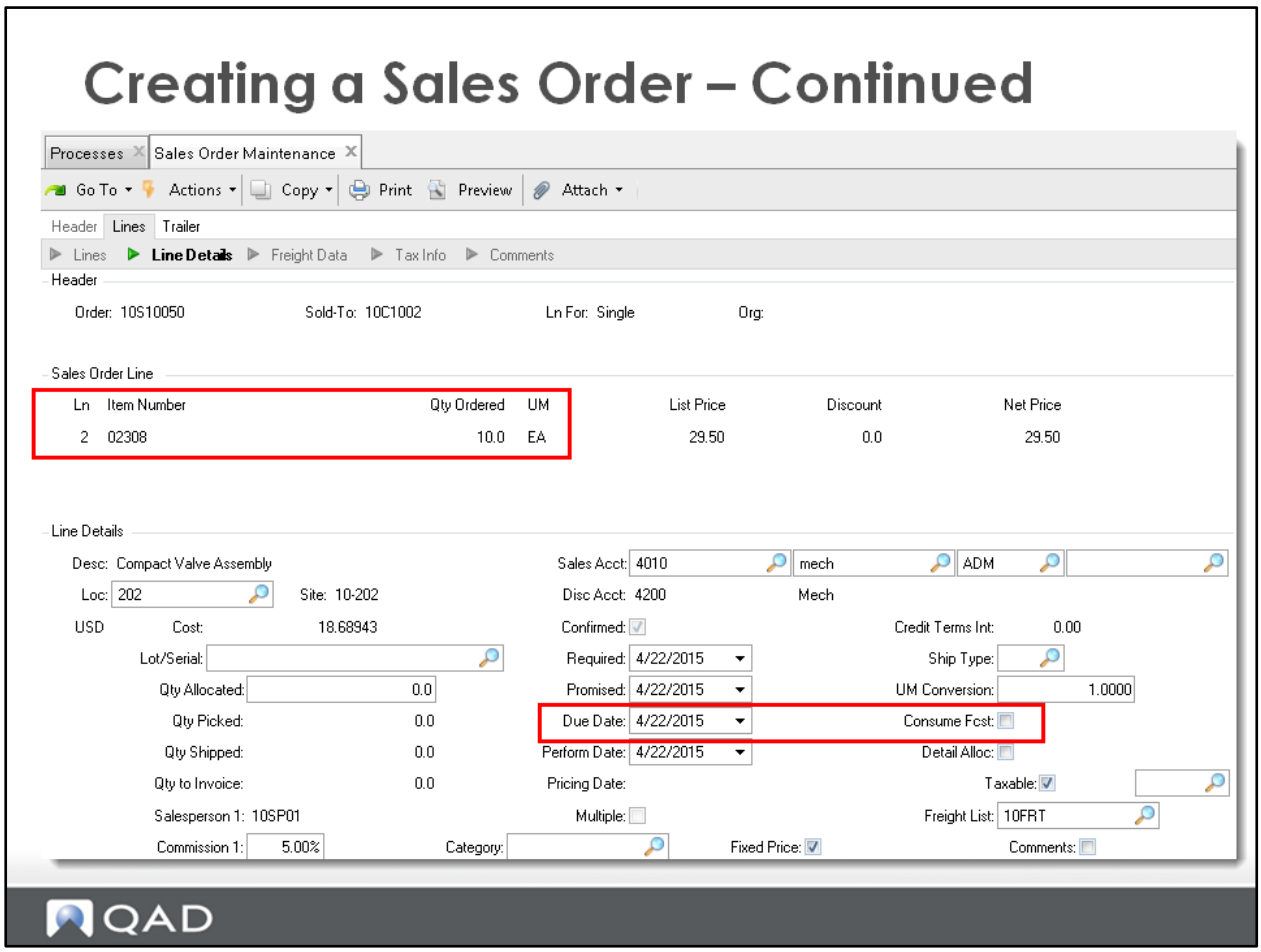


In Sales Order Maintenance, the QMI customer service representative (CSR) has entered two sales order lines for item 02308.

Line 1 (shown in the illustration) is for an order of 20 units due April 15, 2015. This order, once confirmed, consumes the forecast because the Consume Forecast option is selected.

Line 2 is shown on the next page.

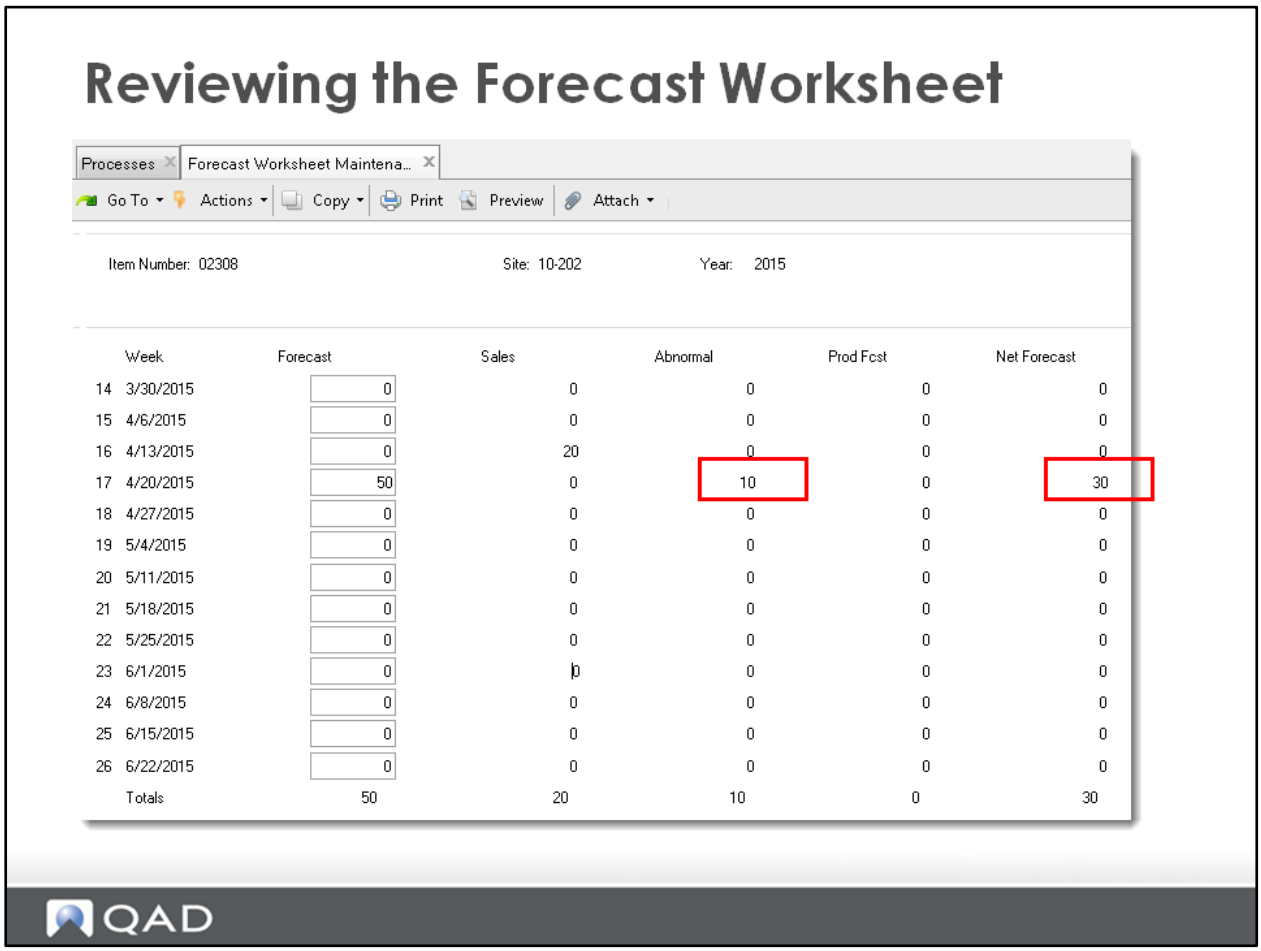
Creating a Sales Order – Continued



Line 2 is for another ten units due in a week. This order does not consume the forecast because the Consume Forecast option is not selected.

Note: Consume Forecast is not selected (unchecked) when the order quantity is considered abnormal and is planned in addition to the forecast. Perhaps the best definition of abnormal sales is sales that were not anticipated in the forecast. It can be sales to new customers, new markets, or a current customer significantly increasing their volume. Businesses should establish their own rules and guidelines for sales order entry to determine when an order is considered abnormal.

Reviewing the Forecast Worksheet



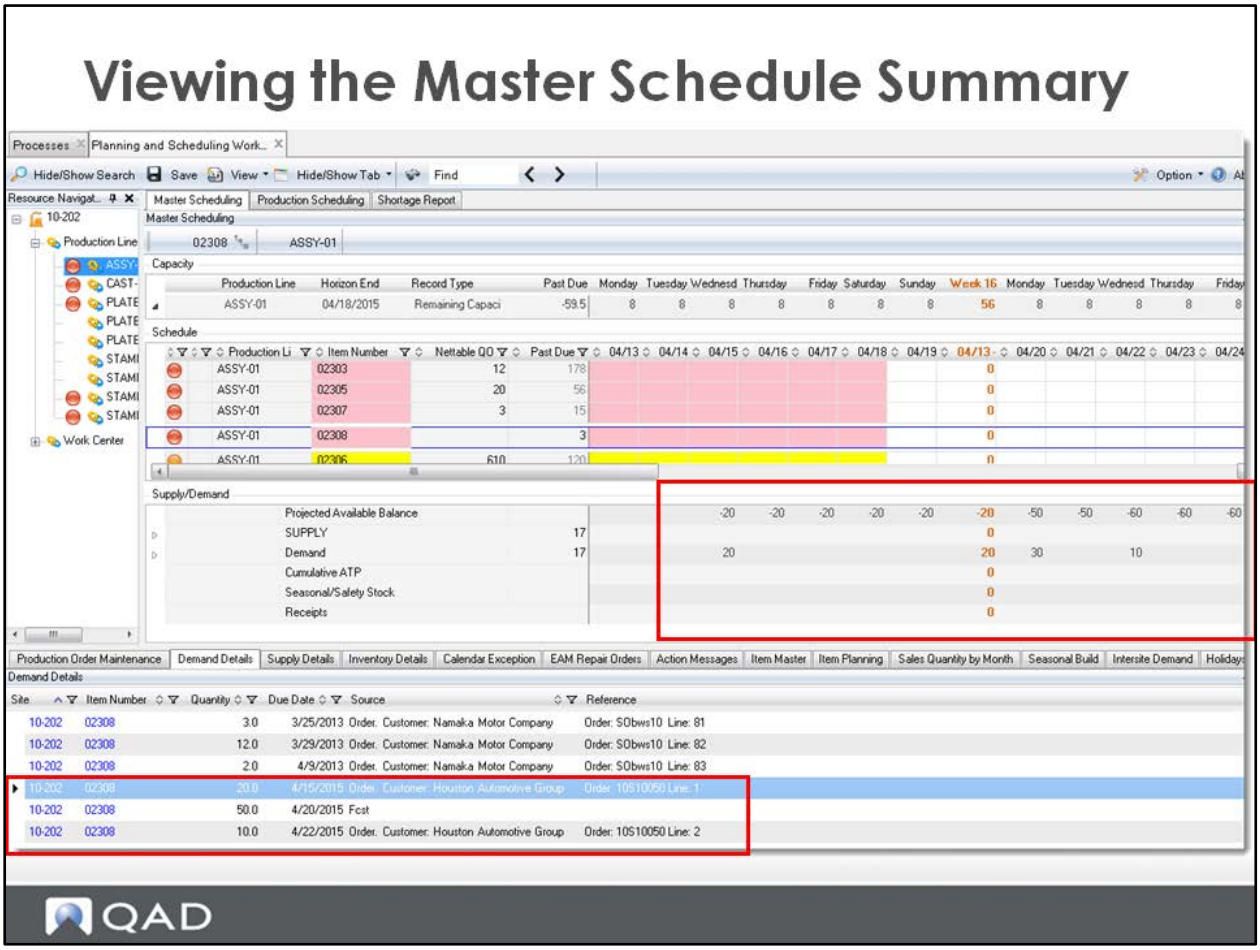
Forecast Worksheet Maintenance shows the effect of the new sales order on the net forecast:

- Line 1 for 20 units in week 16 consumes forecast.
- Line 2 for 10 units in week 17 does not consume forecast so the quantity of ten displays in the Abnormal column.

The effect of setting Forecast Consumption in Sales Order Control (one period back and one period forward) can be seen most clearly here with Week 17. The quantity ordered is greater than the forecast (0) for Week 16. Therefore, it consumes forward 20 units in Week 17.

Note: MRP always plans for the total demand, even when it exceeds the forecast.

Viewing the Master Schedule Summary



Before running MRP, you can view the demand entered as forecast and view the sales order on the Supply/Demand Panel in the Master Scheduling Workbench (MSW).

The Supply/Demand Panel displays the remaining open quantity due for the item. Sources of demand can include forecasts, safety stock requirements, sales orders, customer scheduled orders, component requirements from manufacturing, and so on. Sources of supply include nettable QOH, production orders, production/purchase orders, supplier scheduled orders, and so on.

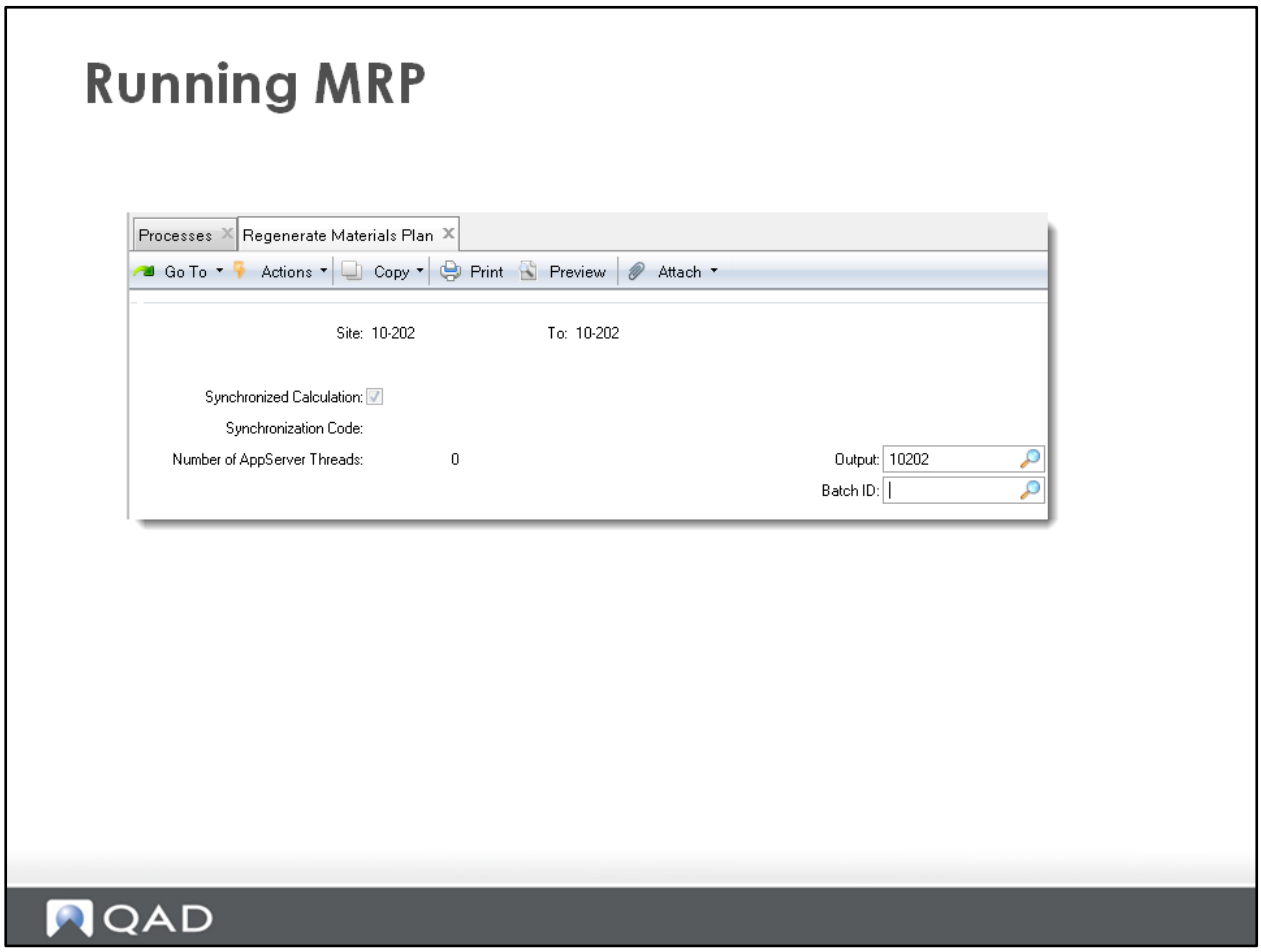
On the Supply/Demand Panel, you can see the demand summary for item 02308. The week of 04/13 is highlighted, indicating that there is a negative projected quantity on hand within the scheduling horizon. On the Demand Details tab at the bottom, the demand sources are displayed in detail.

Notes:

- The example screen contains the legacy data in the training environment. Focus on the data entered in the forecast and the sales order.

- MSW is a QAD-developed tool for planning and scheduling. For more information, see *QAD Planning and Scheduling Workbenches User Guide*.

Running MRP



Running MRP for site 10-202 calculates the net demand against the quantity on hand, supply, safety stock, and demand; and generates planned production orders based on the calculation.

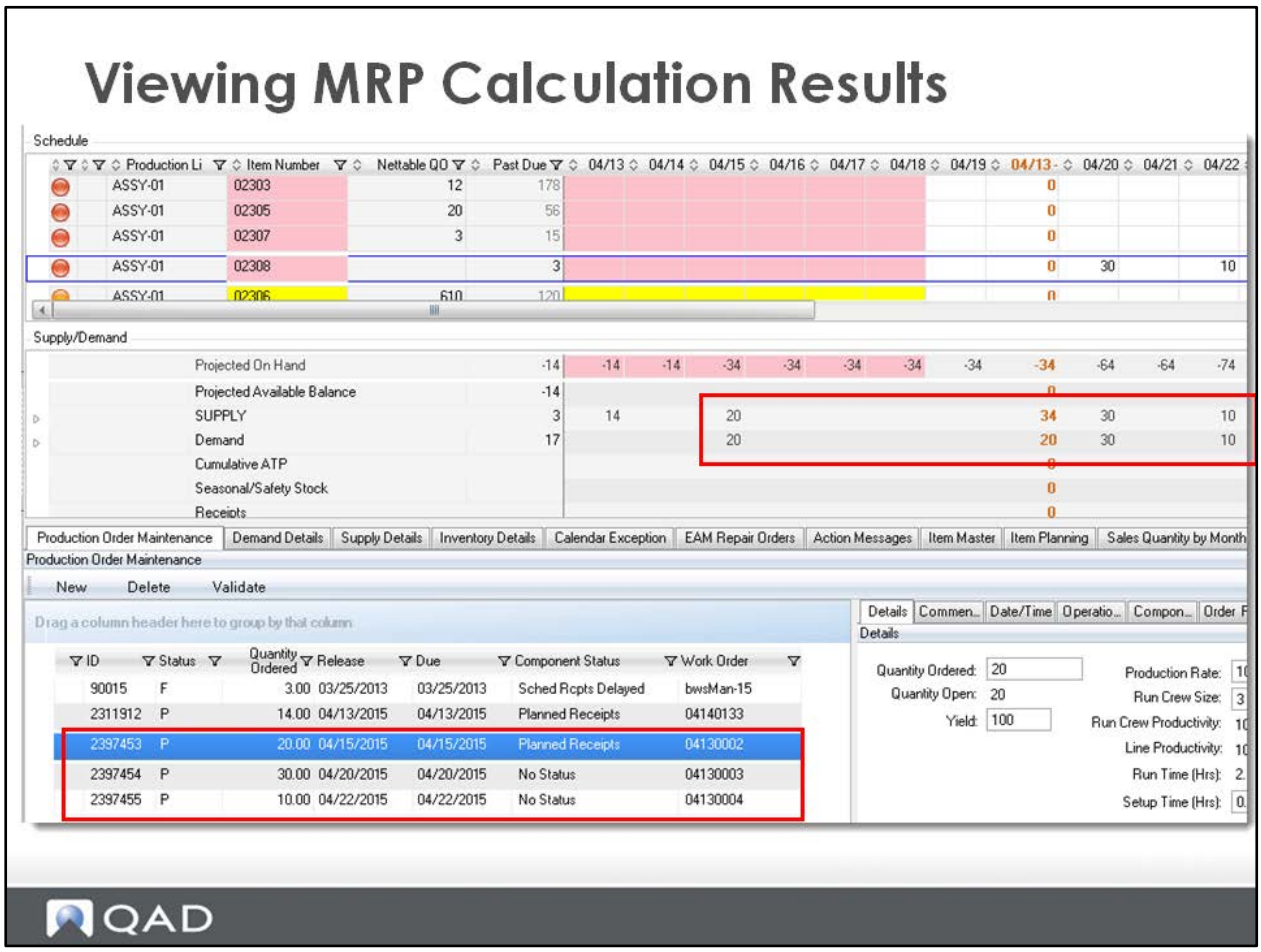
QAD EE provides three ways to run MRP:

- **Regenerate Materials Plan**
  Regenerate MRP runs against all items at a site and can take much longer than net change MRP, depending on how many inactive or obsolete items you have. This method is often used when running MRP for the first time.
  For net change MRP and regenerate MRP, the only values that are user specified are the site or range of sites. MRP is always calculated by site. If you have several sites in your database and run MRP for all sites, each site has its own MRP output that is separate from the others.
- **Net Change Materials Plan**
  The normal method used on a routine daily or weekly basis is net change MRP, which selects all the items at a site with the MRP Required field is set to Yes. You can view the setting in this field in Master Schedule Summary Inquiry.

When Regenerate Materials Plan is first run, MRP Required is set to No for all items. In the normal course of business, almost any transaction for an item resets this field, indicating that you must run MRP again to recalculate the demand and supply for the item. Issues and receipts are obvious changes in inventory. Less obvious are changes to the forecast, safety stock, or item planning data. These changes also reset the MRP Required field to Yes.

- **Selective Materials Plan**
  Selective Materials Plan lets the planner select specific items, item groups, or ranges of items. There are many ways to limit the number of items that this MRP method processes, as you can see in the selection screen. While Selective Materials Plan is a powerful planning tool, remember that items excluded from the process can impact items included in the process.

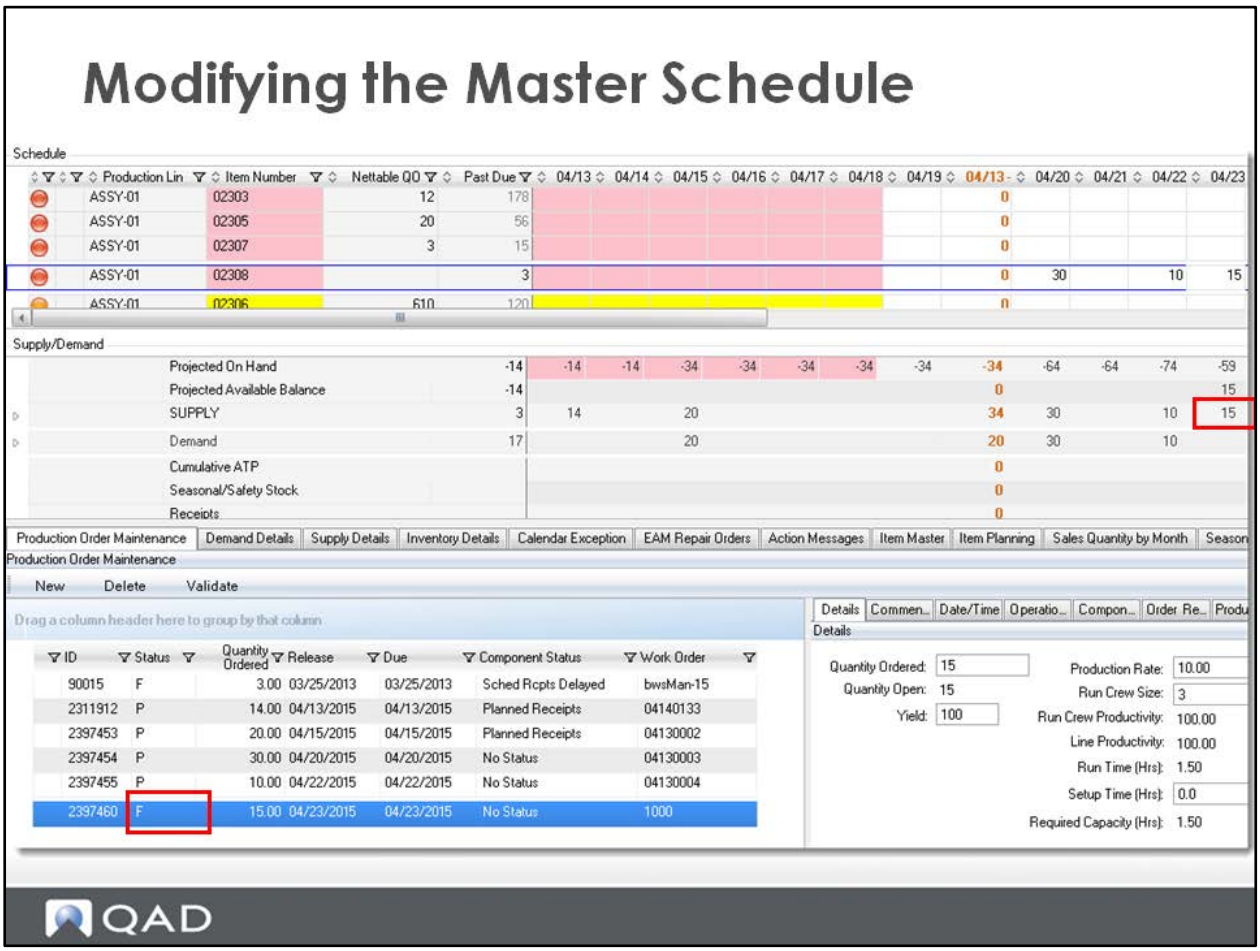
Viewing MRP Calculation Results



After MRP is run, production orders are planned, based on the net demand. The planned orders are displayed as supply in the Supply/Demand panel. You can also view and change the planned orders on the Production Order Maintenance tab at the bottom of the screen.

Note: Ignore the orders generated from the legacy data in the training environment.

Modifying the Master Schedule

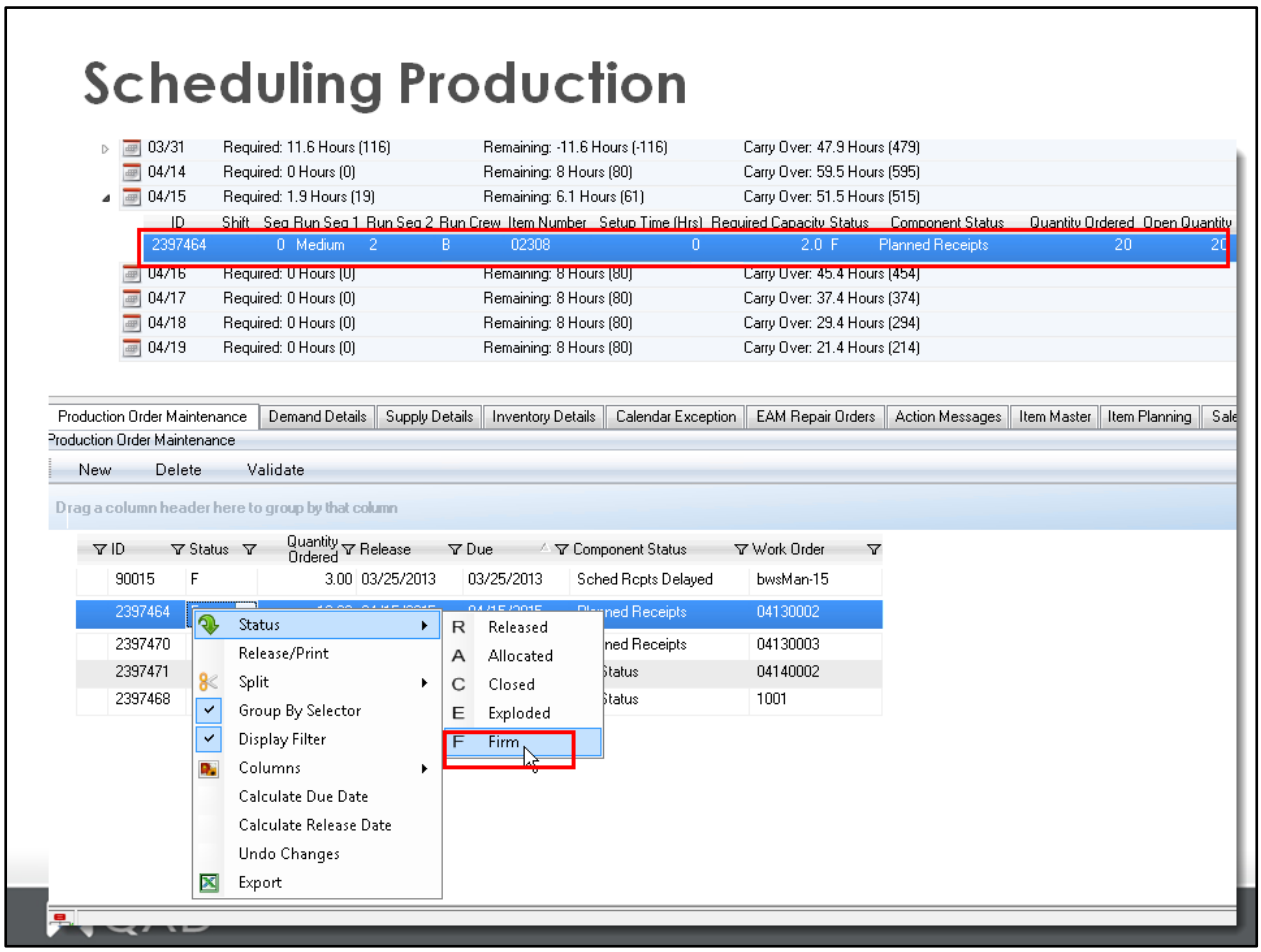


You can manually change the master schedule in the Schedule grid, leveraging its due date and the available capacity.

The manually changed or added quantity in the Schedule grid is handled as a firmed order rather than as a planned order.

As this example screen shows, 15 units of item 02308 are manually planned on April 23, 2015. The initial status for a manually planned order is F (Firmed).

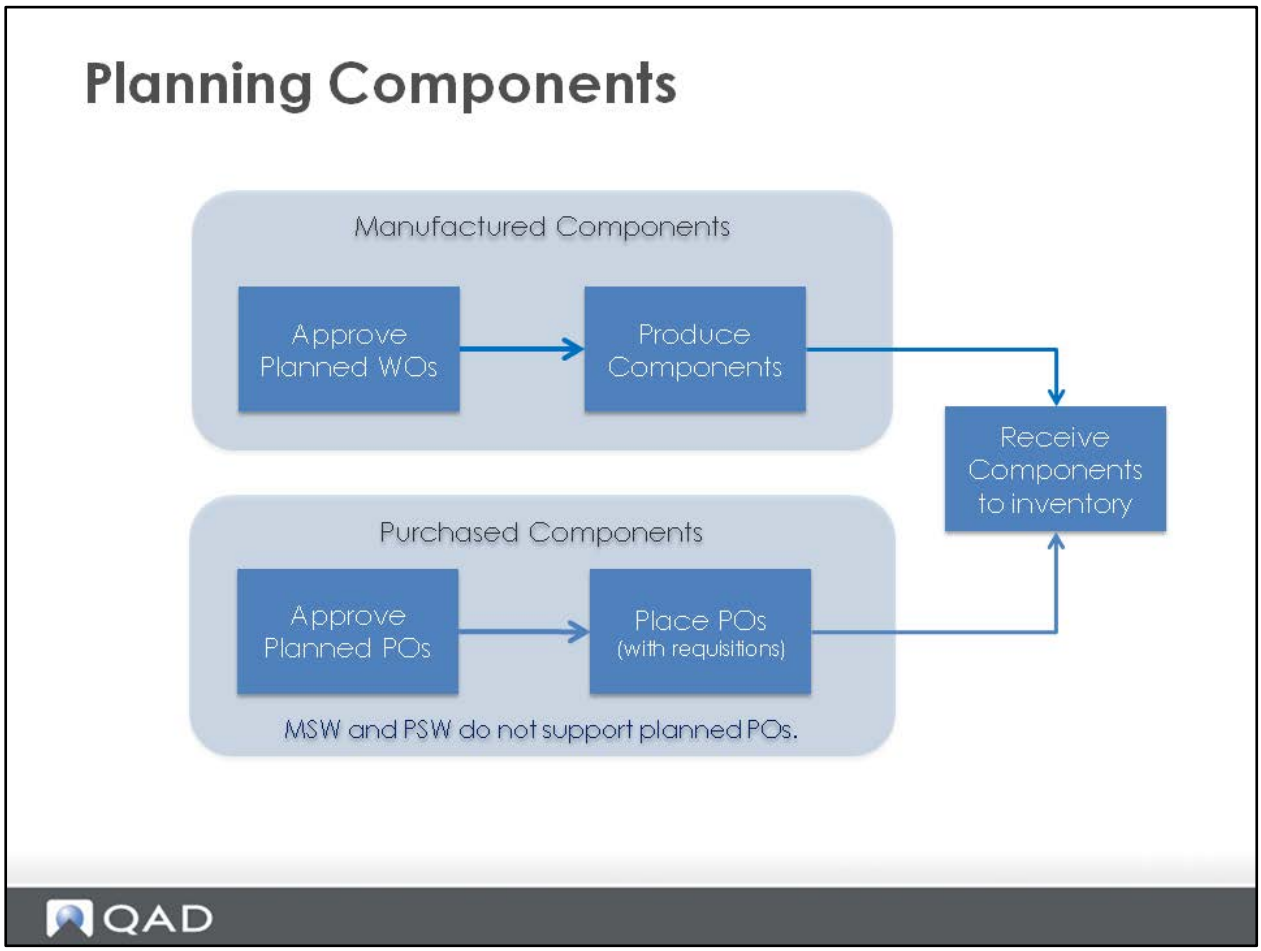
Scheduling Production



Planned production orders are not displayed on the Production Scheduling Workbench (PSW) until the order status changes to Firm, Exploded, Allocated, or Released.

For a firmed production order, you can also change the order quantity, reschedule the order by changing the due date, or split the order if there is a capacity conflict on the scheduled date. For more information on how to process production schedules with PSW, see *QAD Planning and Scheduling Workbenches User Guide*.

Planning Components



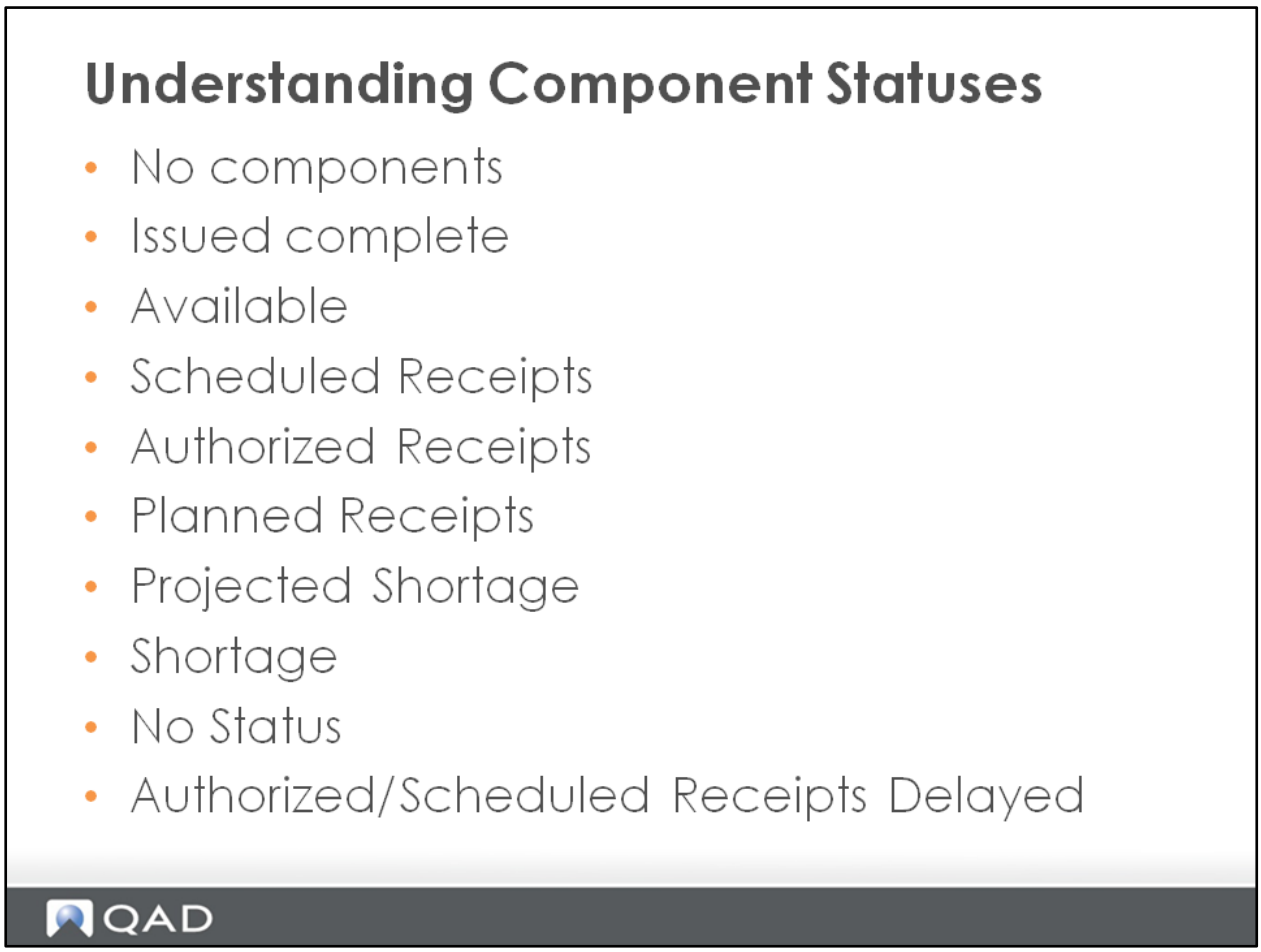
The process of replenishing component inventory depends on whether the component is internally produced or externally procured.

However, you can purchase components that used to be manufactured internally; or you can also make the components that used to be purchased from suppliers when the manufacturing capability is available.

After running MRP, production orders are planned against demand, both forecasts and sales orders. At the same time, MRP calculates the component requirements for the production orders within the CAC horizon, based on the BOM. Basing on the calculation, production orders and purchase orders are planned for the required components when there is not enough inventory for these components.

To ensure that the production for the end items can be carried out, check the component inventory and prepare enough components before releasing the production orders to plants.

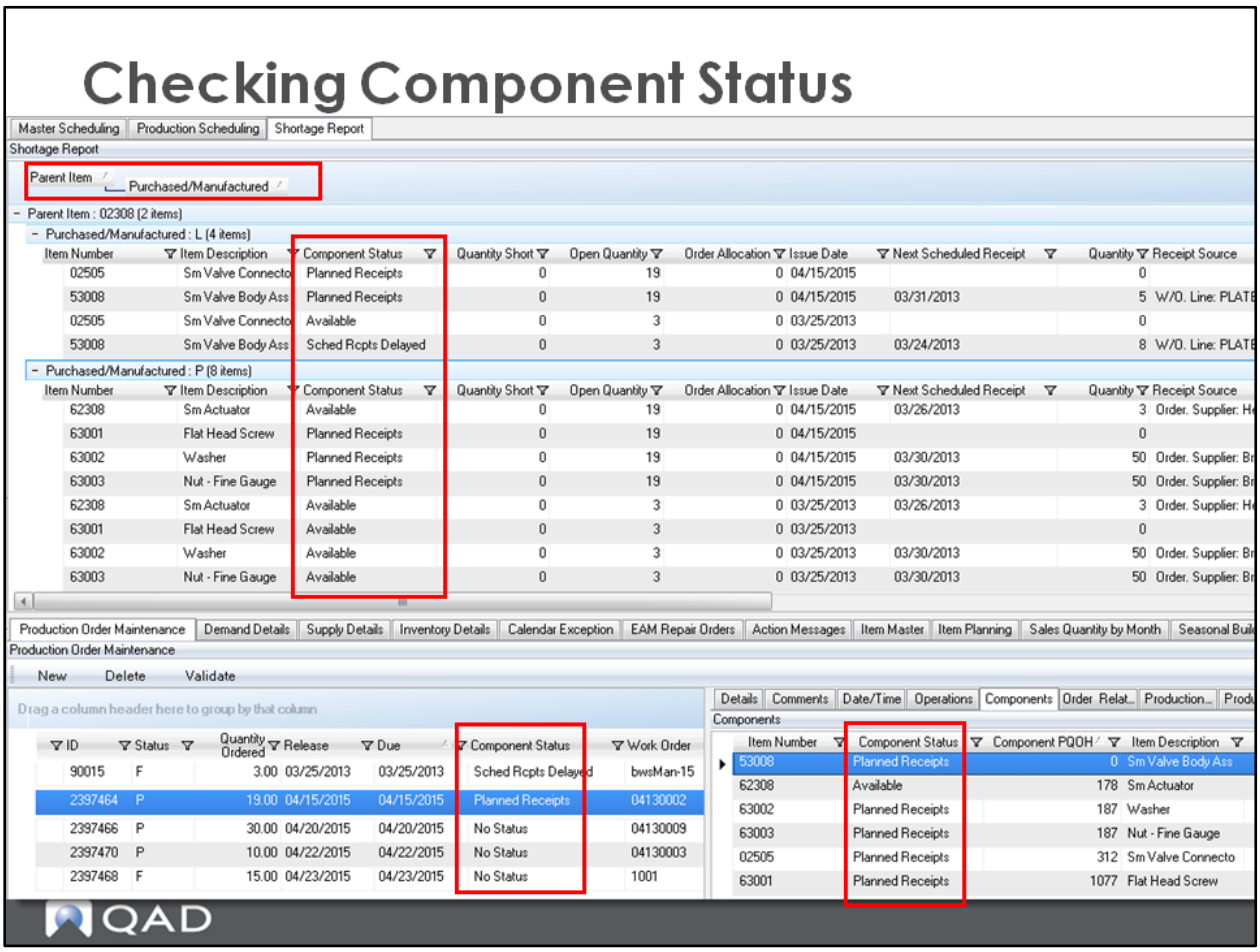
Understanding Component Statuses



- **No components:** The work order does not have any components.
- **Issued complete:** All materials have been issued for the work order component.
- **Available:** Sufficient inventory is projected to be available for the production order component. This includes nettable on-hand inventory and non-expired component supply.
  Note: Nettable inventory includes inventory that may not have the inventory status of Available.
- **Scheduled Receipts:** Sufficient inventory is projected to be available for the production order component. This quantity includes nettable or non-expired inventory, plus authorized receipts and firm purchased and manufactured receipts component supply.
- **Authorized Receipts:** Sufficient inventory is projected to be available for the production order component. This quantity includes nettable or non- expired inventory and authorized purchased (unconfirmed ASNs) and manufactured (allocated and released) receipt component supply.

- **Planned Receipts:** Sufficient inventory is projected to be available for the production order component. This quantity includes nettable or non-expired inventory, plus Authorized Receipts and Firm Receipts, and planned purchased and manufactured planned receipts component supply.
- **Projected Shortage:** There is insufficient inventory projected to be available for the work order component after considering all sources of component supply.
- **Shortage:** Same as Projected Shortage, but only applies to work orders with a status of A(llocated) or R(eleased).
- **No Status:** Component availability is not calculated for the component.
- **Authorized Receipts Delayed:** The same as Authorized Receipts except that the ASNs or work orders covering the requirement are past due (due date < today).
- **Scheduled Receipts Delayed:** The same as Scheduled Receipts except that the POs or Work Orders covering the requirement are past due (due date < today).

Checking Component Status



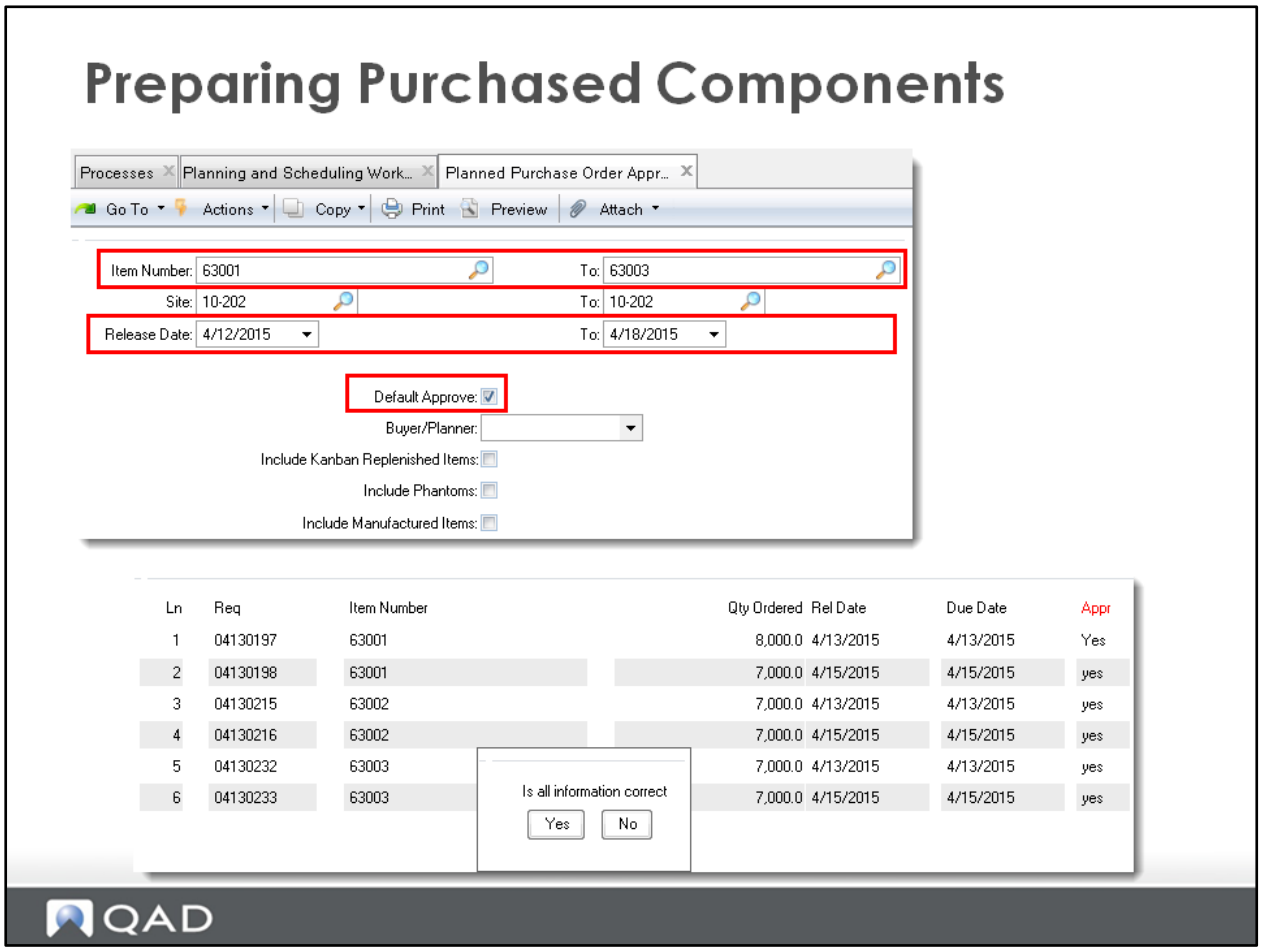
You can check the component status through any of the following:

- Shortage Report tab
  The shortage report is the Component Availability Check (CAC) function integrated to MSW and PSW.
  The shortage report shows the component status by calculating all production orders within the CAC horizon.
  You can group the report results by one or multiple columns by dragging and dropping the column header.

- Production Order Maintenance tab
  The Component Status column shows the summary calculation results for each production order.

- Components tab
  The tab shows the detailed component status for the production order selected in the Production Order Maintenance tab.

Preparing Purchased Components



This example focuses on the components for item 02308, where the demand is due in mid-April 2015.

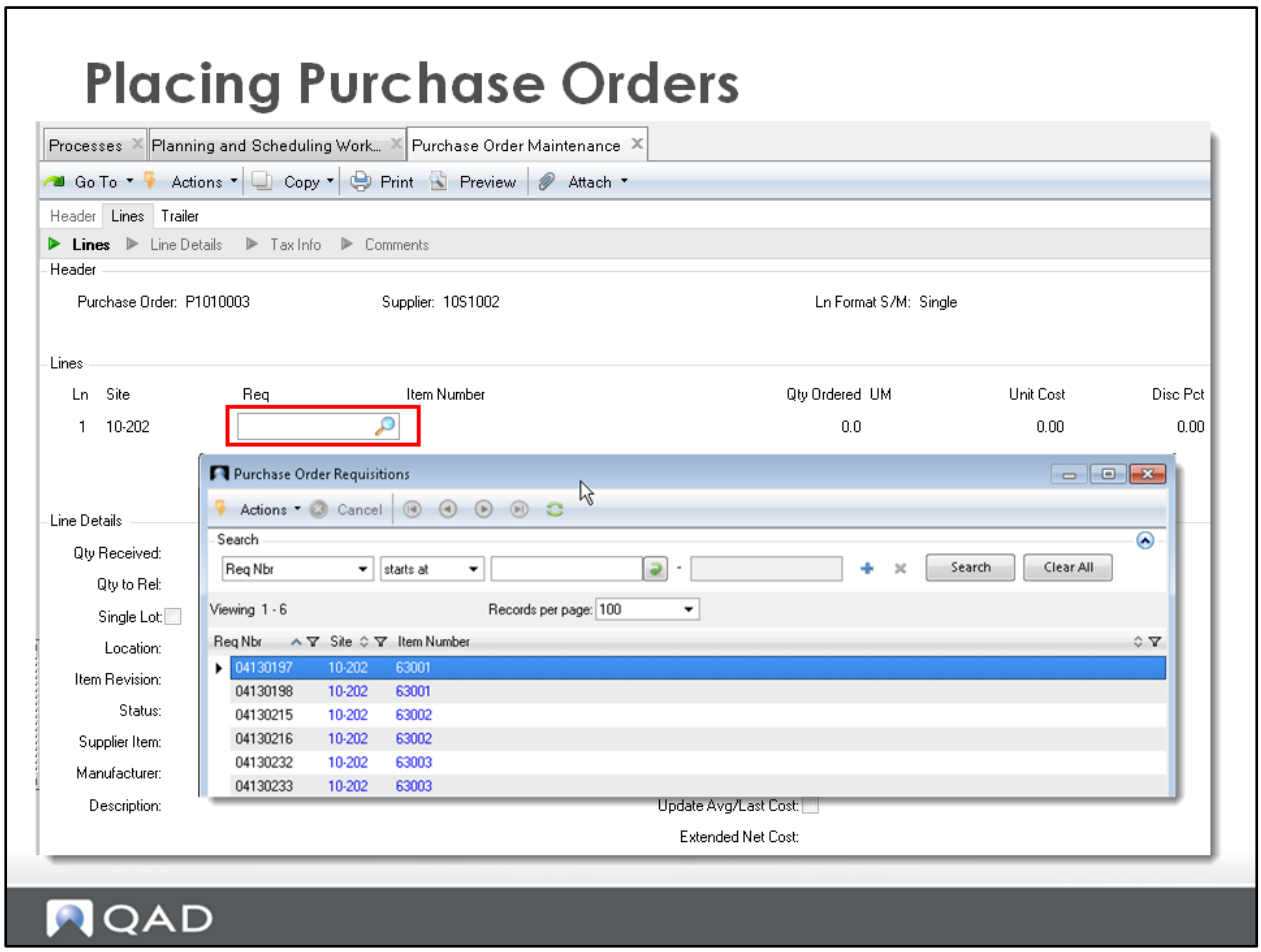
Using the Shortage Report, you can see that the purchased components 63001, 63002, and 63003 have a status of Planned Receipts, which means that there are planned purchase orders generated in the system. The first step is to approve the planned purchase orders for these components.

In Planned Purchase Order Approval, narrow the items from 63001, 63002, and 63003 and set the release date within the week of April 15.

Select Default Approve to minimize the operation steps. Upon approval, purchase requisitions are generated.

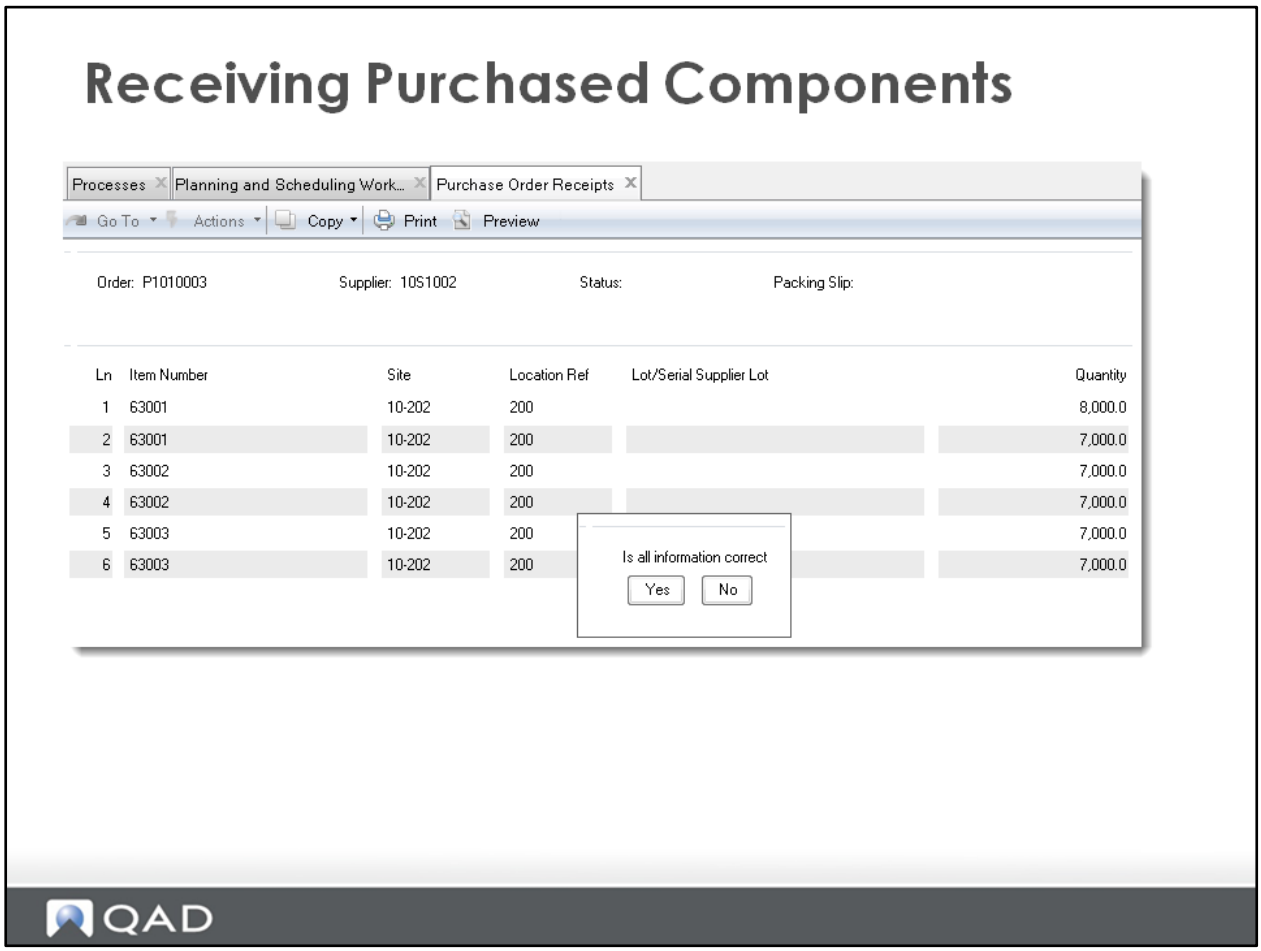
Note: Ensure that you disable the GRS (Global Requisition System) field in Requisition Control before approving the planned POs. This example uses purchase requisition, not GRS.

Placing Purchase Orders



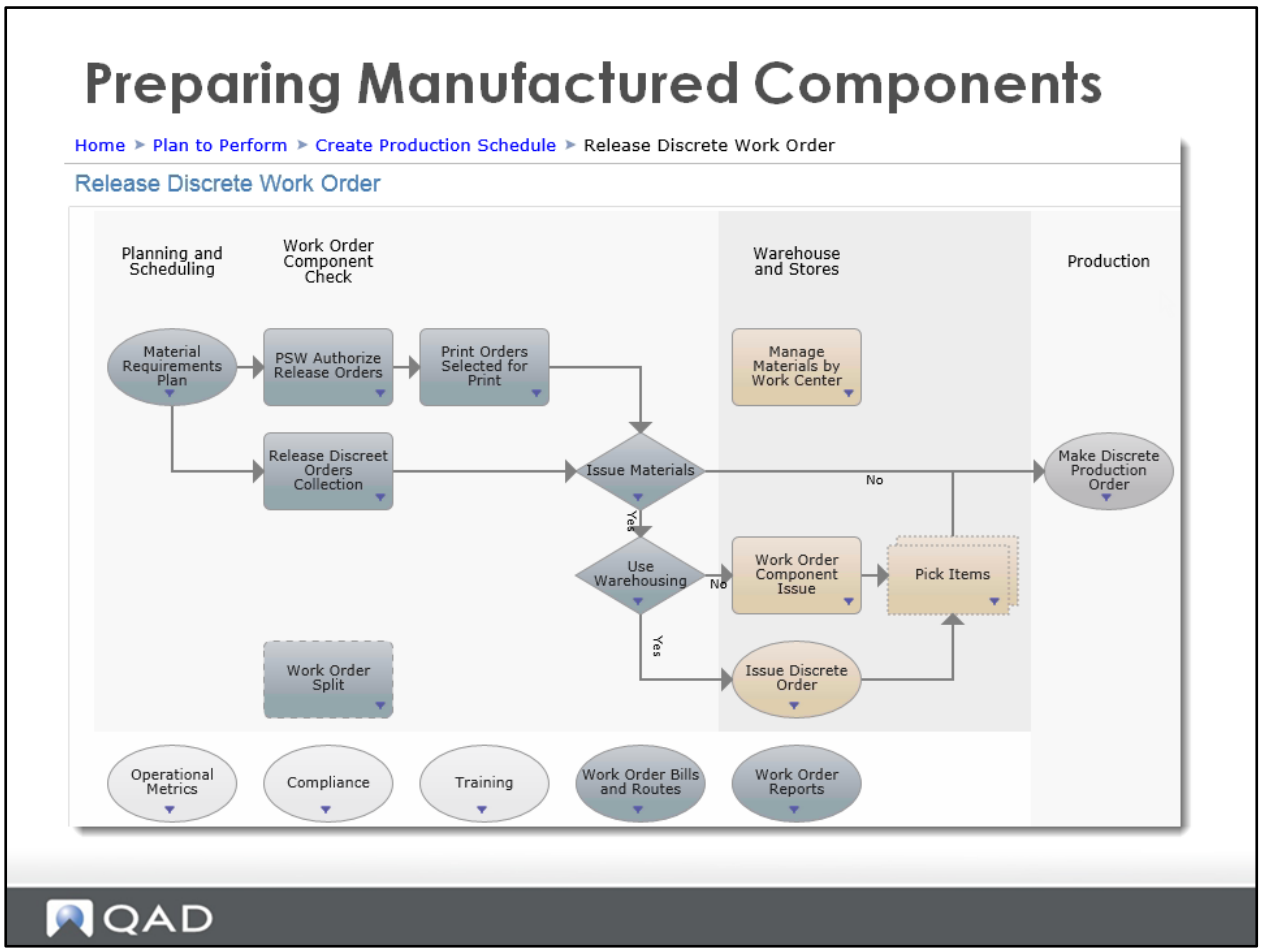
Use Purchase Order Maintenance to create a purchase order against all the generated purchase requisitions.

Receiving Purchased Components



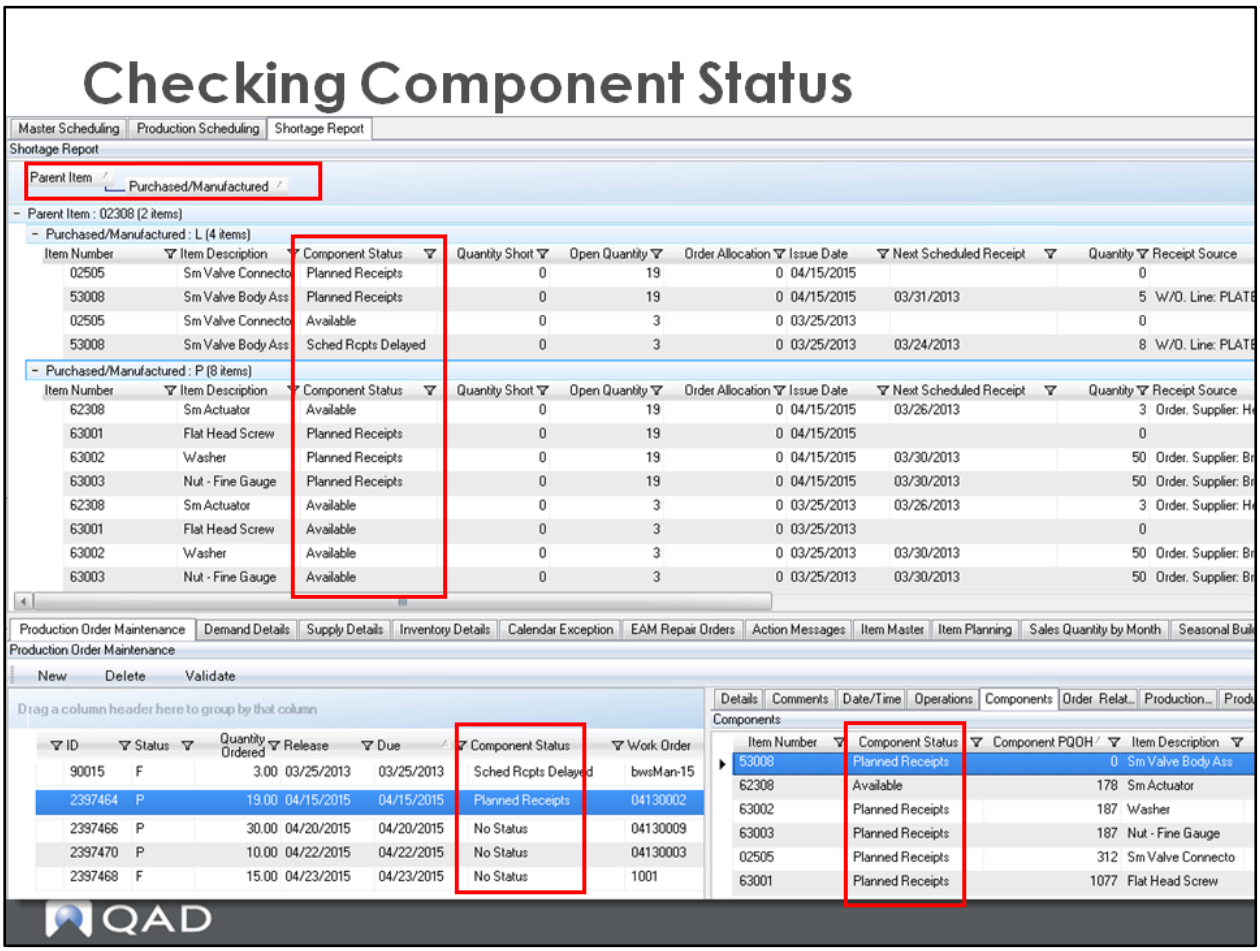
When the supplier delivers the goods to the site, receive them all into inventory at location 200 on site 10-202.

Preparing Manufactured Components



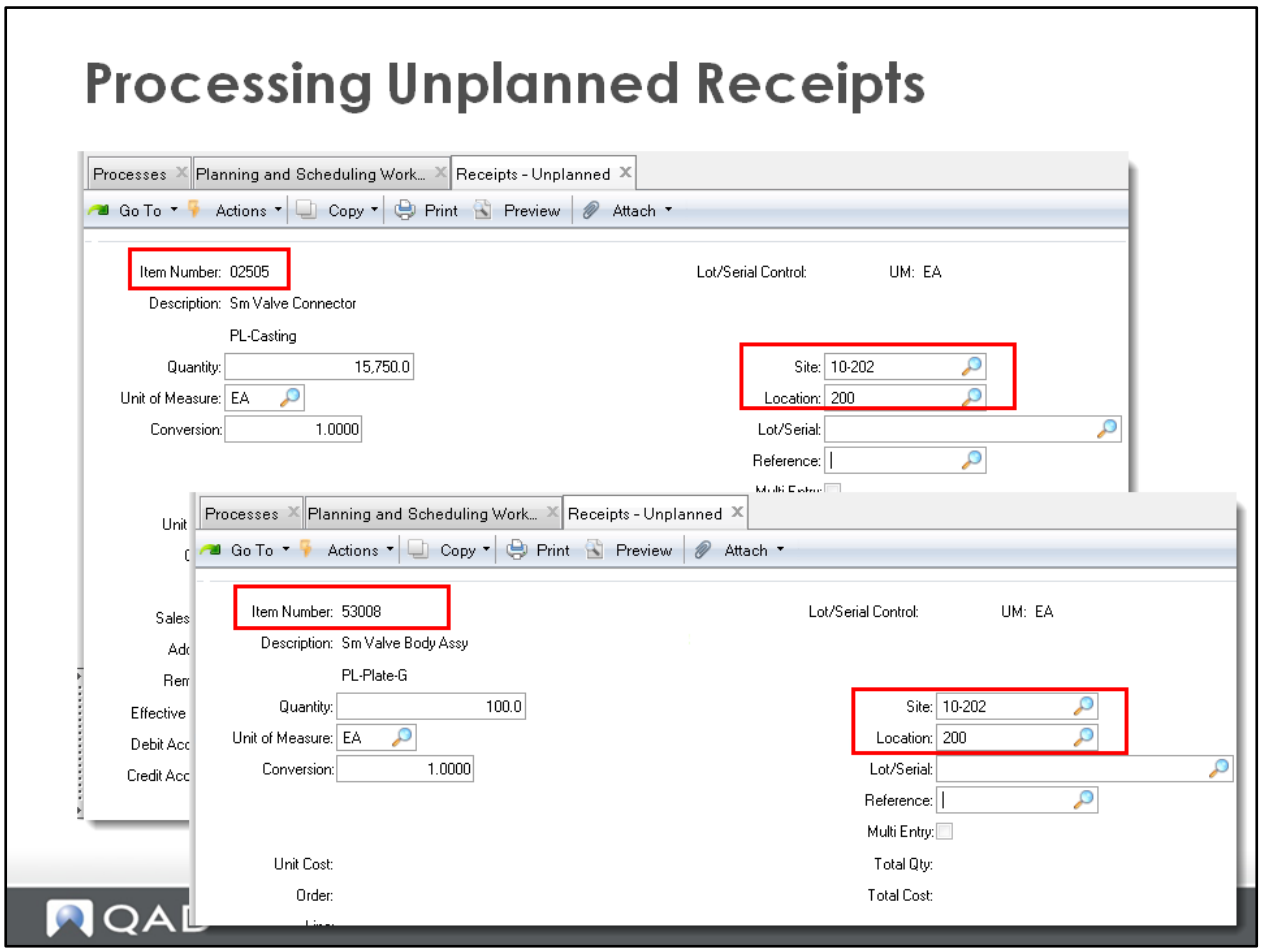
The steps for obtaining manufactured components are similar to those for processing discrete work orders.

Checking Component Status



From the Shortage Report, you can see that the components 02505 and 53008 have a status of Planned Receipts. The two component items are manufactured so there are planned work orders in the system derived from the demand for the parent item, 02308.

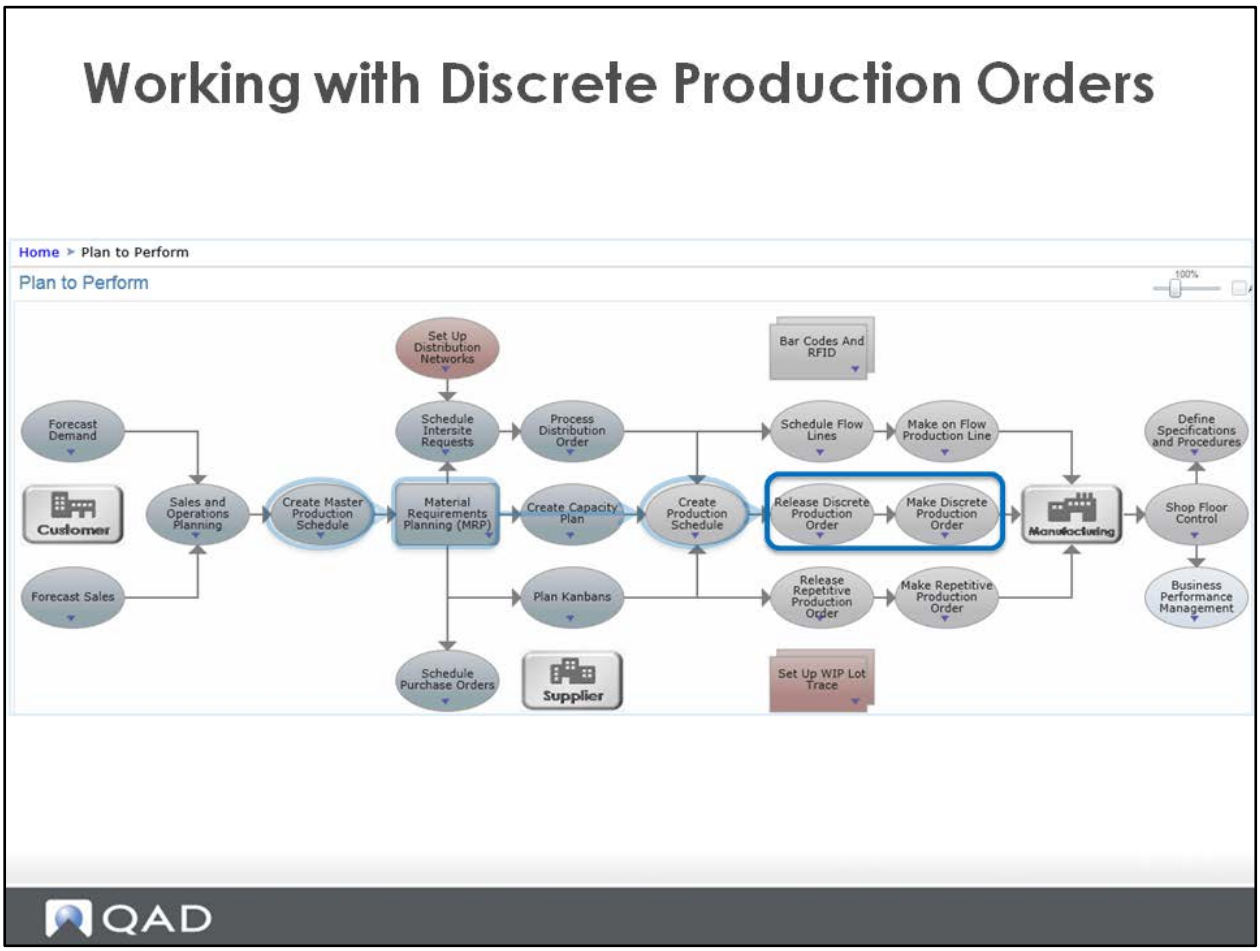
Processing Unplanned Receipts



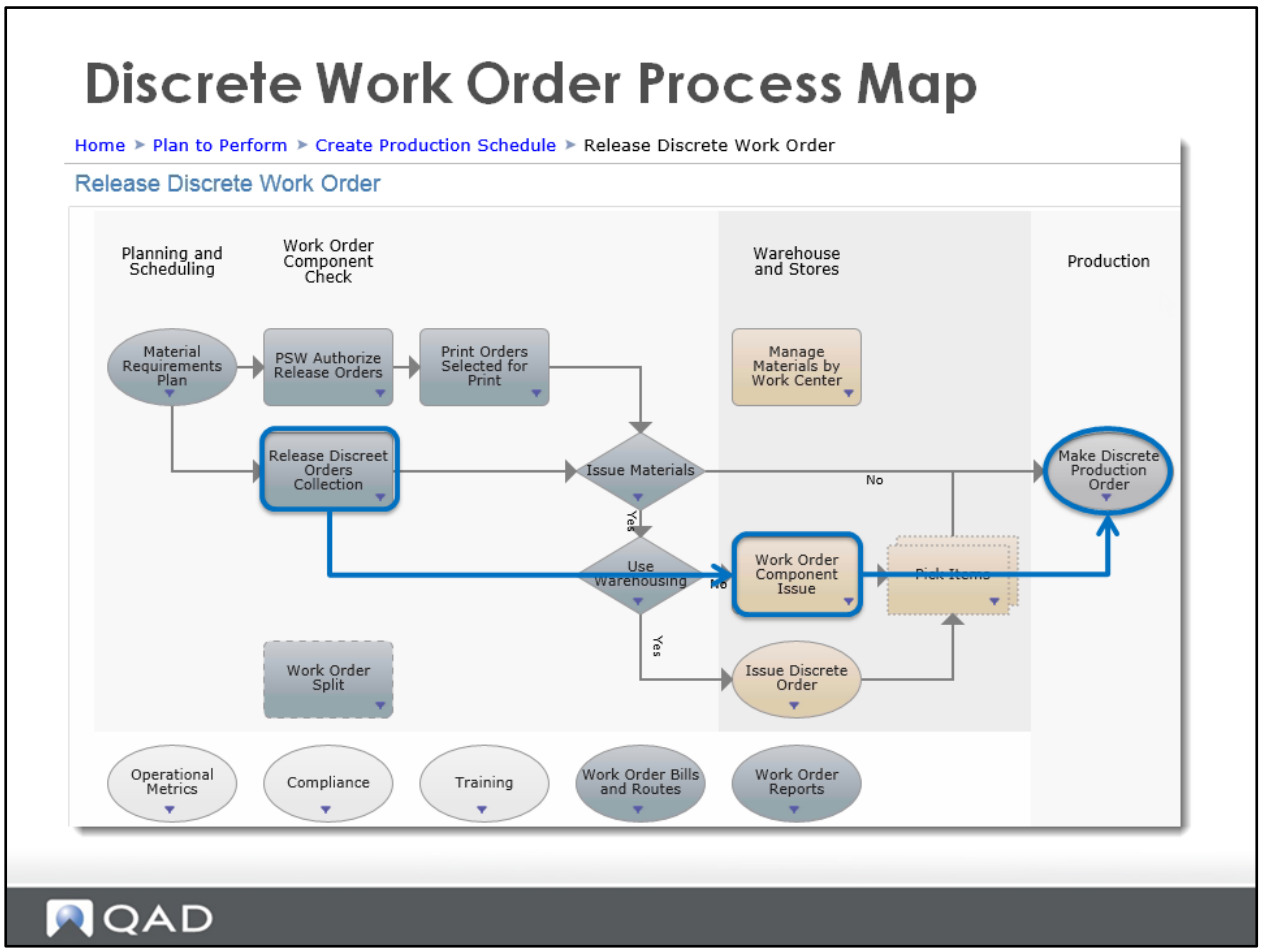
To avoid repetition, you are going to use Receipts-Unplanned (3.9) to obtain inventory for the manufactured components (02505 and 53008) for item 02308.

Receive enough components for the planned and firmed production orders. You can calculate the quantities required by summarizing the quantity of each order on the Production Order Maintenance tab at the bottom of MSW.

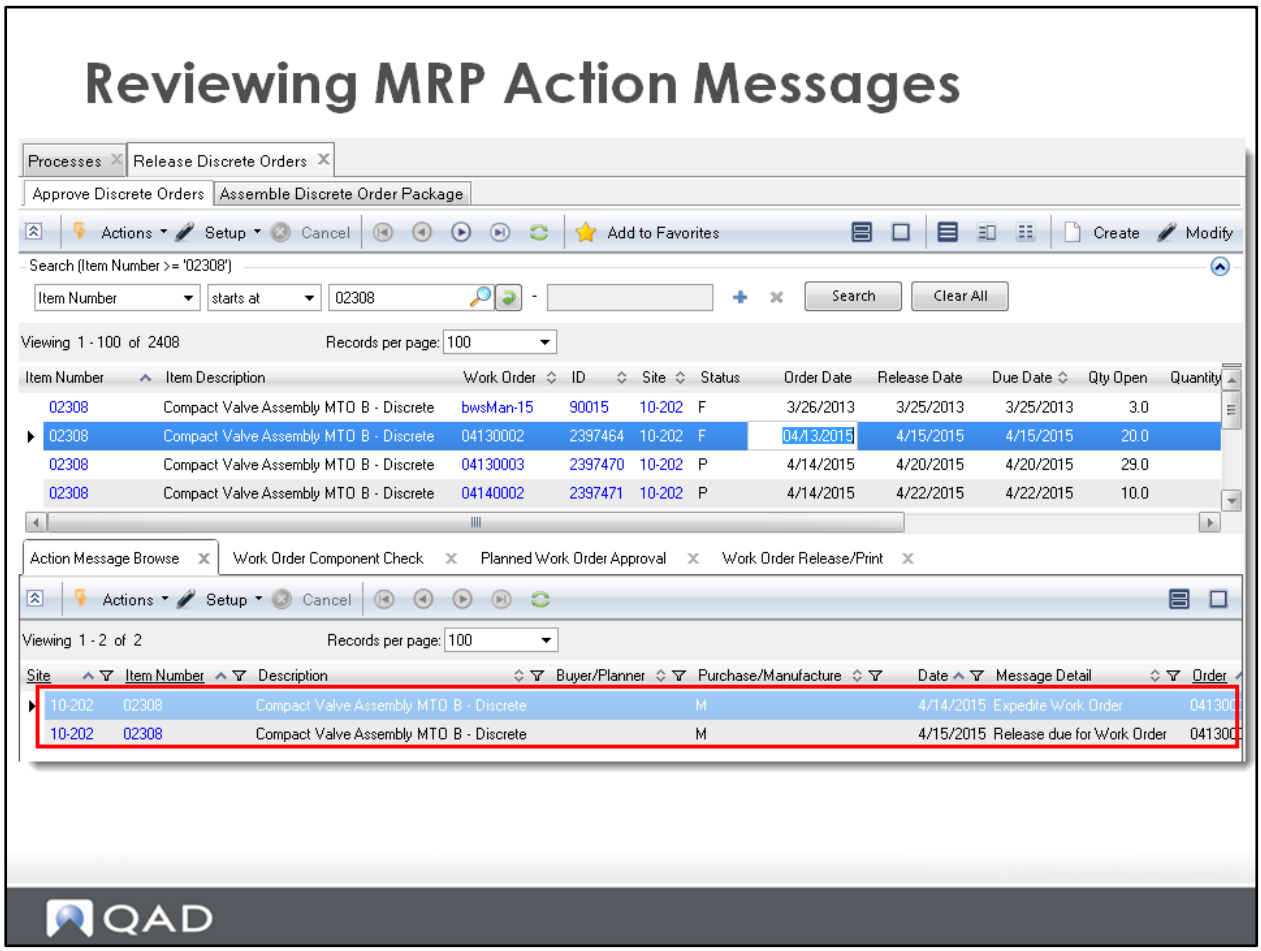
Working with Discrete Production Orders



Discrete Work Order Process Map



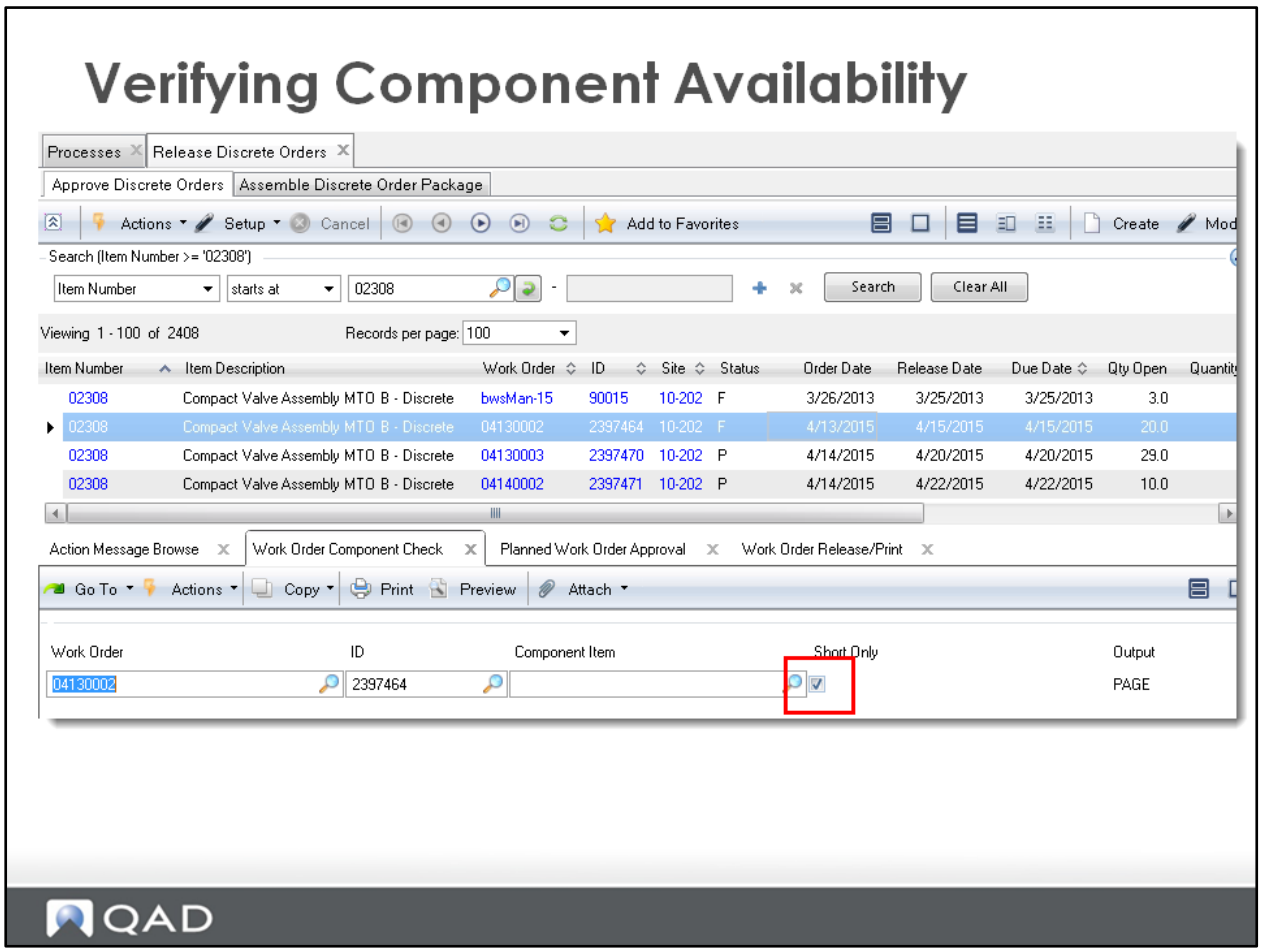
Reviewing MRP Action Messages



It is important to review action messages first because MRP planned orders only make sense if the actions that the messages require are implemented.

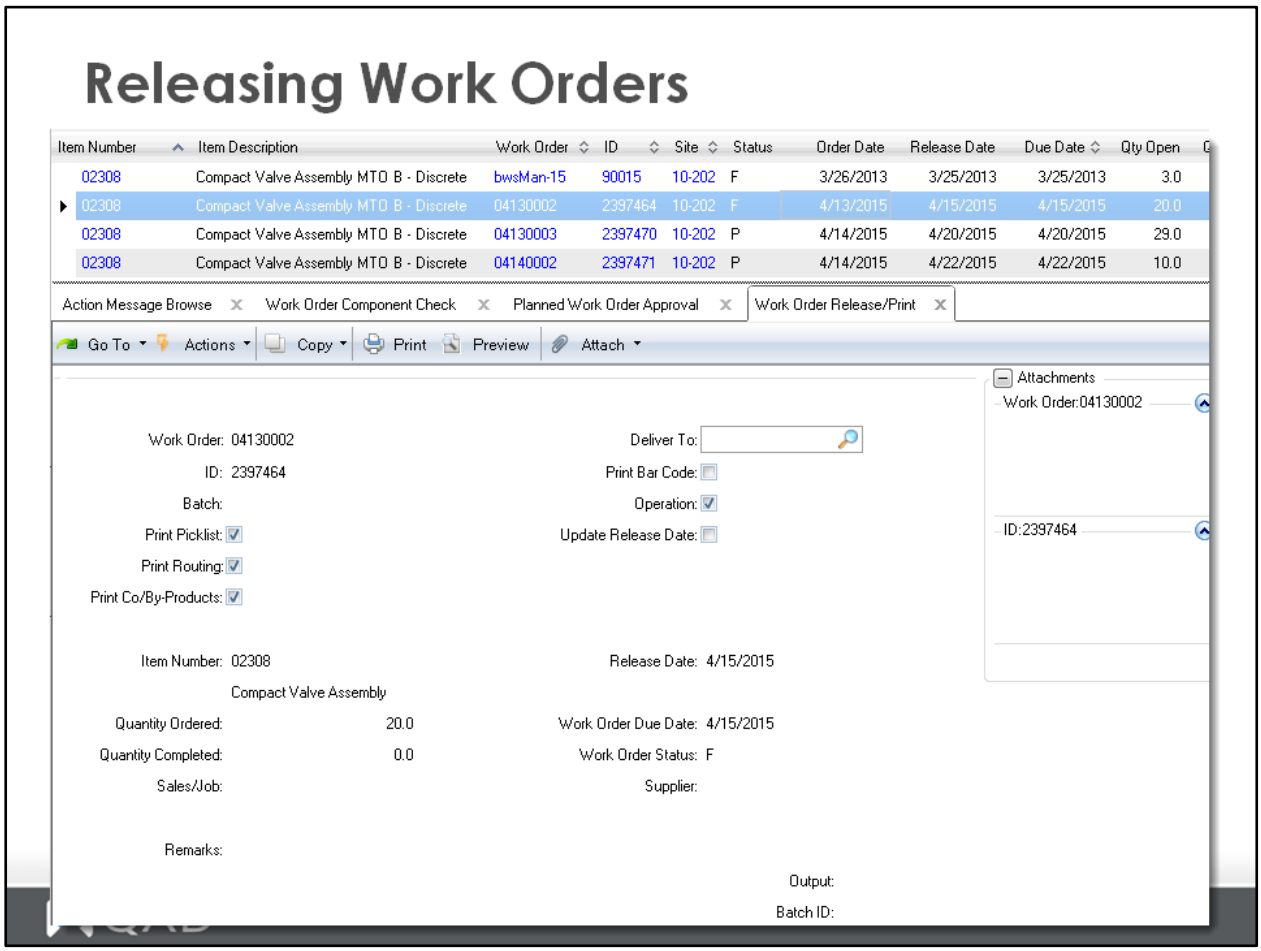
You can see that the messages for item 02308 are shown as “Release due for Planned Order”, which means that the order needs to be released.

Verifying Component Availability



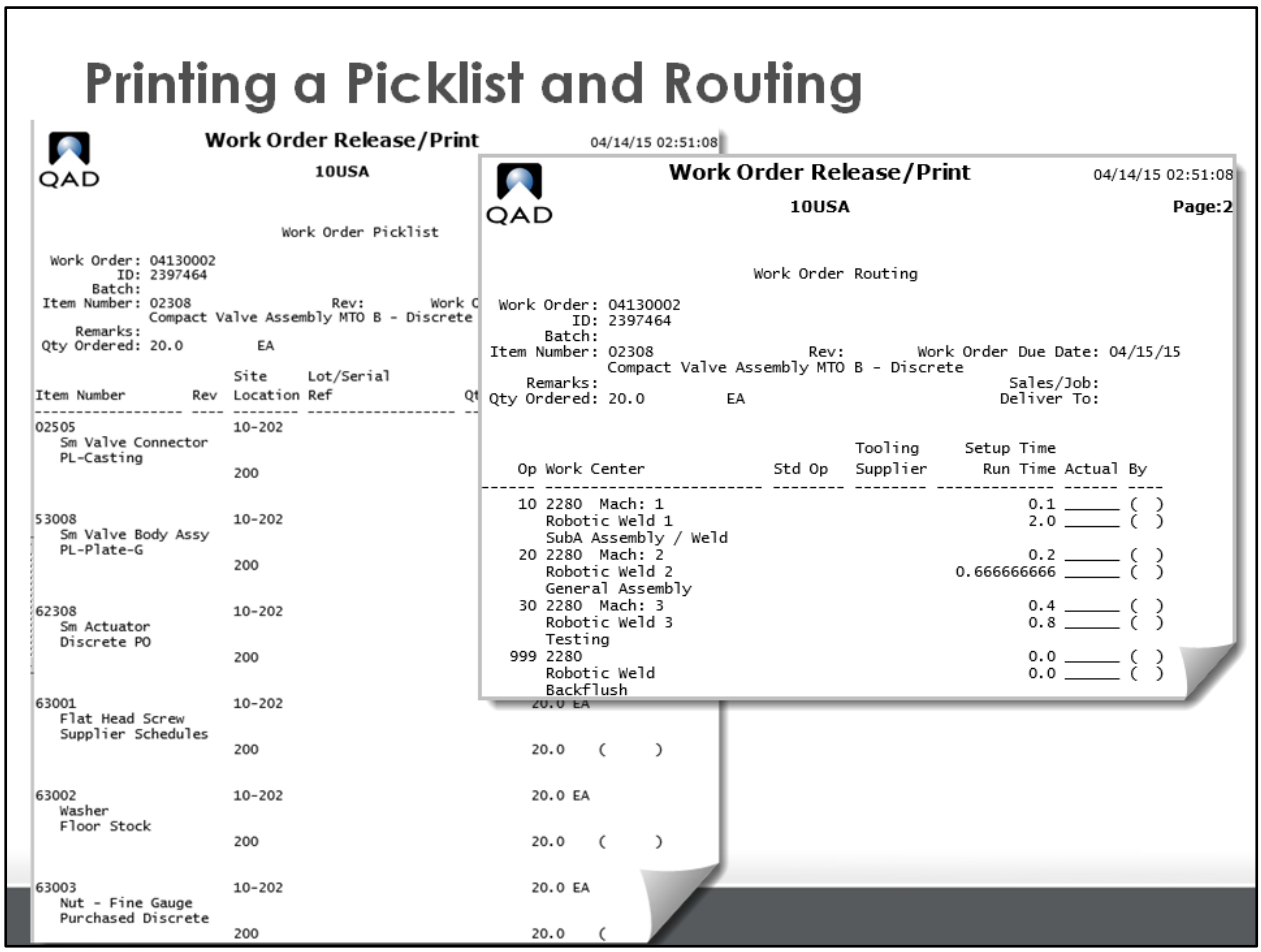
Use Work Order Component Check to verify if there is any component shortage. Select Short Only to report on components based on shortages only.

Releasing Work Orders



Once all required components are available, you can release the work order for production. The PAC manager releases the work order using Work Order Release/Print. Note the print selection options that have been chosen. Set the Output field to Page to view the result of releasing the work order.

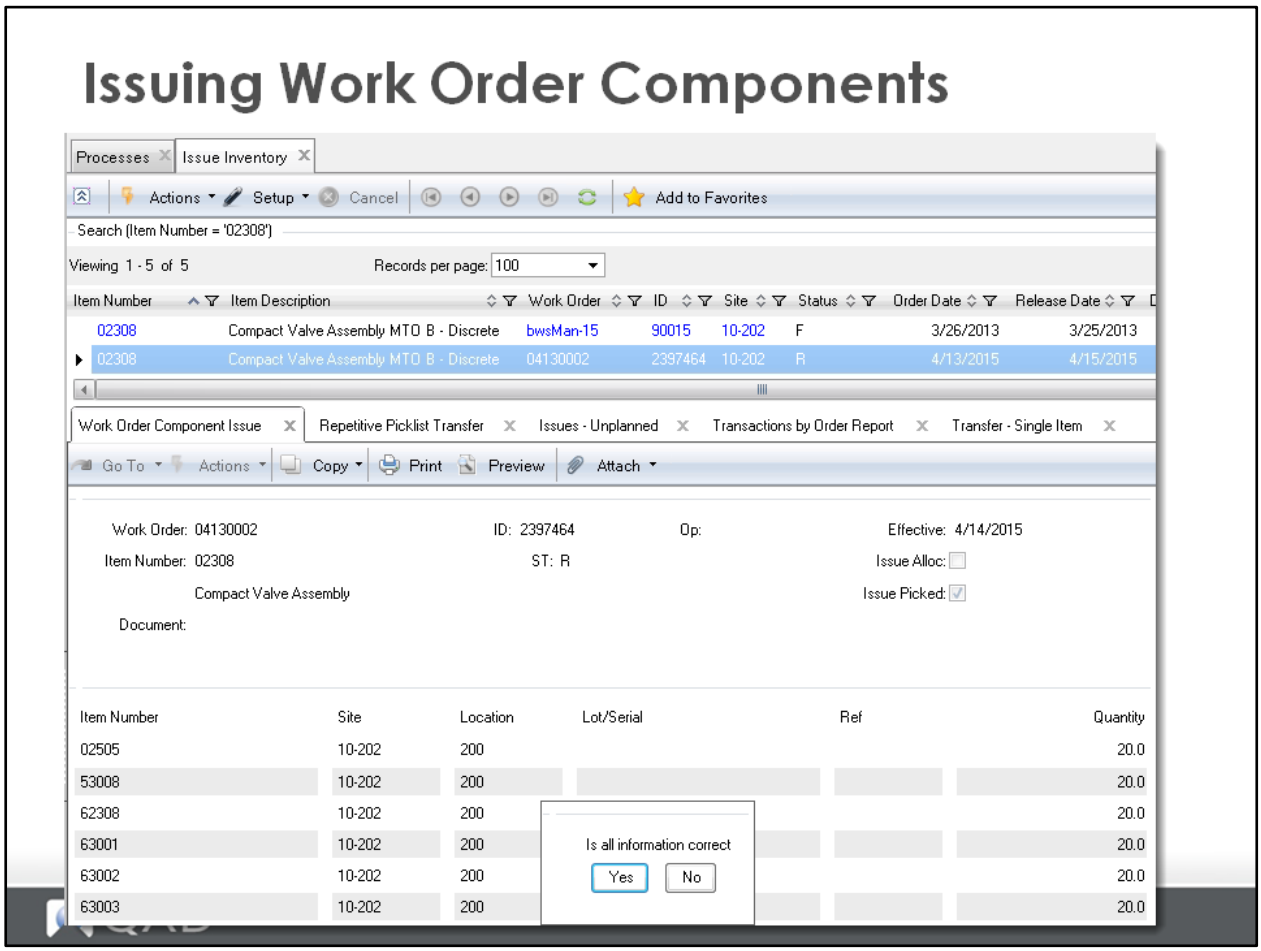
Printing a Picklist and Routing



The slide shows the printed picklist and routing.

Note: It is not necessary to print hard-copy documents. Many companies manage production in a paperless fashion. The system knows what components are required for each order, so the stock room can perform an electronic transaction to issue the parts. In the same manner, the shop floor control system knows each operation in each work center for the work order and reporting can be performed at any terminal.

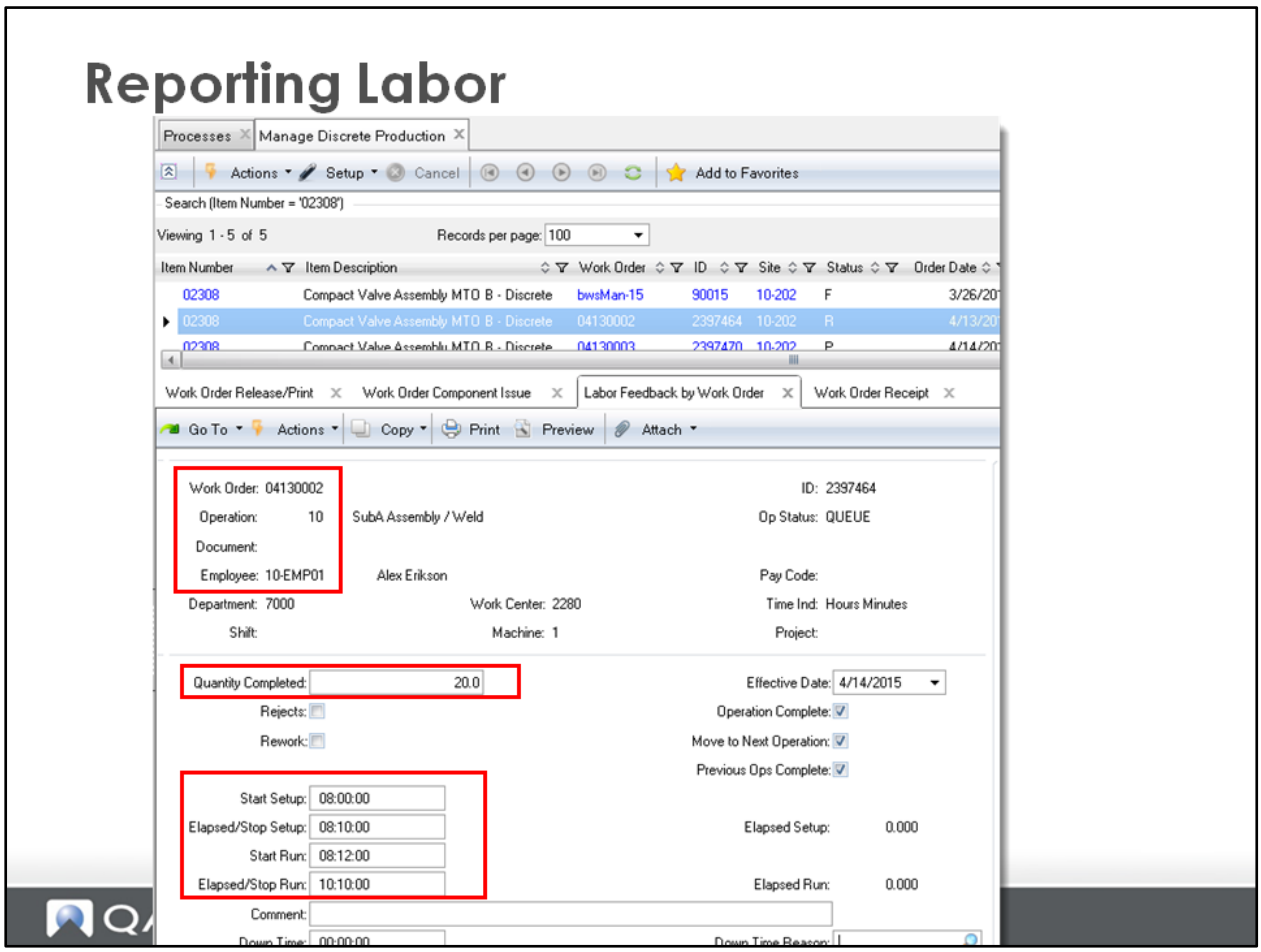
Issuing Work Order Components



The stock clerk issues the components using Work Order Component Issue. If you select Issue Picked in the header frame, the system pre-fills the transaction fields with the information from the work order picklist created in the previous step.

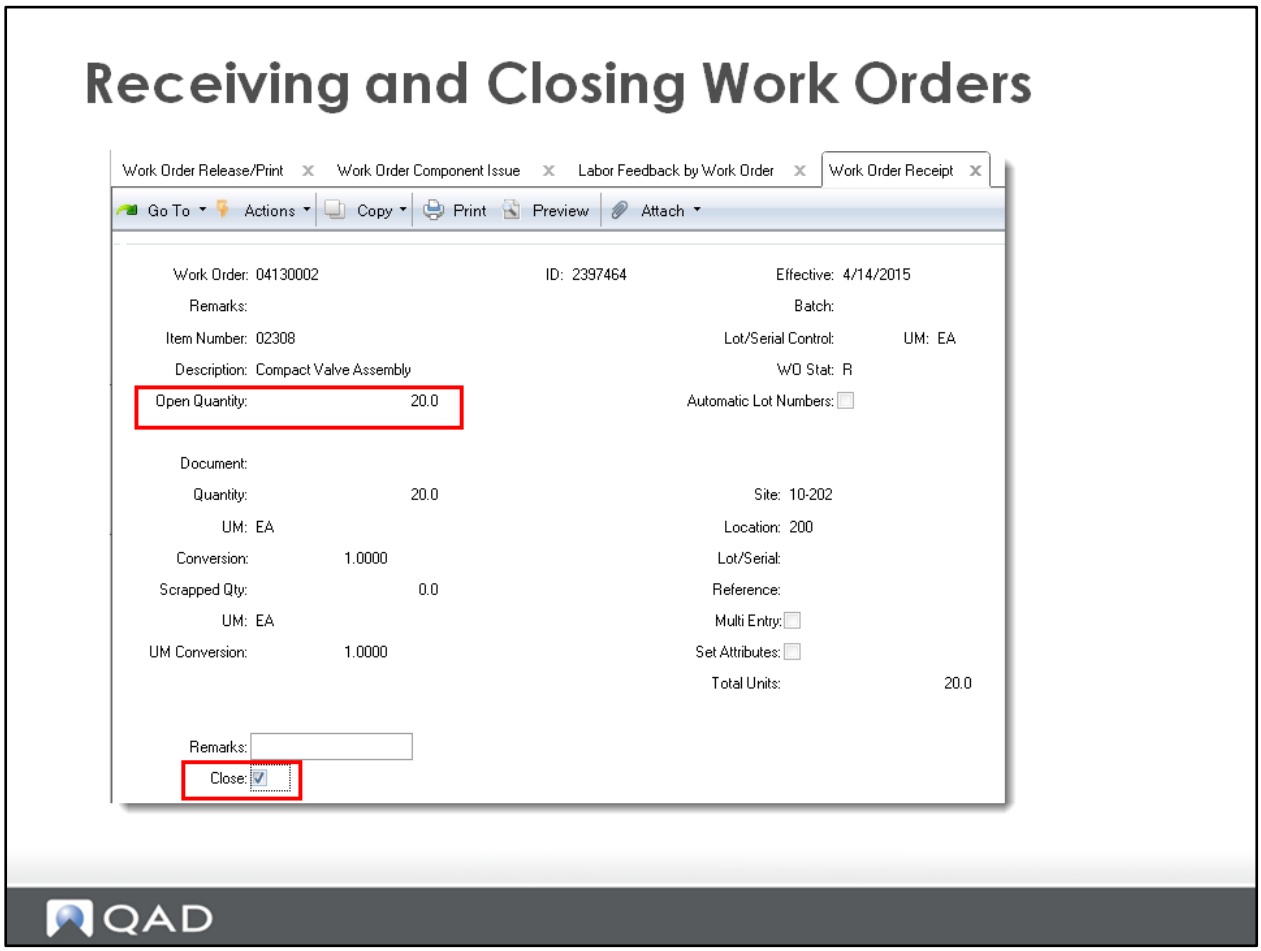
Click Yes when prompted to display items being issued. You then have an opportunity to verify that the correct items are being issued from the correct locations and in the correct quantities. Then, click Yes again when prompted to confirm the transaction and issue the components.

Reporting Labor



On the shop floor, Alex (employee 10-EMP01) uses Labor Feedback by Work Order to report the labor for completing 20 units of item 02308. Operation 10, shown here, is the first operation completed. Ensure that you report labor for each of the operations (operation 10, 20, 30, and 999).

Receiving and Closing Work Orders



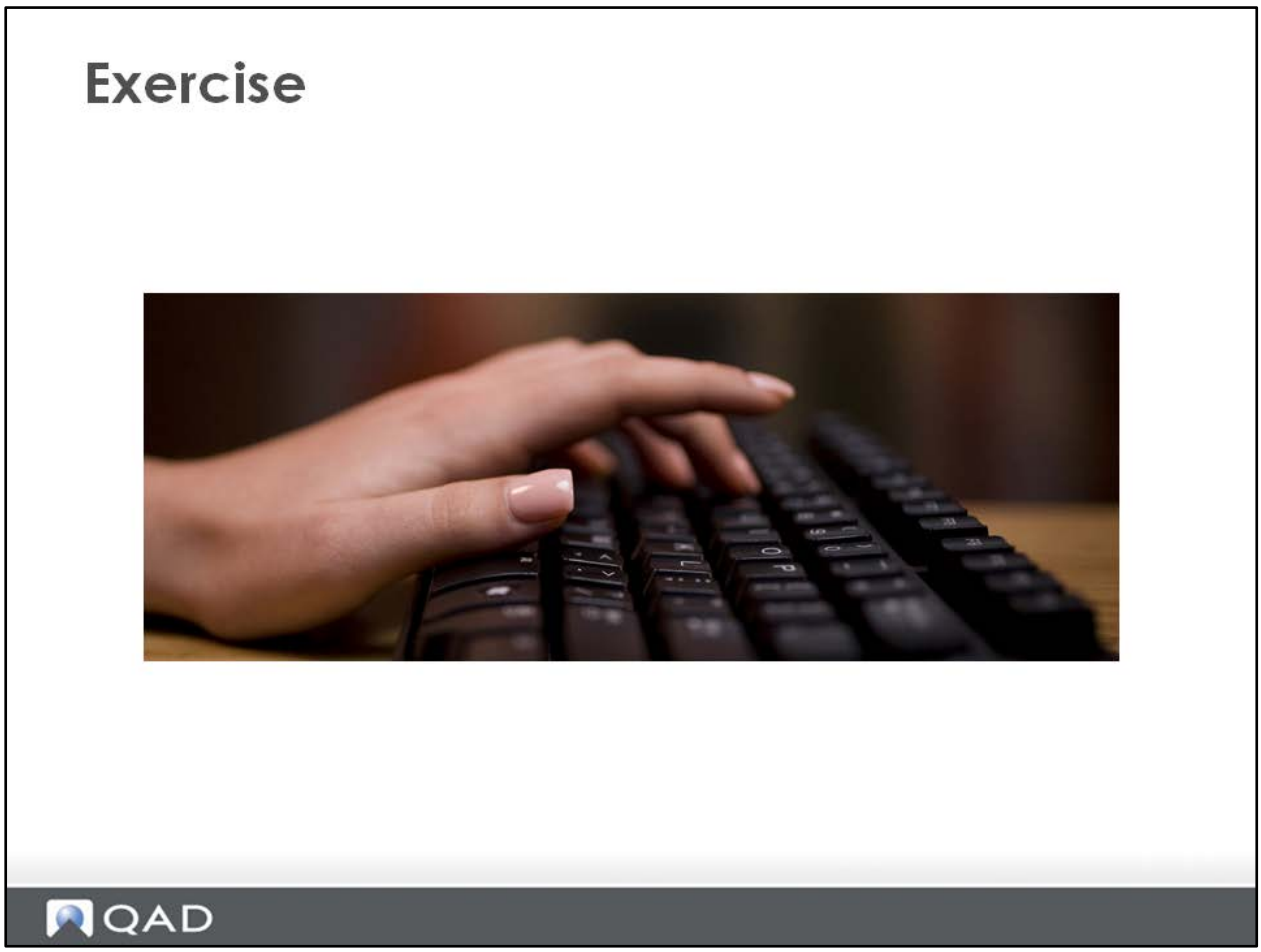
Using Work Order Receipt, the Finished Goods Inventory personnel receive 20 units of 02308 and close the work order. This step indicates that the work order is complete and is closed from a manufacturing standpoint.

To do a partial receipt, enter the quantity received into inventory and leave the Close box unchecked. The partial receipt leaves the work order status at R (Released) and open to receive the balance of the items at a later time.

When the finished items are received into inventory, they are available for shipment to customers. The shipping and logistics staff can process the allocation, picking, and shipping.

Another order, 1002, must be processed in the same week. The process is identical to that performed for order 04070004.

Exercise



Exercise 1: Settings

1. Set the forecast consumption rule to consume one week backward and one week forward in Sales Order Control.
2. Disable Global Requisition System (GRS) in Requisition Control. These exercises use purchase requisition, not GRS.

Exercise 2: Forecast and Forecast Consumption

Use the Plan-to-Perform Process Map to navigate to the functions you need for the following exercises:

1. In Forecast Worksheet Maintenance, enter the forecast for item 02308 at site 10-202 at 50 units per week for the next three weeks, excluding the current week.

   The screen displays only 13 weeks; click Next until you get to the current week.

2. Create a sales order selling item 02308 to customer 10C1002. Enter the following data:

Line 1

Item: 02308

Site: 10-202

Quantity: 20

Due date: Two days from today

Consume Forecast: Yes

Line 2

Item: 02308

Site: 10-202

Quantity: 10

Due date: One week later than Line 1's due date

Consume Forecast: No

3. Use Sales Order Confirmation to confirm the sales order.
4. Use Forecast Worksheet Maintenance to review the effect of sales order on the forecast.

Exercise 3: Master Schedule and Production Schedule

1. Make sure that the Use Plan/Sched Workbenches option is selected for site 10-202 in Site Maintenance.
2. Run MRP for site 10-202 so that the demand you entered in Exercise 2 is calculated for planning the purchase and manufacture.
3. Open Master Scheduling Workbench and use the Search panel to locate the scheduling data for 02308 on site 10-202.
4. Use the Supply/Demand grid on MSW to view the demand and supply summary of item 02308. You can see that:
   - The current week is highlighted in red, which indicates that there is a negative projected quantity on hand.
   - The Supply is planned to meet the demand.
5. Go to the Production Order Maintenance tab at the bottom of the workbench and locate the production order planned for the demand of the sales order line 1 for 20 units. Record the work order number: _____.
6. Go to the Production Order Maintenance tab and approve the work order with 20 units by changing the status to Firm. Now, you can see that the quantity of 20 is displayed in the Schedule grid of MSW.
7. Go to the Production Scheduling panel on the workbench. The order that you approved is scheduled.
8. Expedite the order by changing the due date to one day earlier. Now, you can see that the component status shows "Projected Shortage".

Exercise 4: Components Preparation

Note: Due to the legacy data in the training system, you may find that it is difficult to explicitly recognize the influence of your operations in the system. To alleviate the distraction from the legacy data, we will filter out the components of item 02308 within the planning horizon.

1. Use the Shortage Report tab on the workbench to identify the components that are in short supply. Drag and drop the column header of the parent item to the top of the Shortage Report to group the data by parent item. Then, group the data using the Purchased/Manufactured column.

2. In both the L group and P group, identify the components with a status of Planned Receipts and Projected Shortage, and record the component numbers.
   P: _____

   L: _____
   Note: MRP calculates the component requirements for all demand within the CAC Horizon, seven days are set in the training environment.

3. Purchase all the manufactured and purchased components with a non-available status from supplier 10S1002. Approved the planned POs and receive the items into inventory (location 200 on site 10-202).
   - Approve planned purchase orders using Planned Purchase Order Approval.
   - When you approve planned POs for manufactured components, set Include Manufactured Items and Include Kanban Replenished Items to Yes.
   - Use Purchase Order Maintenance to place a purchase order against the generated requisitions for site 10-202. Use one order line for each requisition until there are no more requisitions in the browse.
   - Receive the purchased items into inventory using Purchase Order Receipts.

   Note: In a real business environment, you can obtain the manufactured components by releasing and receiving the planned work orders. In this exercise, you buy the components to avoid repeatedly operating the planned work order process.

Exercise 5: Discrete Production Order Process

1. On the Plan-to-Perform process map, navigate to Release Discrete Production Order>Release Discrete Orders Collection.

2. Use the Search tool to filter out the production order you put on firm in Exercise 3.

3. View the action message for it and verify the component availability.

4. Release the work order to plant and print the picklist and routing for review.

5. Navigate to Make Discrete Production Order>Manage Discrete Production.

6. Release components for this order.

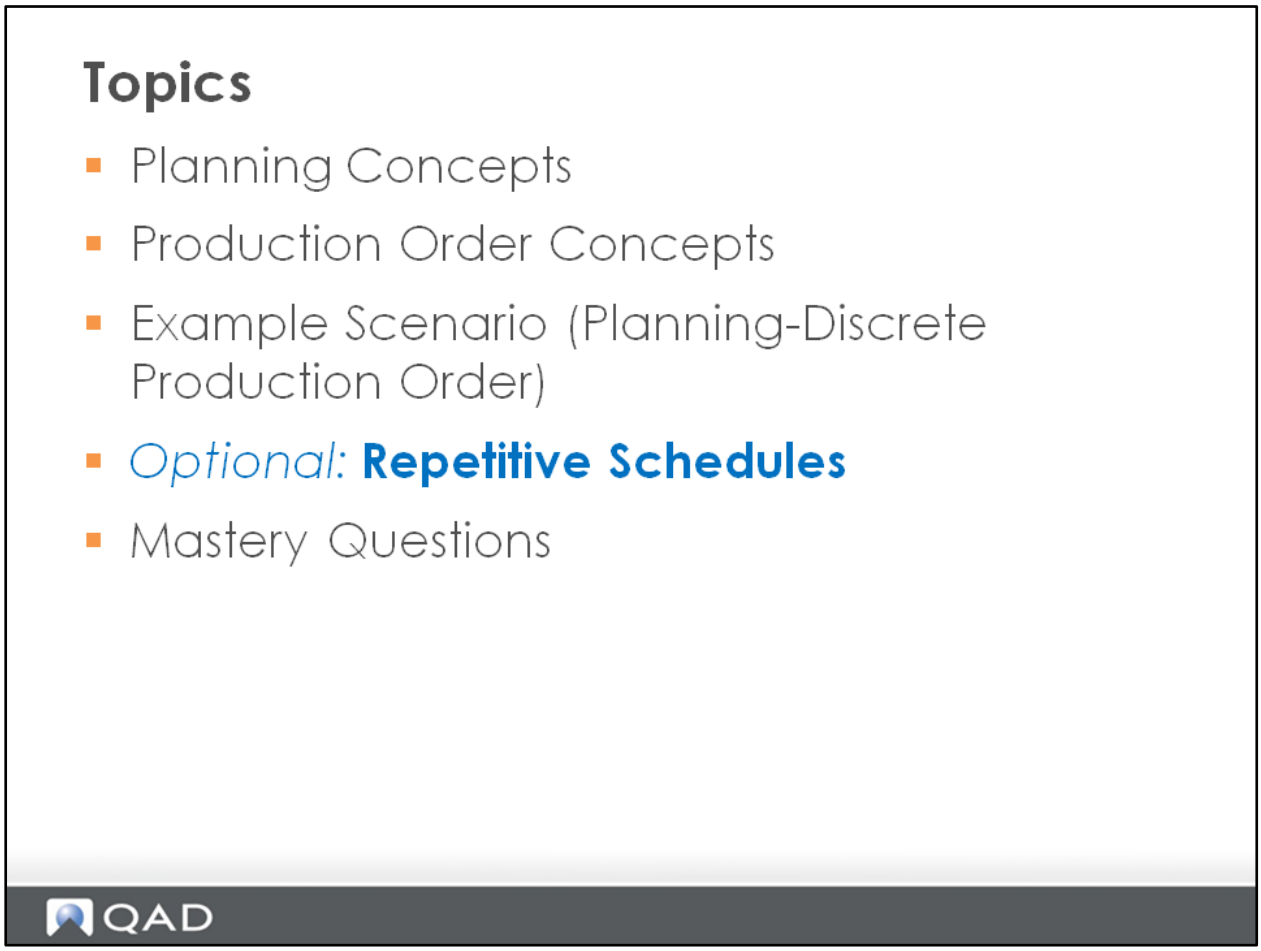
7. Report labor for all operations (10, 20, 30, and 999) of this order.

8. Receive the completed items with a quantity of 20 and close the work order.

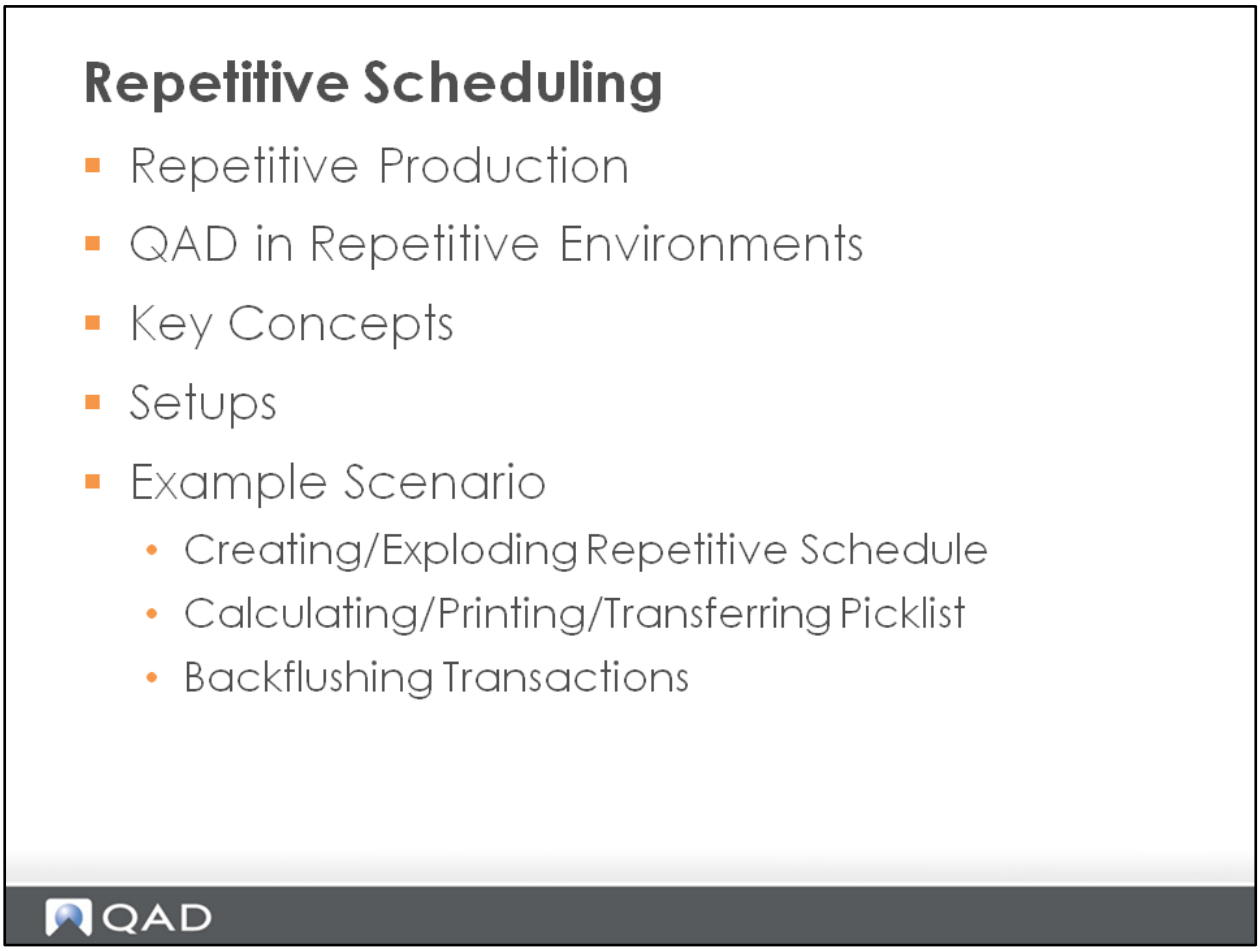
Exercise 6: Sales Order Shipment

1. Allocate the inventory to sales order Line 1.
2. Ship the items to the customer and use Sales Order Shipment to record the shipment.
3. Post and print invoices against the sales order.

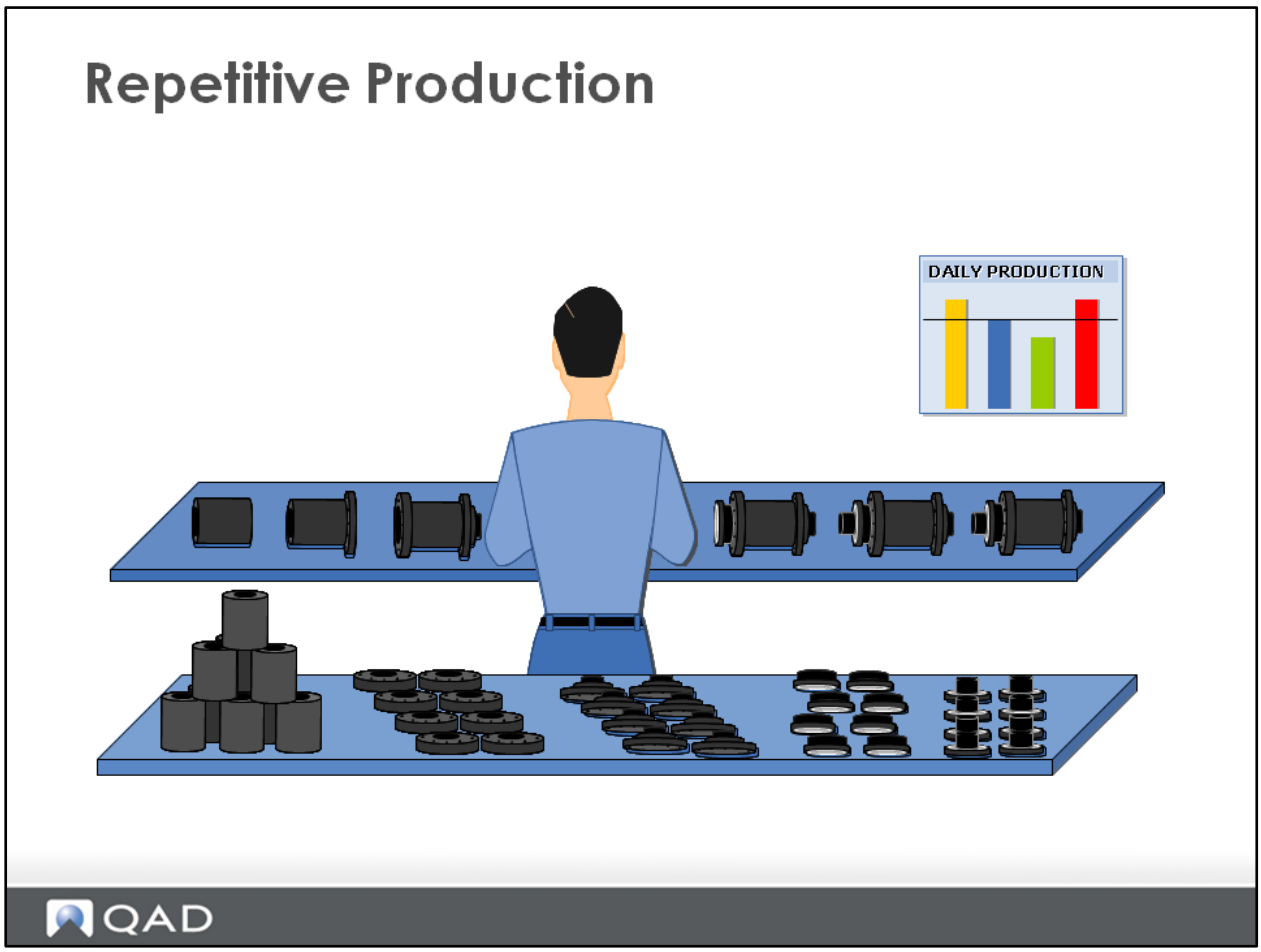
Topics


Topics
Planning Concepts
Production Order Concepts
Example Scenario (Planning-Discrete Production Order)
Optional: Repetitive Schedules
Mastery Questions
QAD

Repetitive Scheduling

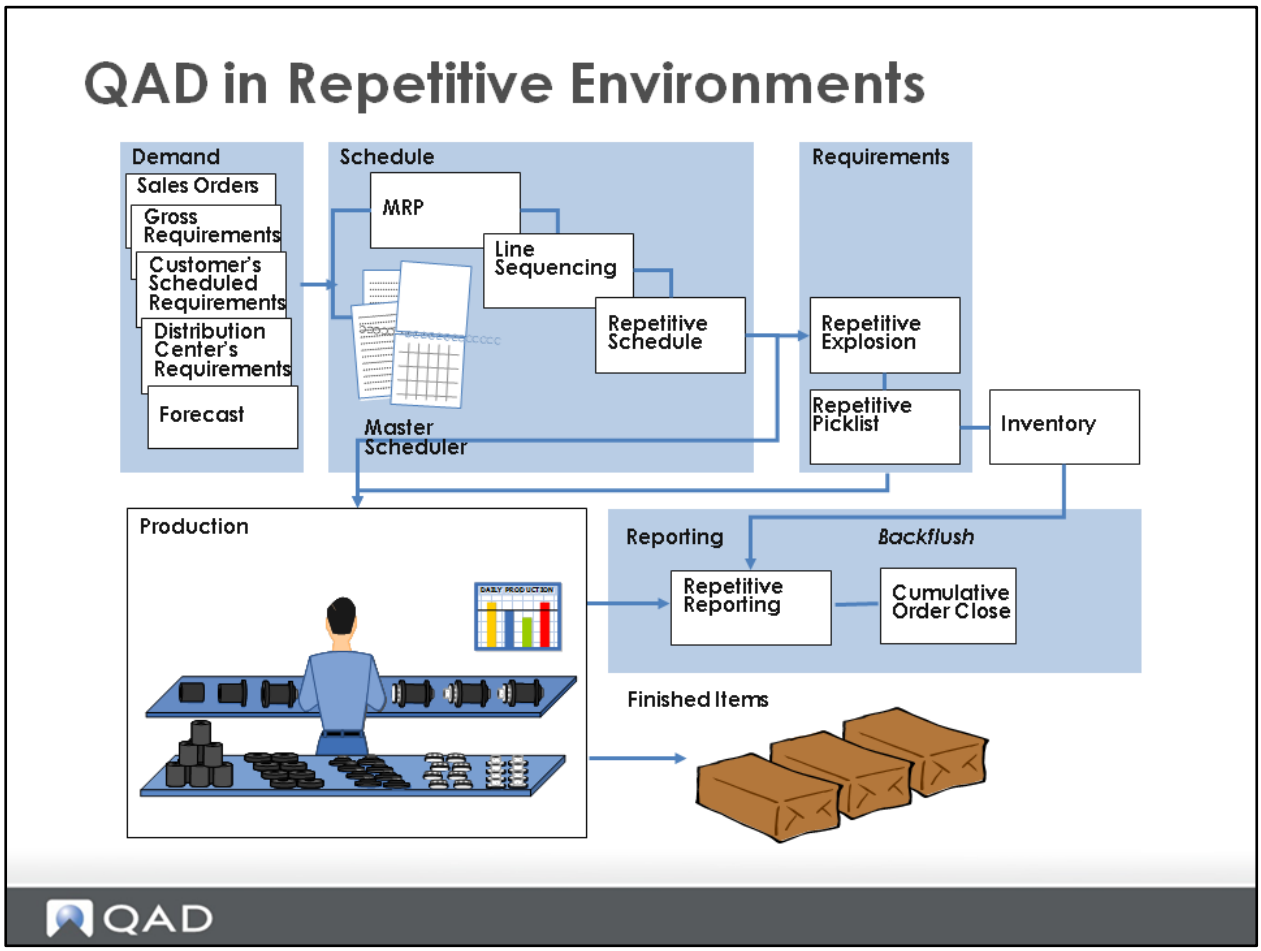


Repetitive Production



Repetitive manufacturing is the production of individual items, using the same process for all items. In this kind of manufacturing, the process has been brought under a high degree of control. There is little variation, and therefore, little need for paperwork for each item produced. Production is managed by creating a schedule of production, and then measuring actual production against what the schedule planned.

QAD in Repetitive Environments



Supports Most Repetitive Environments

The QAD Advanced Repetitive module supports the reporting and management requirements of most repetitive environments.

Scheduling/Reporting

In a repetitive environment, you normally need two things from a computer system: the ability to create schedules and the ability to report on what happened. The schedules set requirements at each operation, and you can determine at which operation you want to report production counts. Labor reporting is optional.

Manual or Line Sequencing

In QAD Enterprise Applications, you can do the scheduling manually, or use the line sequencing functionality. Line sequencing enables you to import QAD planned orders into a simulated schedule, and then modify the schedule based on the actual capacity of a production line.

Explosion and Picklist

Once you establish a schedule, you must explode it. Exploding a schedule determines what will be done at each operation and when. It also determines the materials required at each operation. In environments where inventory is stored on the line, the repetitive picklist enables you to determine when to replenish the line's work centers.

Activity Reporting

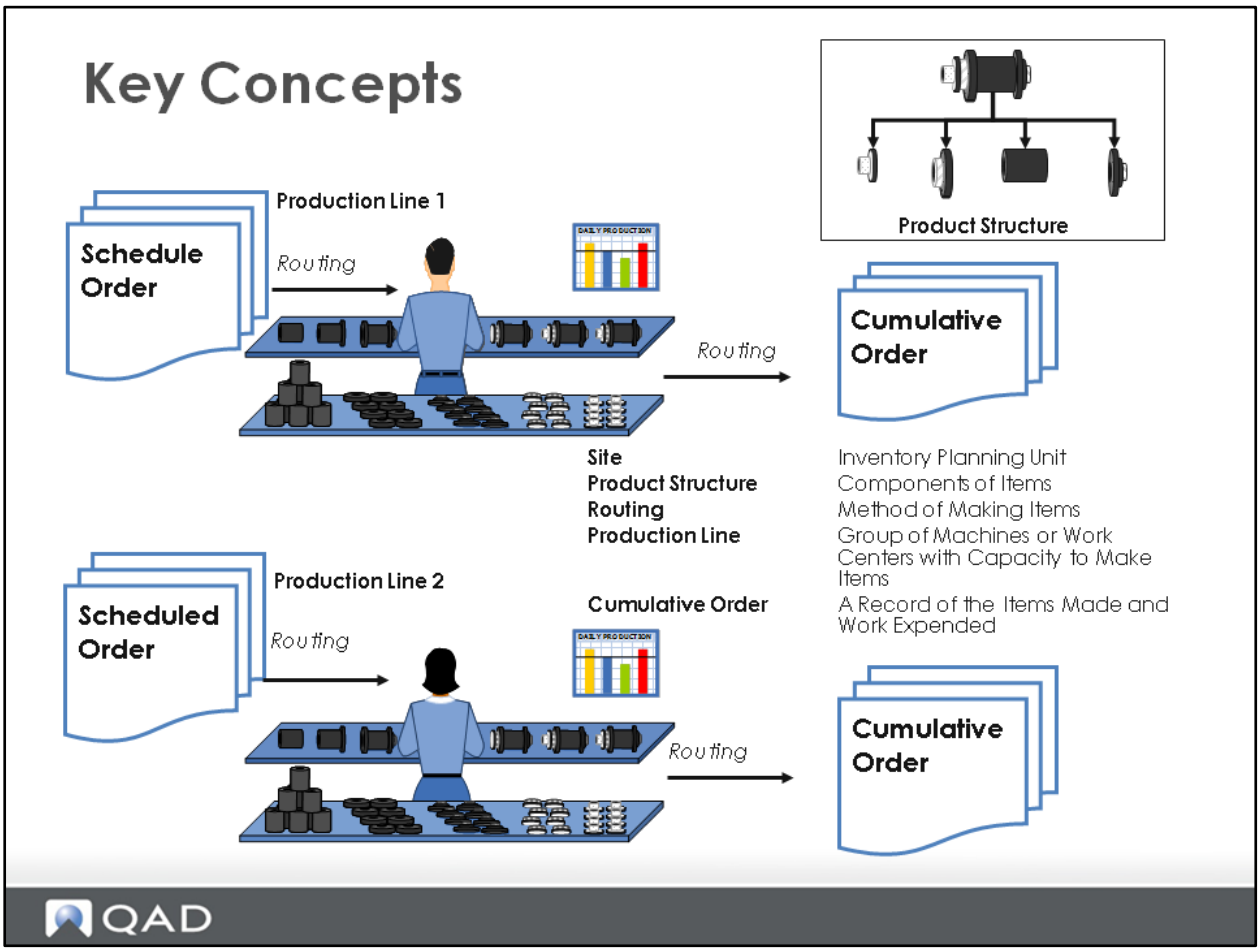
Nine Transaction Types

As work is performed, labor and the movement of WIP units are reported. Repetitive functions enable you to report these activities using various types of transactions, including downtime, scrap, rework, move, and rejected items. There are nine transaction types and several purchase order functions for subcontracted activities.

Updating

The repetitive schedule is updated when units move to stock. Operation schedules are updated when an operation is complete. As the transactions are entered, a cumulative order is updated for costing or for measuring variances.

Key Concepts



Scheduled Orders and Cumulative Orders

You use two basic management functions in a repetitive environment: to set a schedule and to record what happens. In QAD terms, both the schedule and the record are orders. The schedule is a scheduled order, and the record is a cumulative order. Internally, the scheduled order is a special type of work order, and the cumulative order is a type of tally sheet that shows the results of the production and labor reporting.

Note: Cumulative orders are not covered in this training course.

Site

A scheduled order creates a requirement to make a certain item at a certain place, with certain materials, using a certain method. The place is a site. In QAD Enterprise Applications, a site is more a planning term than an actual geographic term.

Organization of Orders/Schedules

QAD Enterprise Applications organizes orders by site, item, product structure, and routing. It organizes schedules by site, item, product line, product structure, routing, and day.

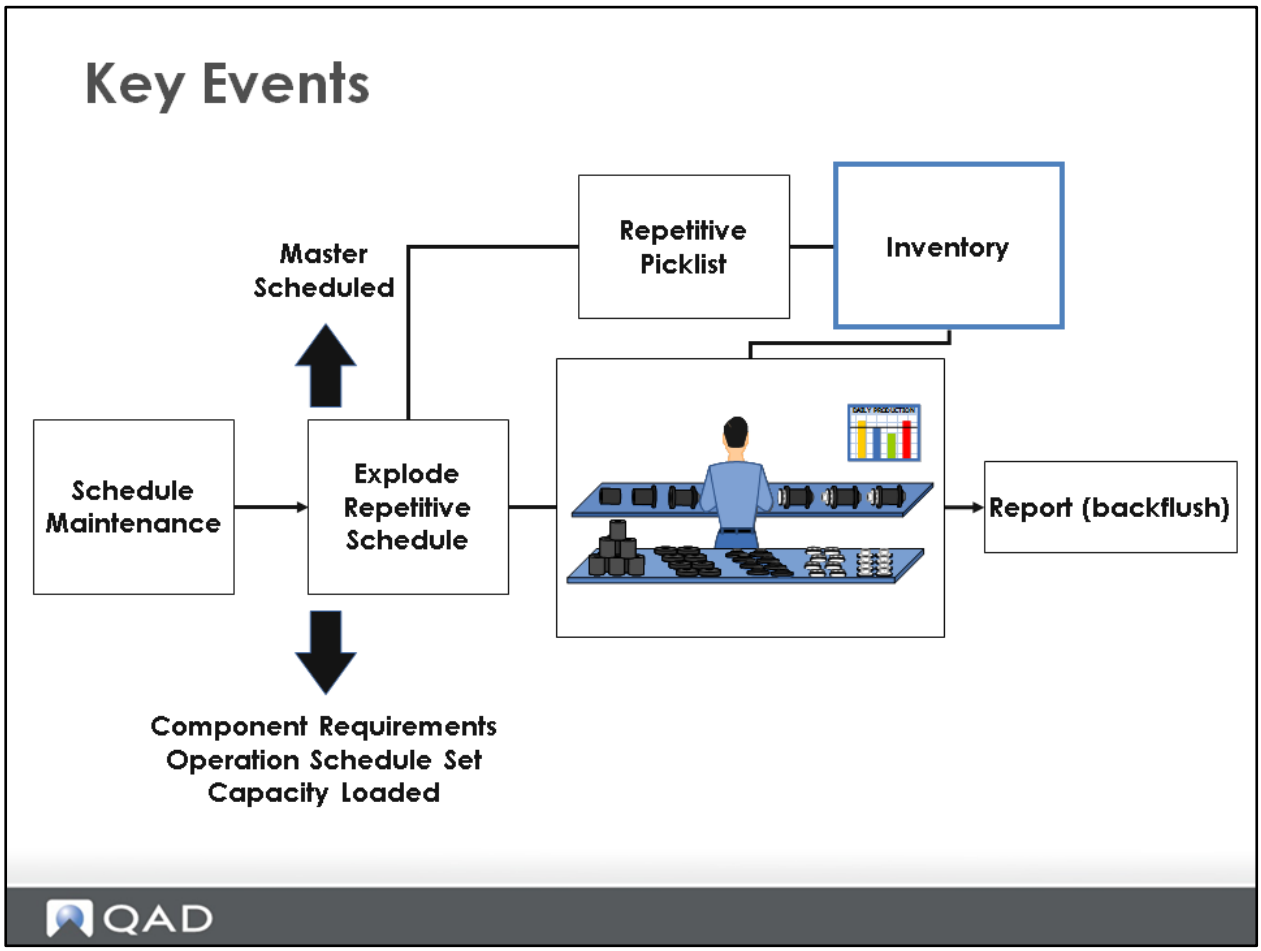
Product Structures/Routings

An item has components. The list of components is the item's product structure or formula. Each item can have more than one product structure. However, each order for an item with a different product structure is treated as a different order. Routings are the methods for making an item. The same logic is true for routings. You cannot combine items with different routings on one order.

Production Lines

Production lines identify a series of work centers and machines, normally dedicated to the manufacturing of a specific number of products or families. Each production line has a certain capacity it is expected to produce. Multiple production lines can have the same routing, but each line can have a different capacity. Scheduled orders and cumulative orders for one production line are treated as different from orders for another line, even if the routings and structures are identical.

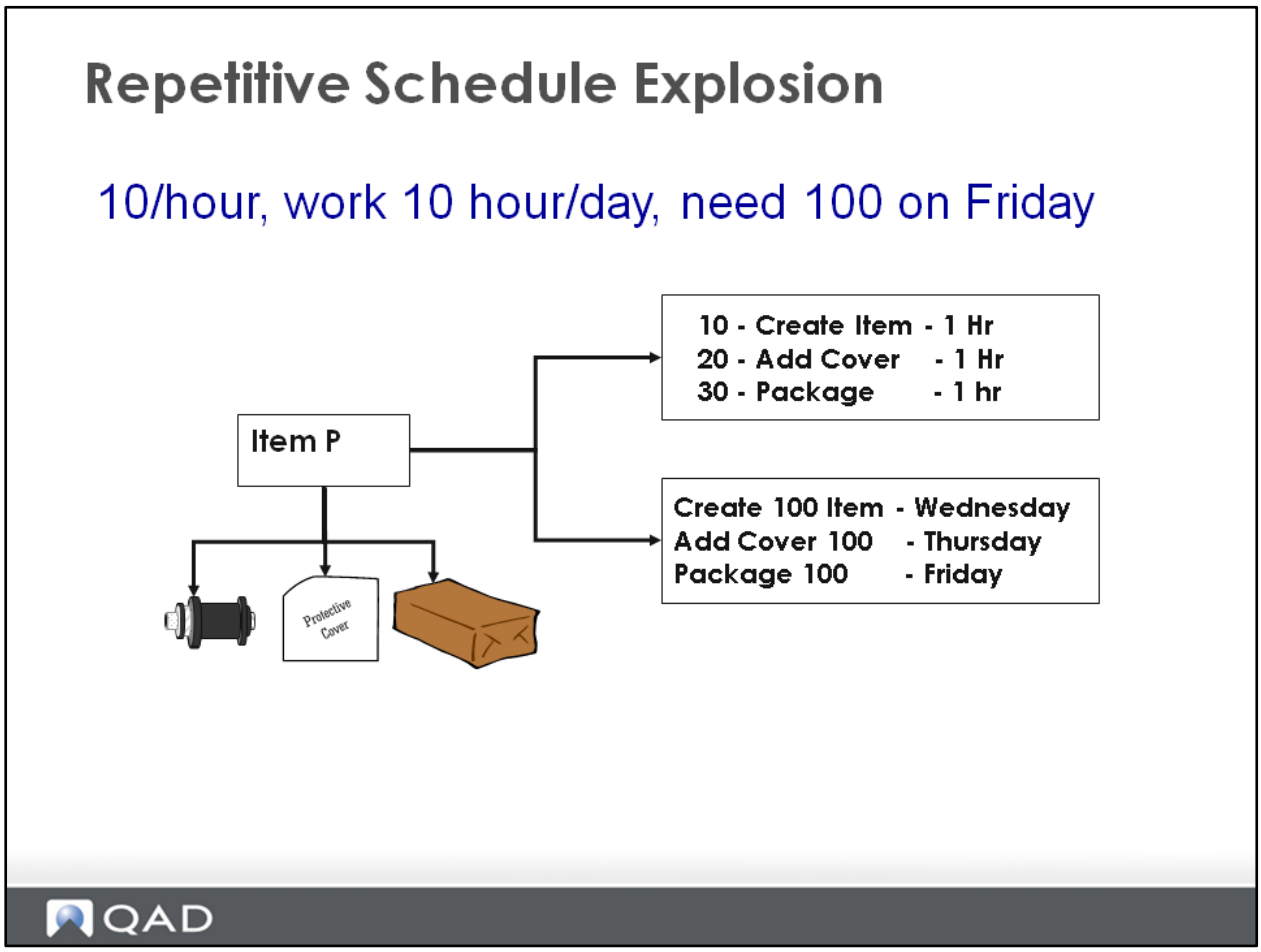
Key Events



Key events in repetitive scheduling are introduced in the following pages:

- Repetitive Schedules Explosion
- Repetitive Picklist Cycle
- Repetitive Reporting

Repetitive Schedule Explosion



Repetitive Schedule

The schedule contains a date, an amount, a product structure or formula, and a routing. The repetitive schedule is always a daily schedule, and is not further subdivided by shift. The schedule can be created manually (by a master scheduler) or brought in from the line sequencing module. Entering a repetitive schedule for an item, or product structure, and the routing establishes supply.

In the example in the slide, a schedule for 100 devices to be completed on Friday comes in through Schedule Maintenance (18.22.2.1). The product structure and routing default from the item planning data for that item and site. According to this product structure, the device has three components, and each component is added in a step.

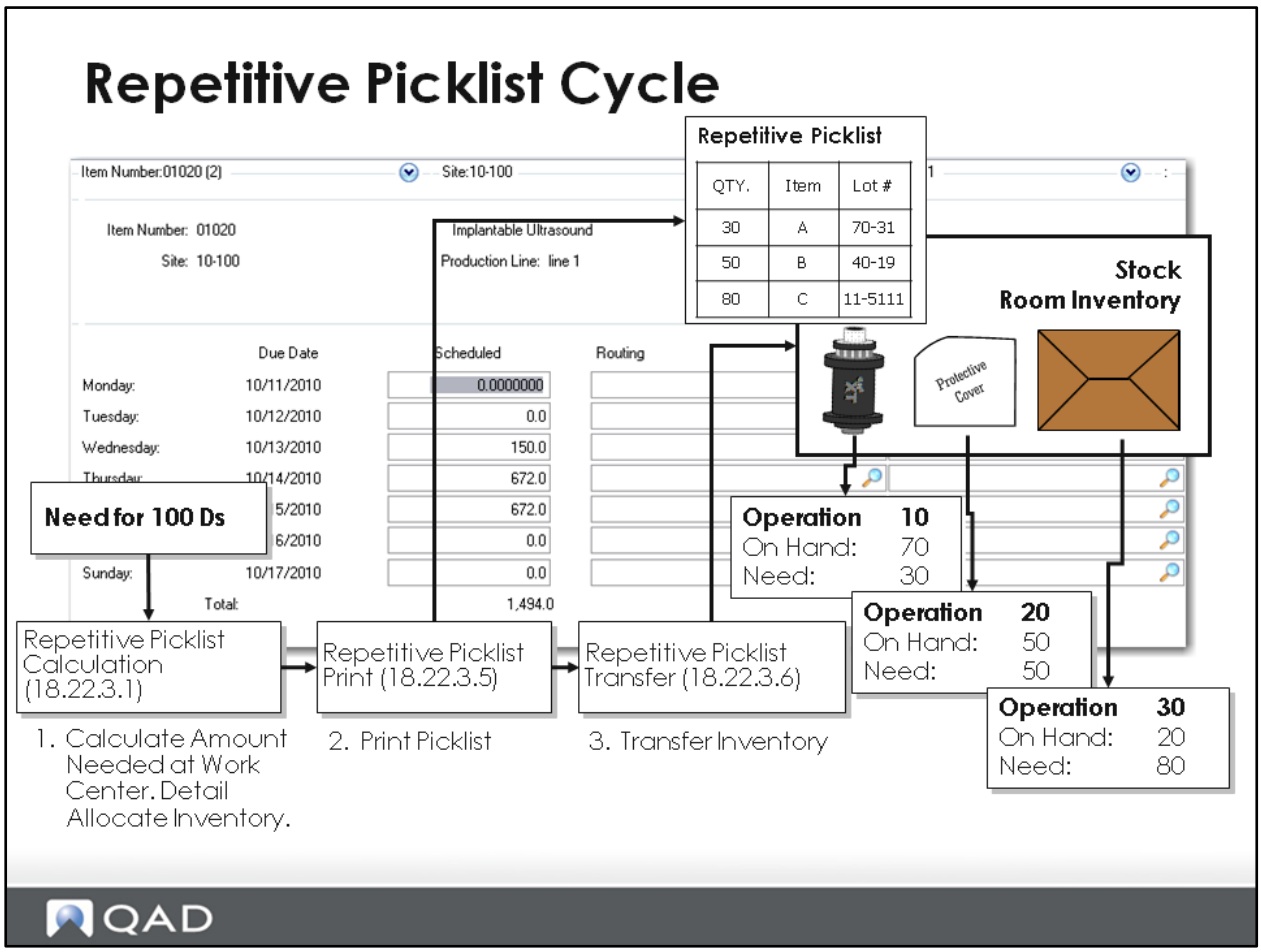
Component Requirements Established after Schedule Explosion

After you enter the schedule, the system regards it as supply. The component requirements are established only after you run MRP or the repetitive schedule explosion. In the example, the explosion schedules the material and the work centers for each operation. Since each operation takes one day, the requirements for Friday translate into requirements at operation 10 on Wednesday and operation 20 on Thursday (assuming overlap is zero in the routing).

Operation Schedule Report

The full schedule for each operation, including the quantity completed and the open quantity are displayed in the Operation Schedule Report (18.22.2.5).

Repetitive Picklist Cycle

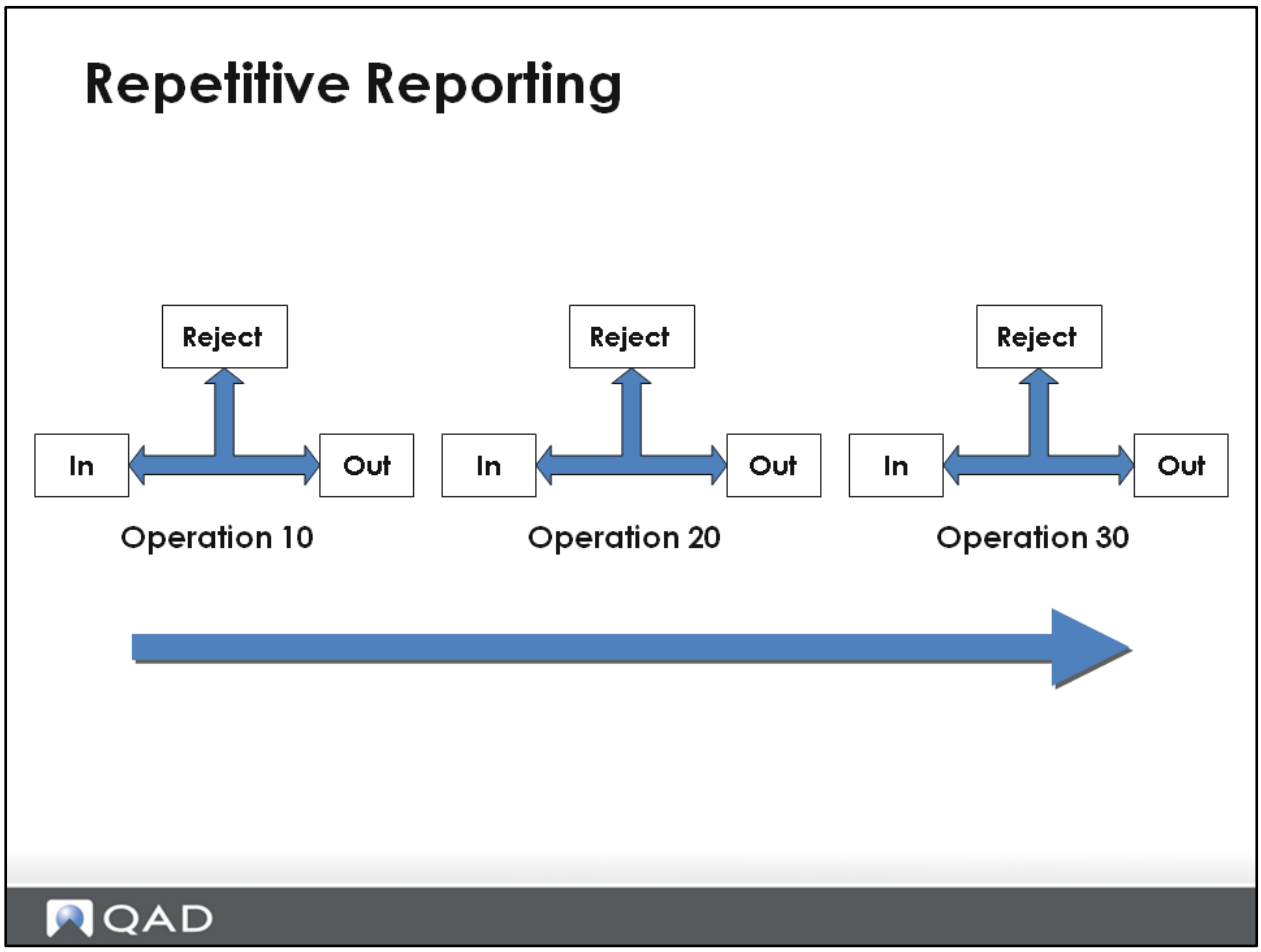


The repetitive picklist allows you to transfer inventory to work center locations in response to schedule requirements. If several repetitively scheduled items have requirements for the same component at a work center, the picklist performs the calculations for all schedules. To use the picklist, ensure that inventory locations with the same name as the work centers are set up.

- Picklist Calculation: Running Repetitive Picklist Calculation (18.22.3.1) allocates inventory. The calculation uses the quantity required at the work center, subtracts the quantity already there, and then adds or subtracts anticipated supply (existing untransferred picklists) and demand (exploded schedules).
- Picklist Print: Printing the picklist moves the status of the inventory from Allocated to Picked. The picking logic used is specified in Inventory Control.
- Picklist Transfer: You must run Repetitive Picklist Transfer (18.22.3.6) to register the physical transfer of components to the floor. This transfer is required to maintain accurate inventory balances,

and does not issue the inventory to WIP. Repetitive components, even when picked, are still backflushed.

Repetitive Reporting



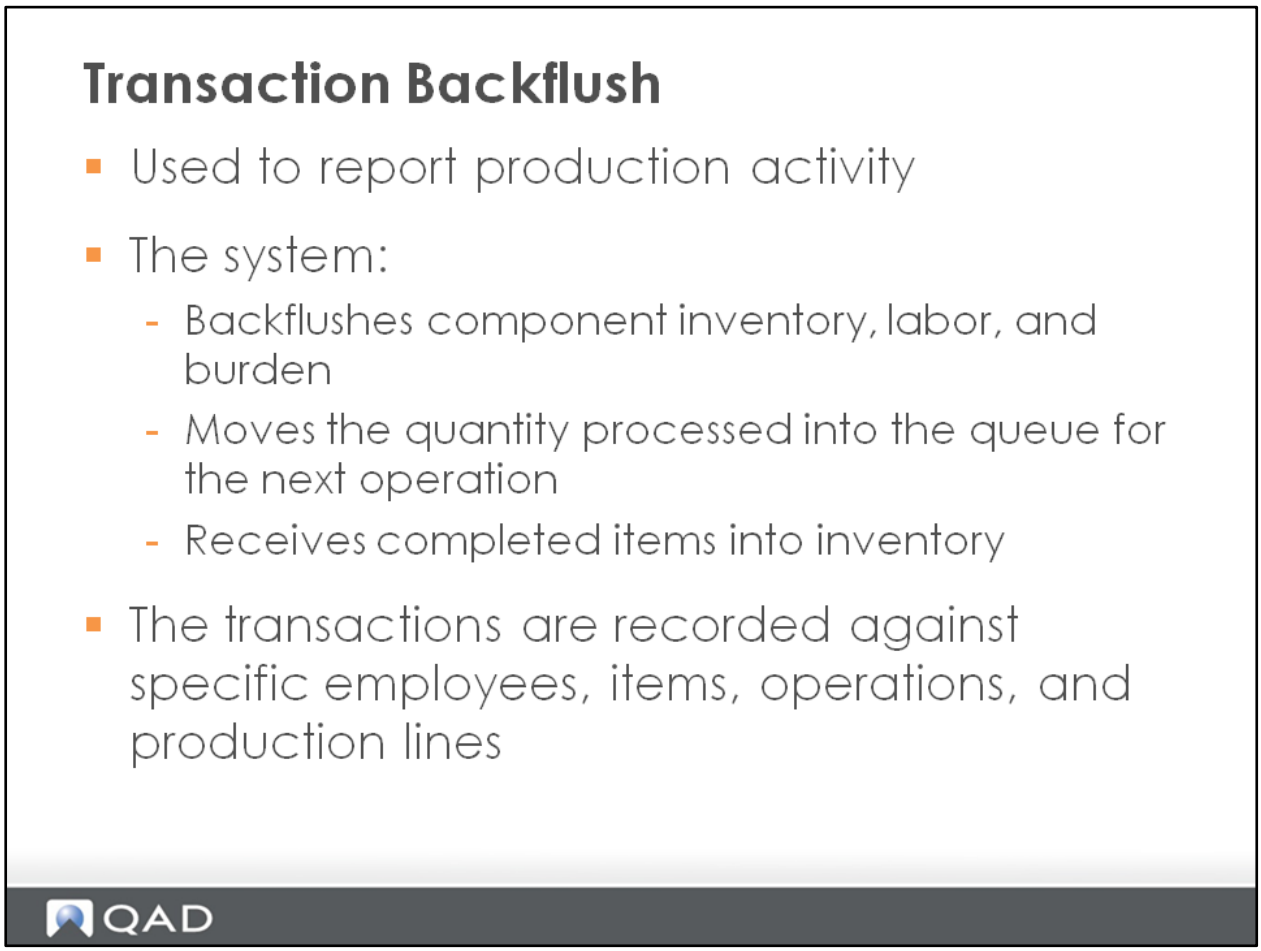
Activity reporting tracks each employee for a specific site, item number, production line, routing, and bill of material (BOM).

- Routing operations have three quantity queues: input, output, and reject.
- The input queue holds quantities from the previous operation.
- The output queue holds quantities from the current operation that have not been moved to the next operation.
- The reject queue holds quantities that the current or a subsequent operation rejected.

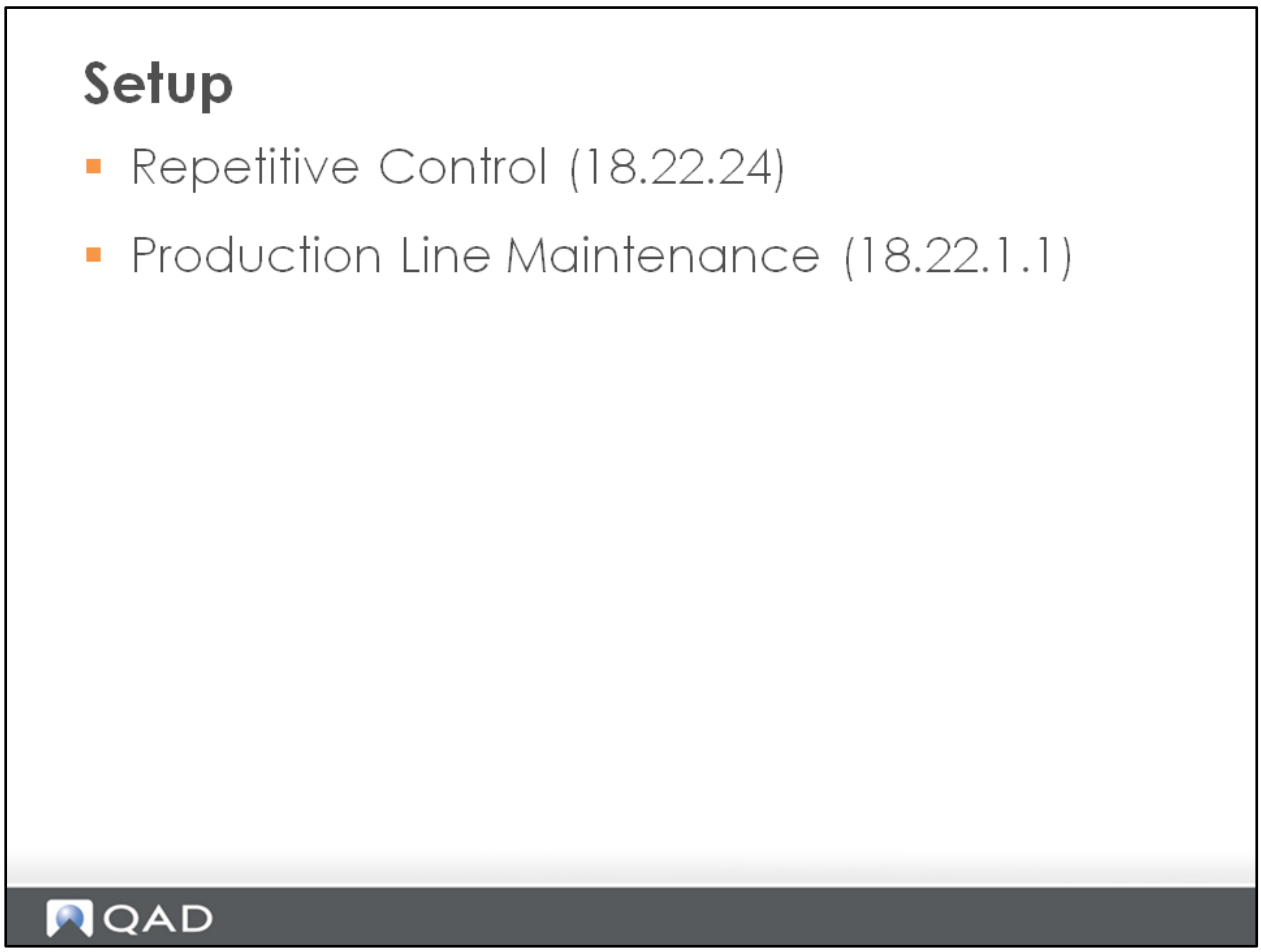
Backflush Transaction

The only transaction that automatically backflushes component inventory is the Backflush Transaction (18.22.13). This transaction backflushes labor and burden if the operation's routing record has the field Auto Labor Report set to Yes (set in Routing Maintenance [14.13.1]). The Backflush Transaction also receives completed items to inventory, if the transaction is made from the last operation.

Transaction Backflush



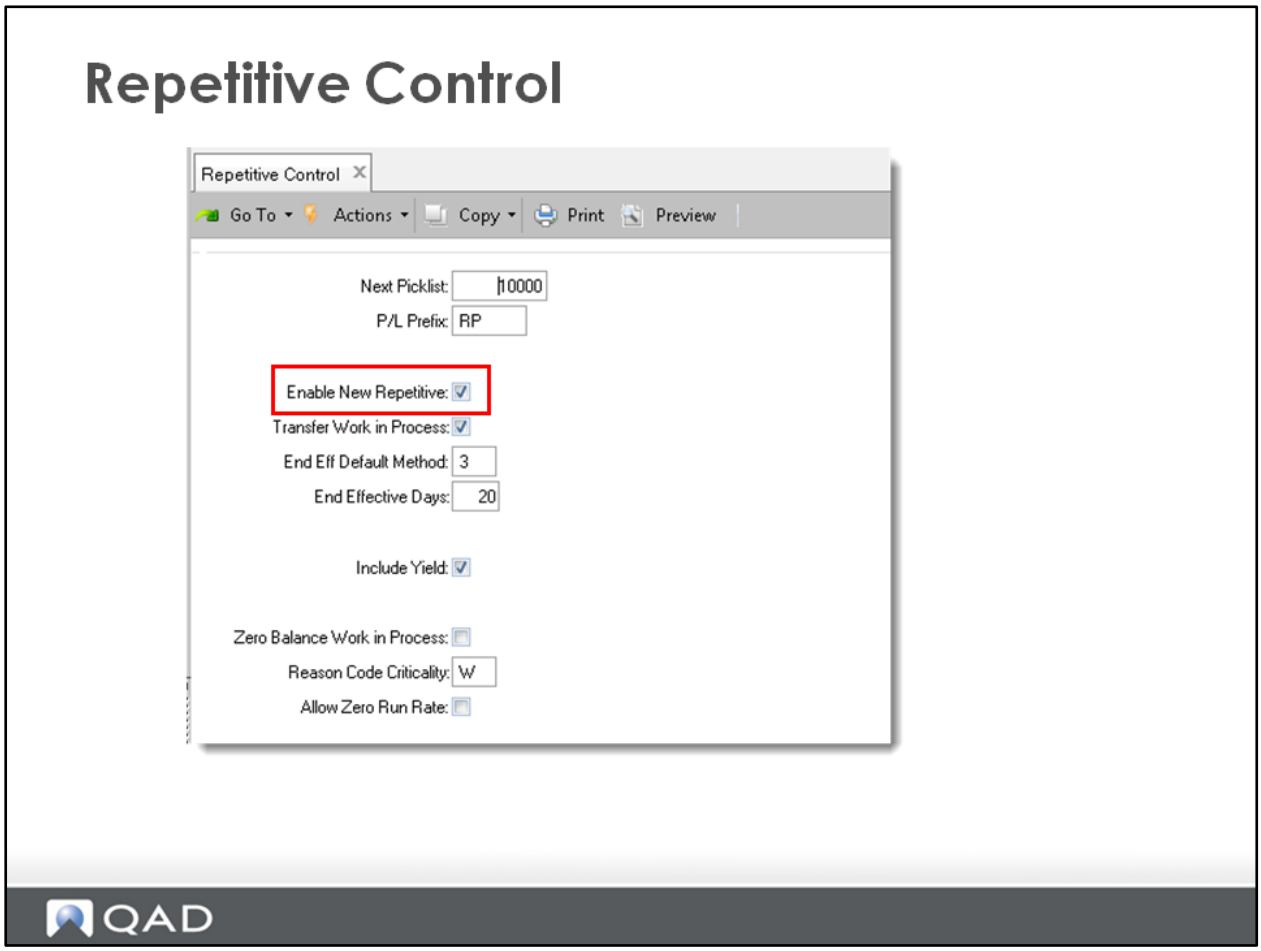
Setup



Additional to the setups required by work orders, Advanced Repetitive requires some additional setup:

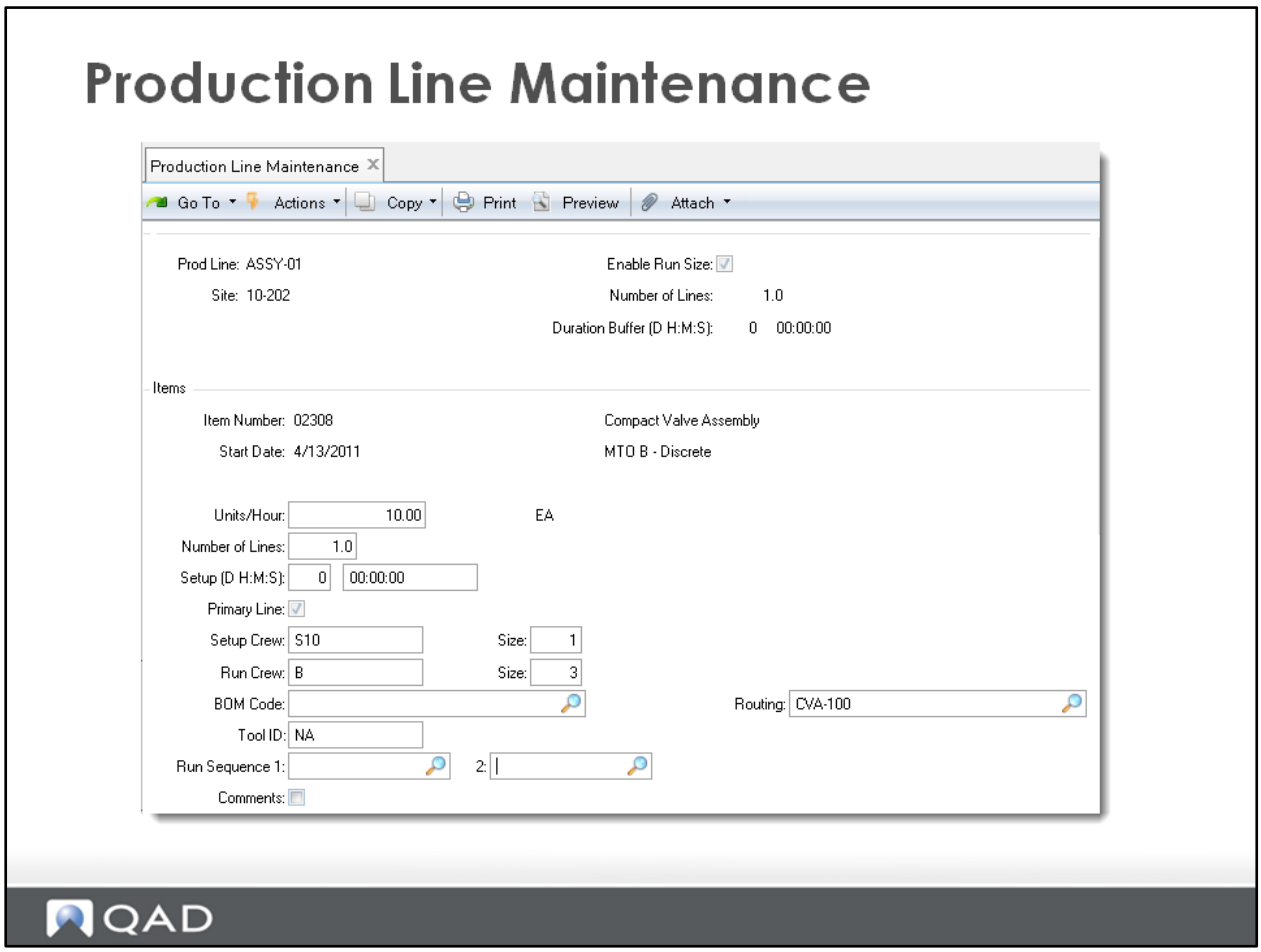
- Use Repetitive Control to enable the Advanced Repetitive functionalities.
- Use Production Line Maintenance to specify attributes for items manufactured in the production line.

Repetitive Control



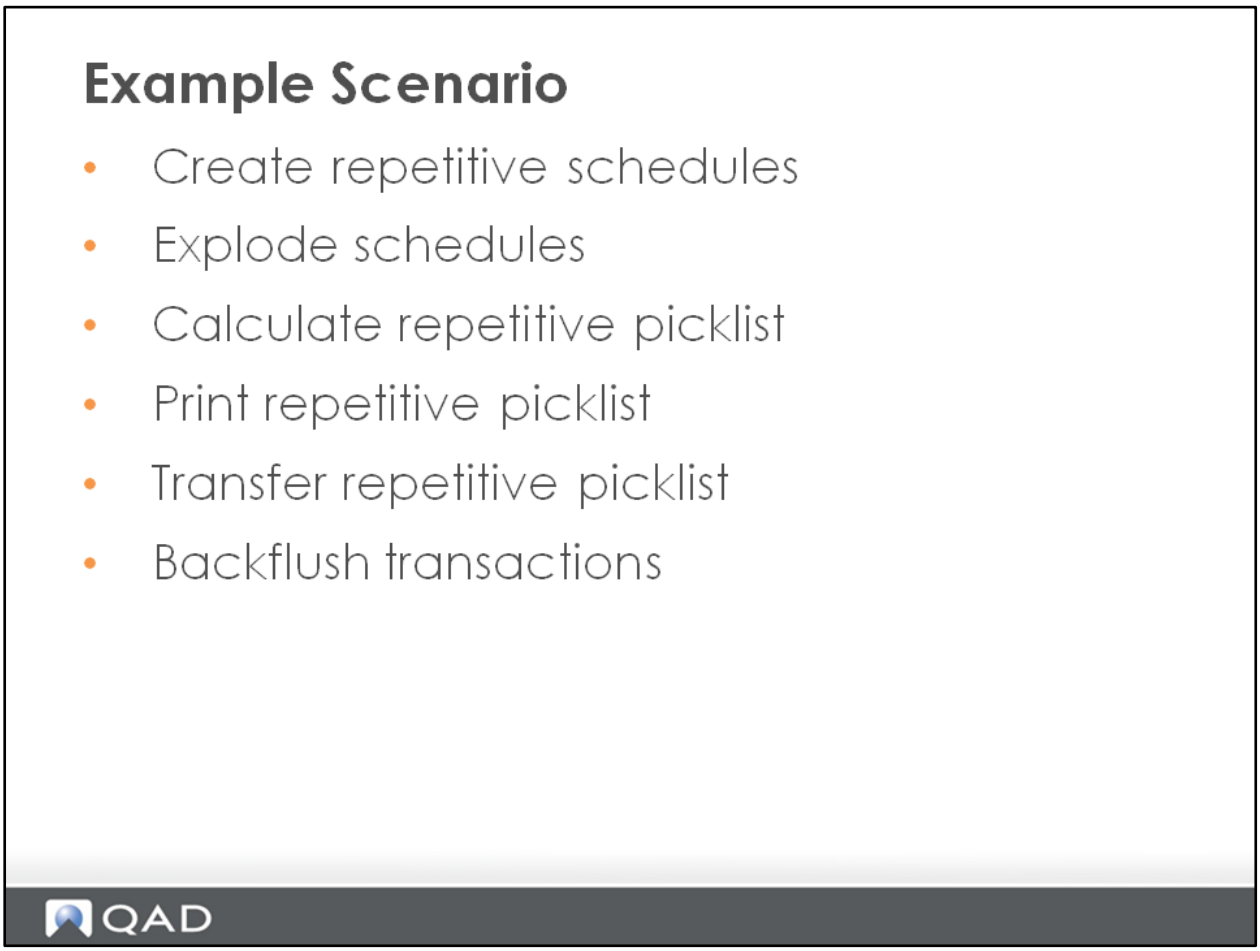
Use Repetitive Control (18.22.24) to activate the Advanced Repetitive functionalities by setting Enable New Repetitive to Yes.

Production Line Maintenance

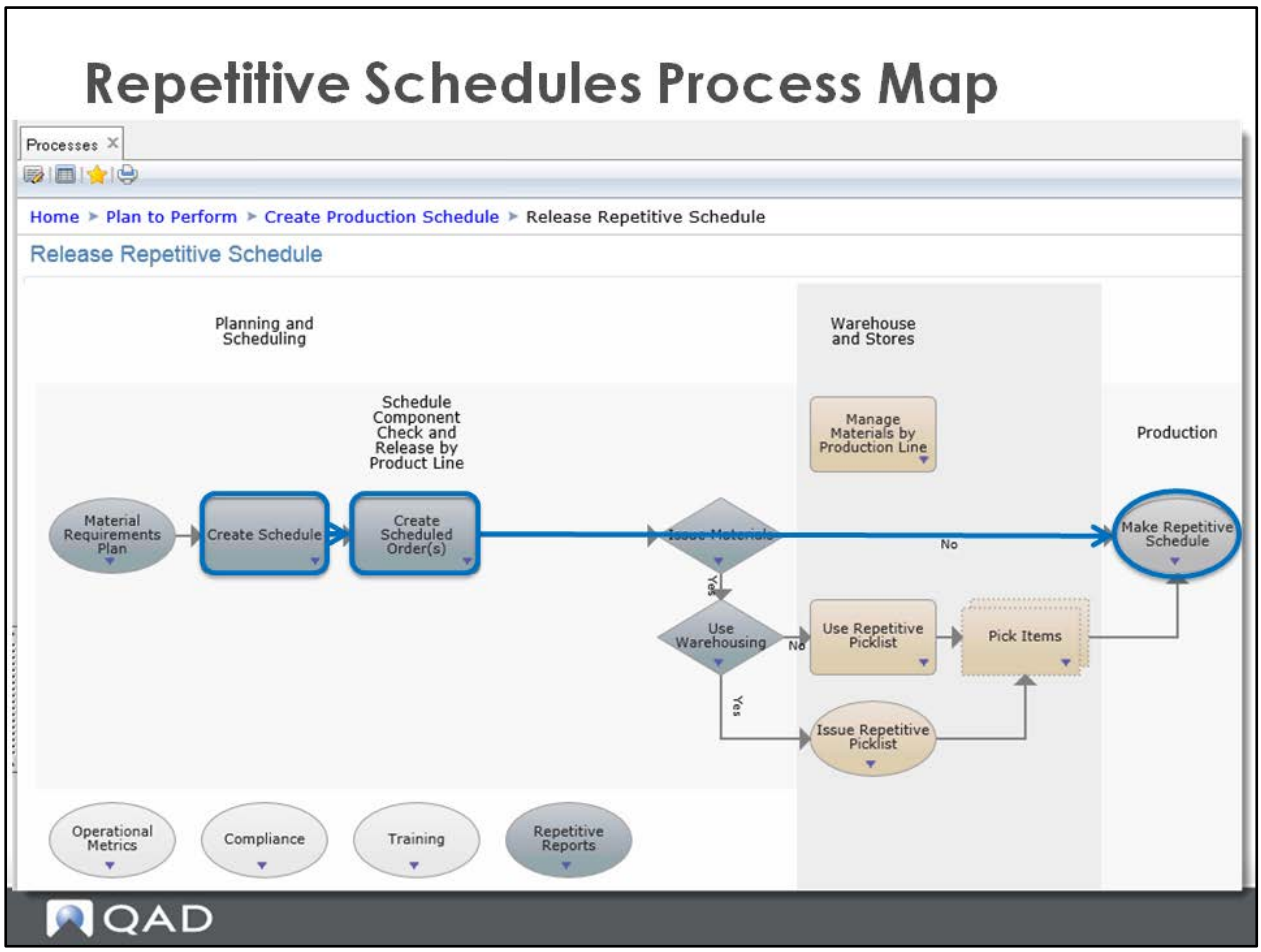


Use the Items frame in Production Line Maintenance (18.22.1.1) to specify attributes and options for a specific item that you manufacture on the production line. The units/hours, number of lines, and setup are display-only fields, and default from the production line setup.

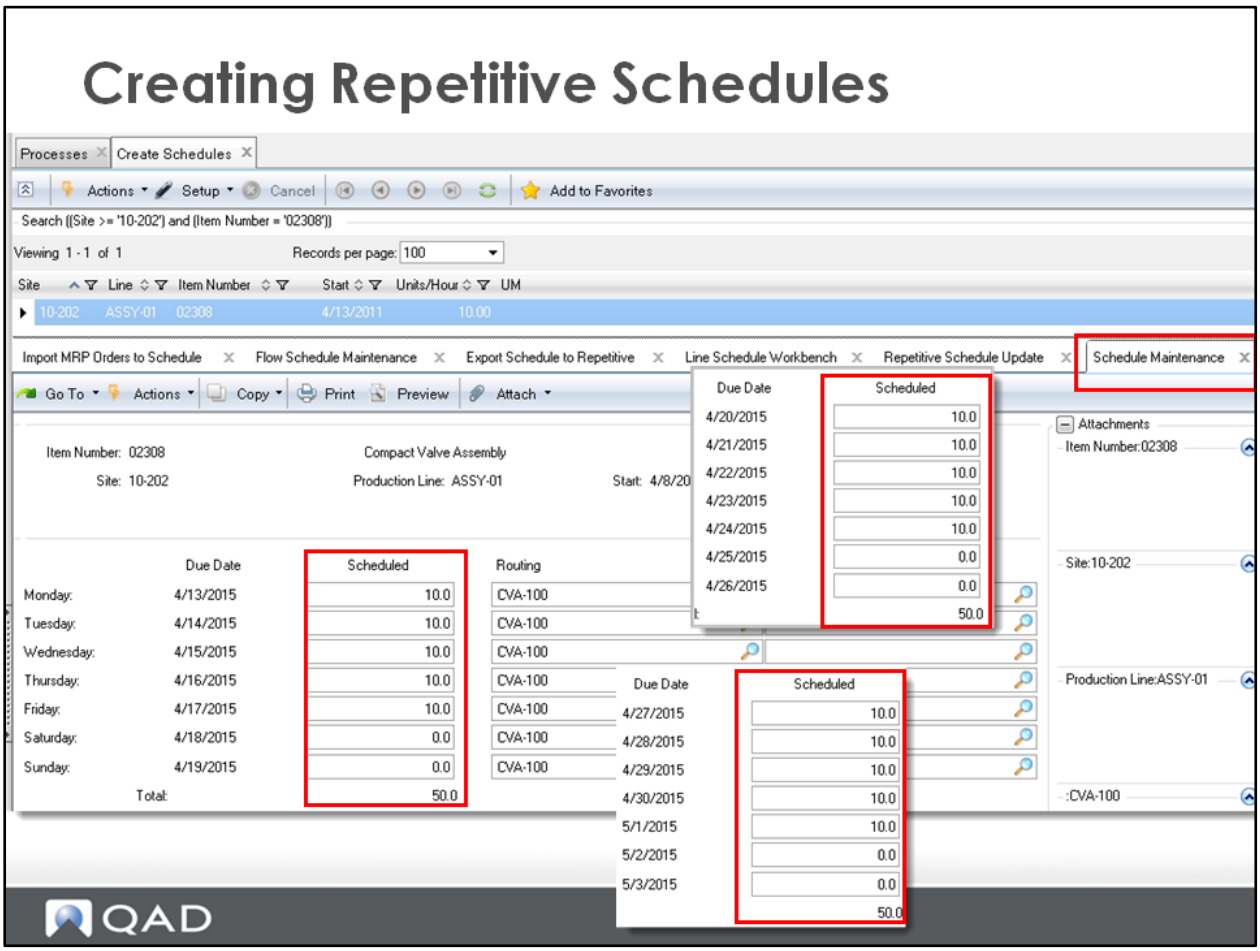
Example Scenario



Repetitive Schedules Process Map



Creating Repetitive Schedules

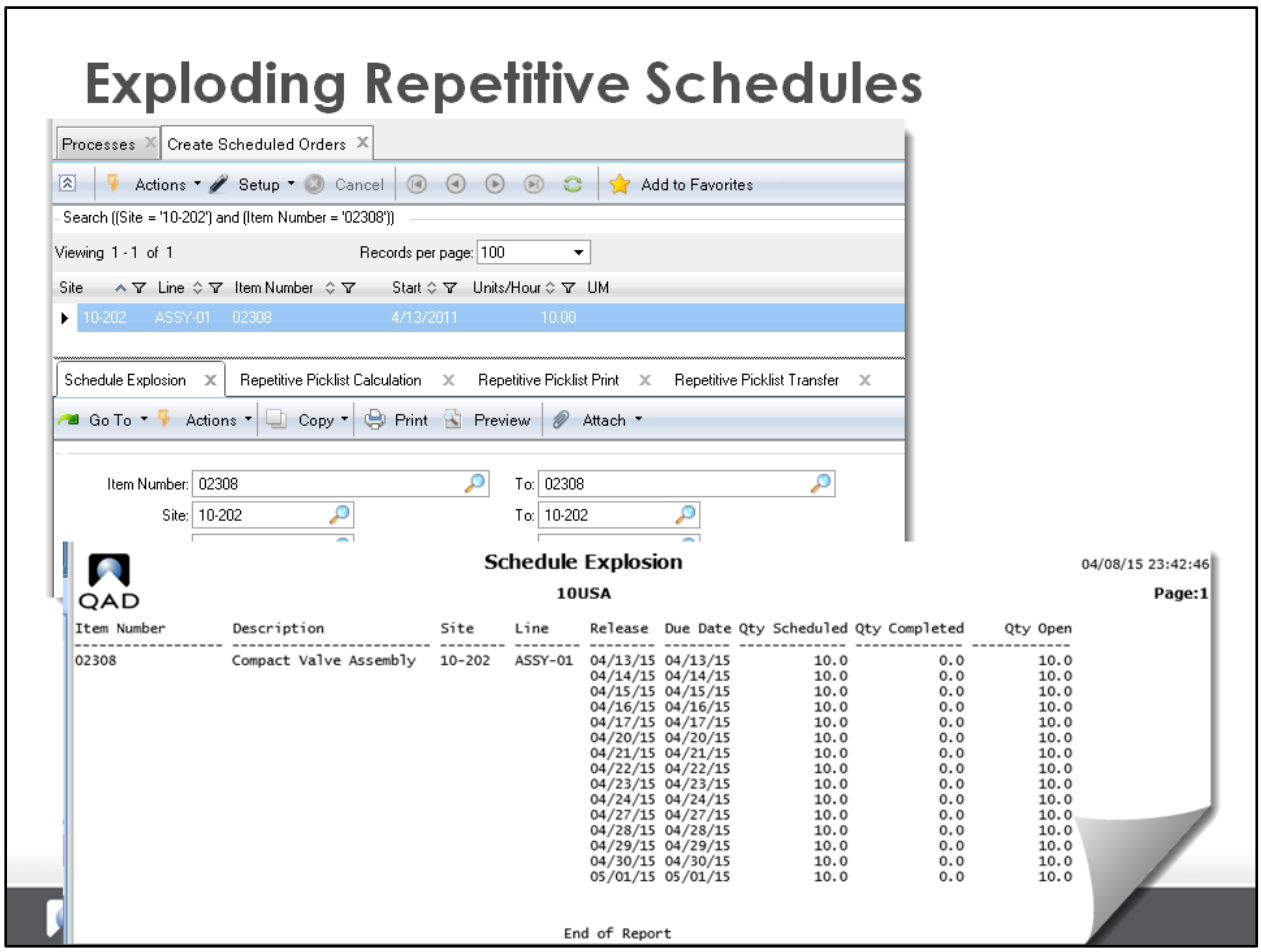


Repetitive Schedule

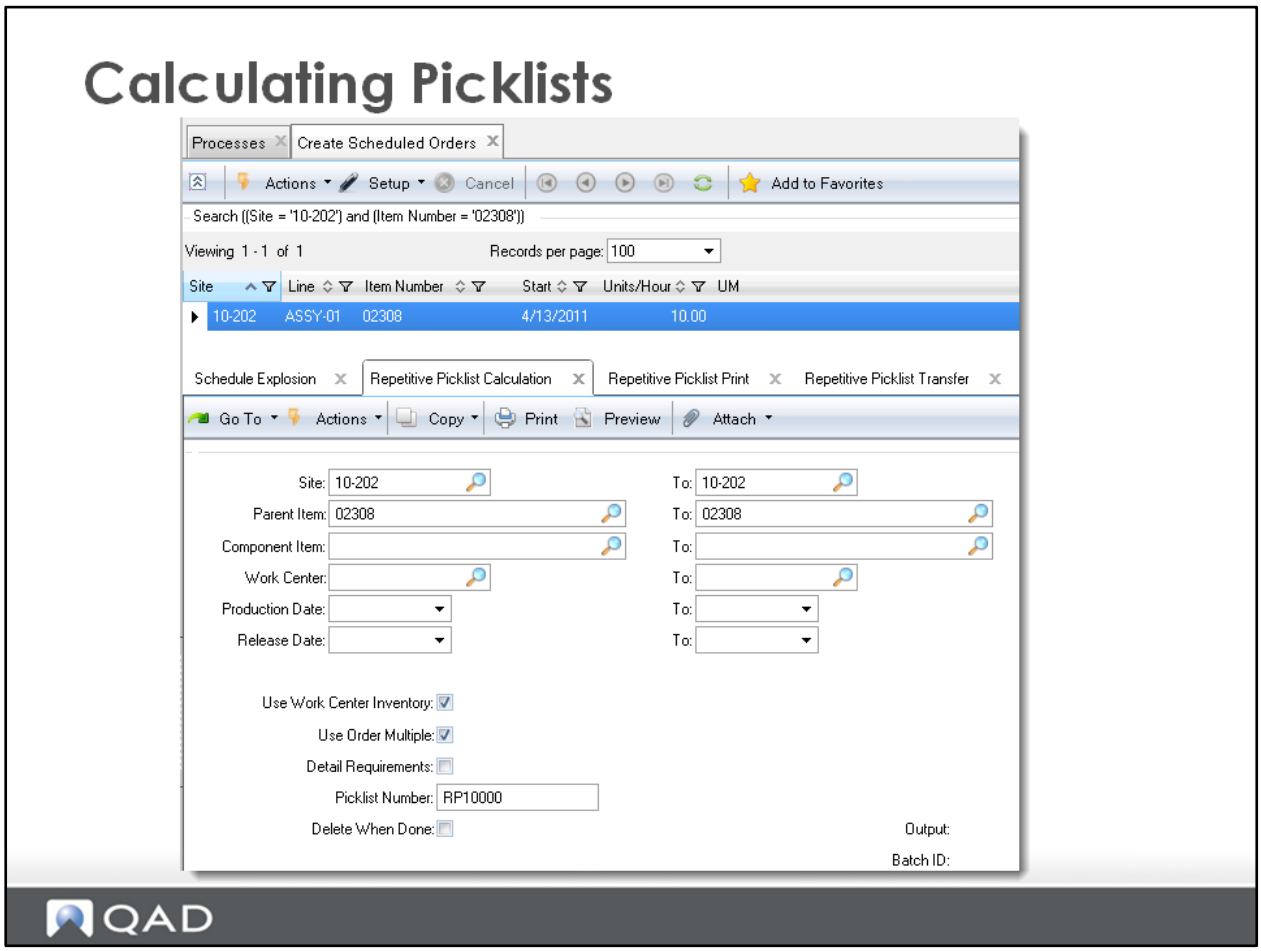
The schedule contains a date, an amount, a product structure or formula, and a routing. It is always a daily schedule, and is not further subdivided by shift. The schedule can be created manually (by a master scheduler) or brought in from the line sequencing module. Entering a repetitive schedule for an item, product structure, and routing establishes supply.

In the example in the slide, a schedule for 150 devices due May 1, 2015 comes in through Schedule Maintenance. The product structure and routing default from the item planning data for that item and site.

Exploding Repetitive Schedules



Calculating Picklists



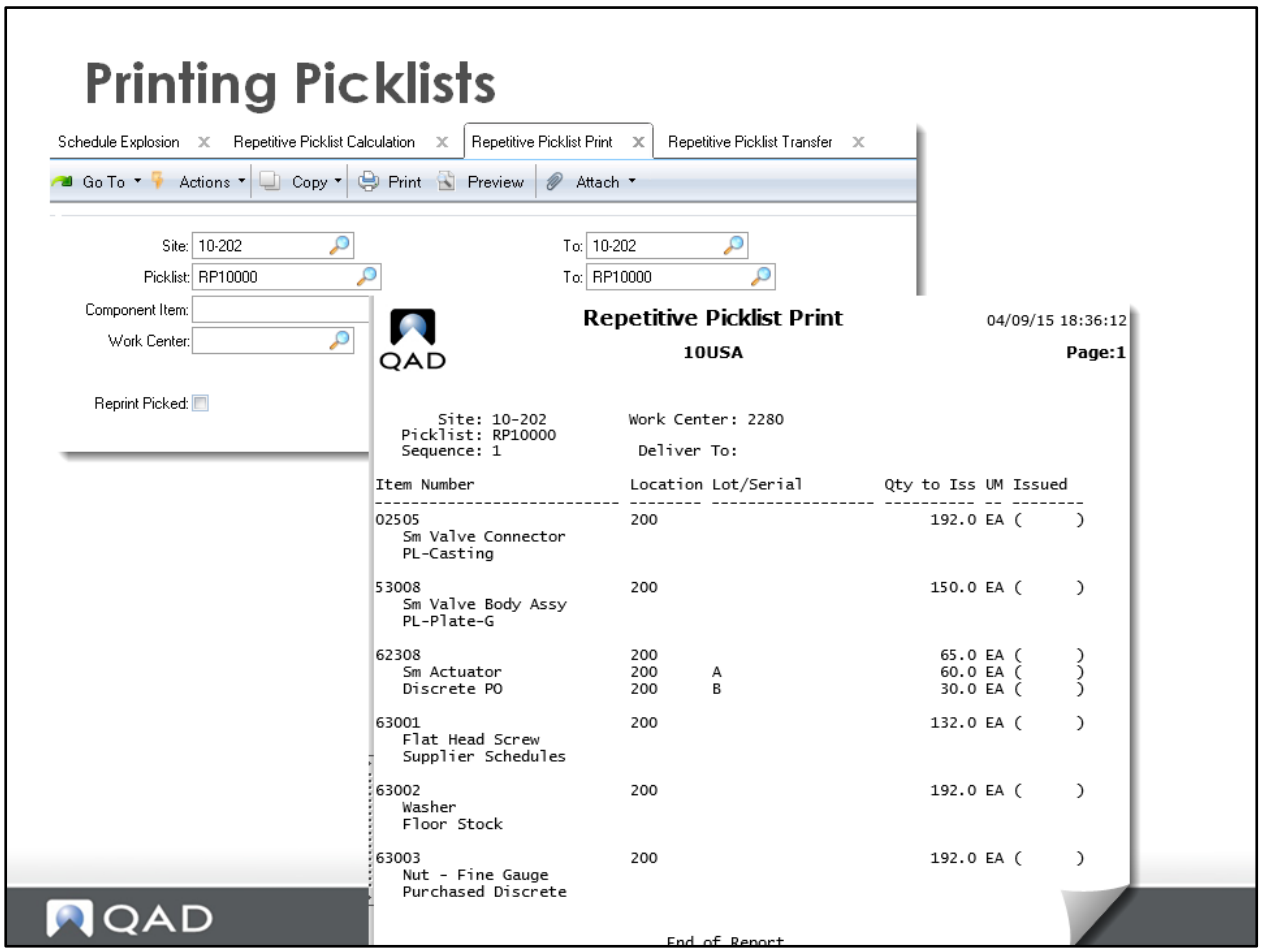
Use Repetitive Picklist Calculation to determine component requirements at work centers and to create picklists to satisfy the requirements. The calculation considers component requirements from the exploded repetitive schedules that match the sites, items, work centers, and production dates specified.

Typically, this program is used in manufacturing environments that need control over when repetitive work centers must be replenished.

Repetitive Picklist Calculation identifies inventory from other locations that is available to the work center. However, the program does not actually transfer the inventory. To transfer inventory, you can print picklists using Repetitive Picklist Print and then transfer the inventory using Repetitive Picklist Transfer.

Note: To use Repetitive Picklist Calculation, use Location Maintenance to define a location with the same name as the work center. Repetitive Picklist Calculation determines inventory availability by looking at the location detail (ld_det) records for that work center.

Printing Picklists

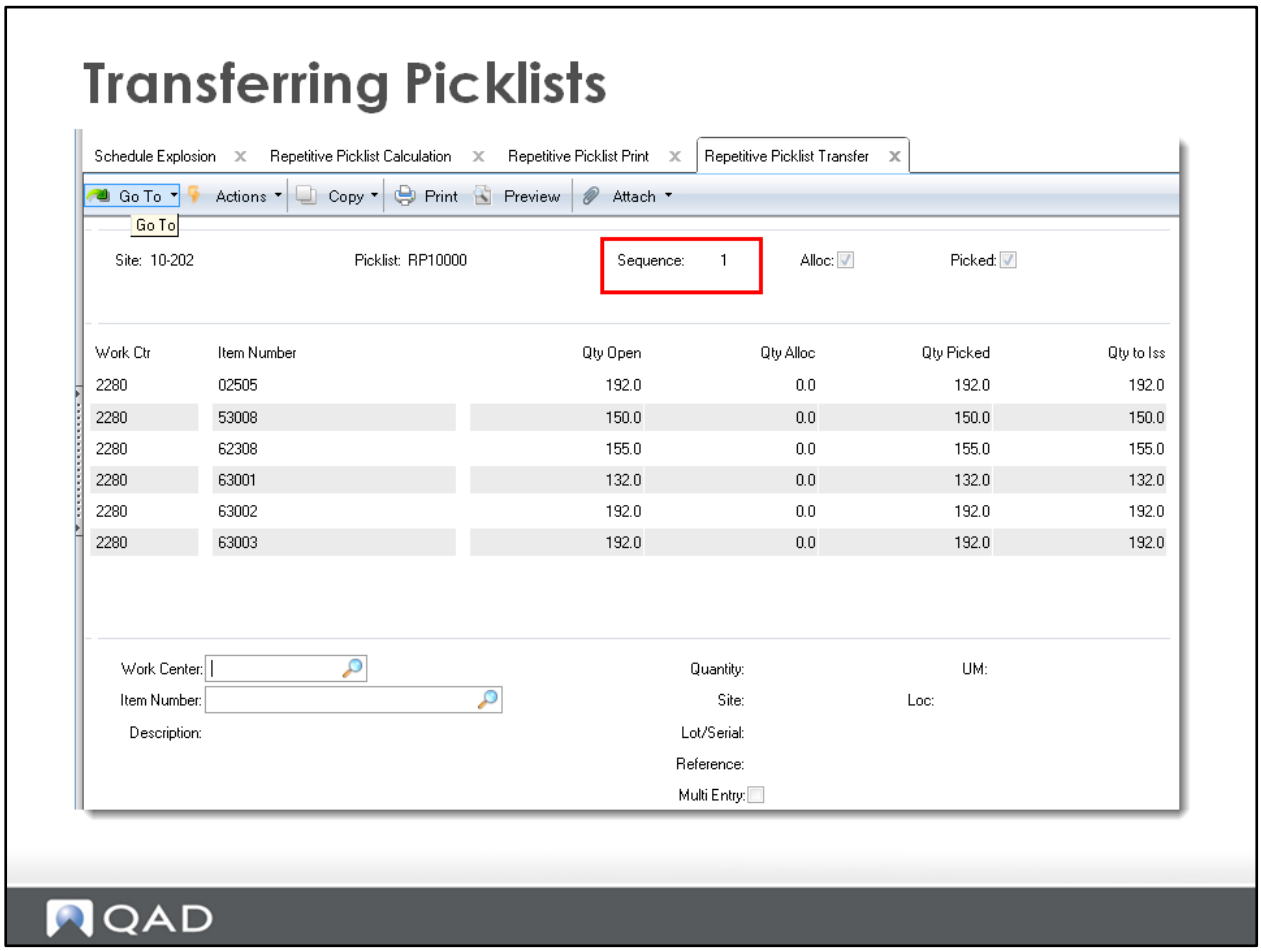


Use Repetitive Picklist Print to print a picklist. After you print a picklist, the status of the inventory changes to Picked.

The printed document is divided by work center, site, picklist, and sequence number. It shows the issue location, the quantity to be transferred, and any lot/serial information.

After printing a picklist, you can use Repetitive Picklist Undo to change the inventory status back to detail Allocated.

Transferring Picklists

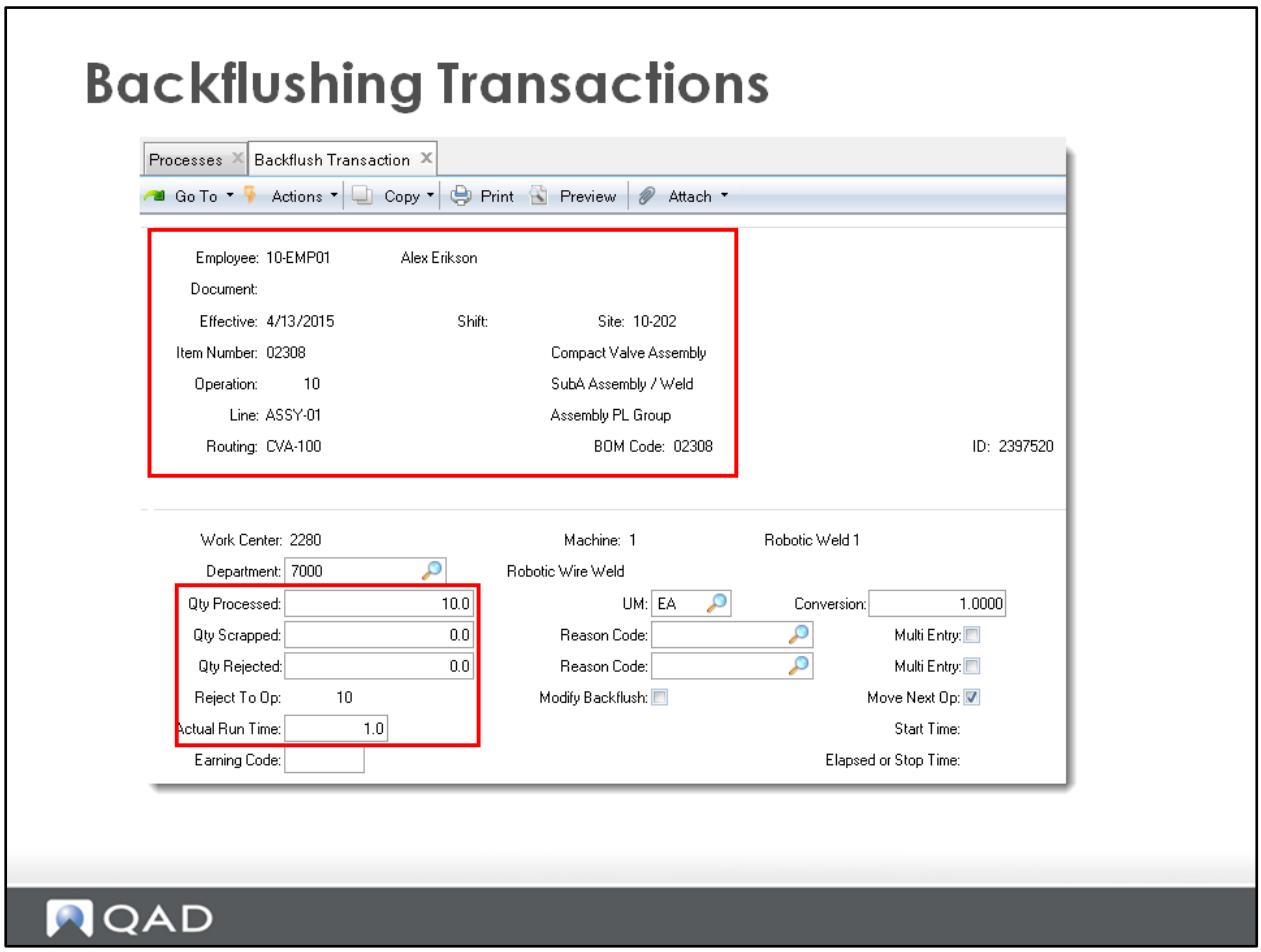


To record inventory that has been moved, use Repetitive Picklist Transfer. This function is flexible, and allows you to rapidly transfer picklist items as created, to enter new quantities, or to issue inventory from a different site. You can use the transfer function, even if the picklist has not been printed. You can transfer inventory that has been allocated, picked, or neither allocated nor picked. The Alloc and Picked fields set the default for your transfers. If you are not printing picklists, but just allocating, set Alloc to Yes, to transfer allocated inventory. If you are printing picklists, set Picked to Yes.

If you do not want to accept the defaults, you can specify the inventory that you are issuing. You can, in fact, issue any inventory from any site-location to any work center. However, you will see a warning message when you select inventory that is not on the picklist and will see another warning message if the inventory is not available. Issuing inventory that is not detail-allocated or picked leaves the currently detail allocated or picked inventory open on the picklist.

After issuing inventory, the system records an ISS-TR transaction and an RCT-TR transaction in the Transaction History. If there are no open quantities on the picklist, the picklist is closed. Note that this is not an inventory issue, so there are no general ledger consequences.

Backflushing Transactions

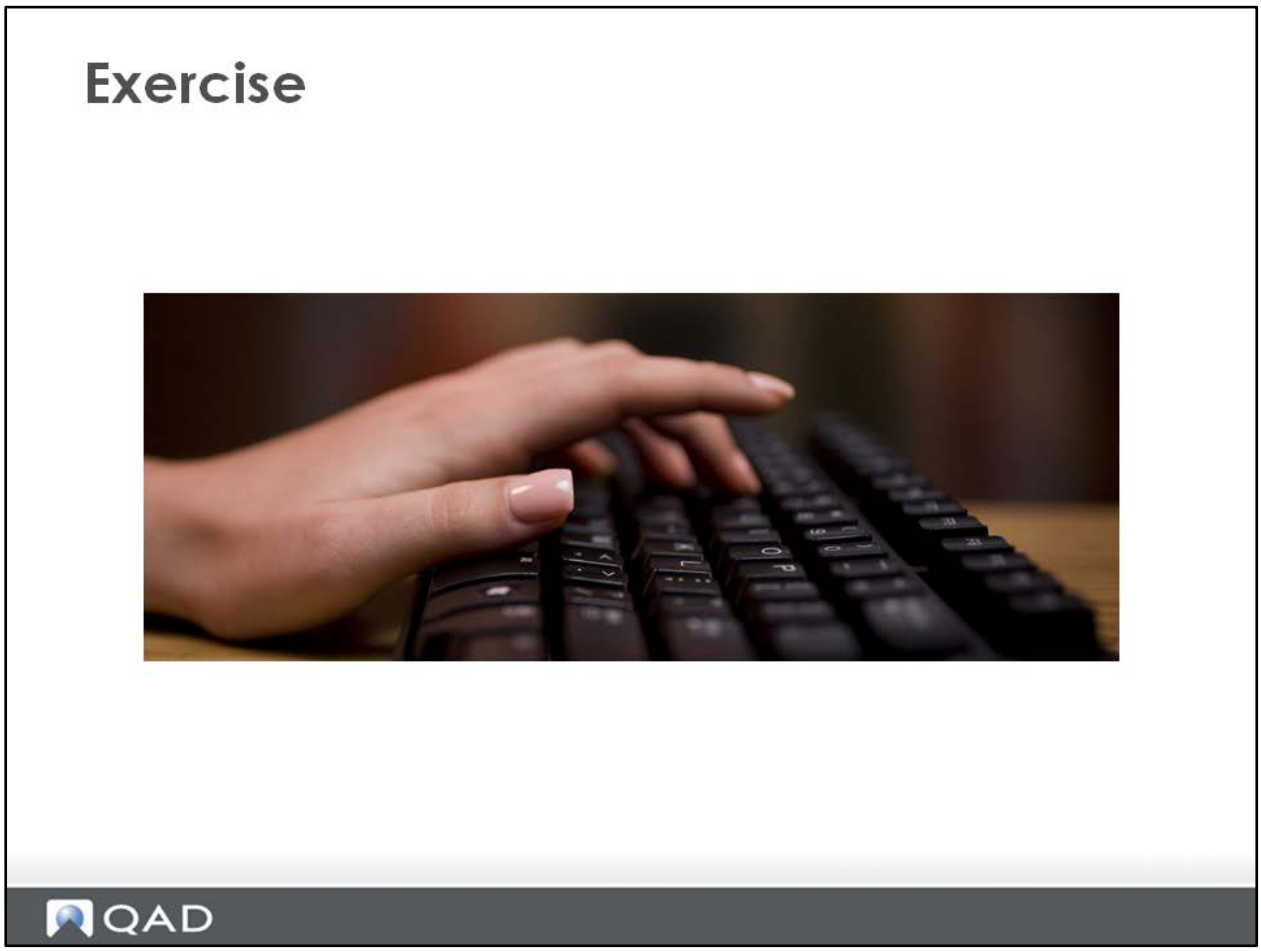


A valid employee, effective date, site, item number, and operation are required. The shift is optional. If the item number is associated with a production line, you must specify a valid production line (Line field). You need only specify the routing and BOM if you are using a routing other than the default. If you specify the default routing/BOM manually, an error message displays, unless the default routing has been set up as an alternate. The ID field displays a system-generated cumulative order ID and cannot be modified.

In the lower window, the fields Work Center, Machine, and Department default to data from the routing operation, and can be overridden.

The Qty Processed field shows the total quantity being processed, and includes any quantities entered to the Qty Scrapped and Qty Rejected fields. If the Multi Entry field for scrap and reject is Yes, a separate pop-up window lets you enter up to ten lines of reason codes and quantities. The quantities entered are accumulated, and posted to the Qty Scrapped and/or Qty Rejected fields.

Exercise



Exercise 1: Enable Advanced Repetitive

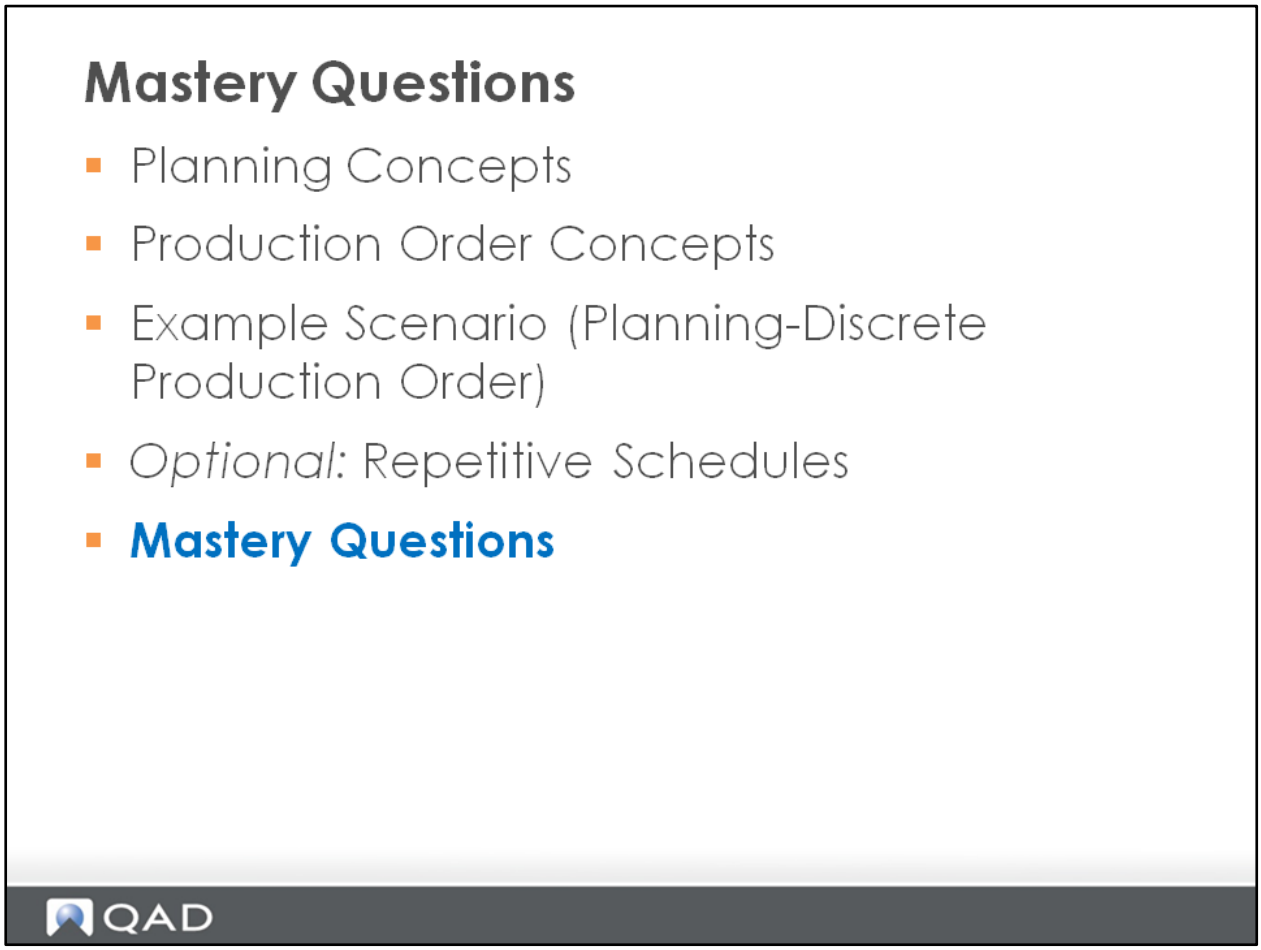
Open Repetitive Control and verify that Enable New Repetitive is set to Yes.

Exercise 2 : Create and process repetitive schedules

1. On the Plan-to-Perform process map, navigate to Create Production Schedule > Release Repetitive Production Order > Create Schedule.
2. Use Schedule Maintenance tab to create repetitive schedules for item 02308 at 10 units per workday for two weeks that follow.
3. Navigate to Create Production Schedule > Release Repetitive Production Order > Create Scheduled Order(s).
4. Explode the schedule of item 02308 using Schedule Explosion.
5. Calculate the repetitive picklist for item 02308 and check if there is any shortage of components.

6. Print the repetitive picklist.
   Note: By default, the Component Item filter is populated with 02308. Clear this filter so that you can print the picklist.
7. Transfer the picklist.
   Note: The Sequence number is required. Enter 1 for this exercise.
8. Before backflushing transactions, check and record the inventory details of item 02308 at site 10-202.
9. Run Backflush Transaction to report production. Assume that the yield is 100%. Report 50 for all the operations.
10. Check the inventory again to see the inventory change.

Mastery Questions



Mastery Questions

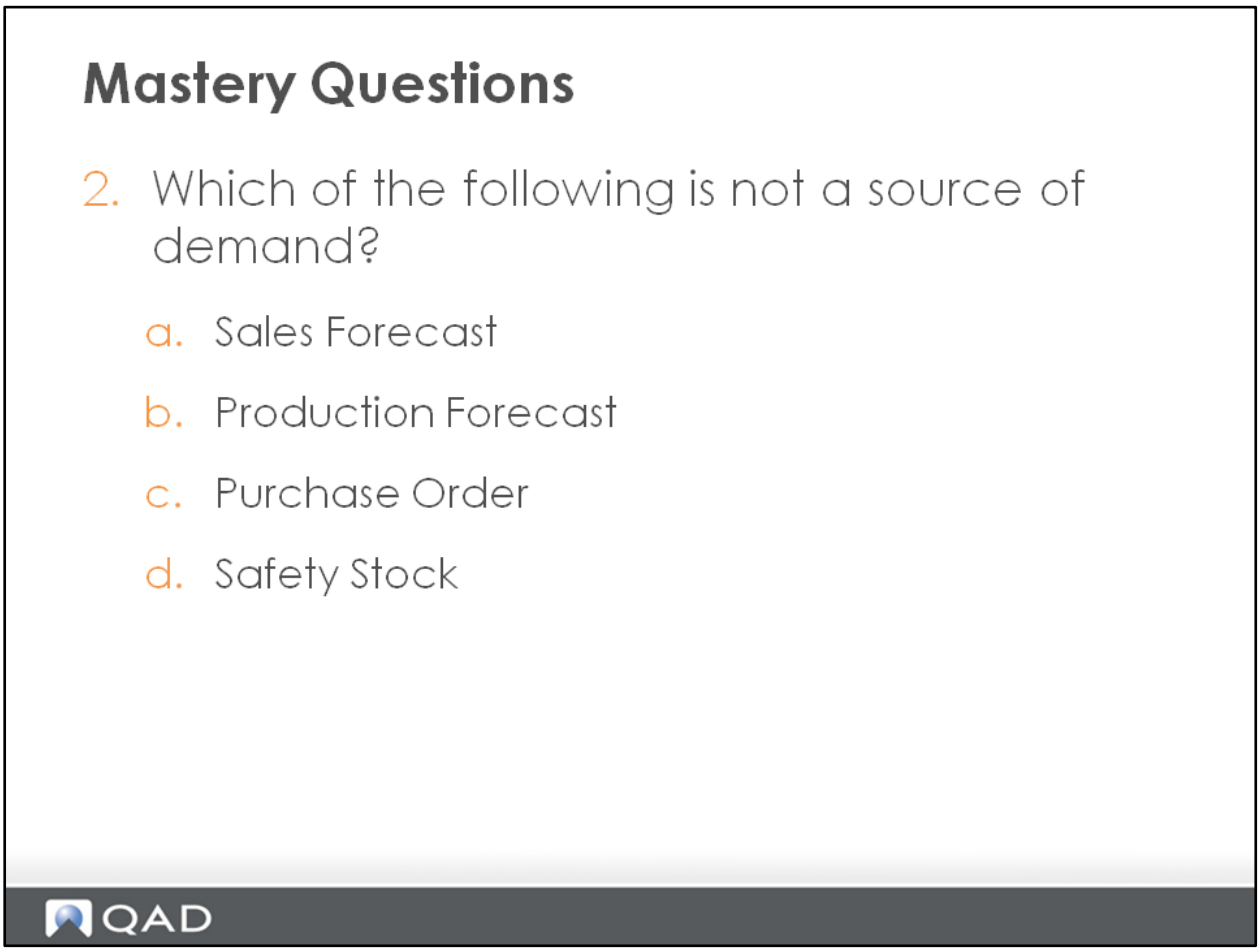
Mastery Questions

1. Order Policy and Modifier Exercise

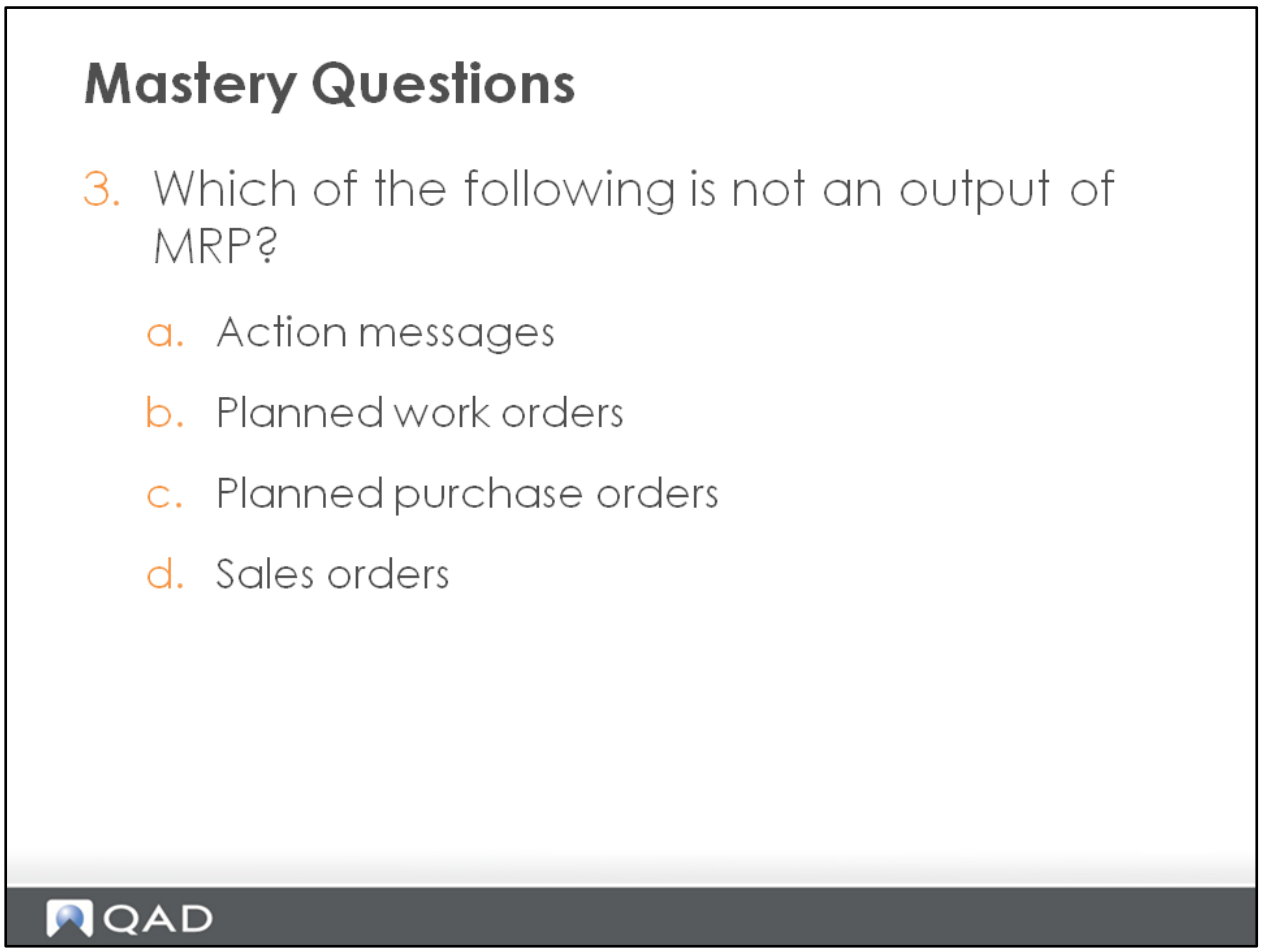
Period	1	2	3	4	5	6	7	8	9	10
Demand	25	30	20	35	25	30	25	35	30	25
LFL	25									
FOQ=35										
POQ 2 periods	55									
POQ-2 periods Min. Qty. = 60										
POQ-2 periods Multi. Qty. = 25										

QAD

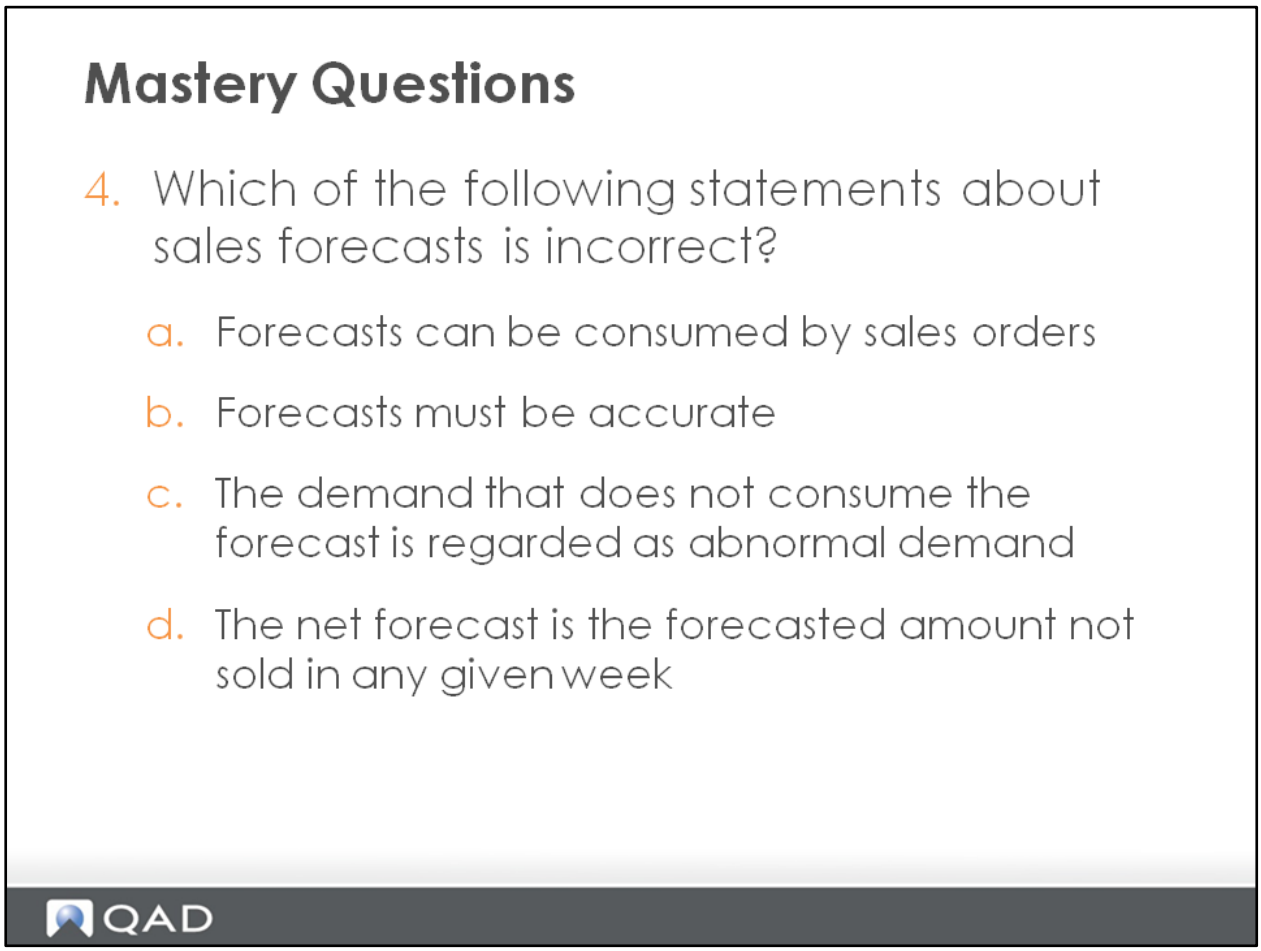
Mastery Questions



Mastery Questions



Mastery Questions



Mastery Questions

