QAD Adaptive Applications
Enterprise Edition

User Guide
QAD Costing

Introduction to Costing
Cost Sets and Methods
Setting Up Product Costing
Product Costing Process
Cost Management
Cost Accounts
Costing Transactions
Cost Reporting

70-3161-2022EE
QAD Enterprise Edition 2022
September 2022

Costing_UG_v2022EE.pdf/crl/crl

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Contents

Costing Change Summary

Product Name Changes

Starting in September 2019, the new name for QAD's complete portfolio of products is QAD Adaptive Applications. Additionally, QAD Adaptive ERP is the new name for QAD's flagship ERP solution. QAD Adaptive ERP includes the functionality previously associated with QAD Cloud ERP and QAD Enterprise Applications - Enterprise Edition, plus the QAD Enterprise Platform and Adaptive UX which resulted from the Channel Islands program. Going forward, the terms QAD Enterprise Applications, QAD Cloud ERP, and Channel Islands will be deprecated but will remain in previous documentation and training materials. QAD's intention is to—as soon as possible—eliminate the use of the deprecated terms going forward.

Change Summary

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

Date/Version	Description	Reference
September 2022/2022 EE	Added note to quality system recalculation of average costs for Purchase Order Receipts/Returns	page 7
September 2021/2021 EE	Rebranded for 2021 EE	
March 2021/2020 EE-Revision 1	Added information about Web UI and .NET UI differences in the order in which transactions are generated when transferring between locations.	page 7
September 2020/2020 EE	Rebranded for 2020 EE	
September 2019/ QAD 2019 EE	Moved information from former Chapter 7 Costing Impact by Module into a section within Chapter 1 Introduction to Costing	page 2
	Added a new Chapter 7 Cost Transactions for production order cost transactions and calculations; referenced the new chapter where appropriate throughout the book	page 65
	Made updates to cost set information	page 6
	Made updates to average cost information.	page 7 page 15
	Expanded Cost Process sections for: Rolling Up Routing Costs and Rolling Up Product Structure Costs, Moving Current Cost to General Ledger, Revalue WIP Material Cost, and Cost Roll-Up Freeze/Unfreeze	page 25 page 28 page 36 page 39 page 41
	Expanded element cost information	page 46
	Removed references in book to cost management module	--

Date/Version	Description	Reference
September 2018/2018 EE	Rebranded for 2018 EE	--
September 2017/2017 EE	Rebranded for 2017 EE	--
March 2016/2016 EE	Updated the formulas in Routing Cost Calculations section	page 27
March 2015/2015 EE	Removed Periodic Costing chapter from this user guide. (Periodic Costing is now a separate user guide.)	--
March 2014/2014EE	Changes made to Periodic Costing chapter only, which is a separate user guide for 2015 EE.	--
September 2013/2013.1 EE	Changes made to Periodic Costing chapter only, which is a separate user guide for 2015 EE	--
September 2012/2012.1 EE	Rebranded for QAD 2012.1 EE	--
March 2012/2012 EE	Added section on PC Unit Cost Adjustment Upload (30.5.5.4)	--
March 2012/2012 EE	Added section on PC Total Cost Adjustment Upload (30.5.5.5)	--
September 2011/2011.1 EE	Rebranded for QAD 2011.1 EE	--

Chapter 1

Introduction to Costing

Costing covers how costs are applied and tracked. It provides information for setting up and using costing features with the Cost Management module, as well as using standard inventory functions.

Overview

A key factor influencing whether a company manufactures a product is the cost of making that product. Costs also determine the level of production output.

The cost of producing at a specific level of output depends not only on the price of needed resources—materials, labor, fuel, transportation, and so on—but also on the quantities of resources needed to produce that output. The level of output also depends on how the company uses fixed resources, such as the size of the plant, in combination with variable resources, such as labor, material, or equipment. It is important to know the total cost of production at varying levels of output along with per-unit costs.

Direct costs are all costs that can be traced to a single product. This includes the cost of all material and direct labor that go into that product, as well as the cost for any outside processing. All production costs other than direct costs are considered *indirect costs*, or overhead. Overhead costs are classified as either fixed or variable.

- Fixed overhead costs do not vary with changes in production output and cannot be avoided in the short term. These costs must be paid even if production output is zero. Some examples are rent, insurance premiums, and interest payments.
- Variable overhead costs, also called burden, change with the volume of production output. Variable costs can be controlled and altered in the short run by changing the level of production output. Some examples are supplies, power, fuel, and transportation costs.

Tracking these costs is important in determining product costs, total cost of production, inventory values, and productivity.

Interaction with Other Modules/Functions

Costing interacts closely with several QAD modules and core functions. This section summarizes the relationship of the modules and functions with costing functions.

Table 1.1
Core Function Interaction with Costing

Core Function	Description	Interaction with Costing
Items/sites	Contains item master data used in some computations: • Order/batch quantity • Yield percent • Site code • Routing code • Bill of material code • GL cost set data • Current cost set data • Product line/account data	Order/batch quantity and yield percent are used in the cost computations. You can specify different characteristics for the same part at different sites using the item-site maintenance programs (1.4.16, 1.4.17, 1.4.18). Items/Sites also maintains the product line records, which specify the default GL accounts—inventory, sales, purchasing, and production orders—for each product line at a site. See Note below.
Configured products	Works with the sales orders/invoices module to create unique product structures for individual sales orders.	Once a configured item is constructed during order entry, the system accesses item master and product line data to determine and maintain the cost of the configured item for COGS purposes.

Core Function	Description	Interaction with Costing
Cost management	Creates multiple cost sets beyond the GL cost set and the current cost set provided with standard inventory functions. These cost sets can be GL sets, current cost sets, or they can be simulated cost sets.	The system can access data from the item-site records, product structures, and routings/work centers in the development of various cost sets.
Flow scheduling	Creates flow scheduled orders and specify the sequence in which they are produced on a flow production line.	Recording flow completions creates GL records for inventory receipts and issues on the associated system-maintained production order. The system uses item/site cost data to cost a GL debit or credit transaction.
Formula/process	Defines the contents of formula items in the same way as bills of material define fabricated and assembly items.	The system uses content information, process definition data, and work center data to calculate level-by-level costs.
General ledger	Maintains GL transactions originating in other modules for financial reporting.	Interacts with GL to posts....
Inventory control	Creates GL records for receipts, issues, and cycle count adjustments.	The system uses item/site cost data to cost a GL debit or credit transaction.
Kanban	Creates kanban transactions that track the movement of items in and out of the production process.	Kanban transactions create GL records for inventory receipts and issues. The system uses item/site cost data to cost a GL debit or credit transaction.
Physical inventory	Uses physical inventory counts to establish the new work-in-process and stocking location inventory balances.	Costed item counts are used to determine the beginning GL amounts for the Inventory and Finished Goods accounts and inventory variance accounts.
Product structures	Creates and maintains multilevel parent/component relationships of manufactured products.	Product structure roll-up determines the item cost (GL, current, or simulated) by adding up purchased material costs and routing labor and overhead costs for each assembly level. The program posts cost data to this-level and lower-level buckets for the five cost categories in the cost set specified in the rollup.
Production accounting	Supports the management and accounting of the cost of producing goods. Production costs include direct costs, such as material and labor and indirect costs, such as burden and overhead. Also lets you analyze production costs and variances for such factors as material, labor, and burden.	The production costs are captured with transactions such as Production Order Component Issue and the Operation Labor Transaction, and also with functions that generate transactions to account for cost variances.
Purchasing	Provides the prices used to determine purchase price variances.	Actual item costs can be used to compute average item inventory amounts. Users of the Accounts Payable module can include differences between invoice cost and purchase price in the average cost computation.

Core Function	Description	Interaction with Costing
Routings/work centers	Maintains the standard hours for setup and run time for manufacturing or subcontract operations used to make an item. The module also maintains the labor and overhead rates for cost centers where an operation is performed.	Data is used to determine current costs and GL costs, and can also be used to create simulated costs.
Sales orders/invoices	Lets you create sales orders, verify credit, allocate inventory, record shipment data, print invoices, and more. Sales Orders/Invoice functions are closely integrated with the Inventory Control, Material Planning, and Accounts Receivable.	Provides shipping transaction data that results in GL transactions affecting inventory, accounts receivable, cost of goods sold, and sales accounts.

Account Distinctions

The system provides separate programs to make finer account distinctions:

- Purchasing Account Maintenance (1.2.5)

  Lets you specify different accounts for purchases, applied overhead, PO receipts, PO price variances, and accounts payable variances by product line, site, and supplier type.
- Prod Order Account Maintenance (1.2.9)

  Lets you specify different accounts for floor stock, cost of production, WIP, and subcontract by product line and site.
- Inventory Account Maintenance (1.2.13)

  Lets you specify different accounts for inventory, scrap, inventory discrepancy, and cost revalue by location at a site.
- Sales Account Maintenance (1.2.17)

  Let you specify different accounts for sales, sales discount, and COGS accounts by customer type and sales channel.

For more information on the account maintenance programs, see Cost Accounts.

Cost-Related Training Material

Costing-related training material is available in the QAD Document Library (documentlibrary.qad.com) once you login:

- *QAD Product Costing Introduction Training Guide*
- *QAD Product Costing Training Guide*
- *QAD Cost Management Training Guide*
- *QAD Advanced Repetitive Costing Training Guide*
- *QAD Average Costing Training Guide*
- *QAD Co-By-Product Costing Training Guide*
- *QAD Periodic Costing Training Guide*

Chapter 2

Cost Sets and Methods

Cost data is collected and calculated using cost sets and costing methods. A *cost set* is a collection of related cost data. A *costing method* defines how cost data in a cost set is calculated and maintained.

This chapter discusses the cost sets and methods that are used to calculate costs.

Cost Sets

There are two default cost sets for each site: general ledger (GL) and current.

- GL cost distinguishes costs used to value inventory and determine cost-of-goods sold from other costs such as current costs or planning costs.
- Current cost is normally based on recent production and/or purchases. Current costs are the actual costs from inventory receipts and production order labor transactions.

The system supports GL and current costs by item and site. Only one GL and one current cost set can be active for each site.

Standard costing provides one GL and one current cost set for each site. GL cost sets and current cost sets must have the same name at all sites. For example, if the name for the GL cost set is *Standard*, it must be Standard for all of the sites. Use Item Cost Set Name Change (1.4.14) to change the name of a cost set as needed.

The cost management functions lets you create and maintain additional GL and current cost sets for each site beyond the default sets. You can also use different names for current and GL cost sets at each site. See Chapter 5, “Cost Management,” on page 43.

You can use cost management functions to create an unlimited number of cost sets for:

- Maintaining different GL and current cost sets for each site
- Cost planning
- Cost simulations
- Historical cost comparisons

Cost management functions also include inquiries (QAD .NET UI) and browses and reporting functions (QAD Web UI) that display which sites use a particular cost set and the GL and current cost sets in effect at each site.

Costing Methods

Companies use costing methods for managing business as dictated by business conditions or, in some cases, law. Costing methods include:

- Standard Cost
- Average Cost
- Last Cost
- Periodic Cost

Standard Cost

Standard costs measure how much an item should cost. Typically, standard costs are used for general ledger (GL) transactions and are not automatically updated by the system. The standard cost for an item is used as the basis for all inventory-related accounting transactions as they are processed. Actual expenses are tracked and measured against this standard.

Standard Cost Variances

Because the standard is only a target or estimate of item costs, the actual costs incurred rarely match the standard exactly. In order to account for the difference between standard and actual costs, variances are calculated and recorded.

Total variance is the difference between standard cost and actual cost. Total variance can result from a difference in purchase price, quantity used, or both. A *rate variance* occurs when the actual cost of a resource differs from the standard rate. A *usage variance* occurs when the actual quantity of the transaction differs from the standard quantity. For example, a usage variance occurs when components are issued for a different quantity than those defined on the standard bill of material (BOM), or when additional non-standard components are issued.

Average Cost

With average costing, costs are recalculated during item receipts and other inventory-related activities using a simple weighted-average calculation.

These system activities update the item costs:

- Receiving inventory from production orders—which can be maintained and scheduled either as production orders or as repetitive schedules—or using Receipts–Backward Exploded (3.12).
- Running the accounting close function for a production order or cumulative order to consider any costs posted after the last receipt.
- Receiving quantities from purchase orders or supplier schedules or returning items to a supplier using functions such as Purchase Order Returns (5.13.7).

  Note When you set Use Logistics Accounting to No in Logistics Accounting Control (2.15.24), Purchase Order Returns (5.13.7) and Purchase Order Receipts (5.13.1) do not update the GL cost of an item specified in Item Cost Maintenance (1.4.9) when the item cost and the discrete order line cost being returned are different.
- Finalizing matching of a purchase order receipt with a supplier invoice. This reverses the effect of the corresponding purchase order receipt and applies only when Current Cost from AP is Yes in Inventory Accounting Control (36.9.2).
- Logistics accounting costs are rolled into the item cost and inventory value.
- Transferring inventory between sites, using either transfers or distribution orders

Differences in Web UI and .NET UI Transaction Generation Order

When locations use the Average costing method, there is a difference in the order in which transactions are generated when transferring between locations.

In the Web UI, transactions are generated in this order:

- RCT-PO
- CN-ISS
- ISS-TR
- RCT-TR

In the .NET UI, transactions are generated in this order:

- ISS-TR
- RCT-PO
- CN-ISS
- RCT-TR

The difference arises because in .NET UI, the ISS-TR and RCT-TR transactions are generating the postings using the total cost before re-averaging the cost, while in the Web UI, the two transactions are generating the postings using the total cost after re-averaging the cost.

Calculating Average Costs for Materials

The following equation is used to calculate average costs for materials:

*(Receipt Quantity * Receipt Cost) + (Item Quantity on Hand * Current Material Cost) / (Receipt Quantity + Item Quantity on Hand)*

For manufactured items, current labor, subcontract, and burden costs are calculated for each operation using the following equation:

*Sum for all operations (Item Quantity Received / Cumulative Quantity Completed at the Operation) * Operation's Cumulative Work-In-Process (WIP) Cost (need to add the value of material to this calculation)*

For purchased items, the quantity received is multiplied by the purchase order price and added to the quantity on hand multiplied by the current average material cost. This sum is divided by the new quantity on hand to determine the new average material cost. The value of inventory is adjusted to reflect this new average cost. When tax is included, and tax is at receipt, the value of receipt cost is:

Receipt cost = receipt cost - recoverable tax

When tax is not included, and tax is at receipt, the receipt cost is:

Receipt cost = receipt cost + non recoverable tax

When tax is included, and tax is at voucher, the receipt cost is:

Receipt cost = receipt cost - total tax

For intersite and distribution transfers, for tax, the calculation is the same as that for purchased items. For the receipt cost for intersite and distribution, it is the issuing site cost for the receipt.

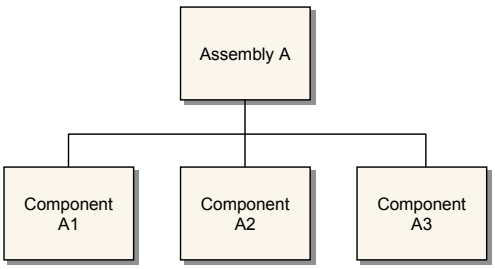
You can use the average costing method to calculate site-specific GL costs as well as current costs. Otherwise, the average costing method is used only for current costs. See Chapter 5, "Cost Management," on page 43.

Average Cost Example

The following example illustrates how average costs are calculated when receiving items on a production or production order.

Assembly A has three components: A1, A2, and A3.

Fig. 2.1
Assembly A Product Structure



A quantity of 20 is received for an assembly A production order. First, the labor, burden, and subcontract cost categories are calculated. Table 2.1 uses labor as an example.

Table 2.1
Operation Costing, Labor

Operation	Cum. Qty. Completed	Cum. WIP Labor Cost	Production Order Receipt Cost Calculation
10	100	$100	20/100 * $100 = $20
20	75	$150	20/75 * $150 = $40
30	50	$20	20/50 * $20 = $8
40	40	$50	20/40 * $50 = $25

Next, material cost is calculated.

Table 2.2
Operation Costing, Material

Component	Qty. Per Assembly	Unit Cost	Production Order Receipt Cost Calculation
A1	1	$5.00	20 * $5.00 = $100
A2	1	$1.00	20 * $1.00 = $20
A3	2	$1.00	40 * $1.00 = $40

For this order, the cost of Assembly A is:

(93 + 160) / 20 = $12.65

For a quantity of 10 in stock at $12.00 each, the new average cost for each assembly A would be:

*(10 * $12.00) + (20 * $12.65) / 10 + 20 = $12.43*

Average Cost Setup

To set up the system for Average Costing, see “Setting Up Average Costing” on page 15.

Last Cost

The last cost method is used only for current costs and is not available for costing in the general ledger. Costs are updated each time the item is received. For example, an item's material cost is updated to the purchase order (PO) cost each time a PO is received.

Periodic Cost

Periodic costing provides functions that can meet local requirements and business practices when companies revalue and recalculate inventory, transactions, and cost of goods sold.

Periodic costing is a part of the Costing Menu (30). Programs in the Periodic Costing menu (30.5) calculate the actual cost of an item based on recorded data—inventory transactions, BOMs, routings, purchase prices, labor/burden expenses—over a certain user-defined period, which can be any length, up to an entire GL period. Under most circumstances, it also takes into the account the beginning balance of the item while it is performing the calculation of the period costing. It then batch generates GL transactions based on the cost calculations.

In periodic costing, costs are recalculated for each period, and a new average cost is defined according to what happened during that period—so no amounts need to be posted to variance accounts.

Periodic costing includes functionality to meet IFRS requirements. You can set the costing method to weighted average (WAVG) or first in first out (FIFO) and print numerous reports, including legal reports. Periodic costing calculates the cost of items periodically and generates GL transaction according to the period costs for all costs. For more information on QAD Periodic Costing, see *QAD Periodic Costing User Guide*.

Using Costing Methods with Cost Sets

The current cost set tracks the running average or the last cost to determine next year's standard cost or to provide a record of recent actual costs.

Costing methods that can be used with the current cost set are:

- Average. Whenever an item is received, the system calculates the new average cost and stores it in the cost set.
- Standard: Costs are not updated automatically; they must be maintained manually. Updates are typically performed no more than a few times per year.
- Last. For each receipt, the system sets the current cost to the last cost of that item. In the case of purchased items, this is the purchase or invoice price.
- None. The system does not maintain the current costs; they must be maintained manually.

Cost Set Categories

Five categories of costs are tracked for each cost set. These categories maintain cost for both this-level and lower-level costs. *This-level cost* is the cost added at the current stage of manufacturing or the cost of a purchased item. *Lower-level cost* represents cost added at prior stages of manufacturing.

A purchased item has this-level material and, optionally, material overhead cost, but no lower-level costs. A manufactured item has this-level labor, subcontract, burden, and overhead cost, but normally no material cost. A manufactured item has lower-level material cost for components and any subassemblies, and possibly lower-level labor, burden, subcontract, and overhead from the cost of making any lower-level subassemblies.

The following are the various cost set categories:

- Material. The total cost of purchased material. For purchased items, material costs are maintained for each item or item and site. For manufactured items, lower-level material costs are maintained by rolling up the product structure costs.
- Labor. The cost of direct labor applied to an item. Labor cost is calculated from labor rates, setup time, and run hours at each operation of a product's routing.
- Burden. The total variable overhead cost for an item, based on burden rates for labor and/or machines.
- Overhead. The fixed overhead cost, if any, for an item. For purchased items, overhead can be assigned to cover the expense of purchase operations, which can then be recovered as fixed overhead on all purchased items based on a percentage of their cost. Overhead cost can be maintained for each item, or by assigning it as a percentage of other cost categories.
- Subcontract. The cost of outside processing as entered in the routing operation for manufactured items.

Chapter 3

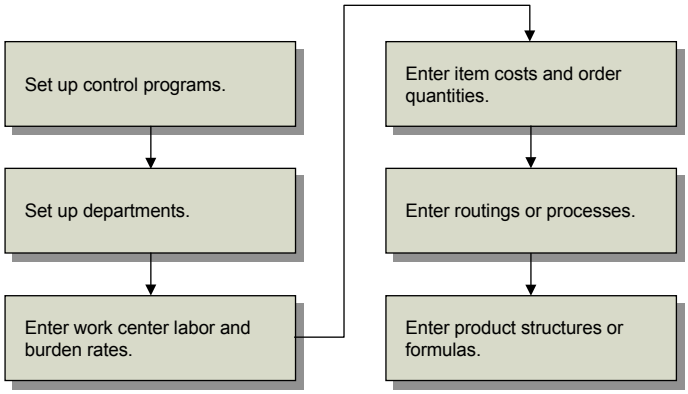
Setting Up Product Costing

This chapter discusses the steps involved in implementing product costing.

Set Up Workflow

Figure 3.1 shows steps for setting up product costing. Each step is discussed in detail in the following sections.

Fig. 3.1
Setting Up Product Costing

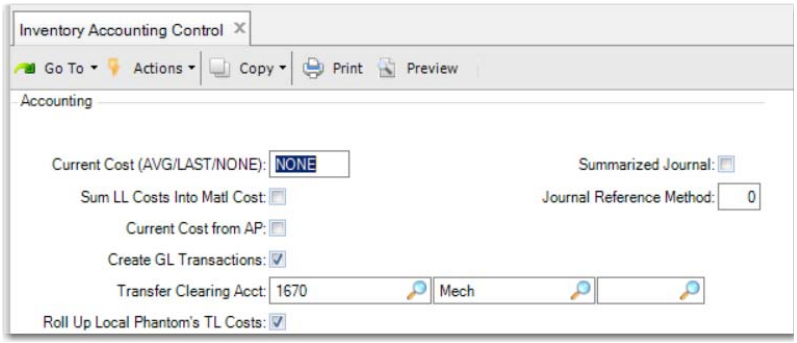


Defining Inventory Accounting Control Settings

Use Inventory Accounting Control (36.9.2) to specify how current costs are maintained. For more information on setting up inventory control, see *QAD Master Data User Guide*.

This section highlights the issues related to costing.

Fig. 3.2
Inventory Accounting Control (36.9.2)



Current Cost. Current material, labor, and burden costs are maintained as either Average, Last, or None. Because this setting is database wide, all current costs for any site in the database are maintained using the selected costing method.

Sum LL Costs Into Material Cost. Cost-of-goods sold amounts are usually maintained separately for each cost component—material, labor, burden, overhead, and subcontract. However, some companies consider the material cost for an end item to include all costs associated with purchasing or manufacturing components, as well as any direct material costs. To report all lower-level costs as material costs (as if all components were bought from outside suppliers), set this field to Yes.

Current Cost from AP. To update the current material cost when receiver matching is complete, set this field to Yes. When the invoice price differs from the purchase order price, the current material cost is adjusted.

Create GL Transactions. Indicate whether inventory activities create GL transactions. This field does not impact memo-item transactions.

Yes: All inventory issues, receipts, count adjustments, and transfers create GL transactions reflecting the change in inventory asset balances. In addition, any transactions that affect work-in-process inventory create GL transactions, including work order issues and receipts.

No: GL transactions are not created by any of these activities.

Companies using perpetual inventory accounting should set this field to Yes, taking advantage of the automatic journal transactions created by the system.

Companies using periodic inventory accounting normally set this to No. Entries are made manually.

Transfer Clearing Account. Specify the GL account code used to track transfers within the same company (entity). This field cannot be blank when multiple sites are defined. In a single-site environment, the Purchases account is used when this field is blank.

Roll Up Local Phantom's TL Cost. Specify whether to roll up local phantom total costs.

Local phantoms are treated like phantoms only in specific product structures. When this field is set to Yes, this-level labor and overhead costs for local phantoms roll up into the parent item's cost, which can cause manufacturing variances.

Note Global phantoms identify an item as a phantom on all bills of material. You can perform routing cost rollups on global phantom items. Only lower-level labor, burden, and subcontract costs of a global phantom item are included in the parent item's cost when the product structure cost rollup is performed. When a global phantom is required to issue orders to build the item as a stockable item, you build and stock the phantom item, and the routing and product structure cost rollups calculate this-level costs correctly.

Setting Up Average Costing

To set up for Average costing, set the Current Cost field in Inventory Accounting Control to Average.

When you change the costing method to Average, the system maintains material, labor, and burden costs as average costs. You can view costing-related reports to check item cost.

In the Web UI, use the Items view to see the current item cost. The Cost Total field displays the item total cost using Average costing. The amount changes, for example, when receipts for the item occur.

Note If you are reporting labor for production orders, refer to the *QAD Production Order User Guide* for information.

Setting Up Departments

A department groups similar work centers. Set up departments so that you can review labor capacity and costing in a meaningful way.

Use Department Maintenance (14.1) to define departments and set up labor capacity and GL accounts for each department. Labor, burden, and cost of production are posted to the GL by department. Capacity Resource Planning (CRP) uses labor capacity to calculate capacity and load by department.

For more information on departments, see *QAD Manufacturing User Guide*.

Setting Up Work Centers

A work center identifies a group of resources (people, machines, production lines, and so on) that are capable of doing the same processes. Labor and burden rates are specified at the work-center level.

For more information on work centers, see *QAD Manufacturing User Guide*.

Use Work Center Maintenance (14.5) to define labor and burden rates. The fields that are of particular importance from a costing perspective are the following:

Machines/Op. Used in calculating burden costs. This value indicates the number of machines at this work center that can work at the same time to process a given operation.The setup labor rate is multiplied by this number to determine the machine burden from setup cost.

Machine Burden Rate. Used in calculating burden costs. This is the burden rate per hour applicable to machine run time and setup at this work center. Standard machine burden cost at the operation is calculated as:

*(Setup Time / Order Quantity * Routing Machines per Op + Run Time) * Work Center Machine Burden Rate*

Setup Rate. The standard hourly labor rate for personnel who perform setup functions in the work center. Used in calculating labor and labor burden.

Labor Rate. The standard hourly labor rate for personnel who run operations at this work center. Used in calculating labor and labor burden.

Labor Burden Rate or Percentage. The labor burden rate or percentage per hour applicable to both setup and run time at this work center. Used in calculating labor burden.

Defining Item Costs

Use Item Cost Maintenance (1.4.9) to enter cost information for purchased material directly into either the current or GL cost sets. Use Item-Site Cost Maintenance (1.4.18) if you have multiple sites. You can also enter material, labor, and burden costs for manufactured items if product structures or routings have not been entered.

You can use Item Master Maintenance to enter all data pertaining to an item, including cost, inventory, shipping, and item planning data.

Note Other than overhead cost, you should not enter costs manually for manufactured items, only purchased items. If you do enter costs for manufactured items, you cannot use the roll-up functions to update these costs.

The site associated with an item in Item Master Maintenance (1.4.1) is considered the primary site. However, you can create different cost records for any site. Use the item-site programs to enter and maintain data for items at sites other than the primary site.

When you use cost management functions, one site can be used as the source for GL costs of items held in inventory at multiple sites. This eliminates the need to set up duplicate GL cost records for the same items at all sites. When GL costs are updated at the source site, the system automatically updates costs at the linked sites. See “Cost Linking” on page 52.

Entering Item Costs

1 In Item Cost Maintenance, Item-Site Cost Maintenance, or Item Master Maintenance, enter the item number and move through the screens until you reach the Current Cost Data frame.

   It is recommended that you initially enter costs in the current cost set so that the GL is not affected. If you change the GL cost set and have inventory on hand, inventory is revalued in the GL.

2 Enter purchased material costs in the this-level field of the current cost set.

3 Enter the overhead cost, if any, for the item.

   Overhead can be assigned to cover the expense of purchase operations, which can then be recovered as fixed overhead on all purchased items based on a percentage of their cost.

   Overhead cost can be maintained manually for each item, or by assigning it as a percentage of other cost categories using Item Overhead Cost Update (1.4.21). See “Updating Burden and Overhead Costs” on page 32.

Effect of Purchase/Manufacture Code on Cost

In order to roll up costs correctly for manufactured items, the Purchase/Manufacture code must be set to M (Manufactured), L (Repetitive line), W (Flow), or R (Routable). The Pur/Mfg code controls how the system explodes forecasts, plans and creates orders, and calculates costs for the item.

When the Purchase/Manufacture code for a manufactured item is incorrectly set to P (Purchased) or D (DRP), all lower-level costs for material, labor, burden, overhead, and subcontract are set to zero. This occurs even when routing and product-structure cost rollups were performed. Additionally, this-level costs for labor and burden are zeroed out.

Effect of Phantoms

Phantom items are used in manufacturing to define items that are made and consumed in the production process without being kept in inventory. For example, a wire harness that exists only briefly on the assembly line as a separate subassembly is defined as a phantom. Phantoms can be defined as local, global, or both. For more information on phantoms, see *QAD Manufacturing User Guide*.

Global phantoms identify an item as a phantom on all bills of material. You can perform routing cost rollups on global phantom items. Only lower-level labor, burden, and subcontract costs of a global phantom item are included in the parent item’s cost when the product structure cost rollup is performed.

In some cases, a global phantom can also require the issue of work order to build the item as a stockable item, such as a service part. If you need to build and stock a phantom item, the routing and product structure cost rollups calculate this-level costs correctly.

Local phantoms are treated like phantoms only in specific product structures. The use of local phantoms is discouraged because this-level labor and overhead costs for local phantoms roll up into the parent item's cost, causing manufacturing variances.

Effect of Item Planning Data

Material costs for product structures depend both on the quantity of each component used and on the scrap percentage and cumulative yield for the parent assembly. Products may have less than 100% yield through operation processing. Item planning data can be set up to recognize expected yield. If components are scrapped during the assembly process, expected loss can be recognized by the component scrap factor in Product Structure Maintenance (13.5).

The material portion of the Product Structure Cost Report (13.12.4; enhanced .NET UI version at 13.12.28) shows the impact of the component cost, scrap percentage, and yield.

Example Standard purchase cost for an item is $.05, but its 5% scrap percentage results in a total component cost of $.05555556 ($.05 / [100% – 5%] or .05/.95). Similarly, the sum of all components in a product structure (1.38) is divided by the inspection yield percentage (80%) to arrive at the total material cost (1.725).

Maintaining Item Costs

The system automatically posts labor, burden, and subcontract costs to this-level and lower-level item cost fields when you run Routing Cost Roll-Up (14.13.13) and Product Structure Cost Roll-Up (13.12.13). The system also rolls up lower-level material cost, assuming that the current or standard purchase price for an item has been added as a this-level material cost.

Defining Routings

Routings define the steps that a product passes through during the manufacturing process. A routing consists of one or more operations—steps needed to manufacture an item. For more information on routings, see *QAD Manufacturing User Guide*.

For costing purposes, routings provide the following information:

- Manufacturing setup and run times per operation
- Machines per operation
- Operation yield percent or yield at each operation
- Subcontract cost, if any, per unit

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

Standard Operations

When routings share one or more operations that are essentially the same, you can create template steps called standard operations. The standard operation feature is a particularly useful tool for manufacturers. In many companies—even those that make to order—the same operations occur in more than one routing.

Use Standard Operation Maintenance (14.9) to set up standard operations. When you create a new routing operation, automatically copy the standard operation data to the routing by referencing the standard operation code. If you edit the standard information, the changes apply only to the new routing, not to the standard operation you copied.

When a standard operation is referenced on a routing, the routing cost rollup uses the standard operation data when calculating costs.

Routings and Processes

You can use three programs to create routings or processes.

- Typically, you define routings in Routing Maintenance (14.13.1) where production run time is expressed as the average time required to manufacture a single unit.
- Use Routing Maintenance (Rate Based) (14.13.2) in a high-volume production environment where run time is expressed in terms of an hourly production rate.
- Use Process Definition Maintenance (15.13) when run time is expressed as the average time to process an entire batch.

Subcontract Cost in Routings

Subcontract costs are entered in the routing at the subcontract step or operation. The cost is entered as the standard charge per unit from your subcontract supplier for performing the work. You can have multiple subcontract operations in a routing.

Actual management of subcontract processing requires that the order be linked to a subcontract purchase order (PO) if you want to have charges applied to specific work orders. When the PO is received, the Inventory accounts are not affected. Instead, the standard subcontract cost is debited to Work in Process (WIP), and the PO amount is credited to PO Receipts. Any variance between the standard subcontract cost and the PO amount is calculated as a subcontract variance and posted accordingly.

If you open a subcontract PO and do not link it to a specific work order, then the subcontract cost is debited to Cost of Production instead of WIP.

Defining Product Structures or Formulas

Product structures attach component items to the parent item and define the quantity to use. The information in a product structure is used to calculate lower-level costs. For more information on product structures, see *QAD Manufacturing User Guide*.

For costing purposes, product structures provide the following information:

- Component items and the quantity required to make one of the parent item

- Start and end effective dates for component items
- Structure types defining component/parent relationships
- Component scrap factor
- The operation number in the routing or process where the component is used

Use Product Structure Maintenance (13.5) to identify raw materials or subassemblies required to produce a finished product or subassembly. Use Formula Maintenance (15.5) to identify ingredients or intermediates required to produce a finished product or intermediate.

Effective Dates

When components must be added or deleted from a product structure, you can manage this with start and end effective dates. You can specify when an old component will no longer be used in a product and when a new component is added. Product Structure Cost Roll-Up (13.12.13) can be performed as of a specific effective date, and most cost reports can be run by effective date as well.

Structure Types

Product structure relationships normally have a blank structure code and are used by manufacturing planning and control and product costing.

An X is a local phantom code and adds this-level cost to the parent item, as well as the component's cost. A global phantom adds only lower-level costs to the parent. See "Effect of Phantoms" on page 17.

Table 3.1 lists structure type codes that exclude the cost of a component from the product structure's cost rollup.

Table 3.1
Non-Costed Structure Types

Code	Description
A	Alternate. Set by the system as an identifier for an alternate structure.
D	Document. Records miscellaneous expense items or documents associated with the product structure.
O	Option. An optional component. Normally defined using Configured Structure Maintenance (8.1), options may also be entered on planning bills.
J	Co-product/By-product. This structure type is set in Co/By-Product Maintenance (13.22.1). You cannot enter J in other product structure programs or modify a relationship of type J.
P	Plan. Planning bill used for multilevel master scheduling.

Scrap Factor

The scrap percentage is used to indicate the expected additional quantity of a component required to produce an item. Scrap is specified by component. Scrap is specified by component and is costed as:

*Component Cost / (100% – Scrap%) * Quantity Per*

Note For information on scrap costing transactions for production orders, including calculations, refer to "Costing Transactions" on page 65.

Use scrap percentage carefully, especially on discrete items, since both Materials Planning and inventory backflush calculations use it. If you specify a 2% scrap rate on a discrete item—for example, an engine—and you have a requirement for 80 engines, the system calculates the demand quantity to be 81.6. To prevent decimal order quantities for discrete items, enter an order multiple in Item Planning Maintenance (1.4.7). Also note that component requirement and issue quantities are inflated when a scrap percentage is used.

Operation

You must specify an operation for components if you are using repetitive manufacturing or want to use component yield calculations.

For repetitive environments, components are automatically backflushed (issued) when quantities for the parent item are reported in Advanced Repetitive or Repetitive reporting transactions. If a matching operation is not found, the component is not backflushed.

Entering an operation enables component yield cost calculations. Both Product Structure Cost Roll-Up (13.12.13) and Routing Cost Roll-Up (14.13.13) use this field when calculating material costs. If the operation yield is specified as less than 100% in an item's routing, then material costs are increased to reflect yield loss. If an operation is not defined, the system assumes components are issued at the first operation.

Chapter 4

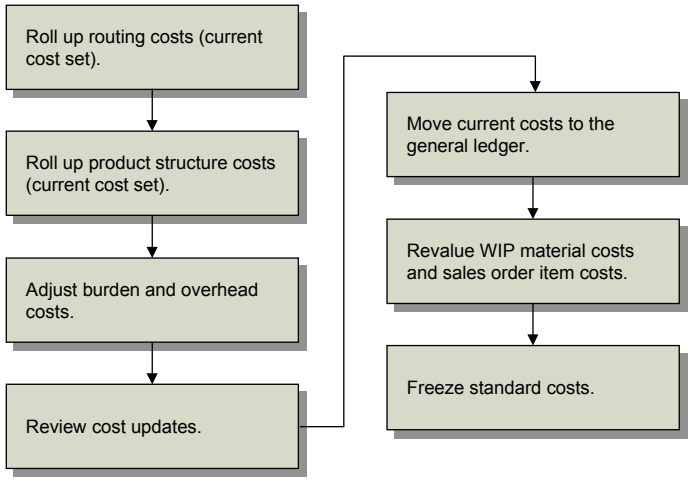
Product Costing Process

This chapter discusses how costs are applied and managed.

Product Costing Workflow

After you have defined item data, routings, and product structures, you can complete the product costing process. Figure 4.1 shows the steps for rolling up costs in the current cost set and using those costs to update the GL cost set.

Fig. 4.1
Product Costing Workflow



You should roll up costs, make any adjustments, and review the updated costs in the current cost set. This lets you validate the updated costs prior to committing them as new GL standards.

Each step in the costing process is discussed in detail in the following sections.

1. Run Routing Cost Roll-Up (14.13.13), which does the following:
   - Totals the labor/machine hours and cost, subcontract cost, and burden cost
   - Computes the cumulative operation yield for a routing or routings
   - Posts the cost data to this-level labor and burden fields for the specified cost set
2. Run Product Structure Cost Roll-Up (13.12.13), which does the following:
   - Obtains purchased material and this-level labor and burden costs from the item master.
   - Performs the level-by-level computation of costs for the five cost set categories. Cumulative lower-level costs are posted for all cost categories at each assembly level.
3. Run Item Burden Cost Update (1.4.20) to adjust item burden costs. Run Item Overhead Cost Update (1.4.21) to adjust item overhead costs.
4. Use Product Structure Cost Report (13.12.4; enhanced .NET UI version at 13.12.28) to review product structure costs to identify any abnormalities such as product structure or routing errors. The report shows costs for an item and its components by structure level.
5. Use Cost Set Move to GL Set (1.4.22) to copy the approved current cost set to the GL cost set.
6. Once standard GL costs are established, use Cost Roll-Up Freeze/Unfreeze (13.12.1) to prevent the system from recalculating the costs the next time routing or product structures rollups are performed.

7 Use WIP Material Cost Revaluation (16.22) to revalue work-in-process material costs. Use Sales Order Cost Revaluation (7.1.12) to revalue line items in sales orders.

Rolling Up Routing Costs

Routing Cost Roll-Up (14.13.13) performs the following:

- Totals the labor/machine hours and cost, subcontract cost, and burden cost.
- Computes the cumulative operation yield for a routing or routings.
- Posts the cost data to this-level labor and burden fields for the specified cost set.

The program calculates costs for each operation after accessing the item master, work center, routing, and standard operation data. You should recalculate manufacturing costs whenever work center rates, routings, or processes change.

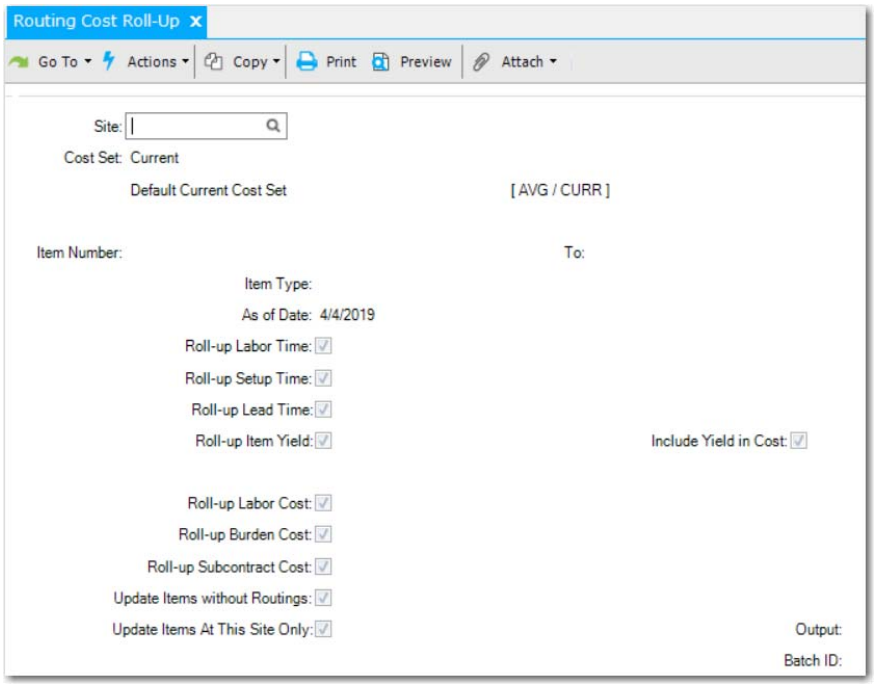
You can roll up either current or GL costs. The default is to roll up current costs. Although you can roll up GL costs when they change, it is safer to roll up current costs and then copy them to the GL.

Note the following important points before you execute this program:

- When you use cost linking, you must roll up costs in a GL cost set that uses the standard costing method. See “Effect of Linking on Routing Cost Rollups” on page 57.
- Only one field for run time exists on the routing. You cannot divide run time into machine run time and labor run time. For burden calculations, the machine and the labor are both assumed to be in use for the entire run time.
- Before you specify to roll-up labor, setup, or lead time, be aware that sometimes these fields are not set so that the manufacturing lead time entered in the item planning data is not overwritten. This should be discussed with the planners to determine how these fields should be set.

Expected yield losses can be factored into cost calculations. The system computes the cumulative yield percentage based on multiplying together the operation yields for all operations. This value is posted to the item master and is used for material planning purposes. For example, yield percentages for a two-operation routing are both 90%, so the cumulative yield percent posted to the Yield% field in the item master is 81.00% (.90 * .90).

Fig. 4.2
Routing Cost Roll-Up (14.13.13)



Other important fields in either .NET UI or Web UI-Channel Islands Routing Cost Roll-Up are:

As of Date. Enter an effective date. Roll-up calculations only consider operations that are effective on the specified date.

Note In the .NET UI version of this program, you can enter a question mark (?) to have the system use the current date. This lets you submit the selection criteria once and then run the same batch whenever a new cost rollup is required. Any time the batch is submitted in the .NET UI, the system sets this field to the date the batch is run.

Roll Up Labor Time. Indicate if labor times (run or setup) on the routing should be rolled up to calculate this-level run or setup time for the item. When this filter is set to Yes, the function accumulates the labor time from the routing and updates Run Time or Setup Time in Item-Site Planning Data or, if not available, Item Planning Data. The default is Yes.

Roll Up Setup Time. Indicate if setup times (run or setup) on the routing should be rolled up to calculate this-level run or setup time for the item. When this filter is set to Yes, the function accumulates the labor time from the routing and updates Run Time or Setup Time in Item-Site Planning Data or, if not available, Item Planning Data. The default is Yes.

Roll Up Lead Time. Indicate if lower-level burden costs should be rolled up to calculate the cost of the parent item. When this filter is set to Yes, these lower-level costs will be included in the total cost of the parent item. The default is Yes.

Roll Up Item Time. Indicate if manufacturing lead times should be calculated. The manufacturing lead time is the normal or average number of working days it takes to manufacture an item, including the time to process paperwork, issue components, inspect the finished product, and receive it into stock. When you specify to roll up manufacturing lead time, the system calculates it from the routing. The default is Yes.

Roll Up Labor Cost. Indicate if this cost should be rolled up to calculate this-level costs for the item. Total cost is the sum of all of the This-Level and Lower-Level costs for an item. This-level costs are costs directly incurred during the production of this item. Lower-level costs are costs incurred to purchase or manufacture the components used to make this item. When this filter is set to Yes, these this-level costs will be included in the total cost of the parent item. The default is Yes.

Roll Up Burden Cost. Indicate if the burden cost should be rolled up to calculate this-level costs for the item. The default is Yes.

Roll Up Subcontract Cost. Indicate if subcontract cost should be rolled up to calculate the cost of the parent item. The default is Yes.

Include Yield in Cost. Determines whether yield percentages from Routings are used to calculate component item costs. When included, the component quantity per is adjusted upward to account for any yield percentage. This adjusted quantity is used to calculate the cost. When not included, the expected yield is not factored into the cost calculations. The default is Yes.

Update Items Without Routing. This filter determines whether cost calculations include only those items with routings, or all items. Setting this filter to Yes lets you clear costs associated with obsolete routings. For example, your company decides to stop making an item and acquire it from another source. Simply deleting the routing does not clear out all of the manufacturing costs. To reset those costs to zero, set this filter to Yes and run the routing cost roll-up. If this item is a component, also run Product Structure Cost Roll-Up. The default is Yes.

Update Items At This Site Only. Indicate whether to include only those items that exist at the specified site in the cost roll-up, or create cost details at the specified site for all items in the item number range regardless of whether the item is defined at the site. The default is Yes.

Detailed Excel Output. Specify that the system outputs routing cost roll-up results to a Microsoft Excel spreadsheet. The default is Yes.

Update. Select Yes to run this program in update mode and change records in the database. Select No to run this program in report-only mode without updating the database. A report prints for review with SIMULATION displayed at the top of each page. The default is Yes.

Routing Cost Calculations

This section includes cost calculations for work orders. For production order cost transactions and calculations, refer to “Costing Transactions” on page 65.

- Labor cost per operation

  The total labor cost is the combined cost of setting up the operation and running it. Since setup time applies to the whole operation rather than per unit, setup time is divided by the item order quantity, then multiplied by the setup rate.

  *Labor Cost = (Setup Hrs / Order Quantity * WC Setup Rate) + (Run Hrs per Unit * WC Labor Rate) / Item Yield%*

- Labor burden cost per operation

Burden costs apply to both setup and run time. Labor burden is calculated as a rate per labor hour and/or a percentage of total labor. Labor burden percent is most commonly used in a labor-intensive environment. Labor burden rates are commonly used in a high-volume production environment. Both types of burden can be applied—as a rate per hour and/or as a percentage of labor cost.

*Labor Burden Rate = [(Setup Hrs / Order Quantity + Run Hrs) * WC Labor Burden Rate] / Item Yield%*

*Labor Burden Percent = [(Setup Hrs / Order Quantity * WC Setup Rate) + (Run Hrs * WC Labor Rate) * WC Labor Burden%] / Item Yield%*

- Machine burden cost per operation

  This is calculated based on the number of hours the machine is in use—both while it is being set up and while products are being run.

  *Machine Burden Cost = (Std. Setup Hrs / Order Quantity * No. of Machines + Std. Run Hrs) * WC Machine Burden Rate / Item Yield%*

- This-level labor and burden cost

  Labor and burden costs for each operation are simply added.

  This Level Labor = Op 10 Labor + Op 20 Labor + ...

  This Level Burden = Op 10 Burden + Op 20 Burden + ...

Rolling Up Product Structure Costs

Use Product Structure Cost Roll-Up (13.12.13) to update the costs of parent items based on the costs of their lower-level components. Each manufactured item has a standard product structure, formula, and/or co-product/by-product structure associated with it that describes the components or base process required to make the item.

Components have information for the quantity required, expected scrap percentage, and the operation where they are required. Purchased items have material and overhead costs. Manufactured items also have labor, burden, and subcontract costs. Product Structure Cost Roll-Up uses these costs to calculate total cost by item, and lower-level run and setup times.

The system displays a warning if you try to roll up an average current cost set, but allows you to continue. Rolling up average costs interferes with the averaging process. Although you can roll up an average current cost set, consider copying it instead. The system does not let you roll up an average GL cost set.

Note If you are using cost linking in the Cost Management module, you must roll up costs in a GL cost set that uses the standard costing method. See “Effect of Linking on Product Structure Cost Rollups” on page 41.

You can run a rollup for all items at a site, in one product line or all product lines, by item type or group, or for individual items.

Other important fields in Product Structure Cost Roll-Up are:

As of Date. The effective date is used to select parent/component relationships to update. Parent/component relationships are defined as effective over a period of time. Effective dates phase in engineering changes and maintain product structure history online. This lets you make changes to a product structure effective in the future, and then evaluate the cost effect of that change.

You can enter a question mark (?) to have the system use the current date. This lets you submit the selection criteria once and then run the same batch whenever a new cost rollup is required. Any time the batch is submitted, the system sets this field to the date the batch is run.

Low Level Material, Labor, Burden, Overhead, and Subcontract Cost. Set these fields to Yes to include lower-level costs in the cost rollup. Total cost includes all this-level and lower-level costs for an item.

Low Level Labor Time and Setup Time. Set these fields to Yes to include lower-level run times for manufactured items (not including global or local phantoms) in the cost rollup.

Print Audit Trail. A printed audit trail should normally be requested and filed. The audit trail prints a complete list of all changes made and can be used for reference should problems arise. When set to No, the system rolls up component costs, but does not produce a report of the actions taken.

Set Cost Update Field For All/Changed Only. You can update the costs for all items or only those items with cost changes. Setting this field to Changed Only provides a better audit trail of dates when costs change.

Include Yield%. Yield percentages from Routing Maintenance (14.13.1) can be used to calculate component costs. If set to Yes, component costs are adjusted to account for any yield percentage. This adjustment can be upwards (yield is greater than 100%) or downwards (yield is less than 100%).

Since you can use Product Structure Cost Roll-Up with simulated cost sets, you can set the options to provide only the output you require. See “Cost Simulation” on page 35.

Example You may want to determine the impact of changes in material cost only. Set the fields for other cost set categories to No so that the rollup only considers material cost changes.

Ideally, you run a rollup only when you know that material, labor, burden, overhead, or subcontract costs have changed. However, this is often difficult to determine. Consider running global rollups periodically for the current cost set to ensure that the top-level item costs are truly current. This is especially important if you have selected the average cost or last cost options in Inventory Accounting Control (36.9.2) or in Cost Set Maintenance (30.1) in the Cost Management module.

Note Roll up a copy of the current cost set if you are using the average cost method.

Rolling Up Product Structure Costs

Use Product Structure Cost Roll-Up (13.12.13) to update the costs of parent items based on the costs of their lower-level components. Each manufactured item has a standard product structure, formula, and/or co-product/by-product structure associated with it that describes the components or base process required to make the item.

You should recalculate costs when purchase or manufacturing costs, structures, or routings change. Only roll up a current cost set or some other non-GL cost set. When you are satisfied with the changes in the current or non-GL cost set, copy the costs to the GL cost set

Components in a product structure have information for the quantity required, expected scrap percentage, and the operation where they are required. Purchased items have material and overhead costs. Manufactured items also have labor, burden, and subcontract costs. Product Structure Cost Roll-Up uses these costs to calculate total cost by item, and lower-level run and setup times.

You must specify both a site and cost set.

For cost calculations, lower-level material cost is calculated as the total material cost for each component divided by 100% less the scrap percentage, then multiplied by the quantity per. For example, for a material cost of $5 per unit, a scrap percentage of 2%, and a quantity per of 2, the calculation is 5 / .98 * 2 = 5.10 * 2 = 10.20 for this component. Each lower-level cost is calculated this way.

The system performs the roll-up for items with costs in the specified cost set. The components of such items are included, whether or not they have costs in the cost set

Any item in the system is available at any site. This means that a routing or product structure roll-up includes every item in the item range you define regardless of which site you roll up. In other words, the roll-up can create item costs for items you did not explicitly define at the site you roll up. These costs, furthermore, can be incomplete since the item range entered may not include the entire structure at another site. However, the costs for items not used at a site are not used for any cost transactions, so there is no business impact. If you want to avoid these cost records altogether, you can maintain item numbering schemes that isolate specific item ranges to specific sites.

The system displays a warning if you try to roll up an average current cost set, but allows you to continue. Rolling up average costs interferes with the averaging process. Although you can roll up an average current cost set, consider copying it instead. The system does not let you roll up an average GL cost set.

Determining When to Run the Roll-up

Ideally, you run a rollup only when you know that material, labor, burden, overhead, or subcontract costs have changed. However, this is often difficult to determine. Consider running global rollups periodically for the current cost set to ensure that the top-level item costs are truly current.

This is especially important if you have selected the average cost or last cost options in Inventory Accounting Control (36.9.2) or in Cost Set Maintenance (30.1).

Note Roll up a copy of the current cost set if you are using the average cost method.

Yield

Expected yield losses can be factored into cost calculations using the quantity per multiplied by the input quantity at that operation. This is the number of units that must be started at this operation to yield 1 unit from the last operation. This input quantity is calculated as 1 divided by the cumulative yield %. Cumulative yield % is the yield percentage for that operation multiplied by all subsequent operation yields.

Co-/By-Products

For co-products, the same co-product can result from more than one base process, but only the base process specified in the BOM/Formula field of the co-product's item record determines the co-product's cost at a particular site. Costs for a co-product are calculated from base process costs, using the cost allocation percentage assigned to the co-product. Allocation percentages for co-products of the same base process should add up to 100 percent. Each cost element of a co-product is updated with the allocation of its base process cost element at this level and at lower level.

The cost roll-up assumes that by-product costs are fixed. By-product costs are subtracted from corresponding base process cost elements (the base process cost is not actually updated). Then this adjusted base process cost is allocated entirely to co-products. Since costs never go negative, the cost of a base process element must be greater than or equal to the corresponding element cost for a by-product.

Linked Sites

For linked sites, one site can be used as the source for GL costs at other sites. This eliminates the need to set up duplicate GL cost records for the same items at all sites. When GL costs are updated at the source site, the system automatically generates cost adjustment (CST-ADJ) transactions at any target sites. Links are maintained for active GL costs only. A target site uses the active GL cost set at the source site and its own GL cost set becomes inactive.

Note If you are using cost linking, you must roll up costs in a GL cost set that uses the standard costing method. See “Effect of Linking on Product Structure Cost Rollups” on page 56.

Links are recognized only when you use a GL standard cost set, active or inactive, for a cost roll-up. A cost roll-up for a current or simulation cost set at a target site will not recognize linked costs. Instead of using a simulation cost set to maintain costs for future periods, you should use an inactive GL standard cost set. A cost roll-up at a target site has no effect on GL costs at a source site. Product Structure Cost Roll-Up will not roll up costs for a linked subassembly or end item. Their GL costs at the source site are used to calculate the cost of the parent item at the target site.

Cost Rollup with Simulated Costs

Since you can use Product Structure Cost Roll-Up with simulated cost sets, you can set the options to provide only the output you require. See “Cost Simulation” on page 49.

Example You may want to determine the impact of changes in material cost only. Set the fields for other cost set categories to No so that the rollup only considers material cost changes.

Fields/Filters

Important fields include the following:

As of Date. The effective date is used to select parent/component relationships to update. Parent/component relationships are defined as effective over a period of time. Effective dates phase in engineering changes and maintain product structure history online. This lets you make changes to a product structure effective in the future, and then evaluate the cost effect of that change.

Note In the .NET UI, you can enter a question mark (?) to have the system use the current date. This lets you submit the selection criteria once and then run the same batch whenever a new cost rollup is required. Any time the batch is submitted, the system sets this field to the date the batch is run.

Low Level Material, Labor, Burden, Overhead, and Subcontract Cost. Set these fields to Yes to include lower-level costs in the cost rollup. Total cost includes all this-level and lower-level costs for an item. The default is Yes.

Low level costs are costs incurred to purchase or manufacture the components used to make this item. When you include low level material, these low level costs will be included in the total cost of the parent item. For example, if you are making sunglasses, the low level material cost of a pair of sunglasses is the total cost of the lenses, frames, and screws. This-level material cost may be the cost of the cleaning solution and rags used to clean the finished sunglasses.

Low Level Labor Time and Setup Time. Set these fields to Yes to include lower-level run and setup times to calculate the cost of the parent item. Parent items include manufactured items, not global or local phantoms in the cost rollup. The default is No.

Print Audit Trail. A printed audit trail should normally be requested and filed. The audit trail prints a complete list of all changes made and can be used for reference should problems arise. When set to No, the system rolls up component costs, but does not produce a report of the actions taken.

Set Cost Update Field For All/Changed Only. Indicate how the system should update the Last Cost Update date for the items processed by this roll-up function:

- All (the default) updates the last cost update date for all items processed.
- Changed updates the date only on items that have a cost change.

Include Yield%. Determines whether yield percentages from Routing Maintenance (14.13.1) are used to calculate component item costs. When included, the component quantity per is adjusted upward to account for any yield percentage. This adjusted quantity is used to calculate the cost. When not included, the expected yield is not factored into the cost calculations. The default is Yes.

Updating Burden and Overhead Costs

You can calculate overhead and burden as a percentage of lower-level costs. This is useful for electronics manufacturers and other companies who calculate overhead and burden based on material cost rather than labor cost. Use the following programs to update burden and overhead:

- Use Item Burden Cost Update (1.4.20) to override item burden costs calculated in Routing Cost Roll-Up (14.13.13). You can change the burden cost for individual items, groups of items, or all items.
- Use Item Overhead Cost Update (1.4.21) to generate overhead allocations as a percentage of other costs.

You can test for the effect of a change in burden or overhead by simulating it. Do this by setting the Update field to No. The system calculates cost data using the specified parameters and prints a report, but does not actually update any cost fields.

Important Take care when making any global changes to ensure that only changes you want are made. Some items may have burden applied differently.

Calculate overhead and burden in three steps:

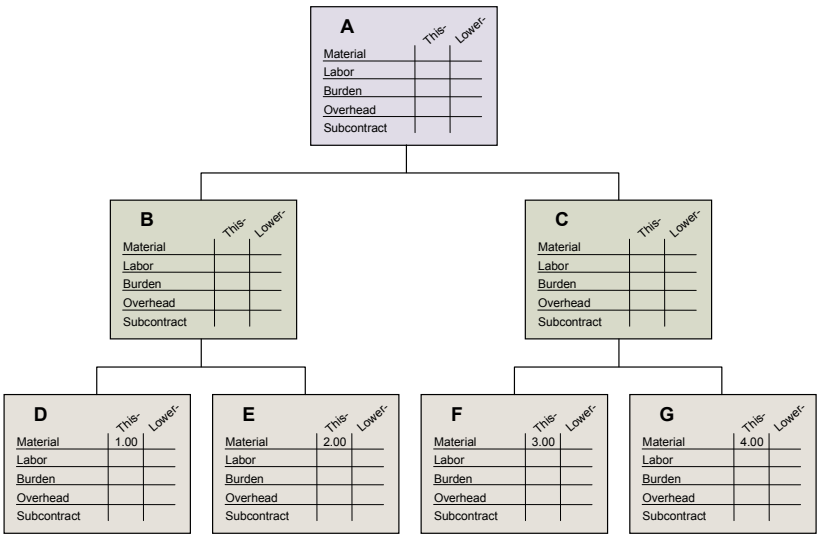
1. Roll up product structure costs to ensure that you calculate overhead from accurate lower-level costs. See “Rolling Up Product Structure Costs” on page 29.
2. Calculate this-level item overhead costs for the lower-level items by using Item Overhead Cost Update, or calculate this-level item burden costs by using Item Burden Cost Update.
3. Roll up the product structure costs again to add the calculated overhead to the lower-level costs.

The following example calculates overhead for a parent item with several components.

Example The product structure for item A, illustrated in Figure 4.3, consists of lower-level items B and C. The lower-level material costs originate in the components for B and C—items D, E, F, and G. This-level overhead is 150% of lower-level material cost. The lower-level material costs are:

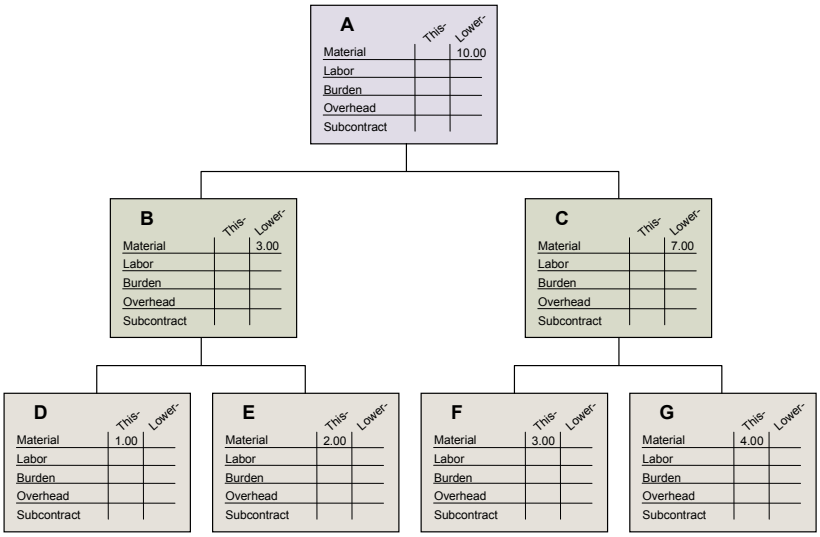
- Item D = 1.00
- Item E = 2.00
- Item F = 3.00
- Item G = 4.00

Fig. 4.3
Product Structure for A



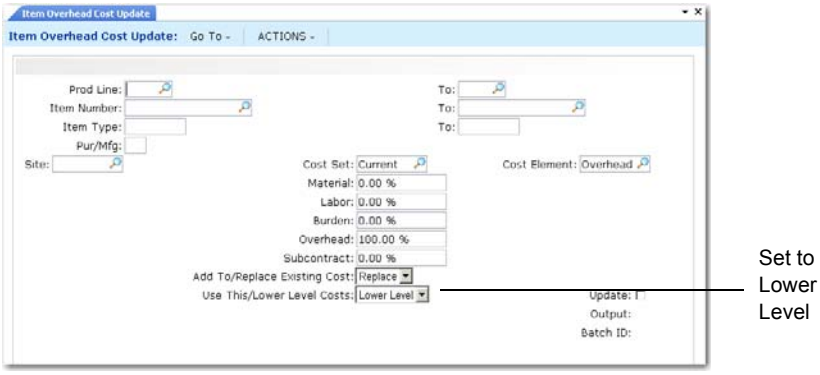
The first product structure cost rollup for item A calculates lower-level material costs of 3.00 for item B, 7.00 for item C, and 10.00 for item A.

Fig. 4.4
Results of First Product Structure Cost Rollup



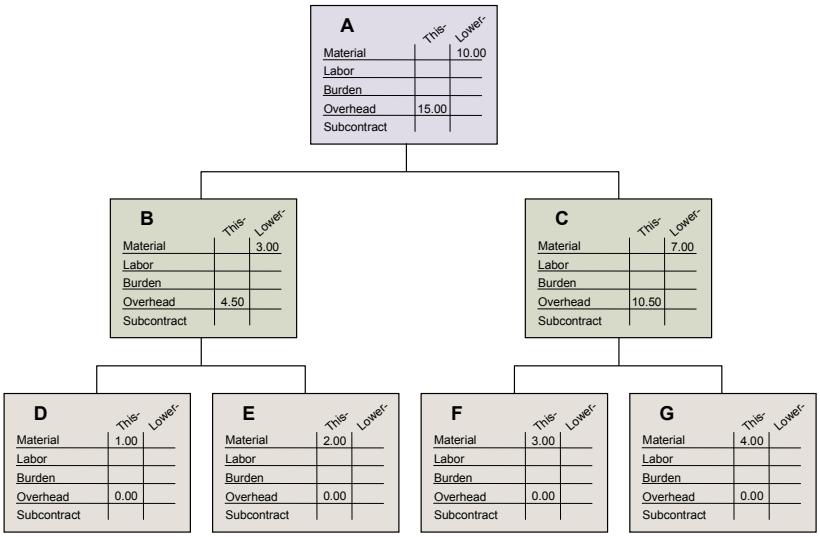
In Item Overhead Cost Update, the material percentage is set to 150% and the other percentages to zero. Use This/Lower Level Costs is set to Lower Level.

Fig. 4.5
Item Overhead Cost Update (1.4.21)



This calculation generates overhead costs of 4.50 (150% of 3.00) for item B, 10.50 (150% of 7.00) for item C, and 15.00 (150% of 10.00) for item A. Items D, E, F, and G have overhead costs of zero.

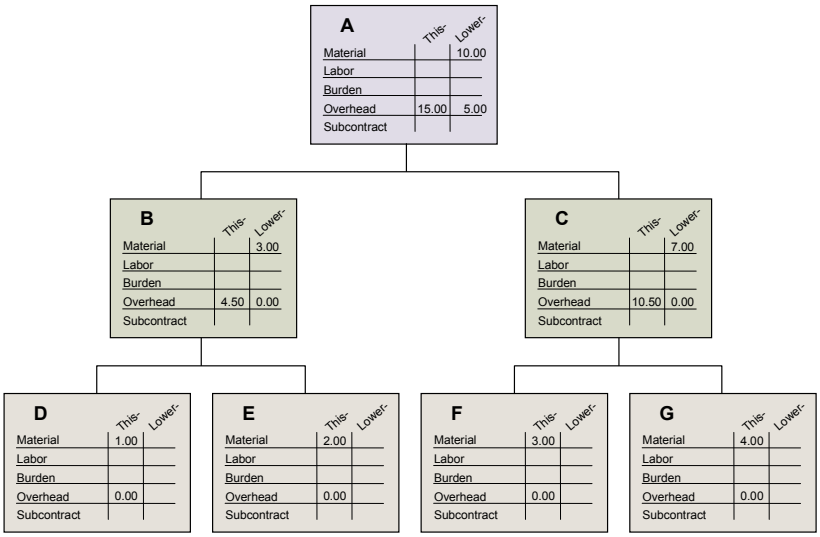
Fig. 4.6
Item Overhead Cost Calculation



The second product structure cost rollup adds the calculated this-level overhead costs for items D and E to B, then the costs of F and G to C, then the costs of B and C to A.

Note You cannot calculate this-level costs for a specific cost element based on both this-level and lower-level cost elements in the same calculation. Calculate this-level costs first for the lowest level, then the next highest level, and so on. Since you must do lower-level and this-level cost updates separately, check each level before going to the next.

Fig. 4.7
Results of Second Product Structure Cost Rollup



Processing Considerations

Before running the calculation, consider the following:

- At which level will you calculate overhead? The lowest level parent item? The highest level parent item? The planning level? This decision varies from company to company.

  It is important *not* to base costs indirectly on themselves. The previous example illustrates why you have to be careful. Item A has a lower-level overhead of 15.00 (4.50 + 10.50). However, Item Overhead Cost Update also calculated this-level overhead of 15.00 (150% of 10.00, the this-level material cost).

  When you run the calculation for item A, you would calculate an overhead cost that is too high, unless you want the overhead for A to be 300% of 10.00. In a product structure with many levels, the inaccuracies would be even more striking. To prevent this, calculate costs from only one level.

- Which overhead percentage will you use for each level?

  In the item burden and overhead cost update functions, the default percentage is 100%. When calculating lower-level costs, typically change this to 0%.

Moving Current Costs to the General Ledger

At least two cost sets are maintained for each item or item and site:

- The current cost set reflects today's cost for an item.
- The GL cost set is used for all general ledger transactions and inventory valuation for an item.

Update the current cost set during cost rollups first, verify the changes, and then copy the updated costs to the GL cost set.

Moving current costs can have significant effects on the general ledger. All changes to GL costs create a GL cost adjustment, updating the value of inventory.

Use Current Cost Set Move to GL Set (1.4.22) to copy data between the current cost set and the GL cost set at a specified site. You can move the costs of all items, individual items, or groups of items. Optionally, you can specify a range of percentage difference in cost for which copying is allowed. You can also inhibit copying of one or more cost set categories.

This function is most commonly used only at regular, widely spaced intervals, and can take a long time to process. At the beginning of the year, many companies set current and GL costs equal.

When one cost set is copied to another, costs may already exist in the target cost set. If so, costs are updated only if the difference between the costs lies within this tolerance range.

Total cost for an item is made up of elements in five cost categories: material, labor, burden, overhead, and subcontract. You can copy all or some of the cost elements from one cost set to another. Each cost element is copied from the current cost set to the GL cost set, provided the difference between the two total costs does not exceed the range specified in the Negative Change Allowed % and Positive Change Allowed % fields.

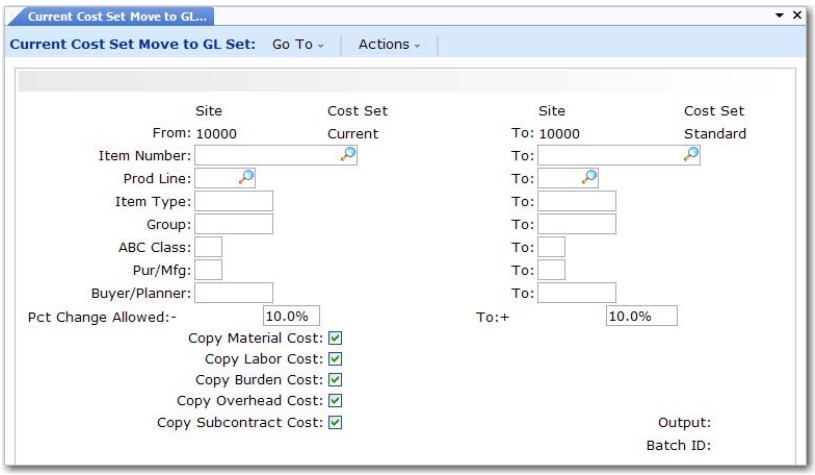
You may want to back up the database prior to updating costs, particularly GL costs.

GL Cost Set for a Specific Site

You must specify a site. The system first looks for item data specific for the site. If none is found, the system uses the item master record. When the GL cost set assigned to a site is updated using this function, inventory is revalued to reflect the new costs. To reflect this cost change in work in process (WIP), run WIP Material Cost Revaluation.

When a site is the source for GL costs at other sites, updating the active GL cost set automatically generates cost adjustment (CST-ADJ) transactions at any target sites. You cannot update GL costs at a target site, since these costs are referenced from the source site. For more information on linked sites, refer to information on Linked-Site Rules in your Costing user documentation.

Fig. 4.8
Current Cost Set Move to GL Set (1.4.22)



Fields/Filters

Important fields include the following:

Percent Change Allowed. Enter a percentage range of allowable cost differences between updated current costs and the previous GL costs. Only updated costs within this range are moved to the GL. To accept the movement of all costs, regardless of the difference from the previous GL costs, enter a question mark in this field and in the corresponding To field. To review cost changes without updating GL costs, enter zero in this field.

Copy Material Cost, Labor Cost, Burden Cost, Overhead Cost, and Subcontract Cost.

Normally, set all fields to Yes. Each cost category is copied from the current cost set to the GL cost set, provided that the difference between the two total costs does not exceed the range specified in Percent Change Allowed.

Sum Cost for Material This Level for DRP (Web UI only). If you select Yes for Sum Costs to MTL TL for DRP, the system rolls up this/lower-level costs into this-level (TL) material costs during the copy process. If you select No, costs are copied as-is. For example, this feature lets you build subassemblies at one site, ship them to a second site, and continue the manufacturing process without requiring manual updates to the subassembly cost. The default is No.

Revaluing Costs

When costs change, sales order item costs and work-in-process (WIP) material costs are not revalued automatically.

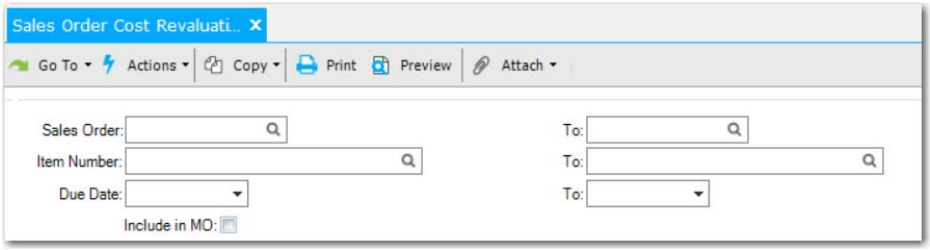
Revalue Sales Order Costs

Use Sales Order Cost Revaluation (7.1.12) to change the sales order line item cost when the prevailing GL costs are changed. Gross margin reports then reflect the proper difference between GL cost and selling price.

Since the system costs items for COGS purposes at the time of shipment, post any unposted invoices before running the cost revaluation program.

To run the program, enter a range of sales orders, item numbers, and due dates; then set the Include in MO field.

Fig. 4.9
Sales Order Cost Revaluation (7.1.12)



Fields/Filters

Most fields in either the .NET UI or Web UI let you filter records for the sales order cost revaluation. Once you do, use the following important fields to process:

Include in MO. Specify to update the cost of line items on material orders.

Yes: This function updates line-item costs on sales orders, RMAs, and MOs.

No: Only sales order and RMA costs are updated.

Revalue WIP Material Costs

Use WIP Material Cost Revaluation (16.22) to revalue production orders when standard costs change or when additional materials are issued.

Use this program to revalue open production orders when standard costs change when:

- Standard costs change after you release a production order.
- Additional materials have been issued to work in process (WIP).

Standard component costs are recorded on production orders at release when the status is E, A or R. When materials are issued to the order, the standard cost of those materials is posted to WIP from the production order bill.

WIP Material Cost Revaluation updates the production order bill with the currently effective GL cost. Any difference between the unit cost of the components issued and the standard cost is posted as a material rate variance. WIP Material Cost Revaluation does not update product structures or labor and burden costs.

Execute this program before closing orders with Production Order Accounting Close to prevent unaccounted material rate variances.

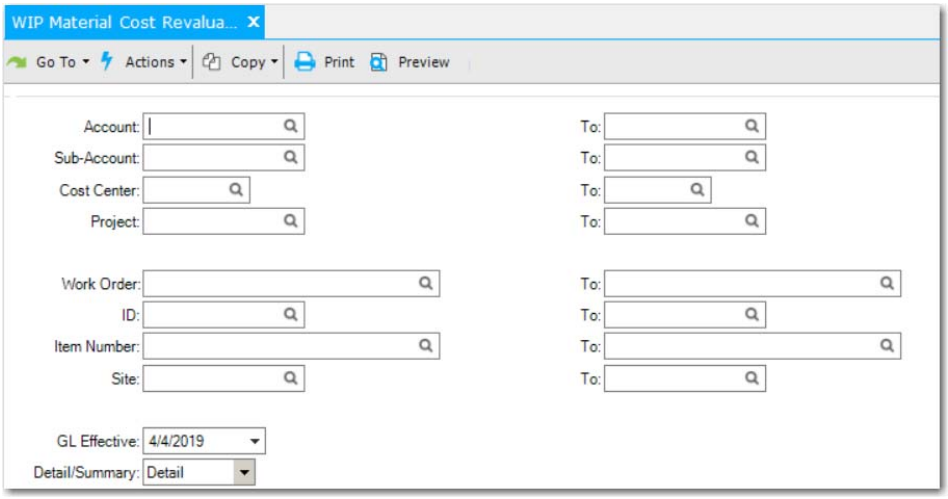
Depending on the number of orders selected for processing, this function can take some time to complete. The program creates transactions in Inventory History and Operation History tables that represent the GL transactions created when closing out the WIP value of the production order. You should execute WIP Material Cost Revaluation before closing orders with this program to prevent unaccounted for material rate variances.

GL Transactions

GL transactions are stored in the unposted transaction table until they are posted. Review unposted transactions with Unposted Transactions. The GL reference begins with WO. This program:

- Debits the WIP account from the production order
- Credits the Material Rate Variance account from the production order

Fig. 4.10
WIP Material Cost Revaluation (16.22)



Fields/Filters

Most fields in either the .NET UI or Web UI let you filter records for the WIP material revaluation. Once you do, use the following important fields to process:

GL Effective Date. Enter the general ledger (GL) effective date associated with this transaction. The default is the system date. The system validates that the date is within an open fiscal period.

Summary/Detail. Specifies the level of detail to appear on this report. Detail prints a detailed report of each transaction selected on this report. Summary prints a report with transaction totals only. Detailed reports are normally used as audit trails or when investigating sources of errors. Summarized reports are useful when you just need a bottom line total.

Update. Select Yes to run this program in update mode and change records in the database. When you select No, the system runs this program in report-only mode without updating the database. A report prints for review with SIMULATION displayed at the top of each page.

Freezing GL Costs

After GL costs are established, you can prevent those costs from being recalculated the next time costs are rolled up. For example, you may want to set standard costs or create a reference cost set that does not change over a specific period. Any cost set can be frozen.

Freezing standard costs provides fiscal-year control over those costs. You can freeze approved or verified standard costs at the start of your fiscal year, and then track cost changes in variance accounts through the year. At the close of the fiscal year, copy the current cost set to the standard set.

Freezing costs also improves processing speed during cost roll-up calculations. After item costs are calculated and frozen, all subsequent cost roll-up calculations simply use the frozen cost.

Warning Freezing costs only prevents the system from recalculating costs. It does not prevent manual changes in item cost data maintenance functions, cost set copy functions, or operation cost calculation.

Cost Roll-Up Freeze/Unfreeze

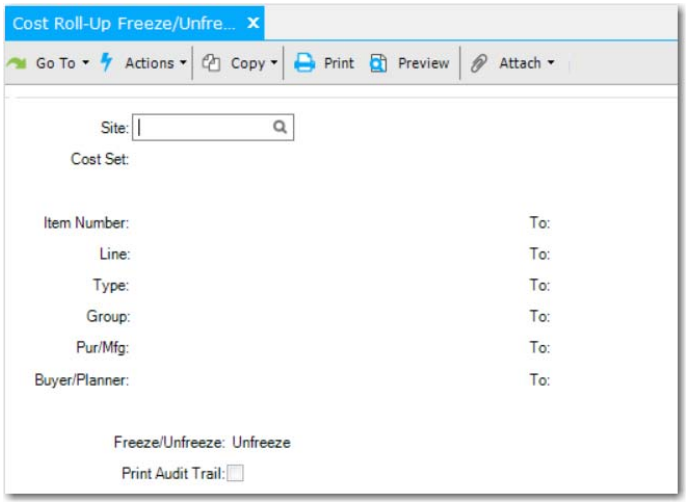
Run Cost Roll-Up Freeze/Unfreeze (13.12.1) to freeze standard (or other) cost sets for fiscal year control over costs or selectively unfreezes items to allow cost updates for new/revised items.

To introduce an item with wholly new components mid-year, add the items, structure, and routing, then roll up as usual and freeze the item's standard costs. To add or change components in an existing structure or to change a routing mid-year, unfreeze the affected items including components and parents. Roll up the revised structure and routing and refreeze.

When a changed item is optional in the structure or routing or if its parent can use other unchanged subassemblies as a direct replacement, be careful to unfreeze the parent without unfreezing unchanged subassemblies.

For the correct calculation of co-product costs, freeze the costs for by-products once those by-product costs have been determined. When by-product costs are not frozen, the cost of a base process item may not be equal to the costs of the co-/by-products that it produces. This is because the costs for a by-product may have been recalculated after the costs were calculated for one or more of the co-products. This can result in co-product costs that do not tie to the cost of a by-product.

Fig. 4.11
Cost Roll-Up Freeze/Unfreeze (13.12.1)



Fields/Filters

Most fields in either the .NET UI or Web UI let you filter records for the freeze/unfreeze. Once you do, use the following important fields to process:

Freeze/Unfreeze. Specify to freeze or unfreeze item costs by cost set against roll-ups, usually after roll-ups have been performed.

Frozen item costs (by item, range, product line, types, groups, and so on) are individually marked by Cost Roll-Up Freeze/Unfreeze and are not changed by subsequent roll-ups.

Unfreeze unflags item costs that have been flagged as frozen.

Update. Select Yes to run this program in update mode and change records in the database. Select No to run this program in report-only mode without updating the database. A report prints for review with SIMULATION displayed at the top of each page.

Chapter 5

Cost Management

This chapter discusses how costs are managed.

Overview

You can use cost management functions to create and maintain an unlimited number of cost sets.

Use additional cost sets to:

- Create and maintain different GL and current cost sets for each site and use different GL and current costing methods. Only one GL and current cost set can be active for each site.
- Establish cost planning sets to be automatically activated at specified dates to recognize expected material or other cost changes.
- Develop simulated item costs for planning purposes to evaluate the effects of differing scenarios, such as material price inflation, batch sizing, and labor or burden rate changes.
- Retain inactive cost sets for historical comparative purposes.
- Maintain frozen standard costs. Unlike GL costs, frozen standard costs do not change during the accounting fiscal year. Frozen costs and GL costs are identical at the beginning of the accounting year. The original standard costs at the start of a fiscal period can be retained as an historical cost set.

Cost management functions also let you create additional cost elements in the five cost categories—material, labor, burden, overhead, and subcontract. These provide additional reporting detail.

Creating Multiple Cost Sets

Multiple sets of costs can be maintained for any item, each identified by a cost set code. Data associated with a cost set code controls how these costs are updated and used.

Use Cost Set Maintenance (30.1) to set up GL, current, and simulation cost sets and to specify the costing method for each set. Specify the cost set, optionally add a description, then set the following important fields.

Note You cannot enter the default cost set in the Cost Set field, attempting to change the current cost set method or type. When you do, an error displays.

Cost Set Type. Each cost set must be assigned one of four type codes, indicating its purpose.

GL: Cost sets of type GL, when associated with sites using Cost Set to Site Assignment (30.9), are used with GL transactions to value inventory and determine the cost of sales.

Current: Current cost sets are typically system maintained and used for reporting purposes.

Simulated: Simulated cost sets are for reporting only and are typically used for planning, developing new standards, or simulating the effects of a cost change. Simulated costs cannot be system maintained. You must maintain them manually using functions on the Cost Simulation Menu (30.13).

PC: Periodic costing is in use. This functionality allows you to calculate costs over user-defined periods based on weighted averages, or averages calculated based on when material is received (LIFO or FIFO).

Period costing is the actual cost of an item based on inventory transaction information—transactions, BOMs, routings, purchase prices, expenses—that occurred during a certain period (usually a month). It also takes into the account the beginning balance of the item while it is performing the calculation of this period costing. Period costing does not include the concept of variations; the costs are recalculated each time.

When PC is the cost set type, the system displays an additional frame to indicate whether to use the PC cost set template. The system maintains a detailed cost set for every combination of cost-calculating period and currency. Each detailed cost set cost assumes all the elements defined for the template cost set. You only need to set up one periodic cost set, so you use the template cost set features in the Periodic Costing Menu (30.5) and not Cost Management (30) features to create the periodic costing template cost set.

Costing Method. A costing method must be assigned to each cost set indicating how costs are defined and maintained. See Chapter 2, “Cost Sets and Methods,” on page 5.

The cost set type determines which costing methods can be used:

- For current costs, the cost method can be Average, Last, or None.
- For GL costs, the cost method must be Average or Standard.
- For simulated costs, the cost method defaults to None and cannot be updated.
- For PC (periodic costing), cost method can be AVG (weighted average), FIFO (first in first out), or LIFO (last in first out).

Average: Costs are updated during item receipts and other inventory-related activities using a simple weighted-average calculation.

Standard: Costs are not updated automatically. Updates are performed manually and typically no more than a few times a year.

Last: Each item’s cost is equal to the unit cost from the last receipt or inventory update.

None: Costs are not updated automatically. They are maintained manually as needed.

WAVG: Weighted Moving Average method considers the previous period cost and the average of the cost incurred this period.

FIFO: First in first out method considers the receipt date of items for the existing inventory. This method assumes that the oldest (first) item in stock is issued first.

LIFO: Last in first out method considers the receipt date of items for the existing inventory. This method assumes that the latest (last) item in stock is issued first.

After you have defined cost sets, you can assign them to separate sites using Cost Set to Site Assignment (30.9).

Important Only one active GL and one active current cost set per site are permitted. The system automatically updates average or last costs only for these two cost sets.

You cannot delete a cost set using Cost Set Maintenance, even if it was added by mistake. You must use Cost Set Delete (30.23) to delete all other cost information completely.

Multi-Element Costing

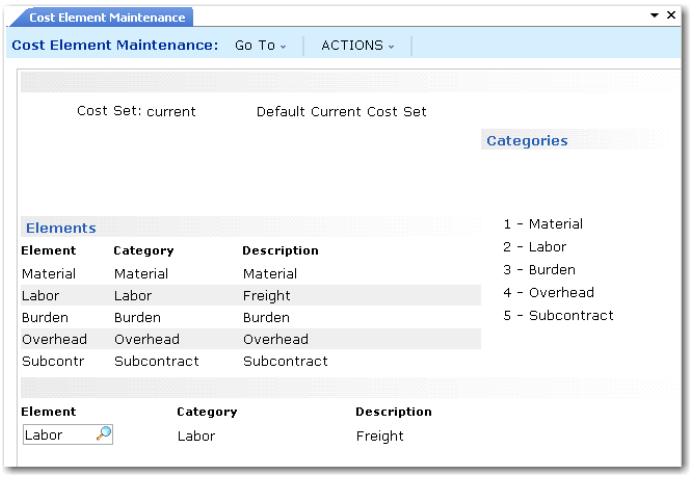
Costs for an item are always separated into five categories—material, labor, burden, overhead, and subcontract. An unlimited number of cost elements can be created as subsets of these categories. Item costs can then be assigned to these cost elements. See “Cost Set Categories” on page 10.

The use of cost elements is optional. You only need to introduce cost elements when you want additional reporting detail. For example, a company may want to split material cost into foreign and domestic content. Another company might want to split material costs for purchased items into purchase price and freight.

When you use Logistics Accounting, you need to set up separate cost elements used for inbound logistics charge accruals. The cost elements must be in the Material or Overhead cost categories.

Create new cost elements for GL and current cost sets using Cost Element Maintenance (30.17.1).

Fig. 5.1
Cost Element Maintenance (30.17.1)



Every cost set starts out with five cost elements that match the cost categories. You can add others but you cannot delete these. Each of the cost elements you add must be associated with one of the five cost categories.

You can set up current and GL cost set with the same cost elements or each cost set can have its own set of cost elements, or each cost set can be set up the same. To use the same elements for all cost sets, enter the cost elements for one cost set, and then use Cost Element Copy (30.17.4) to copy them to the other cost sets. Additional elements can be added to these cost sets.

Entering Element Costs

After cost sets and elements have been created, you can enter costs. You can use:

Item-Element Cost Maintenance (30.17.5) to enter costs manually, or have the system calculate these costs based on other cost elements in the cost set.

Item-Element Cost Calculation (30.17.10) to calculate the value for a particular cost element as a percentage of one or more cost elements.

Item-Element Cost Maintenance

Use Item-Element Cost Maintenance to maintain site-specific costs for an item by cost element. You can maintain cost elements for GL and current type cost sets with this program, but not simulation cost sets.

Total cost for an item is made up of elements in five cost categories: material, labor, burden, overhead, and subcontract. Each cost category always has one primary element. You can create an unlimited number of non-primary cost elements as subsets of these categories. Use Cost Element Maintenance to create additional elements for GL or current cost sets.

You can enter element costs manually in this program or you can use Item-Element Cost Calculation to calculate the value for a cost element as a percentage of one or more cost elements.

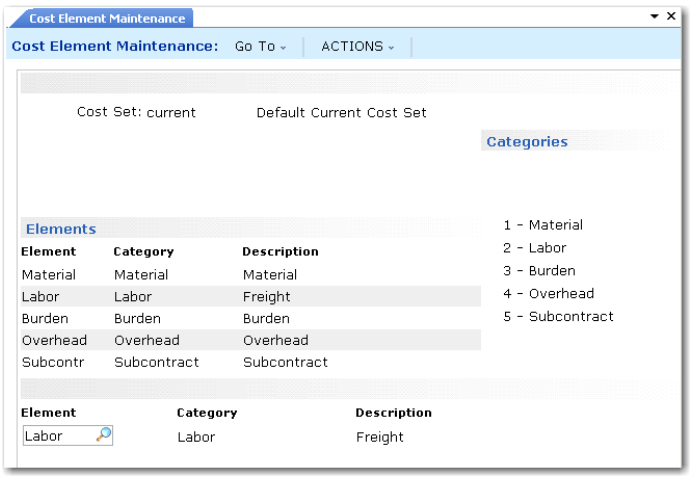
When the GL cost set assigned to a site is updated using this function, inventory is revalued to reflect the new costs. To reflect this cost change in work in process (WIP) and open sales orders, run WIP Material Cost Revaluation and Sales Order Cost Revaluation.

If a site is the source for GL costs at other sites, updating the active GL cost set automatically generates cost adjustment (CST-ADJ) transactions at any target sites. You cannot update GL costs at a target site, since these costs are referenced from the source site. For more information on linked sites, refer to the procedure help for Linked-Site Rules Maintenance.

When you change the cost of non-primary elements, the total cost for each cost category is not automatically updated. To update category costs, perform routing and product structure cost rollups, or run Cost Update from Cost Elements.

To run the program, enter an item number, site, and cost set. You can enter costs for any cost element assigned to this cost set. To enter costs for a non-primary cost element, enter the element name. You can also set this element to be the primary element for its cost category.

Fig. 5.2
Item-Element Cost Maintenance (30.17.15)



Item-Element Cost Calculation

Use Item-Element Cost Calculation to calculate element costs from a set of existing element costs. For example, you can set up Freight as 10% of Domestic Material costs and 30% of Foreign Material costs. You can specify whether the system should calculate costs as a percentage of an item's this-level or lower-level costs.

The ability to calculate a particular cost element as a percentage of lower-level costs is especially important for companies that calculate fixed overhead as a percentage of total material costs.

You must specify both a site and cost set. This function can take a long time to process.

Total cost for an item is made up of elements in five cost categories: material, labor, burden, overhead, and subcontract. Each cost category always has one primary element. You can create an unlimited number of non-primary cost elements as subsets of these categories using Cost Element Maintenance.

Enter the target cost element in the Cost Element filter, and the source elements and their percentages in the Element # and Element # Percent filters. The system multiplies each item cost as assigned to the listed source elements by the percentages entered. The resulting cost is updated or reported by item under the target element.

When you change the cost of non-primary elements, the total cost for each cost category is not automatically updated. To update category costs, perform routing and product structure cost roll-ups or run Cost Update from Cost Elements.

You should define menu security for this program to restrict access.

Running the Program Twice for Lower-Level Costs

You can run this program twice, once to calculate item costs based on lower-level cost element values and again to calculate item costs based on this-level values. For example, do this if you want to update lower-level material cost and this-level material overhead cost. When you calculate item costs twice, once for each level, set Add To/Replace Existing Cost to Replace for the first cost calculation. The program overwrites the existing cost element value with the calculated value. For the second calculation, set Add To/Replace Existing Cost to Add to add the calculated cost to the total value of the cost element. Otherwise, the second calculation overwrites the first calculated value.

Updating GL Cost Set

When the GL cost set assigned to a site is updated using this function, inventory is revalued to reflect the new costs. To reflect this cost change in work in process (WIP) and open sales orders, run WIP Material Cost Revaluation.

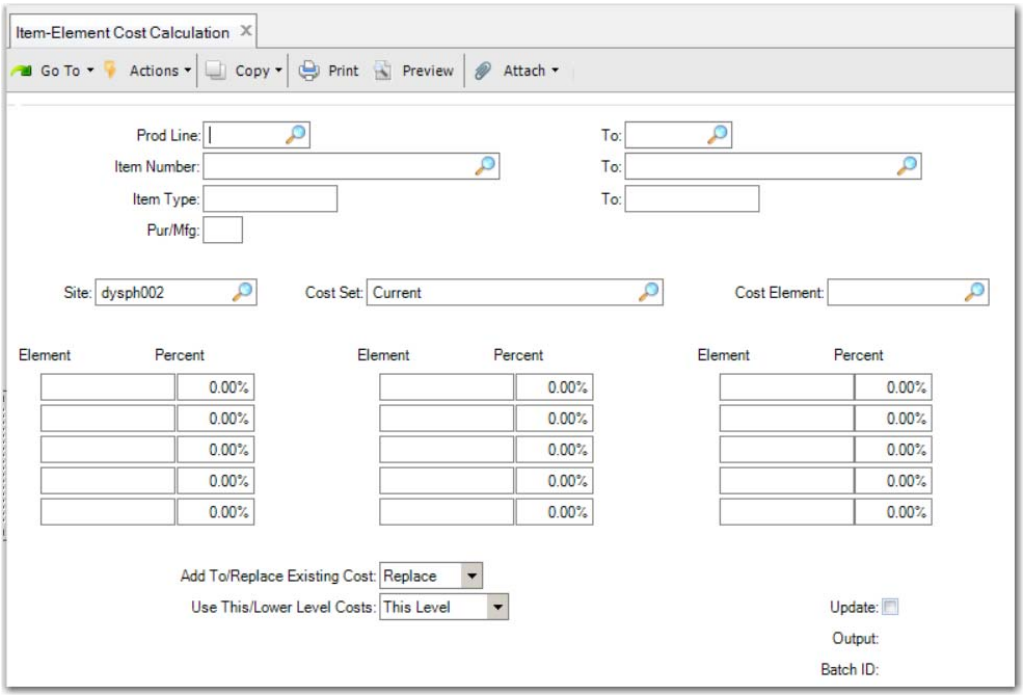
If a site is the source for GL costs at other sites, updating the active GL cost set automatically generates cost adjustment (CST-ADJ) transactions at any target sites. You cannot update GL costs at a target site, since these costs are referenced from the source site.

Running a Simulation First

Set Update to No to print a simulated report before updating the database. To update the database, set Update to Yes.

You should run a report first and verify the changes before updating the system. Only update a current cost set or some other non-GL cost set. When you are satisfied with the changes in the current or non-GL cost set, copy the costs to the GL cost set.

Fig. 5.3
Item-Element Cost Calculation (30.17.15)



Comparing Cost Sets

You can compare the active GL cost set with either simulated cost sets or historical GL cost sets. For example, you can compare Quarter 1/2000 with Quarter 1/2001. The system can retain an unlimited number of inactive cost sets and make comparisons among them, or between inactive and simulated cost sets. Use Comparative Cost Set Report (30.22) to compare cost sets.

Note An enhanced version of Comparative Cost Set Report is available at menu 30.46 for .NET UI users only.

Cost Simulation

Cost simulation functions let you set up different cost scenarios and test the impact of cost changes. Unlike the other cost rollup and update functions, cost simulation calculations look at an entirely different set of cost standards. You can set up different work center labor and burden rates, different subcontract operation costs, and different item material and overhead costs. Simulation roll-up functions use these costs rather than the standards.

Note Cost simulation programs do not let you modify current or GL cost sets. They are used only for simulations. This lets you set up menu security so that many users can have access to the simulation functionality, while only a few have the ability to actually affect the GL or current cost sets.

1 Create a simulation cost set.

   Use Cost Set Maintenance (30.1) to define a simulation cost set with a Cost Set Type of SIM.

2 Copy costs to the simulation set.

Use Cost Set Copy to Cost Set (30.3) to copy user-specified item cost data for each cost element into the simulation cost set. Enter a question mark (?) in Percent Change Allowed to disable the check for percentage difference between the two cost sets.

3 Copy routing and work center data.

Use Item/Routing to Simulation Copy (30.13.23) to copy work center rates for labor, burden, and subcontract cost from user-specified routings into the simulation cost set.

This program creates direct item costs for material, labor, burden, subcontract, and overhead. Use Cost Set Maintenance to vary these costs by a positive or negative percentage.

4 Modify cost elements.

In the simulation process, you can split material or overhead into multiple elements. For example, divide purchase cost into two elements, material and shipping cost, so you can add and maintain amounts separately.

The cost of any sub-elements is added to existing direct material cost, so you first need to zero out any existing material cost.You can then use Simulation Cost Element Maintenance (30.13.1) to create the two new material elements. Enter costs for them with Simulation Item-Element Cost Maintenance (30.13.5).

5 Modify direct item costs.

Use Simul Item-Element Cost Update (30.13.8) to change item element or sub-element costs directly by a positive or negative percentage.

Example You identify TRANS as a sub-element of material cost. Examine the impact of a 10% increase in transportation cost by entering 10% in the Change field.

6 Modify work center rates.

Use Simul Work Center Rate Maintenance (30.13.13) to change labor, labor burden, or machine burden rates. You could, for example, evaluate the impact of a 15% increase in labor cost by multiplying the existing labor rate by 1.15 and entering that value for the labor cost element.

Note To examine the impact of improved efficiency for an operation, create an alternate routing with different standard hours rather than changing the labor rate.

7 Modify subcontract costs.

Use Simulation Subcontract Cost Maintenance (30.13.10) to change routing subcontract costs.

8 Roll up simulation costs.

Use Simulation Cost Rollup (30.13.18) to combine sub-elements before rolling up product structure costs.

9 Roll up simulation product structure costs.

Use Simulation Structure Cost Rollup (30.13.19) to roll up costs for the simulation cost set.

10 Review simulation cost set data.

You can perform this task several times depending on the number of changes you have made to costs and work center rates.

11 Copy work center and subcontract costs to your production database.

Use Simulation to WC/Routing Copy (30.13.22) to copy the work center and subcontract costs to the production database. Enter a question mark (?) in Percent Change Allowed to allow all changes.

The program copies the work center setup rate, labor rate, labor burden rate, machine burden rate, and labor burden percentage to user-specified work center records. It also copies subcontract costs to specified routings. Use Work Center Report (14.7) and Routing Cost Report (14.13.14) to verify that expected changes have been made.

12 Copy simulation costs to GL cost set.

Use Cost Set Copy to Cost Set to copy the simulation data into the GL cost set. Review the data with Cost Set Report (30.21) or Item Cost Report (1.5.6). The Item Cost Report shows both the current and GL cost data for items.

Cost Planning

You can phase in different GL cost sets by date. For example, you can change GL costs to reflect seasonal commodity price fluctuations.

1 Create a new cost set.

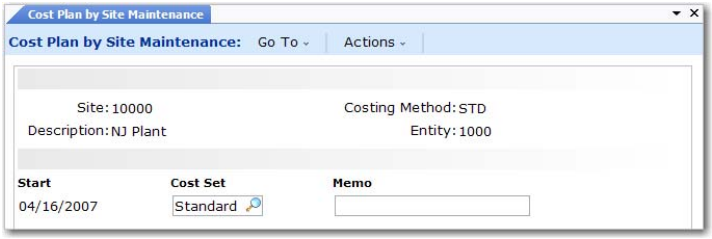
Suppose you experience a 10% cost increase in the first quarter. You can create a cost set with costs that are 10% higher than normal and name it 1st Qtr or whatever seems appropriate. Similarly, you might want to create a cost set for the third quarter (3rd Qtr) if costs for that quarter are expected to be less than normal.

If you have costs set up at multiple sites, the active GL cost set at all sites should use the same name.

2 Create a cost plan.

Use Cost Plan by Site Maintenance (30.15.1) to enter the cost set names you want to activate in the future and their start dates. Figure 5.4 shows a plan with special costs for the first quarter. Standard costs display with Standard in the Cost Set field.

Fig. 5.4
Cost Plan by Site Maintenance (30.15.1)



Note The same cost set can appear more than once, as the standard cost set does. Setting up a cost plan does not actually make a cost set active with respect to GL transactions. It only provides Material Requirements Planning (Material Planning) and Master Production Schedule (MPS) with the costs to appear on costed reports.

3 Activate cost set.

Use Cost Plan by Site Update (30.15.3) to activate the cost set according to the cost plan. This program also changes the inventory to reflect the new costs and posts the cost revaluation amount to the general ledger.

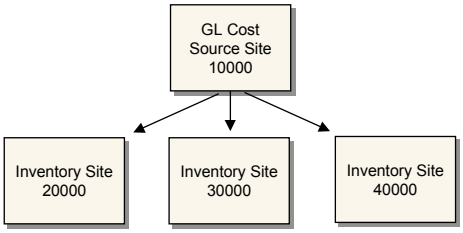
4 Revalue work-in-process (WIP).

Assuming that WIP exists, revalue it using the newly activated cost set with WIP Material Cost Revaluation (16.22).

Cost Linking

Linked-site costing functions let you set up the system so that the cost used by multiple sites all come from one site. This reduces the maintenance of item costs since the cost only has to be maintained in one site.An *inventory site* is any site where items are held in inventory. Linking an inventory site to a primary costing site eliminates the need to set up duplicate GL cost records at all sites. This functionality only affects the active GL cost set. Current, simulated, and inactive GL cost sets are not affected.

Fig. 5.5
Inventory Sites Linked to a Cost Source Site



Linked-site costing is especially useful when items are held in inventory or manufactured at one primary site, but are also held or manufactured at secondary sites. You can also assign different primary sites for different product lines, item types, or Purchase/Manufacture code designations.

Updating the active GL costs at a cost source site triggers a cost adjustment (CST-ADJ) transaction for the item at any other inventory site linked to the cost source site.

Updating the active GL costs at a target site has no effect on the cost source site. No CST-ADJ transactions are created at a cost source site if a target site's GL cost set is updated.

Note You cannot use linked-site costing for a site if you use the average cost method for GL transactions, since the average cost calculation does not consider inventory at multiple sites.

An inventory site can be a cost source site or a target site, but not both for the same item. If an inventory site has been used as a cost source site for an item, it must remain a cost source as long as there are links to it from target sites. Conversely, an inventory site for an item cannot be a cost source site as long as it is a target site.

Site-Linking Rules

Use Linked-Site Rules Maintenance (30.18.1) to set up site-linking rules for inventory sites. The rules you set up here determine the default cost source site in Item-Site Cost Maintenance (1.4.18). These are defaulting rules for linked target sites, not strict data enforcement rules. You can change the GL cost source site for individual items.

Three site-linking rules determine the default GL cost source site for items:

- Linking rule 1 sets the inventory site as the default cost source site.

The inventory site is also the default site if you are not linking costs. However, if you implement linking rules, this setting lets you retain the inventory site as the default site for some item attributes, while linking other attributes to alternate sites.

For example, you may want to set up the inventory site as the default cost site for manufactured items (Purchase/Manufacture code M), and set up another site as the default cost site for configured items (Purchase/Manufacture code C).

- Linking rule 2 sets the site in Item Master Maintenance (1.4.1) as the default cost source site.

  This setting lets you set up costing on a per item basis easily. For example, if your business manufactures an item at one site and distributes that item from several sites, you can set up the manufacturing site entered in Item Master Maintenance as the default cost source site for that item. This eliminates the need to set up separate GL standard costs for the same item at each distribution site.

- Linking rule 3 sets any site you designate as the default cost source site.

Important Set up linking rules for inventory sites only. To avoid setting up chained or circular links, do not assign linking rules to the cost source site. A warning message displays in Linked-Site Rules Maintenance, and the site code fails to default to the GL Cost Source Site field in Item-Site Cost Maintenance.

Fig. 5.6
Circular Link

Fig. 5.7
Chained Link

You can specify a default cost source site for all items at an inventory site, or you can associate a linking rule at an inventory site with one of the following item attributes:

- Product line
- Item type
- Purchase/Manufacture code

You can select only one item attribute for a particular inventory site. Existing linking rules for an item attribute must be deleted before you can associate a different attribute with an inventory site.

Example Linking rules for inventory site 20000 are associated with the product line attribute. Linking rules for the item type or Purchase/Manufacture code attribute cannot be assigned as long as the product line attribute is associated with the site.

This lets you determine different primary sites for different item classifications depending on your business requirements.

Fig. 5.8
Linked-Site Rules Maintenance (30.18.1)

Inventory Site. Enter the code for the site where inventory is held.

Item Attribute. Optionally enter an item attribute identifying the items to associate with linking rules. You can select according to product line, item type, or Purchase/Manufacture code. You can select only one item attribute for each site. Enter None, the default, to select all items without regard to attribute.

Linked Site Costing Active. Enter Yes to activate linked-site costing for this site. The default is Yes.

Item Attribute Code. If an attribute has been selected, enter the product line, item type, or Purchase/Manufacture code associated with the linking rule.

Warning It is possible to assign a blank value to product lines and other item attributes. Do not assign blank values if you use linked-site costing, since you cannot use blank to specify all other attribute values.

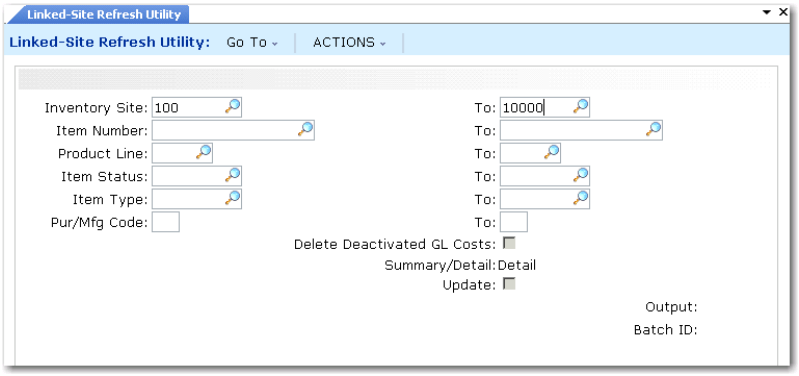
Linking Rule. Enter the linking rule to assign to this site. See “Site-Linking Rules” on page 52.

Default GL Cost Site. If you have selected linking rule 3, specify the default cost source site for items or designated item attributes.

Refreshing Linked-Site Cost Sets

Use Linked-Site Refresh Utility (30.18.5) to update the GL cost source site and GL cost set records after entering rules in Linked-Site Rules Maintenance. Running this utility creates CST-ADJ transactions for records that meet the range of criteria you specify and generates a report of updated GL costs for the selected criteria.

Fig. 5.9
Linked-Site Refresh Utility (30.18.5)



You can run a report at two levels of detail. A detailed report lists all old and new costs and cost source sites. A summary report provides only the cost source site changes. Set Update to No to generate a simulation report before running the refresh utility to show what records will be updated.

Because updates in systems with large volumes of data can be time consuming, consider running the refresh utility at the close of the day or whenever system resources are highest.

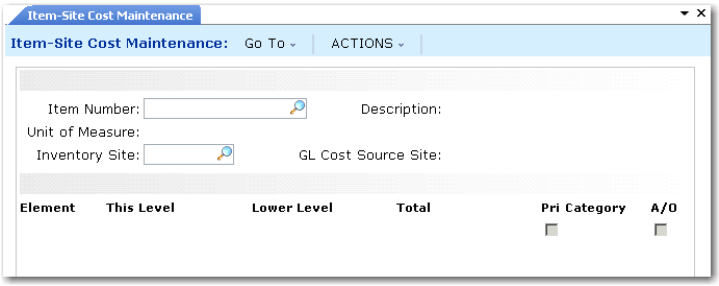
As part of the update process, you can also delete GL costs at inventory sites deactivated by linked-site costing by setting Delete Deactivated GL Costs to Yes. Deleted records are reported in detail only.

Important To facilitate GL cost set management with linked-site costing active, use the same active GL cost set name at all sites. Only deactivated GL costs with the active GL cost set name are deleted when Delete Deactivated GL Costs is Yes.

Defining Source Sites for Individual Items

You set up the rules that define the default cost source site in Linked-Site Rules Maintenance. However, you can change this value manually in the GL Cost Source Site field in Item-Site Cost Maintenance (1.4.18). Use this field to enter a valid site code to specify which site to set as the GL cost source site for any specified item. This lets you assign costs for any item from any valid designated GL cost source site. Access to this field can be security restricted.

Fig. 5.10
Item-Site Cost Maintenance (1.4.18)



For linked-site costing to function in Item-Site Cost Maintenance, the following must be true:

- Valid item, site, inventory, and GL standard cost information exists for the sites and inventory you want to link.
- Linked-site costing is active and linking rules are defined for the inventory site.
- The inventory site and the GL cost source site are in the same database.
- GL cost set costing method is not average for the cost source site or the inventory site.
- The GL cost source site is not linked to another cost source site.

Otherwise, the linking rule is not applied, you cannot update GL Cost Source Site, and the GL standard cost site and inventory site remain the same.

Item-Site Cost Relationships with Linking Rules

When linked-site costing is activated and an item at the inventory site is assigned GL standard costs from another site, other cost set information—including current costs, old GL costs, and simulated costs—remains associated with the inventory site.

Effect of Linking on Product Structure Cost Rollups

Product Structure Cost Roll-Up (13.12.13) uses the costs of an item's components and any subassemblies to calculate this-level and any lower-level costs.

When cost linking is used, the target site is linked to the source site for active GL costs only. Product Structure Cost Roll-Up recognizes the links for any GL cost set using the standard costing method, regardless of whether the cost set is active or inactive. Since you cannot take advantage of cost linking using a simulation cost set, you should set up an inactive GL standard cost set and use it to prepare costs for future periods instead.

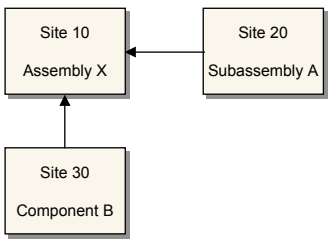
Important Product Structure Cost Roll-Up does not recognize links when the rollup is performed for current or simulation cost sets. In order to roll up costs correctly for linked items, you must use a GL standard cost set.

When items are linked, the system uses the cost set specified at the GL cost source site to find the cost. If the GL cost record does not exist at the source site, costs are not created and a zero cost value is used for the linked item.

Performing a product structure cost rollup at one site does not roll up costs for a linked subassembly at another site. The GL cost for the subassembly at the source site is used to calculate the parent item's cost at the inventory site.

Example Figure 5.11 shows that assembly X at Site 10 uses subassembly A, manufactured at site 20, and component B, held at site 30. Site 20 is the cost source site for subassembly A and site 30 is the cost source site for component B.

Fig. 5.11
Example of Cost Rollup with Linked Costs



At site 20, costs are rolled up for subassembly A in the current cost set and then the updated costs are moved to the GL standard cost set. Updating the GL cost set at site 20 automatically updates the linked GL cost for subassembly A at target site 10. Similarly, updating the GL cost of component B at site 30 automatically updates the linked cost at site 10.

Since assembly X contains linked items, its cost at site 10 must be rolled up for the active GL standard cost set. The system locates the GL cost for subassembly A at site 20 and component B at site 30. These costs are used in the cost calculation.

Effect of Linking on Routing Cost Rollups

Routing Cost Roll-Up (14.13.13) calculates this-level manufacturing costs, lead times, and total yield for an item at a particular site.

If a GL standard cost set is specified for the rollup, then:

- The routing cost rollup does not update this-level costs if the item at the rollup site is linked.
- Lead time and yield for all selected items are calculated whether they are linked or not.
- The operation cost calculation recognizes linked costs.
- Updating the active GL standard costs at a cost source site automatically updates the costs at target sites.

Important Routing Cost Roll-Up does not recognize links if the rollup is performed for current or simulation cost sets. In order to roll up costs correctly for linked items, you must use a GL standard cost set.

Chapter 6

Cost Accounts

Transactions in several modules create GL transactions for accounts involved with item costing. This chapter summarizes these accounts.

Inventory Accounts

Cost Revalue. This account records the GL impact of item cost changes on inventory. When you change the GL costs for items using Item Cost Maintenance or Item-Site Cost Maintenance, the system automatically creates adjusting transactions. An increase in cost creates a debit to the Inventory account and a credit to the Cost Revalue account.

Note GL item cost changes do not automatically revalue material in WIP. Use WIP Material Cost Revaluation (16.22) to revalue this material.

Inventory. Use this account to maintain inventory value. Inventory accounts can be different for each product line, site, and location within each site. If site/location Inventory accounts are specified, all inventory transactions use them. Otherwise, the product line Inventory accounts are used.

Transactions affecting Inventory accounts include purchase order receipts, work order issues/receipts, sales order shipments, physical inventory counts, and manual inventory transactions. Each transaction affects inventory by creating a GL transaction that either debits or credits the account value.

Inventory Discrepancy. Use this account to post the value of cycle counts or physical inventory differences. Positive count adjustments debit the Inventory account and credit the Inventory Discrepancy account. Negative count adjustments do the reverse.

Purchasing Accounts

Accounts Payable Rate Variance. This account records variances between supplier invoice and purchase order price. If the invoice is higher, this account is debited in addition to the Purchase Order Receipts account to balance the credit to the Accounts Payable account.

Accounts Payable Usage Variance. This account records variances between the quantity on a supplier invoice and received quantity. A positive variance (invoice quantity larger than received quantity multiplied by the invoice unit price) is debited to this account to offset the higher than expected invoice amount credited to the Accounts Payable account.

Overhead Applied. This transaction applies to both purchase order and work order receipts whenever the standard cost includes overhead. When receipt transactions are made, the system credits this account and debits Inventory for the this-level overhead amount.

Purchase Order Receipts. This account records purchase order receipts before receipt of a supplier invoice. The Inventory account is debited for the GL cost of the item less any overhead amount multiplied by the quantity received. This account is credited for the purchase order price times the quantity received.

Purchase Price Variance. This account records the variance between the GL cost of an item less any overhead and the purchase order price. When a purchase order item is received, the system creates a debit to Purchase Price Variance in addition to a debit to Inventory if the PO price is higher. It does so to balance the credit to Purchase Order Receipts.

Sales Accounts

Five accounts contain the standard portion of Cost of Goods Sold (COGS).

- COGS Burden
- COGS Labor
- COGS Material
- COGS Overhead
- COGS Subcontract

For each shipment, the Inventory account is credited for the total GL cost of the item times the quantity shipped and debited for the appropriate COGS portion.

Work Order Accounts

Important The information in this section pertains to work orders; for information on cost transactions for production orders, refer to“Costing Transactions” on page 65.

Labor. This account records labor cost for a department based upon standard hours reported at the work center labor rates. When labor is reported in the Repetitive and Shop Floor Control modules, the following types of transactions are made using the standard hours earned multiplied by the work center labor or setup rate.

Table 6.1
GL Transactions Generated by Labor Reporting

Setup and Run Labor		Downtime	
Debit:	Work in Process (Standard Labor + Burden)	Debit:	Cost of Production (Standard Labor + Burden)

Labor Rate Variance. This account records variances resulting from a difference between the actual employee pay rate and the standard work center labor rate. This variance is calculated as:

*(Actual Labor Rate – WC Labor Rate) * Actual Hours*

At posting, a positive variance (unfavorable) is debited to the Labor Rate Variance account and credited to WIP.

Labor Usage Variance. This account records variances resulting from a difference between the actual hours needed to complete an operation and the standard hours. This variance is calculated as:

*(Actual Hours – Std. Hours) * WC Labor Rate*

Where:

*Std. Hours = Run Hours / Unit * Number of Units Completed*

At posting, a positive variance (unfavorable) is debited to the Labor Usage Variance account and credited to WIP.

Note Both labor rate and usage variances are normally posted at the same time as labor. However, if Post Variances at SFC is No in Work Order Maintenance (16.1), variance posting is delayed until work order receipt. Delaying posting can be useful if an operation requires more than one shift to complete. See “Defining Work Order Control Settings” on page 11.

Burden. This account records the variable overhead associated with production operations. The Burden account is used to accumulate accrued burden for a department. Each operation may have labor burden and/or machine burden depending on how variable overhead is applied. Machine burden is applied as a machine hour rate. However, labor burden can be applied either as a labor burden rate or as a percentage of direct labor cost.

The standard hours reported are multiplied by the standard work center labor or machine burden rate.

- Labor Burden using Labor Burden Rate:

  *Labor Burden = (Std. Setup Hrs. / Order Qty. + Std. Run Hrs) * WC Labor Burden Rate*

- Machine Burden using Machine Burden Rate:

  Machine Burden = (Std. Setup Hrs / Order Qty. No. of Machines + Std. Run Hrs.) * WC Machine Burden Rate*

  Note This option assumes that the machine hour rate applies to both setup and run. If this is not true, create a separate setup operation that has zero run hours per unit.

- Labor Burden Percentage:

  *Labor Burden = (Std. Setup Hrs. * WC Setup Rate * Labor Burden%) + (Std. Run Hrs. * WC Labor Rate * Labor Burden%)*

Burden Rate Variance. This variance applies to burden application using burden rate percentage. It requires the actual employee labor rate.

*Burden Rate Variance = Labor Burden% (Actual Labor Rate – WC Labor Rate) * Actual Hrs.*

Burden Usage Variance. This variance applies to burden calculated by any of the three allocation methods—burden rate, burden percentage, or machine hours.

*Burden Usage Variance = (Actual Hrs. – Standard Hrs.) * Standard Burden*

Note You can use any or all of the burden application methods to calculate standard burden.

Work in Process (WIP). WIP is the cost of open work orders. It includes the cost of component issues, labor, burden, and subcontract.

When labor is reported, WIP is debited and the Labor account credited for actual hours times actual labor rate. At posting, positive (unfavorable) labor rate and labor usage variance amounts are debited to the Labor Rate Variance account and credited to WIP. These transactions leave WIP at standard.

Cost of Production (COP). COP is the material or subcontract cost not associated with a work order and labor not associated with a work order or repetitive schedule.

- Material and Subcontract Items. The Cost of Production account is updated by unplanned issue transactions and purchase order receipts for subcontract items. For subcontract item receipts, when a work order ID is associated with the PO, the initial posting to COP is reversed and the purchase order price is posted to WIP. When work order ID is blank for the PO, the subcontract price remains in COP.
- Labor. Labor hours for maintenance, cleanup, meetings, and other labor reported in Non-Productive Labor Feedback (18.22.22) are charged to Cost of Production. The system creates a GL transaction that debits the COP account for the actual hours at the work center labor and burden rate and credits labor and burden absorption accounts.

Floor Stock. This is a clearing account for bulk issue items that are part of the product structure, but are not issued in the normal manner. These items are defined in Item Master Maintenance with Issue Policy set to No. They are issued to the floor using an unplanned issue transaction. However, the default Cost of Production account is changed to the Floor Stock account so that the material is not expensed. The issue transaction debits Floor Stock and credits Inventory. When a work order is closed, the cost of the bulk issue items is automatically credited to the Floor Stock account, and WIP is debited.

Material Rate Variance. This account records variances between costs of a component issued to the work order and the cost stored on the work order bill of material. This variance would occur if materials were issued from another company site with costs that differ from costs at the using site.The variance is computed when material is issued to a work order.

Chapter 7

Costing Transactions

This chapter contains tables of standard and average costing transactions for production orders. Use this chapter as reference material to determine how and by which application or application condition the transaction is posted.

Overview

The following topics include tables of costing transactions. Each table includes the following data:

- Standard or Average transaction name
- Transaction type
- GL transaction type
- Debited and credited accounts
- Calculations
- Functions or conditions that create the transaction

Use this information to decipher transaction types that display in reports and browses and to understand how and when various transaction types are created.

Important The tables in this chapter reference production orders and production order functions and programs.

Standard Costing Transactions

This section contains tables for the following standard costing transactions:

- Standard Material Costing Transactions
- Standard Labor/Burden Costing Transactions
- Standard Subcontract Costing Transactions
- Standard Scrap Costing Transactions

Table 7.1
Standard Material Costing Transactions

Std Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Material Actual Cost	tr_hist ISS-WO	ISS-WO	WIP (wo_acct)	Inventory	Actual Unit Cost at Issue * Actual Quantity Issued	• Production Order Component Issue • Production Order Receipt • Operation Activity Transaction
Material Rate Variance	tr_hist ISS-WO	RATE-VAR	Material Rate Variance (wo_mvrr _acct)	WIP (wo_acct)	(Actual Unit Cost at Issue-Standard Unit Cost (wod_bom_amt)) *actual qty issued	• Production Order Component Issue • Production Order Receipt • Operation Activity Transaction

Std Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Material Usage Variance	tr_hist WO-CLOSE	MATL-VAR	Material Usage Variance (wo_mvar _acct)	WIP (wo_acct)	{Actual Qty Issued – [qty per (wod_bom_qty) * (qty completed+ qty scrapped)]} * Frozen Std Unit Cost (wod_bom_amt)	Production Order Close
	WO-VAR			Inventory		Post Production Order Usage
Floor Stock	tr_hist WO _CLOSE	FLRSTK	WIP (wo_acct)	Floor Stock (wo_flr_acct)	[qty per (wod_bom_qty) * (qty completed + qty scrapped)] *Frozen Std Unit Cost (wod_bom_amt)	Production Order Close
	WO-VAR					Post Production Order Usage Variances
Production Receipt Inventory Receipt	tr_hist RCT-WO	RCT-WO	Inventor y	WIP (wo_acct)	Standard Rolled up Cost of Production Order Item * completed qty	Production Order Operation Activity Transaction
Production Receipt Method Variance	tr_hist RCT-WO	MTHD-CHG	Method Variance Account (pl_mstr.pl _wvar _acct	WIP (wo_acct)	[Rolled up costs of Production Order Item at time of status set to 'R' - (Standard Rolled up Cost of Production Order Item - Standard Overhead amount)] * completed qty	• Production Order Receipt • Operation Activity Transaction
Method Variance	tr_hist WO-CLOSE	MTHD-CHG	Method Variance Account (pl_mstr. pl_wvar _acct)	WIP (wo_acct)	Cost left in WIP after all variances have been accounted for	Production Order Accounting Close
Material Rate Variance	tr_hist ISS-WO	WIP-ADJ	WIP (wo_acct)	Material Rate Variance	(New Std Cost - Previous Std Cost (wod_bom _amt)) * Quantity Issued	WIP Material Cost Revaluation
Mix Variance	tr_hist WO-CLOSE for base produc-tion order	MIX-VAR	Mix Variance Account (wo_xvar _acct)	WIP (wo_acct)	See text following this table.	Production Order Accounting Close
Overhead	tr_hist RCT-WO	OVH POST	WIP (wo_acct)	Overh ead Appli ed	qty received * std overhead cost	• Production Order Receipt • Operation Activity Transaction
WIP Transfer	op_hist TRANS-FER	TRA NS-FER-WI P	WIP (wo_acct)	Transf er Clearing found on Production Order Control	N/A	Production Order Accounting Close

Std Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Substitute items	WO-CLOSE	MATL-VA R	Material Usage Var	WIP (wo_acct)	At close or post usage variances, system posts a usage variance for the substitute component item and for the original component	• Purchase Order Receipts • Operation Activity Transaction
	RCT-WOVA R					Receipt Backward Exploded

The Mix Variance calculation is as follows for co/by product production orders:

Mix Variance = Expected Costs minus Accumulated Cost old_mix_var = coBy-wo_mstr.wo_mix_var coBy-wo_mstr.wo_mix_var = if base-wo_mstr.wo_qty_ord = 0 then ((base-wo_mstr.wo_qty_comp + base-wo_mstr.wo_qty_rjct) - (coBy-wo_mstr.wo_qty_comp + coBy-wo_mstr.wo_qty_rjct)) coBy-wo_mstr.wo_unit_cost else (((base-wo_mstr.wo_qty_comp + base-wo_mstr.wo_qty_rjct) * (coBy-wo_mstr.wo_qty_ord / base-wo_mstr.wo_qty_ord)) - (coBy-wo_mstr.wo_qty_comp + coBy-wo_mstr.wo_qty_rjct))*

Table 7.2 Standard Labor/Burden Costing Transactions

Std Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Labor Setup	op_hist SETUP	LBR-1000	WIP (wo_acct)	COGS Labor	lbr_act_a mt = Actual Setup Rate * Actual Setup Hours lbr_wr_std _amt = wr_setup_ rte * Actual Setup Hours **Note:** Actual setup rate from routing setup time divided by item planning order qty	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction
Labor Setup Rate Variance	op_hist SETUP	LBR-1001	Labor Rate Variance	WIP (wo_acct)	br_rate _var = (Actual Setup Rate - Std Setup Rate) * Setup Hours	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction

Std Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Labor Setup Usage Variance	op_hist OP-CLOSE	LBR-1002	Labor Usage Variance	WIP (wo_acct)	Per operation: lbr_usage_ var = (Actual Setup Hrs - Std Setup) * Std Setup Rate	• Production Order Receipt • Operation Activity Transaction • Production Order Maintenance setting status to C
	op_hist WO-CLOSE					Production Order Accounting Close
	WO-VAR					Post Production Order Usage Variances
Burden Setup	op_hist SETUP	BDN-1000	WIP (wo_acct)	COGS Burden	(setup time/ POQ) * ((setup rate * (bdn pct/100)) + bdn rate + (mch bd rate * mach/op))	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction
Burden Setup Rate Variance	op_hist SETUP	BDN-1001	Burden Rate Variance	WIP (wo_acct)	Same as Burdent Setup	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction
Burden Setup Usage Variance	op_hist OP-CLOSE	BDN-1002	Burden Usage Variance	WIP (wo_acct)	Same as Burdent Setup	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction • Production Order Maintenance setting status to C
	op_hist WO-CLOSE					Production Order Accounting Close
	WO-VAR					Post Production Order Usage Variances

Std Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Labor Run	LABOR	LBR-2000	WIP (wo_acct)	COGS Labor	lbr_act_a mt = Actual Run Rate * Actual Run Hours lbr_wr_std _amt = wr_lbr _rate * Actual Run Hours	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction
Labor Run Rate Variance	op_hist LABOR	LBR-2001	WIP (wo_acct)	WIP (wo_acct)	Same as for Labor Run	Same as for Labor Run
Labor Run Usage Variance	op_hist OP -CLOSE	LBR-2002	Labor Usage Variance	WIP (wo_acct)	Per operation: lbr_usage_ var = (Actual Run Hrs - Std Run) * Std Run Rate	• Production Order Maintenance change status to C • Production Order Receipt • Operation Activity Transaction
	WO -CLOSE					Production Order Accounting Close
	WO-VAR					Post Production Order Usage Variances
Burden Run	op_hist LABOR	BDN-2000	WIP (wo_acct)	COGS Burden	run time * ((run rate * (bdn pct/100)) + bdn rate + mch bd rate)	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction

Std Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Burden Run Rate Variance	op_hist LABOR	LBR-2001 BDN-2002	Burden Rate Variance	WIP (wo_acct)	Same as for Burden Run	Same as for Burden Run
Burden Run Usage Variance	op_hist OP-CLOSE		Burden Usage Variance	WIP (wo_acct)	Same as for Burden Run	• Production Order Receipt • Operation Activity Transaction • Operation Labor • Transaction Production Order Maintenance C status
	op_hist WO-CLOSE					Production Order Accounting Close
	WO-VA R					Post Production Order Usage Variance

Table 7.3
Standard Subcontract Costing Transactions

Std Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Subcontract	op_hist SUBCNT	SUB-200 0	WIP	Cost of production	std_cost = std subcontract rate * qty received	• Production Order Receipt • PO Shipper Receipt • Kanban Fill/Receive
Subcontract	tr_hist RCT-PO	RCT-PO	Cost of production	PO receipt	act_cost = po price * qty received	
Subcontract Rate Variance	op_hist SUBCNT	SUB-0001	Subcontract Rate Variance	Cost of production	rate_var = (po price - std subcontract rate) * qty received	• Production Order Receipt • PO Shipper Receipt • Kanban Fill/Receive
Subcontract Usage Variance	op_hist WO-CLOSE	SUB-0002	Subcontract Usage Variance	WIP	lbr_usage_var = [Qty received - (op qty completed + op qty scrapped)] * subcontract std unit cost	Production Order Accounting Close

Table 7.4
Standard Scrap Costing Transactions

Std Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Scrap	op_hist SCRAP-I SCRAP-R	SCRAP	Scrap acct from production line (pld _det or pl_mstr)	WIP (wo _acct)	See text below this table.	• Production Order Receipt • Operation Activity Transaction • Reject/Scrap Transaction
Scrap with Floor Stock	op_hist SCRAP-I SCRAP-R SCRAP-O	FLR-STK	WIP (wo _acct)	Floor stock (wo_flr_acct)	See text below this table.	Production Order Receipt Operation Activity Transaction Reject/Scrap Transaction

For scrap calculations, the scrap transaction rolls up and totals the material (including floor stock costs), run time labor, run time burden, and subcontract costs by operation based on the production order reporting the scrap, using that order's routing and bill data to determine the value of the scrap at the operation where it is scrapped.

For floor stock components included in the calculation, the system:

- Reduces component quantity required by qty scrapped * BOM qty:

  *(wod_qty_req = wod_qty_req - (qty scrapped * wod_bom_qty)*
- Reduces component quantity issued by qty scrapped * BOM qty:

  *(wod_qty_iss = wod_qty_iss - (qty scrapped * wod_bom_qty)*
- Adds the floorstock cost to the actual costs:

  *(wod_tot_std = wod_tot_std +(wod_bom_amt * wod_bom_qty * qty scrapped))*
- Adds the floorstock costs to the field that stores WIP costs removed from actual costs:

  *(wod_mtl_totx = wod_mtl_totx +(wod_bom_amt * wod_bom_qty * qty scrapped))*

Average Costing Transactions

This section contains tables for the following standard costing transactions:

- Average Material Costing Transactions
- Average Labor/Burden Costing Transactions
- Average Subcontract Costing Transactions
- Average Scrap Costing Transactions

Differences in Web UI and .NET UI Transaction Generation Order

When locations use the Average costing method, there is a difference in the order in which transactions are generated when transferring between locations.

In the Web UI, transactions are generated in this order:

- RCT-PO
- CN-ISS
- ISS-TR
- RCT-TR

In the .NET UI, transactions are generated in this order:

- ISS-TR
- RCT-PO
- CN-ISS
- RCT-TR

The difference arises because the ISS-TR and RCT-TR transactions are generating the postings using the total cost before re-averaging the cost, while in the Web UI, the two transactions are generating the postings using the total cost after re-averaging the cost.

Table 7.5 Average Material Costing Transactions

Avg Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Material Actual Cost	tr_hist ISS-WO	ISS-WO	WIP (wo_acct)	Inventory	Actual Unit Cost at Issue * Actual Quantity Issued	• Production Order Component Issue • Production Order Receipt • Operation Activity Transaction
Floorstock	tr_hist WO-CLOSE	FLR-STK	WIP (wo_acct)	Floor Stck (wo_flr_acct)	[qty per (wod_bom_qty) * (qty completed + qty scrapped)] * Item-Site Average Cost	Production Order Close
	tr_hist CST-ADJ	RCT-AVG	Inventory	WIP (wo_acct)		Production Order Close
Production Receipt Inventory Receipt	tr_hist RCT-WO	RCT-AVG	Inventory	WIP (wo_acct)	Total unused labor and material cost of final operation + (quantity completed final operation/ quantity completed lower operation) * (total unused labor and material costs)	Operation Activity Transaction
					Adds all actual costs and removes costs already removed from WIP from previous transactions to calculate receipt amount	Production Order Receipt (see exception below this table)

Avg Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
WIP Transfer Out	op_hist TRANSFER	WIP	WIP	Transfer clearing account	Takes remaining WIP from each production order operation and moves it to the new repetitive CUM order.	Production Order Accounting Close with Transfer WIP set to TRUE.
WIP Transfer In	op_hist CLOSE	CLOSE	Transfer clearing account	WIP	Creates a new repetitive cum order, moves remaining costs from previous repetitive CUM order into new order.	Production Order Accounting Close with Transfer WIP set to TRUE.
Cost Adjust-ment	tr_hist CST-ADJ	RCT-AVG	Inventory	WIP	When there are additional costs that have not been absorbed by the RCT-AVG transaction, during close, a CST-ADJ is made to re-average in the costs.	Production Order Accounting Close
Inventory Discrepancies	tr_hist WO-CLOSE	blank	Inventory discrepancies	WIP	See text below table.	Production Order Accounting Close
Overhead	tr_hist RCT-WO	OVH POST	WIP (wo_acct)	Overhead applied	qty received * std overhead cost	• Production Order Receipt • Operation Activity Transaction

Notes:

- For the Production Receipt Inventory Receipt transaction, note the following exception:

  Do not use Production Order Receipts for production orders with subcontract costs. Production Order Receipt does not report setup time for repetitive type production orders, even if the standard setup time is set to yes.

- Inventory discrepancies can happen because there is not enough inventory for the cost adjustment, so it must go to discrepancy. For example: your order is for 10. You receive 10; then, you report labor. You then issue 10 to a sales order before you close the order. Now there is no inventory for your finished goods, so the remaining costs must go to discrepancy.

Table 7.6 Average Labor/Burden Costing Transactions

Avg Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Labor Setup	op_hist SETUP	LBR-1000	WIP (wo_acct)	COGS Labor	lbr_act_amt = Actual Setup Rate * Actual Setup Hours	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction
Labor Run	op_hist LABOR	LBR-2000	WIP (wo_acct)	COGS Labor	lbr_act_amt = Actual Run Rate * Actual Run Hours	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction
Burden Setup	op_hist SETUP	BDN-1000	WIP (wo_acct)	COGS Burden	setup time * ((setup rate * (bdn pct/100)) + bdn rate + (mch bd rate * mach/op)	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction
Burden Run	op_hist LABOR	BDN- 2000	WIP (wo_acct)	COGS Burden	run time * ((run rate * (bdn pct/100)) + bdn rate + mch bd rate)	• Production Order Receipt • Operation Activity Transaction • Operation Labor Transaction

Table 7.7 Average Subcontract Costing Transactions

Avg Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Subcon-tract	op_hist SUBCNT	SUB-2000	WIP	Cost of production	act_cost = po price * qty received	• Purchase Order Receipt • PO Shipper Receipt • Kanban Fill/Receive
Subcon-tract	tr_hist RCT-PO	RCT-PO	Cost of production	PO Receipt	act_cost = po price * qty received	

Table 7.8 Average Scrap Costing Transactions

Avg Trans	Trans Type	GL Trans Type	Debit	Credit	Calculation	Function or Condition
Scrap	op_hist SCRAP-I SCRAP-R SCRAP-O	SCRAP	Scrap Account	WIP (wo _acct)	For each operation starting with the operation with the scrap, sum all cost elements as: Qty scrapped / Qty processed * Actual costs for each code element	• Production Order Receipt • Operation Activity Transaction • Reject/Scrap Transaction
Scrap with Floor Stock	op_hist SCRAP-I SCRAP-R SCRAP-O	FLR-STK	WIP (wo _acct)	Floor stock (wo_flr_acct)	Same as above.	Production Order Receipt Operation Activity Transaction Reject/Scrap Transaction

Chapter 8

Cost Reporting

The system provides many cost-related reports to facilitate cost analysis. This chapter summarizes the types of available reports.

Accounts Payable

Table 8.1
Accounts Payable Cost Reports

Report	Description
Matching Variance Report (28.2.7)	Shows the variance between an item's supplier invoice cost and either the standard cost or purchase order cost.

General Ledger

Table 8.2
General Ledger Reports

Report	Description
GL Transactions by Account (25.15.1.2)	Provides posted transaction detail for the selected account or accounts for a specified effective date horizon.
Cost Center Trans Detail Report (25.15.3.2)	Lists posted cost center account activity.
Project Trans Summary Report, Project Trans Detail Report (25.15.3.3, 25.15.3.4)	Summary lists project activity over a period. Detail also lists individual transactions.

Inventory

Table 8.3
Inventory Reports

Report	Description
Average Cost Accounting Report (3.21.17)	Lists transactions involving average cost computations. Quantity, unit cost, and inventory value data are shown for the beginning balance data, the change data, and the ending balance data.
Item ABC Status Report/Update (3.6.3) (Also available as enhanced .NET UI report, menu 3.6.27)	Calculates item ABC class codes. Lists items in either descending sales or issue value, and shows an item's old and new ABC classifications.
Current Surplus Inventory Report (3.6.8) (Also available as enhanced .NET UI report, menu 3.6.32)	Lists current surplus quantities and GL value of items. Surplus is determined by absence of issue activity after a user-specified date.
Projected Surplus Inventory Report (3.6.9)	Lists projected surplus inventory based on either Material Planning requirements or average use. Choose either current cost or GL cost for surplus cost computations.
Inventory Valuation (3.6.13, 3.6.14, 3.6.15) (Also available as enhanced .NET UI reports, menu 3.6.37, 3.6.37, 3.6.38)	Lists inventory valuation for a product line or lines, or for sites and locations.

Report	Description
Transactions by Order Report (3.21.13)	Shows transaction information for selected orders (work orders, sales orders, and so on).
Transactions by Item Report (3.21.14)	Shows transaction information for selected item numbers.
Transactions Accounting Report (3.21.16)	Shows the costed GL transactions created for each selected inventory transaction.
Frozen Inventory Valuation Report (3.16.16)	Shows costed inventory balances prior to conducting a physical inventory.
Tag Inventory Valuation Report (3.16.17)	Shows the value of counted inventory.
Inventory Variance Report (3.16.18)	Shows the variance between physical counts and the frozen inventory count.

Items

Table 8.4
Item Cost Reports

Report	Description
Item Cost Report (1.5.6) (Also available as enhanced .NET UI report, menu 1.5.30)	Shows item cost information for current and GL cost sets for each site and product line, as well as for other cost sets created with Cost Management.
Product Structure Cost Report (13.12.4) (Also available as enhanced .NET UI report, menu 3.12.28)	Shows costs for an item and its components by structure level.

Manufacturing

Note The following table covers work order manufacturing reports. For information on production order manufacturing reports, refer to the *QAD Production Order User Guide*.

Table 8.5
Manufacturing Cost Reports

Report	Description
Operations Accounting Report (16.20.13.10)	Shows the GL transactions resulting from discrete manufacturing downtime and labor transactions.
Rep Operations Accounting Report (18.4.10)	Shows the GL transactions resulting from repetitive work order downtime and labor transactions.
Down Time Report (16.20.13.16)	Shows transactions for each work center or machine in transaction sequence by date. Total downtime for each work center is shown for the specified period.
Down Time by Reason Report (18.4.6, 16.20.13.17, 18.22.4.7)	Shows downtime transactions for each reason code. The system charges downtime to the Cost of Production account. Use Operations Accounting Report (17.13.10) to list details on the GL transactions for the COP account.
Efficiency by Work Center Report (18.4.23, 18.22.4.24, 16.20.13.19)	Shows setup and run efficiency by work center.

Report	Description
Efficiency by Work Order Report (16.20.13.20)	Shows setup and run efficiency by ascending work order number.
Efficiency by Employee Report (18.4.22, 18.22.4.23, 16.20.13.21)	Shows the setup and run efficiency for all setup and run transactions for an employee during a specified period.
Routing Cost Report (14.13.14)	Provides a detailed cost record for a routing. It shows cost detail for each operation in the routing, and total labor, burden and subcontract costs.
Work Order Cost Report (16.3.4)	Provides a detailed cost record for a work order while it is in process and after it has been closed. It shows cost detail for material by component and labor operation detail, labor burden, and subcontract costs.
Work Order WIP Cost Report (16.3.5)	Shows the accumulated amounts for material, labor, burden, and subcontract cost for a work order for each WIP account, sub-account, cost center, and project. A similar report, Repetitive WIP Cost Report (18.4.12), is available for repetitive WIP costs.
Work Order History Report (16.3.6)	Shows the current status of a work order in terms of schedule, material consumed, and labor expended.

Purchasing

Table 8.6
Purchasing Reports

Report	Description
Purchase Order Commitment Report (5.9.4)	Shows the commitment to suppliers for open purchase order line items. Blanket orders are not included in this report.

Sales Orders

Table 8.7
Sales Order Cost Reports

Report	Description
Sales Order Gross Margin Report (7.15.5)	Shows the gross margin for all open sales order item quantities by line item and order. Order totals are shown for the extended price and gross margin.

Cost Management Reports

Table 8.8
Cost Management Reports

Report	Description
Simulation Cost Element Report (30.13.3)	Shows cost elements for selected cost sets.
Simul Item-Element Cost Report (30.13.7)	Shows direct item costs by part number for selected cost sets.
Simul Subcontract Cost Report (30.13.12)	Shows subcontract costs by routing code and operation for selected cost sets.

Report	Description
Simul Work Center Rate Report (30.13.15)	Shows work center rates by work center for setup and run labor and burden cost elements for selected cost sets. Note: This functionality is also available in Simul Work Center Rate Browse (30.13.14), which offers enhanced browse capabilities to .NET UI users.
Cost Set Report (30.21)	Lists this-level and lower-level costs by category and total item cost for part numbers in cost sets at selected sites.
Comparative Cost Set Report (30.22)	Lists costs by cost element category and total cost for each part number in a selected cost set. The percent difference is shown for each element and for the total unit cost. **Note** An enhanced version of Comparative Cost Set Report is available at menu 30.46 for .NET UI users only.

Product Information Resources

QAD offers a number of online resources to help you get more information about using QAD products.

QAD Forums (community.qad.com)
Ask questions and share information with other members of the user community, including QAD experts.

QAD Knowledgebase (knowledgebase.qad.com)*
Search for answers, tips, or solutions related to any QAD product or topic.

QAD Document Library (documentlibrary.qad.com)
Get browser-based access to user guides, release notes, training guides, and so on; use powerful search features to find the document you want, then read online, or download and print PDF.

QAD Learning Center (learning.qad.com)*
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Index