

**Oracle® Bills of Material**

User's Guide

Release 12.2

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Oracle Bills of Material User's Guide, Release 12.2

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# Contents

## Send Us Your Comments

## Preface

## 1 Setting Up

Related Product Steps.....	1-1
Setup Steps.....	1-2
Defining Bills of Material Parameters .....	1-7
Creating Alternates.....	1-10
Creating Custom Deletion Statements and Constraints.....	1-11
Creating a Department Class.....	1-14
Defining a Department.....	1-15
Assigning Resources to a Department.....	1-16
Defining a Resource .....	1-24
Defining Resource Setup Information.....	1-33
Using the Workday Calendar.....	1-37
Defining Lookups.....	1-47
Assigning View-only Privileges to Forms.....	1-48
Bills of Material Profile Options.....	1-50
Subscribing to Bills of Material Business Events.....	1-55

## 2 Bills of Material

Overview of Bills of Material.....	2-2
Creating a Bill of Material .....	2-9
Copying Bill and Routing Information .....	2-17
Referencing Common Bills and Routings.....	2-21

Assigning Descriptive Elements .....	2-27
Creating Reference Designators .....	2-27
Assigning Substitute Components .....	2-29
Defining Item Revisions .....	2-29
Defining Bill or Routing Operation Documents.....	2-30
Attaching Files.....	2-30
Checking for Bill Loops.....	2-30
Modifying Components and Bills.....	2-31
Mass Changing Bills of Material .....	2-32
Viewing an Indented Bill of Material .....	2-36
Comparing Bills of Material .....	2-39
Viewing Item Usage .....	2-40
Bills of Material Field Reference.....	2-42
Bill/Component Validation Rules.....	2-48
Creating a Product Family.....	2-50

### **3 Oracle Bills of Material Command Center**

<b>Bills of Material Command Center.....</b>	<b>3-2</b>
Bills of Material Command Center Overview.....	3-2
Bills of Material Dashboard.....	3-3
Bills Dashboard.....	3-4
Indented Bills Dashboard.....	3-11
Change Orders Dashboard.....	3-16

### **4 Oracle Bills of Material Command Center Setup**

<b>Bills of Material Command Center Product Configuration.....</b>	<b>4-2</b>
Setting Up Bills of Material Command Center.....	4-2
Setup and Configuration Steps.....	4-2
Setting Profile Options for Bills of Material Command Center.....	4-2
Loading Bills of Material Command Center Data.....	4-3

### **5 Routings**

<b>Overview of Routings.....</b>	<b>5-1</b>
<b>Creating a Routing .....</b>	<b>5-9</b>
<b>Creating a Standard Operation.....</b>	<b>5-22</b>
<b>Viewing Resource Usage.....</b>	<b>5-29</b>
<b>Routings Field Reference.....</b>	<b>5-30</b>

<b>6</b>	<b>Deleting Information</b>	
	Deleting Items, Bills, Routings, Components, and Operations .....	6-1
	Deletion Constraints and Statements.....	6-6
<b>7</b>	<b>Configure to Order</b>	
	Overview of Configure To Order.....	7-1
	Overview of Model and Option Class Bills of Material.....	7-4
	AutoCreate Configuration Items.....	7-24
	Deactivating Configuration Items .....	7-43
<b>8</b>	<b>Manufacturing Scheduling</b>	
	Overview of Manufacturing Scheduling.....	8-1
	Detailed Scheduling.....	8-2
	Repetitive Line Scheduling.....	8-3
	Dynamic Lead Time Offsetting.....	8-4
	Required Lead Time Information.....	8-5
	Lead Time Offsetting Computations.....	8-6
<b>9</b>	<b>Manufacturing Lead Times</b>	
	Overview of Lead Time Management.....	9-1
	Calculating Lead Times.....	9-14
<b>10</b>	<b>Oracle E-Records</b>	
	21 CFR Part 11 Overview.....	10-1
	E-records and E-signatures for Oracle Bills of Material.....	10-2
	Viewing Oracle E-Records and E-Signatures.....	10-4
<b>11</b>	<b>Reports and Processes</b>	
	Bill of Material Comparison Report .....	11-2
	Bill of Material Listing .....	11-2
	Bill of Material Loop Report .....	11-4
	Bill of Material Structure Report .....	11-6
	Bills of Material Parameters Report .....	11-10
	Calculate Cumulative Yield for Network Routing.....	11-10
	Calculate Manufacturing Lead Times.....	11-11
	Consolidated Bill of Material Report .....	11-12
	Delete Items Report .....	11-14
	Department Classes Report .....	11-16

Department Report .....	11-16
Item Where Used Report .....	11-17
Pre-Explode Configurable Bills of Material.....	11-20
Resource Report .....	11-21
Resource Where Used Report .....	11-22
Rollup Cumulative Lead Times.....	11-23
Routing Report .....	11-23
Standard Operation Report .....	11-25
Workday Exception Sets Report .....	11-26
Oracle Configurator Concurrent Programs .....	11-26

**A Oracle Bills of Material Windows and Navigator Paths**

Bills of Material Windows and Navigator Paths.....	A-1
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**B Oracle Bills of Material Tools Menu**

Bills of Material Tools Menu.....	B-1
Oracle Bills Of Material Character Mode Forms and Corresponding GUI Windows.....	B-2

**C Business Event Data for Oracle Bills of Material**

Business Events.....	C-1
Sample Subscription Functions.....	C-9

**Glossary**

**Index**

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# Send Us Your Comments

## Oracle Bills of Material User's Guide, Release 12.2

### Part No. E48954-12

Oracle welcomes customers' comments and suggestions on the quality and usefulness of this document. Your feedback is important, and helps us to best meet your needs as a user of our products. For example:

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- Did you understand the context of the procedures?
- Did you find any errors in the information?
- Does the structure of the information help you with your tasks?
- Do you need different information or graphics? If so, where, and in what format?
- Are the examples correct? Do you need more examples?

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# Preface

## Intended Audience

Welcome to Release 12.2 of the *Oracle Bills of Material User's Guide*.

This guide assumes you have a working knowledge of the following:

- The principles and customary practices of your business area.
- Oracle Bills of Material

If you have never used Oracle Bills of Material, Oracle suggests you attend one or more of the Oracle Bills of Material training classes available through Oracle University.

- The Oracle Applications graphical user interface.

To learn more about the Oracle Applications graphical user interface, read the Oracle E-Business Suite User's Guide.

See Related Information Sources on page xi for more Oracle E-Business Suite product information.

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## Structure

### **1 Setting Up**

This chapter provides information on setting up Oracle Bills of Material.

### **2 Bills of Material**

This chapter provides you with everything you need to know to define and use bills of material.

### **3 Oracle Bills of Material Command Center**

This chapter provides information about Oracle Bills of Material Command Center dashboards.

### **4 Oracle Bills of Material Command Center Setup**

This chapter provides information about setup and configuration steps to enable and use Oracle Bills of Material Command Center dashboards.

### **5 Routings**

This chapter tells you everything you need to know to use routings.

### **6 Deleting Information**

This chapter tells you everything you need to know to delete item, bill, and routing information.

### **7 Configure to Order**

This chapter provides an overview of how to use the configure-to-order features within Oracle Bills of Material.

### **8 Manufacturing Scheduling**

This chapter tells you everything you need to know about manufacturing scheduling.

### **9 Manufacturing Lead Times**

This chapter tells you everything you need to know about manufacturing lead times.

### **10 Oracle E-Records**

This chapter discusses the acquisition of electronic signatures (e-signatures) on electronic records (e-records) in Oracle Bills of Material. E-records and e-signatures enable you to comply with the 21 CFR Part 11 regulations.

### **11 Reports and Processes**

This chapter describes Oracle Bills of Material reports and processes and their submission parameters.

### **A Oracle Bills of Material Windows and Navigator Paths**

This appendix shows you the default navigator path for each Oracle Bills of Material window. Refer to this appendix when you do not already know the navigator path for a window you want to use.

### **B Oracle Bills of Material Tools Menu**

This appendix describes the options on the Oracle Bills of Material Tools menu.

### **C Business Event Data for Oracle Bills of Material**

### **Glossary**

## Related Information Sources

- Oracle Advanced Supply Chain Planning Implementation and User's Guide
- Oracle Capacity User's Guide
- Oracle Configurator Developer User's Guide
- Oracle Cost Management User's Guide
- Oracle E-Business Suite Developer's Guide
- Oracle E-Business Suite Flexfields Guide
- Oracle E-Business Suite Setup Guide
- Oracle E-Business Suite Maintenance Guide
- Oracle E-Business Suite Security Guide
- Oracle E-Business Suite User's Guide
- Oracle E-Business Suite: Administering Enterprise Command Centers
- Oracle E-Business Suite: Extending Enterprise Command Centers
- Oracle E-Records Implementation Guide
- Oracle Engineering User's Guide
- Oracle Flow Manufacturing User's Guide
- Oracle Inventory User's Guide
- Oracle MRP User's Guide
- Oracle Order Management User's Guide
- Oracle Production Scheduling User's Guide
- Oracle Projects Documentation Set
- Oracle Quality User's Guide
- Oracle Shop Floor Management User's Guide
- Oracle Warehouse Management User's Guide

- Oracle Work in Process User's Guide
- Oracle Workflow User's Guide
- Oracle Workflow Developer's Guide
- Using Oracle HRMS Documentation Set

## Integration Repository

The Oracle Integration Repository is a compilation of information about the service endpoints exposed by the Oracle E-Business Suite of applications. It provides a complete catalog of Oracle E-Business Suite's business service interfaces. The tool lets users easily discover and deploy the appropriate business service interface for integration with any system, application, or business partner.

The Oracle Integration Repository is shipped as part of the Oracle E-Business Suite. As your instance is patched, the repository is automatically updated with content appropriate for the precise revisions of interfaces in your environment.

## Do Not Use Database Tools to Modify Oracle E-Business Suite Data

Oracle **STRONGLY RECOMMENDS** that you never use SQL\*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle E-Business Suite data unless otherwise instructed.

Oracle provides powerful tools you can use to create, store, change, retrieve, and maintain information in an Oracle database. But if you use Oracle tools such as SQL\*Plus to modify Oracle E-Business Suite data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle E-Business Suite tables are interrelated, any change you make using an Oracle E-Business Suite form can update many tables at once. But when you modify Oracle E-Business Suite data using anything other than Oracle E-Business Suite, you may change a row in one table without making corresponding changes in related tables. If your tables get out of synchronization with each other, you risk retrieving erroneous information and you risk unpredictable results throughout Oracle E-Business Suite.

When you use Oracle E-Business Suite to modify your data, Oracle E-Business Suite automatically checks that your changes are valid. Oracle E-Business Suite also keeps track of who changes information. If you enter information into database tables using database tools, you may store invalid information. You also lose the ability to track who has changed your information because SQL\*Plus and other database tools do not keep a record of changes.

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## Setting Up

This chapter provides information on setting up Oracle Bills of Material.

This chapter covers the following topics:

- Related Product Steps
- Setup Steps
- Defining Bills of Material Parameters
- Creating Alternates
- Creating Custom Deletion Statements and Constraints
- Creating a Department Class
- Defining a Department
- Assigning Resources to a Department
- Defining a Resource
- Defining Resource Setup Information
- Using the Workday Calendar
- Defining Lookups
- Assigning View-only Privileges to Forms
- Bills of Material Profile Options
- Subscribing to Bills of Material Business Events

### Related Product Steps

The following steps may need to be performed to implement Oracle Bills of Material. These steps are discussed in detail in the Overview of Setting Up sections of other Oracle product user's guides.

- Performing system-wide setup tasks such as configuring concurrent managers and

printers

- Managing data security, which includes setting up responsibilities to allow access to a specific set of business data and complete a specific set of transactions, and assigning individual users to one or more of these responsibilities
- Setting up Oracle Workflow
- Defining items in Oracle Inventory. See: Defining Items, *Oracle Inventory User's Guide*.

## Setup Steps

Some of the steps listed are Required and some are Optional. You need to perform Optional steps only if you plan to use the related feature or complete certain business functions.

While you can set up Oracle Bills of Material in many different ways, and defer optional set up steps until you are ready to use the corresponding functionality, we recommend you use the order suggested in the following list.

For each step, a Context section indicates whether you need to repeat the step for each set of books, set of tasks, inventory organization, HR organization, or other operating unit under Multiple Organizations.

### 1. Set Profile Options (Required)

Profile options specify how Oracle Bills of Material controls access to and processes data. In general, profile options can be set at one or more of the following levels: site, application, responsibility, and user.

Oracle Bills of Material users use the Personal Profile Values form to set profile options only at the user level. System administrators use the System Profile Values form to set profile options at the site, application, responsibility, and user levels. See: Oracle Bills of Material Profile Options, page 1-50.

**Context:** Perform this step once for each entity, that is, organization operating unit, business group, or legal entity.

### 2. Define Exception Templates (Optional)

You can define your own exception templates. When you assign an exception template to your workday calendar, you can assign workday exceptions to account for plant workday differences-such as holidays, scheduled maintenance, or extended downtime.

**Context:** Perform this step once per installation.

See: To create a workday exception template, page 1-37.

### 3. Define and Build your Workday Calendar (Required)

You define a workday calendar for one or more organizations, and assign an exception set to each calendar. For each workday calendar and exception set, you assign a list of holidays or workday exceptions. You then define shifts for your workday calendar, and assign any shift workday exceptions.

After you define your workday calendar information, you build your workday calendar with the exception set. If you associate one calendar with multiple organizations, you can build your workday calendar with multiple exception sets to account for workday differences across organizations.

**Important:** If you use Oracle Master Scheduling/MRP, choose the calendar options 445 weekly quarter pattern or 544 weekly quarter pattern if you want to report MRP information in weeks and months. Otherwise, if you choose 13 period calendar or Regular calendar months, you can only report MRP information in monthly buckets.

**Context:** Perform this step once per installation.

See: Creating a Workday Calendar, page 1-37.

### 4. Assign Workday Calendar to Organization (Required)

You assign a workday calendar and exception set to each of your organizations. You can share the same workday calendar across organizations with either the same or a different exception set for each organization.

**Default:** If you skip this step, *<enter value here>* will be used as the default value.

**Context:** Perform this step once per organization.

See: To select workday or shift exceptions, page 1-37.

### 5. Define Bill of Material Parameters (Required)

You assign the maximum number of bill of material levels for bill explosions, loop checks and implosions. For assemble to order manufacturers, you assign configuration item information.

Oracle Cost Management does require that you assign values to each parameter if you compute an organization's manufacturing costs based on bill of material and routing information defined in Oracle Bills of Material.

**Context:** Perform this step once per organization.

See: Defining Bill of Material Parameters, page 1-7.

### 6. Define Department Classes (Optional)

You can define department classes to group departments and to identify

manufacturing cells. This information is for your reference only.

**Context:** Perform this step once per organization.

See: Creating a Department Class, page 1-14.

#### 7. Define Resources (Optional)

You can define a resource as anything of value, except material and cash, required to manufacture, cost, and schedule products. Resources include people, tools, and labor purchased from a supplier.

**Context:** Perform this step once per organization.

See: Defining a Resource, page 1-24.

#### 8. Define Resource Setup Information (Optional)

Define resource setup information to create a performance model for machines and resources that includes time needed to change from one setup to another.

**Context:** Perform this step once per organization.

See: Defining Resource Setup Information, page 1-33.

#### 9. Define Resource Groups (Optional)

You can group department resources by resource group to facilitate bill of resource generation and capacity planning in Oracle Capacity.

**Context:** Perform this step once per installation.

See: Defining a Resource, page 1-24.

#### 10. Define Competencies for Resources

You can define competencies for resources while assigning employees to the resources. The competency, skill levels and qualification must match the requirements for the resource. You can only add those resources that meet the requirements to the resource instance. The skill definition of the resource cannot be changed if there are employee instances assigned to the resource.

**Note:** If you want to change the skills for the resource, then delete all employee instances for the resource and then change the skills.

#### 11. Define Competencies for Routings

Define the competencies required for both standard and non-standard operations and update competencies as required.

#### 12. Define Competencies for Standard Operations

You can define the competencies of the resource to perform the operation.



### 13. Define Simulation Sets (Optional)

You can group deviations to available resource capacity for resource shifts and use each set in shop floor scheduling and capacity planning.

**Context:** Perform this step once per installation.

See: Defining a Resource, page 1-24.

### 14. Define Locations (Optional)

You define delivery locations for departments with outside processing resources.

**Context:** Perform this step once per organization.

See: Defining a Resource, page 1-24.

### 15. Define Departments (Optional)

You can define departments as areas within your organization where you perform work and/or collect costs.

**Context:** Perform this step once per organization.

See: Defining a Department, page 1-15.

### 16. Assign Resources and Resource Shifts to Departments (Optional)

You can assign resources to a department and then assign shifts to those resources. You can group department resources by resource group, and assign a simulation set with capacity modifications for each resource shift.

**Default:** If you skip this step, *<enter value here>* will be used as the default value.

**Context:** Perform this step once per organizational department.

See: Assigning Resources to a Department, page 1-16.

### 17. Define Overheads (Optional)

You can define resource overhead by using the Define Overhead form. Each overhead sub-element has a default basis, default activity, and absorption account. The overhead absorption account offsets your corresponding overhead cost pool in the general ledger.

**Context:** Perform this step once per organizational resource.

See: Defining a Resource, page 1-24.

### 18. Associate Overheads with Departments (Optional)

You can assign overhead rates or amounts to your department by cost type and department. The cost rollup uses the assigned basis type to allocate the overhead charge. The cost rollup assigns the activity to the calculated overhead cost. You can define pending rates and use the cost rollup/update process to change the pending rates to Frozen overhead rates.

**Context:** Perform this step once per organizational department.

See: Defining a Department, page 1-15.

#### 19. Define Alternates (Optional)

You can define any number of alternate names that you use when you create alternate bills of material and routings. You use alternate bills and routings to produce an identical product using a different bill or routing. You can apply the same alternate name to a bill of material and a routing.

**Context:** Perform this step once per organization.

See: Primary and Alternate Bills of Material, page 2-2.

#### 20. Define Standard Bill of Material Comments (Optional)

You can define any number of standard bill of material comments that you can assign to your bills of material.

**Context:** Perform this step once per organization.

See: Creating a Bill of Material, page 2-9.

#### 21. Define Standard Instructions (Optional)

You can define any number of operation instructions that you can assign to a routing operation or standard operation.

**Context:** Perform this step once per organization.

See: Creating a Standard Operation, page 5-22.

#### 22. Define Change Order Types (Optional)

You can define mass change order types, using your own terminology, to describe mass changes to your manufacturing bills of material.

**Default:** If you skip this step, Oracle shipped change order types will be used as the default value.

**Context:** Perform this step once per installation.

See: Mass Changing Bills of Material, page 2-32.

#### 23. Define Delete Statements and Constraints (Optional)

Oracle Bills of Material provides a list of rules to determine if an item, bill of material or routing can be deleted and a list of delete instructions. Each rule insures data integrity across all Oracle Manufacturing applications. You can add to this list with your own business rules to further restrict the entities that can be deleted. You write each of your delete constraints as a SQL select statement that either prevents or lets a user delete an item, bill, or routing. Once the delete constraint selects the data to be deleted, the delete statement provides the SQL delete statement used to delete the selected data.

**Default:** If you skip this step, Oracle shipped delete constraints and statements will be used as the default values.

**Context:** Perform this step once per organization.

See: Creating Custom Deletion Statements and Constraints, page 1-11.

#### 24. Define Lookups (Optional)

Oracle Applications provides a consolidated method across all applications for defining codes. Bills of Material codes you can define include:

- Bonus Codes
- Scrap Codes
- Resource Down Codes
- Resource Capacity Change Reasons

**Context:** Perform this step once per organization.

See: Defining Lookups, page 1-47.

#### 25. Assign View-only Privileges to Forms (Optional)

The system administrator can assign view-only privileges to certain forms by user. For example, most users do not need the ability to define or update department information. The system administrator can restrict all but the user who maintains department information from adding or updating departments, while still enabling everyone to view the Departments window.

**Context:** Perform this step once per responsibility.

See: Assigning View-only Privileges to Forms, page 1-48.

## Defining Bills of Material Parameters

Use bill of material parameters to define modes of operation and default values for an organization that affect functions such as bill definition, bill deletion, and assemble-to-order configuration numbering.

Define bill of material parameters for each organization in which you use bills or routings. (Bill parameters are specific to, and must be defined for, each organization.) Doing so ensures access to resource, outside processing, and overhead cost information for certain cost management functions.

#### To define bill of material parameters:

1. Navigate to the Parameters window.

Parameters (M1)

Max Bill Levels  [ ]

**Configuration Options**

Inactive Status

Numbering Segment

Numbering Method

Create Lower Level Supply

Config BOM Creation Allowed  Include Model/Option Class Items in Lead Time Rollup

Use Phantom Routings

Inherit Phantom Op Seq

2. Enter the maximum bill levels to explode. The maximum is 60.

#### For configurations only

All fields in the Configuration Options box apply only to configured items. See: BOM Parameters, *Oracle Configure to Order Process Guide*, for more detailed information about each field.

3. Enter an inactive status.
4. Enter the numbering segment to use when creating configuration item numbers.
5. Select an automatic or user defined numbering method. A unique configuration item number is automatically assigned based on the numbering method you select:

*Append Sequence:* Appends a sequence number to the item segment you entered for the numbering segment.

*Replace with Sequence:* Replace the item segment you entered in the numbering segment with a sequence number.

*Replace with Order, Line Number:* Replace the item segment you entered for numbering segment with the sales order and line number.

*User Defined:* Allows you to define a numbering scheme that meets your business needs.

6. Select one of the following in the Create Lower Level Supply field:
  - No (default value)

The system creates supply only for the top level assemble to order (ATO) item or configuration.

- Auto Created Configuration Items Only

Creates supply for any lower level configuration generated because of the specific sales order configuration.

**Note:** This option does not create supply for any lower level configuration that was matched to a preconfigured item.

- Auto Created Configuration Items and ATO Items

Creates lower level supply for all ATO items, preconfigured items, and autocreated configured items.

**Note:** Supply is created even for ATO items set up as standard mandatory components on the model bill. Only use this option if you do not expect to have inventory on hand for your ATO items and preconfigured items.

This parameter indicates whether or not the system creates supply for lower level configurations and assemble to order items when progressing an order on-line in Oracle Order Management, or when using the Autocreate FAS batch program.

7. Check the Config BOM Creation Allowed box to allow the creation of configuration bills of material in the organization.

Check this box in all organizations in which you plan to manufacture or purchase your configurations. Uncheck the box in those organizations where a model BOM exists, but a configuration BOM is not necessary. For example, leave the box unchecked for an Order Management validation organization that is not a manufacturing organization.

8. Check the Include Model/Option Class Items in Lead Time Rollup box to include models and option classes when rolling up cumulative lead times.

If you leave this box unchecked, the cumulative lead time calculations are not performed for model or option classes.

#### **For all bills of material**

9. If you would like Work in Process to maintain the individual operation sequence numbers for phantom subassemblies, and to charge their resource and overhead costs to the parent or higher level assembly, you set the following two parameters in Oracle Bills of Material:

*Use Phantom Routings:* Set this parameter to specify whether phantom routing resources and overhead costs (including those for outside processing resources assigned to phantom routing operations) are charged to the parent or higher level assembly. Setting this parameter also implies department inheritance for resources;

thus, phantom resources can be used by departments that they are not owned by or assigned to as a borrowed resource. You set the parameter at the inventory organization level and it then applies to all phantoms within a single inventory organization. These are its two values:

- *Yes*: If you select this value, phantom routing components and resources and overheads are included in the cost of the higher level assembly. Routing resource costs are also included in capacity planning.
- *No*: This is the default. This value specifies that only components are included in the higher assembly's cost, not resources and overheads.

*Inherit Phantom Op Seq*: Set this parameter to specify whether phantom subassembly components inherit the operation sequence number of their parent or higher level assembly, or maintain their own operation sequence number. This parameter is set at the inventory organization level, and applies to all phantoms within a single inventory organization. The parameter has these two values:

- *Yes*: This is the default. This value specifies that phantom subassembly components inherit the operation sequence number of their parent or higher level assemblies.
- *No*: If you select this value, phantom subassembly components maintain their own operation sequence numbers.

## Related Topics

Overview of Configure To Order, page 7-1

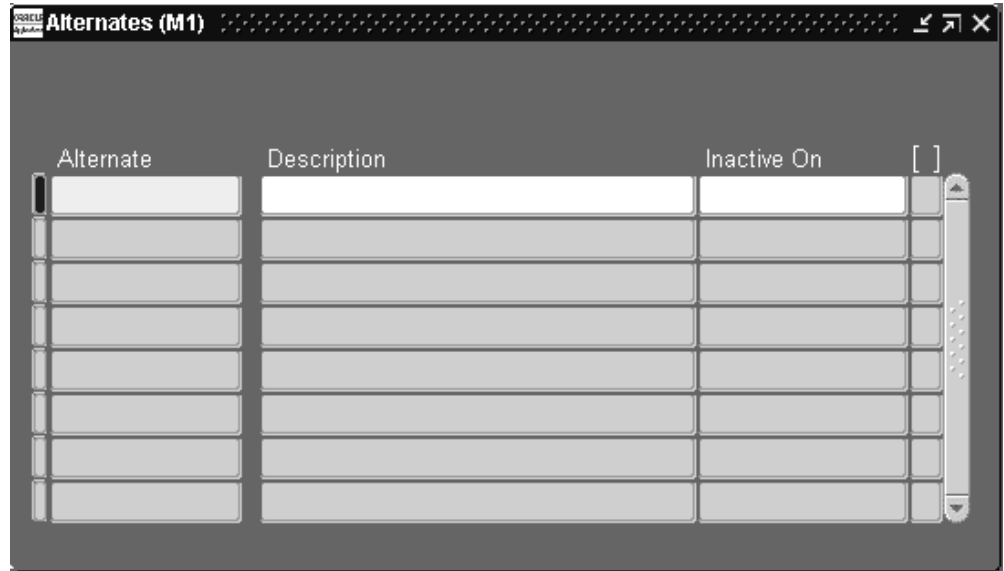
Bills of Material Parameters Report, page 11-10

## Creating Alternates

An alternate bill describes an alternate list of component items that produce an assembly. An alternate routing describes an alternate manufacturing process that produces an assembly.

### To create or update an alternate:

1. Navigate to the Alternates window.



2. Enter an alphanumeric string to describe a unique alternate.
3. Enter a date that the alternate is inactive on. As of the inactive date, you can no longer assign the alternate to a bill of material or routing.

## Related Topics

Primary and Alternate Bills of Material, page 2-2

Primary and Alternate Routings, page 5-1

Effective Date Fields, page 2-42

## Creating Custom Deletion Statements and Constraints

You can create custom deletion statements to specify from which database table to delete data that meets the deletion constraint criteria. Create custom deletion constraints to enforce your unique business rules. Custom deletion constraints identify the rows in a table that meet certain conditions for deletion.

Oracle provides seeded deletion statements and constraints, which you can view using the Deletion Statements and Deletion Constraints windows. You cannot modify seeded deletion statements and constraints, though.

**Note:** Oracle E-Business Suite forms built using Oracle Forms are added to menus using function security functions. Some forms and pages in Oracle E-Business Suite allow a user to modify the functionality of the applications by specifying values such as SQL

statements, SQL fragments such as WHERE clauses, HTML strings, and operating system commands or environment variables. These screens may constitute a security risk if used in an unauthorized fashion. For information regarding sensitive administrative forms and their corresponding functions, refer to *Sensitive Administrative Pages in Oracle E-Business Suite* (Doc ID: 1334930.1).

### To create a custom deletion constraint:

1. Navigate to the Deletion Constraints window.

Constraint   Enabled

Description

Delete Entity  Product Name

SQL Statement

```
SELECT COUNT(*)
FROM BOM_BILL_OF_MATERIALS
WHERE BILL_SEQUENCE_ID != &BILL_SEQUENCE_ID
AND COMMON_BILL_SEQUENCE_ID = &BILL_SEQUENCE_ID
```

Delete If

Rows Found  No Rows Found

Failure Message

Name

Text

2. Enter a name for the deletion constraint.
3. Indicate whether the constraint is enabled. An enabled deletion constraint means that it is in effect when the delete concurrent program runs.
4. Select the kind of delete entity the constraint applies to: item, bill, routing, component, or operation.
5. Select the name of the product that applies to this deletion constraint.  
The Product Name field enables you to group deletion constraints by product.
6. Enter the SQL Select Statement that the delete concurrent program is to execute.



You cannot update SQL statements for predefined deletion constraints.

7. Indicate whether to delete if there are rows found or no rows found by the SQL Select Statement.
8. Enter a failure message from Oracle Application Object Library's message dictionary to display if the delete fails.

### To create a custom delete statement:

1. Navigate to the Deletion Statements window.

The screenshot shows a window titled "Deletion Statements" with the following fields and values:

- Statement: `BIL_DEL6`
- Archive Table: `BOM_BILL_OF_I`
- Enabled:
- Description: `Delete bill of material`
- Delete Entity: `Bill of Material`
- Product Name: `BOM`
- SQL Statement: `DELETE FROM BOM_BILL_OF_MATERIALS WHERE BILL_SEQUENCE_ID = &BILL_SEQUENCE_ID`

2. Enter a name for the deletion statement.
3. Indicate whether the statement is enabled. An enabled deletion statement means that it is in effect when the delete concurrent program runs.
4. Select the kind of delete entity the statement applies to: item, bill, routing, component, or operation.
5. Select the name of the product that applies to this deletion statement.  
The Product Name field enables you to group deletion statements by product.
6. Enter the SQL Delete Statement that the delete concurrent program is to execute.  
You cannot update SQL statements for predefined deletion statements.

## Related Topics

Deleting Items, Bills, Routings, Components, and Operations, page 6-1

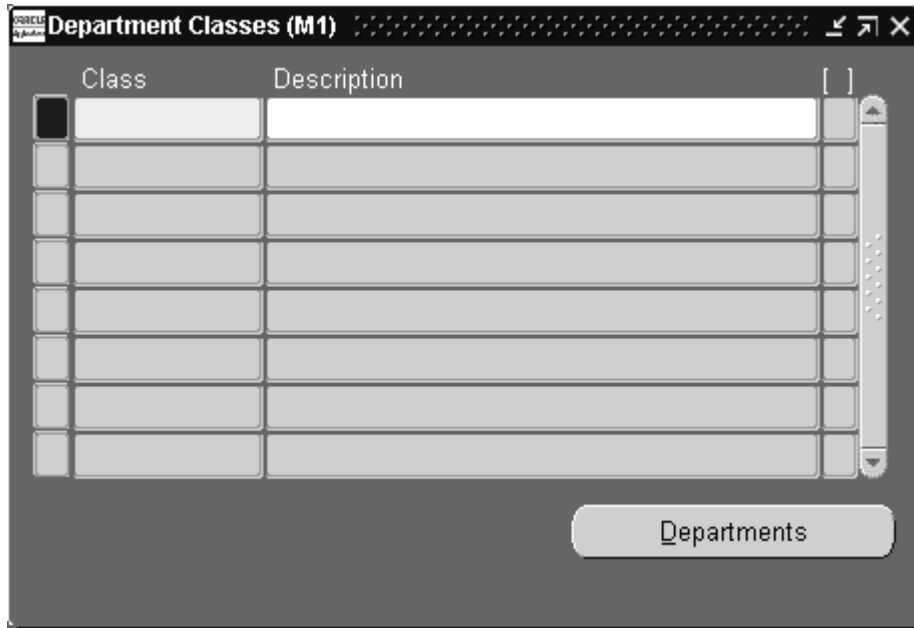
Deletion Constraints and Statements, page 6-6

## Creating a Department Class

Use department classes to group departments for shop floor scheduling and control, and to identify manufacturing cells and flexible machine centers. Department classes are used for reporting purposes.

### To create a department class:

1. Navigate to the Department Classes window.



2. Enter text that uniquely describes the department class. For example, you could use ASSY to group all final assembly departments.
3. Choose the Departments button to display the departments assigned to this department class and the dates when these departments can no longer be assigned to routing operations.

**Note:** Assign departments to classes when you define departments.

## Related Topics

Defining a Department, page 1-15

Department Classes Report, page 11-16

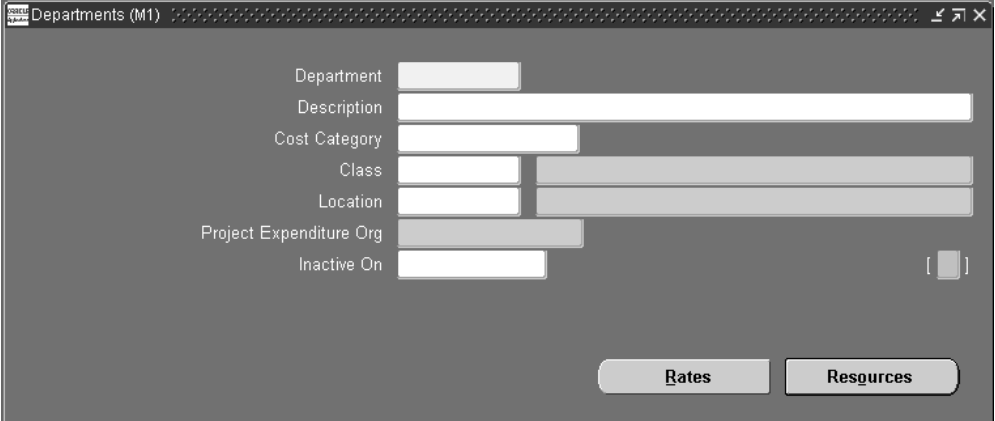
## Defining a Department

A department is an area within your organization that consists of one or more people, machines, or suppliers, where you want to collect costs, apply overhead, and compare load to capacity. You assign a department to each operation in a routing, and assign resources that are available for that department.

When you define a department, you specify any department overhead costs and the resources that are available. You can enter multiple resources for each department. For each resource, you can specify the shifts that the resource is available. For each resource shift, you can also specify capacity modifications that change the available hours per day, units per day, or workdays.

### To define a department:

1. Navigate to the Departments window.



The screenshot shows a software window titled "Departments (M1)". The window contains a form with the following fields and controls:

- Department: A text input field.
- Description: A long text input field.
- Cost Category: A text input field.
- Class: A text input field.
- Location: A text input field.
- Project Expenditure Org: A text input field.
- Inactive On: A date input field.
- At the bottom right, there are two buttons: "Rates" and "Resources".

2. Enter a name for the department unique for the organization.
3. Optionally, enter a department class. See: [Creating a Department Class](#), page 1-14.
4. Enter a location for the department.
5. Enter a project expenditure organization.
6. Optionally, enter an inactive date on which you can no longer assign this department to routing operations.
7. Enter the Scrap Account in order to charge the departments that have scrapped material. This field is displayed for Shop Floor Management enabled organizations.
8. Enter the Estimated Absorption Account to estimate the expected scrapped material. This field is displayed for Shop Floor Management enabled organizations.

that have enabled estimated scrap accounting. See: *Defining Parameters, Oracle Shop Floor Management User's Guide*.

9. Choose the Rates button to view the overhead rates for the department.
10. Choose the Resources button to assign and update resources to the department.

**Note:** If you have Oracle Warehouse Management installed, the Departments form is used to group resources that may be needed together, to perform tasks. For example, a warehouse may define a refrigerated picking department, which has all the machine and manual resources associated to it that are required to perform a refrigerated picking task. A warehouse can also use a picking department, or a generic task department with all resources associated that are used for warehouse task management. See: *Set Up Departments, Oracle Warehouse Management Implementation Guide*.

## Related Topics

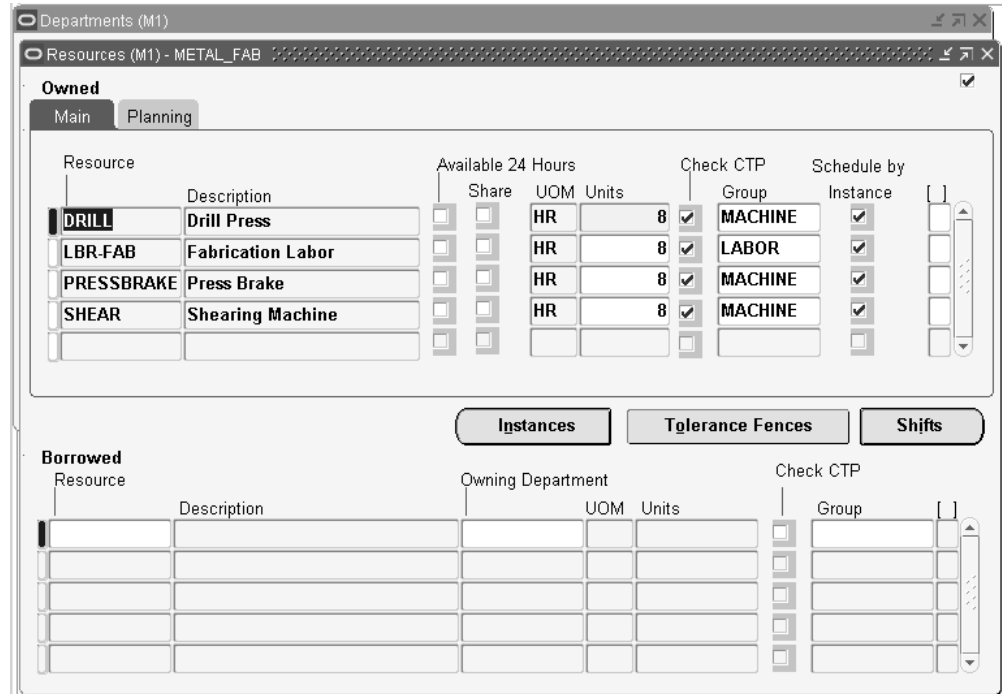
Assigning Resources to a Department, page 1-16

Department Report, page 11-16

## Assigning Resources to a Department

### To assign resources to a department:

1. Navigate to the Resources window. You can do this by choosing the Resources button from the Departments window.



The Resources window is split into owned and borrowed resources.

2. Enter the resource to assign to the current department.
3. Optionally, for owned resources, indicate whether the resource is available 24 hours a day. You cannot assign shifts to a resource that is available 24 hours a day.
4. For owned resources, indicate whether this department can share the resource and capacity with other departments.
5. For borrowed resources, enter the owning department.
6. Enter the number of capacity units (resource units) available for this department, for example, the number of machines for a machine resource.

Each resource can be assigned to any number of departments; multiple resources can be assigned to each department.

7. Optionally, select the Check CTP check box. The Check CTP check box tells the system to use this resource in a Capable to Promise (CTP) check. See: Capable to Promise, *Oracle MRP User's Guide*.
8. Optionally, enter a resource group for the resource in this department.
9. Optionally, choose the Instances button to indicate if the department resource should be scheduled to the instance level (specific employee name or piece of

equipment). See: Defining a Resource, page 1-24.

**Caution:** You can only schedule machine type resources by instance, not labor type resources.

10. Enter an expenditure type for the resource.
11. For owned resources that are not available 24 hours, choose the Shifts button to assign and update shift information for the resource. See: To assign shift information for the resource, page 1-21.

### **To plan for resources assigned to a department**

If you are using Oracle Capacity or Oracle Advanced Supply Chain Planning to ensure that you have sufficient capacity to meet your production requirements, then enter resource availability information in the Planning tab. All fields in this tab are optional.

12. Enter an exception set. The exception sets that you assign help identify capacity problems. See: Exception Sets, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.
13. Select an ATP rule from the list of values. See: Functional Setup for ATP Based on Collected Data, *Oracle Global Order Promising Implementation and User's Guide*.
14. Enter the utilization and efficiency percentage for the resource. Use these values to calculate the available hours for a resource. See: Resource Efficiency and Utilization, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.
15. Enter the sequencing window (in days) to consider when optimizing the sequence of jobs running on a resource with sequence dependent setups. See: Sequence Dependent Steps, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

### **To define a resource instance:**

You can optionally define each resource instance (specific employee name or piece of equipment) eligible for use. You can also associate contingent workers as Person Type resources.

If the resource is a person resource, only certain people may be qualified to act as the resource. For example, only certain people are trained to operate a drill press. Before you can specify person resource instances, you must perform the following tasks:

- Optionally, define the person resource skills needed in the Resources window, Skills region (see: Defining a Resource, page 1-24).
- Specify the employees that have the necessary skills for the resource (see: To group employees by resource, page 1-24).

If the resource is an equipment resource, only certain serial-numbered equipment items are usable as the resource. Before you can specify equipment resource instances, you must perform the following tasks:

- Create an equipment item by selecting the Equipment attribute in the Organization Item window, Physical Attributes tab (see: Defining Items , *Oracle Inventory User's Guide*).
- Set up serial number control for the equipment item (see: Setting Up Serial Number Control, *Oracle Inventory User's Guide*).
- Define the equipment item as an equipment type for the resource (see: To group similar types of equipment by resource, page 1-24).

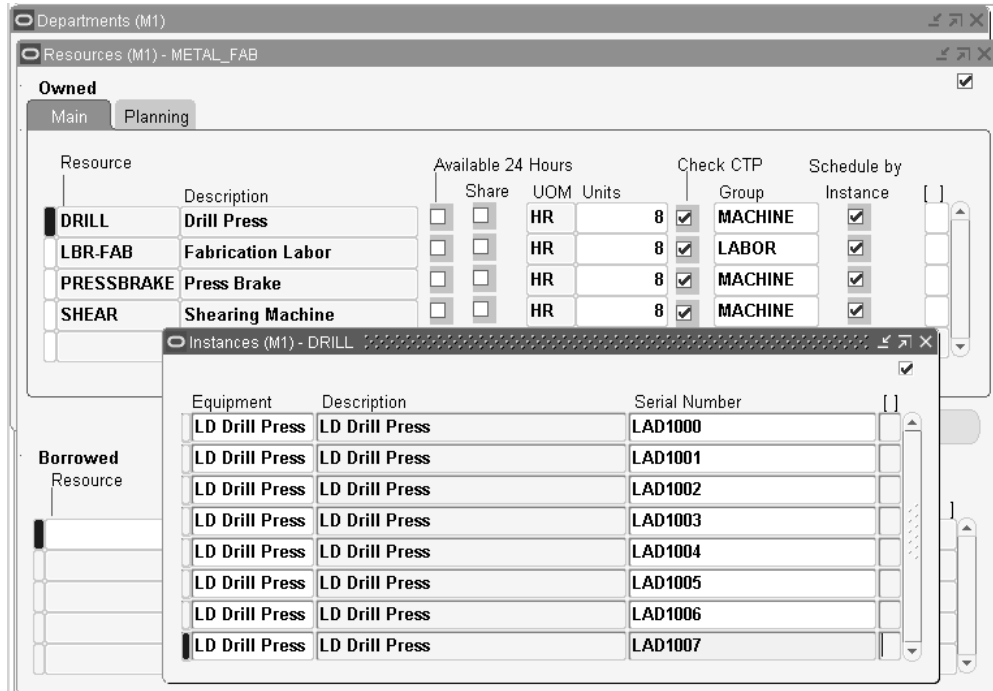
1. Find the resources assigned to a department by navigating to the Departments window, then choosing Resources.

2. Select a resource, then choose Instances.

The Instances window contains different fields depending upon whether you select an equipment or person resource.

3. If you select an equipment resource:

- Enter the equipment item that acts as the resource.
- Enter the serial number of the specific resource instance. Valid serial numbers for the equipment item appear in the list of values.



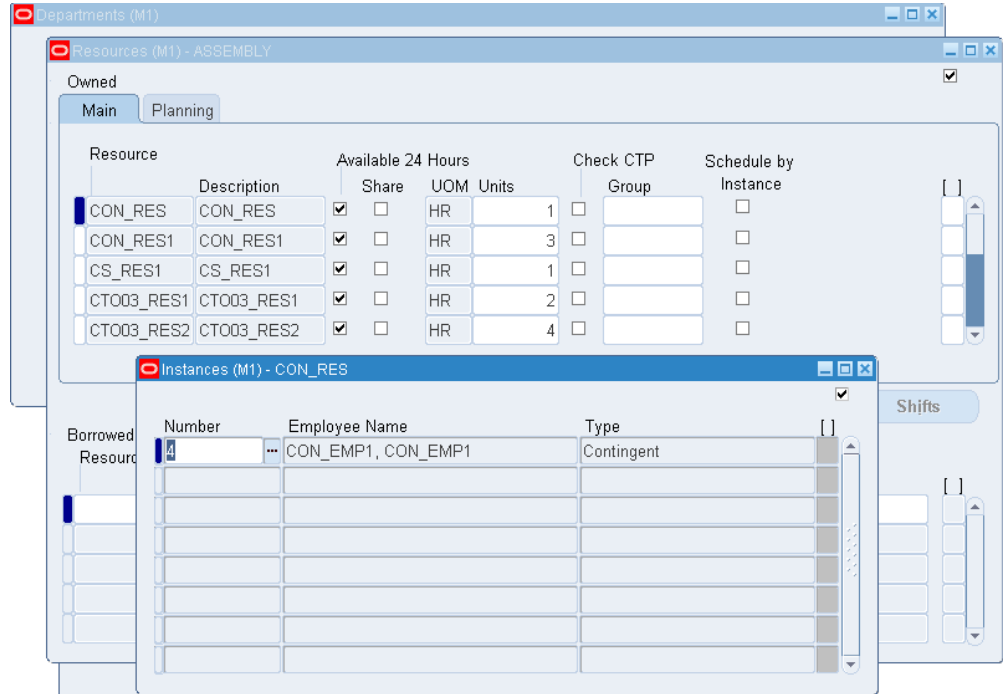
4. If you select a person resource, enter the employee number of the person that acts as the resource.

The Instances window when invoked through the Department window allows you to select contingent workers as instances to person type resources as well.

When you launch the Instances window for the first time, it displays the employees already assigned to this resource. If there are no employees assigned to this resource code, this window displays no records. For any existing employee associations, the Type field displays as Employee.

You can assign additional employees or contingent workers to this resource code by selecting from the list of values in the Number field. The list of values are restricted by any associations made in the Resource window. For any newly chosen contingent worker, the Type field displays as Contingent.





5. Save your work.

**Important:** The number of resource instances must match the number of units specified in the Resources window.

**To assign shift information for the resource:**

1. Navigate to the Shifts window. Do this by choosing the Shifts button from the Resources window.
2. Enter a shift number to assign to the resource.

The shifts available to assign to the resource are those assigned to the workday calendar assigned to the organization.

3. Choose the Capacity Changes button to define capacity changes for a shift.

**To define capacity changes:**

Capacity modifications can add or delete a day, or add or reduce capacity for a shift.

1. Navigate to the Capacity Changes window. Do this by choosing the Capacity Changes button from the Shifts window.
2. Enter or select a simulation set for the capacity change. Use simulation sets for

capacity requirements planning in Oracle Capacity. See: *Creating Simulation Sets, Oracle Capacity User's Guide*.

3. Select the action to take for the department resource:

*Add:* Adds a workday and capacity changes.

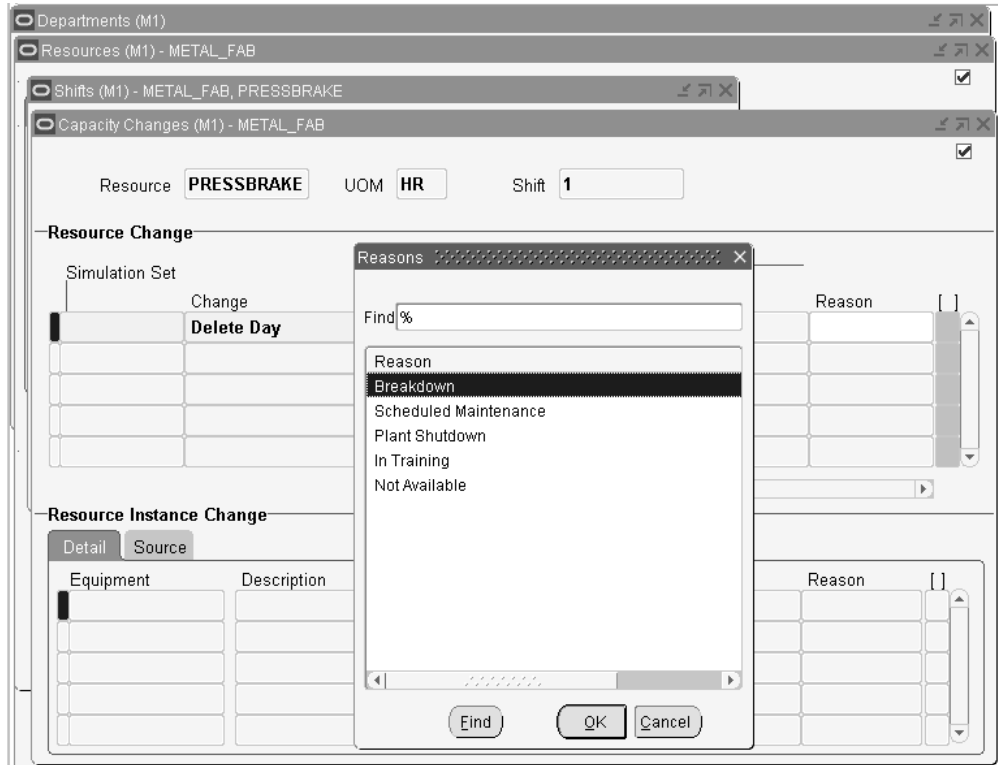
*Delete:* Deletes a workday for this department resource.

*Add or Reduce Capacity:* Add or reduce capacity for a resource shift. The capacity change can fall outside a shift time, so you can add time to a shift. To reduce capacity, enter negative numbers.

4. Enter the number of resource units to increase or decrease capacity (if applicable). Make sure to use a negative number if you are reducing capacity.
5. Enter an effective date and time from which the capacity change starts. If you are adding or reducing capacity, you must also enter a date and time on which the change is no longer in effect.

If you are adding a shift's workday, this is the date of the new workday. If you are deleting a shift's workday, this is the date of the deleted workday. If you are changing capacity, this is the first day the resource shift's capacity changes.

6. Select the reason for the resource capacity change from the list of values. See: *To define a reason for a resource capacity change*, page 1-33.



7. Review the Resource Instance Change region for information on the specific equipment capacity changes.

#### **Detail Tab**

These fields identify the resource instances impacted by the capacity change.

#### **Source Tab**

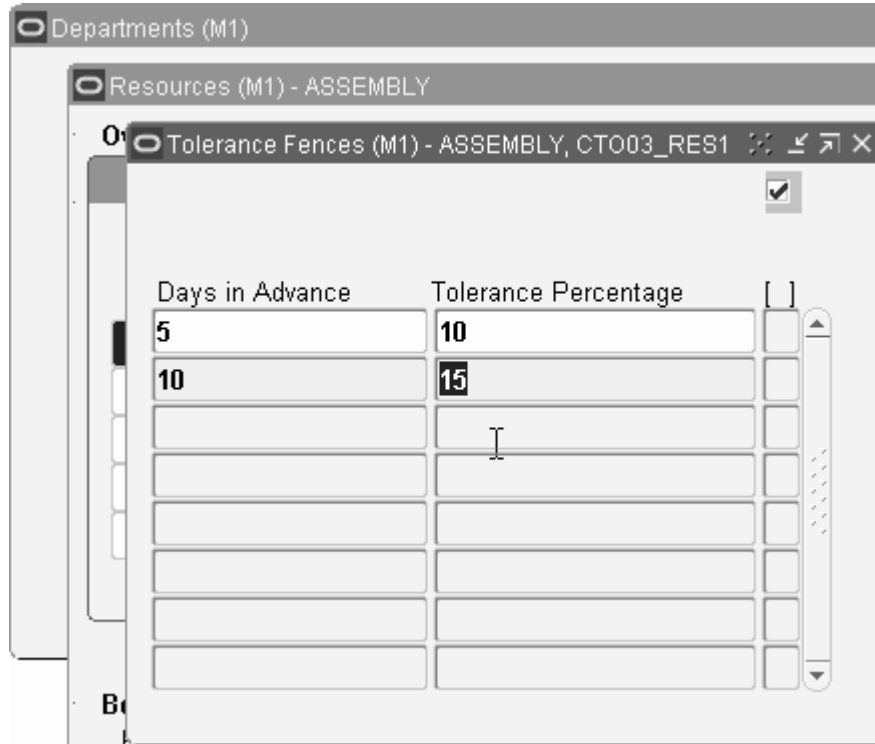
This tab provides detailed information (the downtime source, organization, work order, and operation) about resource downtime due to scheduled maintenance at the resource instance level.

For the resource downtime information to appear in the Source tab, you must execute the Load Production Equipment Maintenance Downtime process. See: *Production Equipment Downtime, Oracle Enterprise Asset Management User's Guide.*

#### **To define the resource tolerance:**

Situations arise where an excess load needs to be placed on a resource. Use the Tolerance Fences window to define the acceptable excess load (tolerance percentage) for each resource, based on the number of days in advance of the need.

1. Navigate to the Tolerance Fences window by choosing Tolerance Fences from the Resources window.



2. Enter the number of days in advance of the resource need.
3. Enter the acceptable excess load (tolerance percentage) for the resource given the number of days in advance of the manufacturing capacity need.
4. If the tolerance percentage changes as the number of days in advance changes, then enter as many combinations of days in advance and tolerance percentage as needed.
5. Save your work.

## Related Topics

Cost Management Profile Options and Security Functions, *Oracle Cost Management User's Guide*

## Defining a Resource

Use resources to define the time an assembly spends at an operation and the cost you incur at the operation. A resource is anything you require to perform, schedule, or cost, including but not limited to: employees, machines, and outside processing services. A resource and usage rate for all scheduled activities is required in a routing. Scheduled resources can include queue, setup, run, and move time.

When you define your departments, you assign the resources available in each department and the shifts that each resource is available. For each operation you define, you specify a department and list of resources and usages. An operation can use any resource that is available in the department, but you do not need to use all resources assigned to the department.

If you have Oracle Manufacturing installed, you can use Resource batching. Resource batching enables you to use resources across multiple jobs. By using a single resource to process multiple jobs simultaneously, you can prevent a resource from being underutilized. Work scheduled using resource batching is characterized by equivalent work performed with the same manufacturing processes. See: *Setting Up Batch Resources, Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

## Prerequisites

- Before you can define resources, set up your units of measure and unit of measure conversion rates. Some resources may represent currency such as a fixed charge resource, but currency resources cannot be scheduled since their unit of measure is not time-based.
- Set the site level profile option BOM: Hour UOM to hold the unit of measure that represents an hour. Oracle Work in Process prevents you from scheduling resources whose unit of measure is not in the same unit of measure class as the hour unit or measure and has no conversions defined to the hour unit or measure.

### To define a resource:

1. Navigate to the Resources window.

Resources (M5)

Resource: **HG\_TST\_MCH** Inactive On:

Description: **High Grade Chip Test Machine**

Type: **Machine** UOM: **HR**

Charge Type: **WIP Move** Basis: **Lot**

Expenditure Type:

Supply Subinventory:  Supply Locator:

Outside Processing

Item:

Costed

Activity:   Standard Rate

Absorption Account: **01-515-5360-0000-000**

Variance Account: **01-515-5390-0000-000**

Overheads Rates

Skills

Competence:

Skill Level:

Qualification:

Batchable

Minimum Batch Capacity:  Batching Window:

Maximum Batch Capacity:  UOM:

Batch Capacity UOM:

Machine Down Codes Employees Equipment Setups

2. Enter a resource name unique to the organization to describe the resource. For example, you could assign AS1 to signify assembler grade 1, or WE for welder.
3. Optionally, enter an inactive date after which you can no longer assign this resource.
4. Select a resource type: Amount, Currency (the set of books currency as defined in Oracle General Ledger), Machine, Miscellaneous, or Person.
5. Enter a unit of measure (UOM) that describes how you measure the resource. (You can update this if the BOM: Update Resource UOM profile option is set to Yes.)

**Note:** This field is protected from changes if this resource is used for any operation with the Scheduled field set to Yes, and if you have previously set it as a time-based UOM. See: To assign a resource to a routing operation, page 5-9.

6. Select a charge type. When an operation is completed, Oracle Work in Process records the units applied to the job or repetitive schedule in the resource unit of measure for all resources you charge manually or automatically. See: Charge Types, page 5-30.
7. Select a basis type by which to charge and schedule the resource.

*Item:* Charge and schedule the resource where the resource usage quantity is the amount required per assembly unit you make.

*Lot:* Charge and schedule the resource where the resource usage quantity is the amount required per job or schedule.

8. Select an expenditure type for this resource.

If the *Project Cost Collection Enabled* parameter is set in the Organization Parameters window, you must associate the resource with an expenditure type. See: *Organization Parameters Window, Oracle Inventory User's Guide* and *Assigning Project Parameters, Oracle Project Manufacturing User's Guide*.

You can only select expenditure types that belong to the Work in Process expenditure type class. Expenditure types are defined in Oracle Projects. See: *Expenditure Types, Defining Expenditure Types, and Expenditure Type Classes in the Oracle Projects Implementation Guide*.

9. Optionally, enter the supply subinventory if the resource is a machine.

The system uses the supply subinventory specified for the resource if the routing does not specify a supply subinventory.

10. Optionally, enter the supply locator if the resource is a machine.

The system uses the supply locator specified for the resource if the routing does not specify a supply locator.

11. Indicate whether to enable the outside processing resource, and if so, enter its item number.

**Important:** If you specify PO Move or PO Receipt, Oracle Purchasing uses this item when it creates requisitions for your outside processing resource. See: *Overview of Shop Floor Control, Oracle Work in Process User's Guide* and *Outside Processing, Oracle Work in Process User's Guide*.

12. If this resource services requests for maintaining assets, you can optionally enter the billable item in the Billing region Item field.

Oracle Enterprise Asset Management (eAM) can use Oracle Bills of Material resources to service requests for asset maintenance. Identifying the billable item for the resource enables eAM to determine the cost of work performed by the resource for the item. See: *Viewing Cost Information, Oracle Enterprise Asset Management User's Guide*.

13. Enable the Costed check box to collect and assign costs to this resource, and if so, optionally enter an activity for the resource.

You cannot view costing information if the Privilege To View Cost Information function is excluded from the responsibility. You cannot update costing information if, in addition, the Privilege To Maintain Cost Information function is excluded.

You can use activities to group resource charges for cost reporting purposes. See: Defining Activities and Activity Costs in *Oracle Cost Management User's Guide*.

14. If the resource is costed, indicate whether to charge jobs and repetitive schedules based on a standard rate you define.

Or, disable Standard Rate to enter a rate to charge the resource in Work in Process for an internal resource, or derive the rate from the purchase order for an outside processing resource. For outside processing resources, if you charge a job or repetitive schedule at the standard rate, a purchase price variance is computed and posted to the rate variance account. If you charge for all other resources, if you charge a job or repetitive schedule at the actual rate, a resource rate variance is computed and posted to the rate variance account.

15. If this resource is costed, enter an absorption account (general ledger account) used to offset resource charges earned in work in process.

At period end, you normally compare this account to the resource charges in the general ledger.

For outside processing resources, the default is the receiving valuation account from Oracle Purchasing, as defined in the receiving options.

**Important:** For outside processing resources, do not change the default receiving valuation account. When you receive an outside processing purchase order, Oracle Purchasing credits the inventory AP accrual account and debits the receiving valuation account. Bills of Material then debits the work in process outside processing account and credits the receiving valuation account. If you change the above default account, your receiving valuation account will have an incorrect balance.

16. If this is a person type resource, enter the skill necessary for a particular person to act as this resource. Define the skill needed by selecting from the following fields' lists of values:

- Competence
- Skill Level
- Qualification

See: Creating a Competency Profile, *Talent Management, Workforce Sourcing, Deployment, and Talent Management Guide (US)* for more information on competence,



skill level, and qualification.

See: To group employees by resource, page 1-24 to select employees that meet the skill requirements.

17. If this resource is costed, enter a variance account (general ledger account) to accumulate resource rate variances for a job or repetitive schedule. For outside processing resources, this is the purchase price variance account.
18. If you have Oracle Manufacturing installed, you can use Resource batching. To enable resource batching, select the Batchable check box in the Batchable region. This enables the other batch fields. See: *Setting Up Batch Resources, Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

**Additional Information:** The Batchable region is disabled when the Basis field is set to Item.

19. Enter the maximum number units to be batched in the Maximum Batch Capacity field.
20. Enter the minimum number of units to be batched in the Minimum Batch Capacity field.
21. Select the unit of measure for the batch capacity from the list of values available in the Batch Capacity UOM field.
22. Enter the time value for the batching process in the Batching Window field.
23. Select the time unit of measure available in the UOM field.

**Additional Information:** The UOM list of values only appears if you enter Time in the BOM: Time Unit of Measure Class profile option User Value field. See: *Bills of Material Profile Options*, page 1-50.

### **To define cost type and resource rate associations:**

1. Navigate to the Resource Costs window. Do this by choosing the Rates button from the Resources window.

**Note:** You cannot view costing information if the Privilege To View Cost Information function is excluded. You cannot update costing information if, in addition, the Privilege To Maintain Cost Information function is excluded.

- 2.

Enter or select a cost type to associate with each resource overhead rate.

3. Enter the Resource Unit Cost, that is, the resource's current standard cost per UOM.

#### **To associate overheads with resources:**

1. Navigate to the Resource Overhead Associations window. Do this by choosing the Overheads button from the Resources window.

**Note:** You cannot view costing information if the Privilege To View Cost Information function is excluded from the responsibility. You cannot update costing information if, in addition, the Privilege To Maintain Cost Information function is excluded.

2. Enter or select the cost type for the resource.

The Allow Updates check box indicates whether the cost type is defined as updatable.

3. Enter or select the overhead to associate with the resource.

For example, you could assign resource cost as dollars per hour. If you enter a new resource, you can directly enter a frozen unit cost. However, you cannot directly update the frozen unit cost for a previously entered resource.

#### **To group similar types of equipment by resource:**

You can define Equipment Types to group similar types of resources. For example, you can define an Equipment Type of Forklift.

1. Navigate to the Equipment Types window. Do this by choosing the Equipment button from the Resources window. You can choose the Equipment button if the Resource is a Machine type.
2. Enter an Item Number in the Equipment field.
3. Save your work.

**Note:** If you have Warehouse Management installed, you can use the Resources form to define a class of manual or machine resources. For example, a forklift machine resource is indicated by entering the resource name and description, as well as which equipment items are capable of performing pallet picking. See: Set Up Equipment Resources, *Oracle Warehouse Management Implementation Guide*.

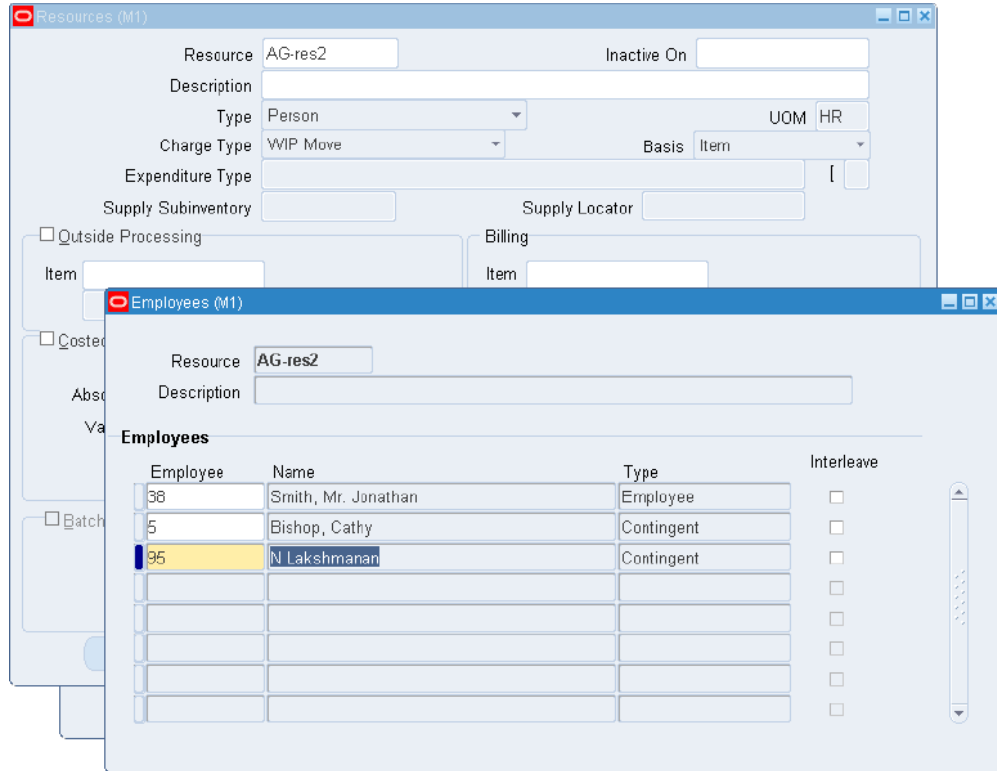
**To group employees by resource:**

You can define the roles which represent what an employee can do for a required task. For example, a role could be defined as Cycle Counter, or a Case Picker. See: *Entering a New Person (People Window), Oracle Human Resources Management Systems Workforce Sourcing, Deployment, and Talent Management Guide (Global)*.

1. Navigate to the Employees window. Do this by choosing the Employees button from the Resources window. You can choose the Employees button if the Resource is a Person type.
2. As you can assign a contingent worker as well as an employee to a resource, select the number of the employee or contingent worker from the list of values in the Number column to associate with the resource.

If you have defined skills in the Resources window, then only those employees that have the competence, skill level, and qualification required for the resource appear in the list of values.

The Type column enables you to know whether a person type resource is an Employee or a Contingent Worker.



When you launch the Employees window for the first time, you will see a list of employees who have already been assigned to this resource code, and the Type column displays them as Employee. But if there are no employees assigned to this resource code, you will not see any records in the Instances window.

You can assign additional employees to this resource code by selecting from the list of values in the Employee field, in that case the Type field defaults as Employee. On the other hand, if you assign a contingent worker to this resource code from the list of values in the Employee field, then the type field defaults as Contingent Worker. Therefore, based on the Type of instance that you choose from the list of values in the Employees window, the Type field gets automatically populated and you cannot update the value in the Type field.

3. Save your work.

**Note:** If you have Warehouse Management installed, you can use the Resources form to define employees qualified for each resource. For example, a hazardous materials manual resource is indicated by entering the resource name and description, as well as which employees are capable of performing hazardous material tasks. See: *Set Up Warehouse Employee Resources, Oracle Warehouse Management Implementation Guide.*

### **To define a reason for a resource capacity change:**

You can assign a reason for a resource capacity change in the Capacity Changes window (see: To define capacity changes, page 1-21) by selecting the reason from a list of values. Define the reasons for this list of values in the Resource Capacity Change Reasons window.

The resource capacity change reasons list of values are defined as lookups. Lookup codes must be decided upon and defined during the implementation process. For more information about lookups, see: Application Utilities Lookups and Application Object Library Lookups, *Oracle Applications online help*.

1. Navigate to the Resource Capacity Change Reasons window.
2. Enter a numeric Code for the resource capacity change reason. Oracle recommends that you enter values in increments of 10, enabling you to easily add codes later.
3. Enter the Meaning of the code, for example, Breakdown.
4. Enter a Description for the code.
5. Optionally enter a Tag to categorize lookup values. This field is for information purposes.
6. The Effective From Date defaults as the system date, but you can update this. Optionally enter a Effective To Date to indicate an expiration of the code.
7. Select the Enabled check box to enable this code for Bills of Material.
8. Save your work.

## **Related Topics**

Defining a Department, page 1-15

Defining a Cost Type, *Oracle Cost Management User's Guide*

Resource Report, page 11-21

Setting Up Inventory Standard Costing, *Oracle Cost Management User's Guide*

Cost Management Profile Options and Security Functions, *Oracle Cost Management User's Guide*

## **Defining Resource Setup Information**

You can create a performance model for machine and resource setups to include time from one setup to another, including the time required to perform the work. If one of your scheduling objectives is to sequence or group jobs based on their required setup,

you can also include a penalty factor—or weighted value—in the scheduling calculation. See: Penalty Factors, *Oracle Production Scheduling User's Guide*.

Resources defined in the Operation Resources window can have multiple setup types. You can define these setup types with an identifying user code or a numerical value.

Any two setup types within a resource can have a transition time and a transition penalty, which means that the scheduler needs the specified time to transition from the former setup to the latter. Also in doing so a certain transition penalty is incurred. This penalty is used to weigh the relative merits of doing the setup versus delaying the job versus cycle time.

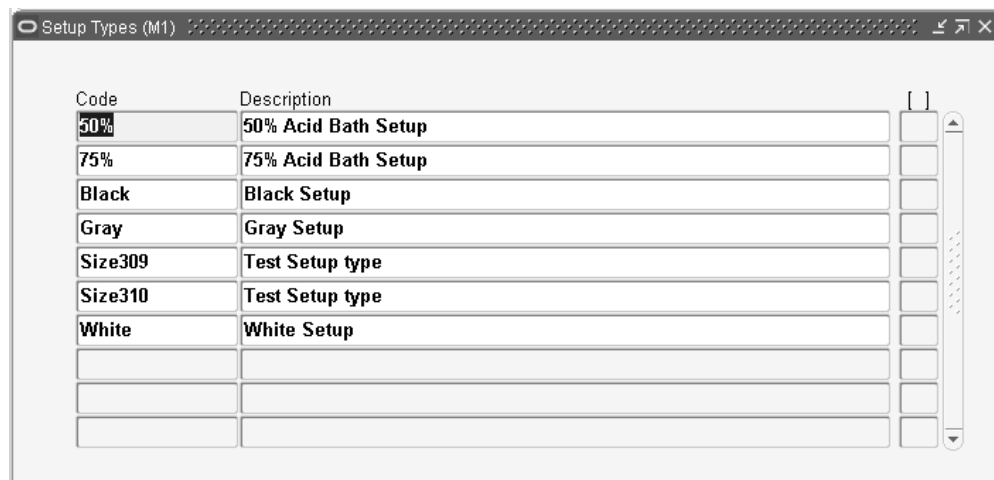
The setups for a resource are independent of the department that the resource belongs to.

The setup type for a particular operation resource is defined in the Operation Resources window. This data displays in the Resource Requirements window during routing explosion. Setup resources and resource instances are only exploded during scheduling.

### To define machine and resource setup types:

1. Navigate to the Setup Types window.
2. In the Code field, enter a unique value for this setup type. Optionally you can enter descriptive information in the Description field.

For example, you may have different codes for setting up and tear down of paint color changes.



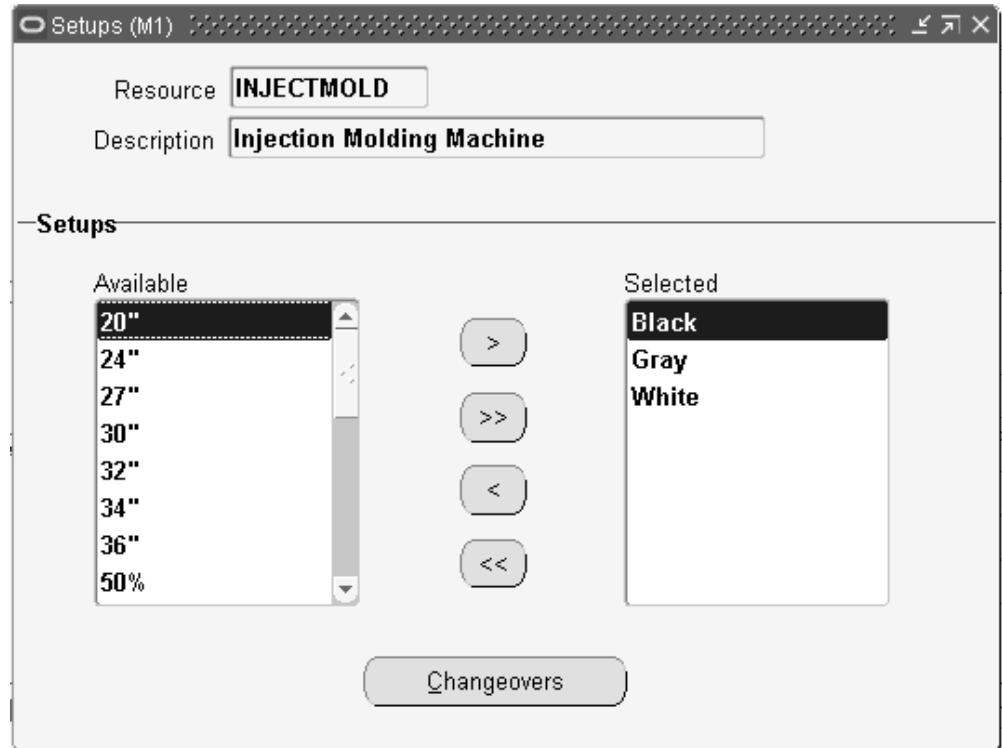
3. Save your work.

### To assign setup times to resources:

1. Navigate to the Resources window.

2. Select your resource.
3. Choose Setups.

The Setups window displays.



4. Select the setups for which you want to define changeovers.

To select a setup, use the arrow button to move the setup from the Available column to the Selected column. Use the double arrow button to move all setups from the Available column to the Selected column.

5. Save your work.
6. Choose Changeovers to access the Changeover Times window.

Resource: INJECTMOLD Description: Injection Molding Machine

"From" Setups List: White, Gray, Black

"To" Setups List: White, Gray, Black

Refresh List of Changeovers

<input type="checkbox"/>	From	To	Duration	UOM	Penalty	Standard Operation	[ ]
<input type="checkbox"/>	White	White	0	HR	0	WHITE	
<input type="checkbox"/>	White	Gray	2	HR	2	GRAY	
<input checked="" type="checkbox"/>	White	Black	5	HR	5	BLCK	
<input type="checkbox"/>	Gray	White	7	HR	7	WHITE	
<input type="checkbox"/>	Gray	Gray	0	HR	0	GRAY	
<input checked="" type="checkbox"/>	Gray	Black	2	HR	2	BLCK	
<input type="checkbox"/>	Black	White	10	HR	10	WHITE	

Perform Mass Update: BLCK Update

Unselect Records where "From" equals "To"

7. In the "From" Setups List, choose one of the following buttons to select the setup types you want to change from.
  - Select: Use this button to select the setup from the list of available setup types. The Select button is most useful if the setup type list is short, making the setup you want to select easy to find. Use the arrow button to move the setup type you want to change from to the Selected Setup Types column.
  - Find: Use this button to find the setup in a long list of available setup types.
8. In the "To" Setups List, use the Select or Find button to select the setup types you want to change to.
9. In the From and To fields, list all combinations of changeovers from one setup type to another setup type.

Optionally, use the Refresh List of Changeovers button to automatically generate a list of all potential changeover combinations in the From and To fields.

**Tip:** If the changeover duration, penalty, and standard operation from any setup type to a particular setup type is the same, then select <any> in the From setup type list of values. For example, changing over from any paint color to white requires the same



amount of time and incurs the same penalty no matter what color you are changing from. In this case, enter <any> in the From field and White in the To field.

10. Enter the time it will take to perform the changeover in the Duration field and enter the unit of measure for the duration in the UOM field.
11. Assign a penalty to the changeover if there is one.
12. Select a Standard Operation (optional). See: Creating a Standard Operation, page 5-22.
13. If you need to update many changeovers that have the same duration, unit of measure, penalty, or Standard Operation values, use the Perform Mass Update function.
  - Select the check box next to the rows you want to update. If you want to update all rows, select the first check box. Use the Unselect Records where "From" equals "To" box to uncheck those rows where the From and To field entries are the same.
  - In the Perform Mass Update fields, enter values only in those fields that you want to update. For example, if you only want to update the penalty in the checked rows, then only enter a value in the Perform Mass Update Penalty field.
  - Choose Update.
14. Save your work.

## Using the Workday Calendar

A workday calendar defines the valid working days for a manufacturing organization and consists of repeating pattern of days on and days off and exceptions to that pattern. This allows you to, for example, designate a normal workday as a scheduled downtime day, or designate a holiday as a workday.

You can define one or more workday calendars and assign them to any number of organizations, and any number of organizations can share a calendar. You can specify the start and end dates, and the weekend schedule for each calendar.

## Repeating Workday Patterns

You can also define a series of repeating workday patterns for a given calendar. For example, you have a repeating two-week pattern where you work five days the first

week, and three days the second week. Or, you have a repeating pattern of 17 consecutive workdays, followed by four days off. When you build the calendar, Oracle Bills of Material automatically determines the valid workdays for you, based on the patterns you specify.

You can also specify repeating workday patterns for shifts (see below).

## Workday Exceptions

There are three ways to apply exceptions to the workday calendar:

- selecting individual exception days
- loading them from an exception template, another calendar, and another calendar shift
- copying a set of exceptions from another calendar

An exception template allows you to create groups of exception dates and apply them to different calendars. You can define multiple workday exception templates that define different holidays and scheduled down times for different organizations. Multiple exception templates can be applied to the same calendar. As each template is applied, new exception dates are added to the exception list for that calendar.

Conflicts on a particular date between one template and another are resolved as follows:

- if the exception date already exists in the target calendar, it is not copied
- if the exception on day falls on a workday, the exception is copied but is redundant and has no effect on the calendar
- if the exception off day falls on a non-workday, the exception is copied but is redundant and has no effect on the calendar

This allows you to define different holidays or scheduled down times, for example, for organizations in different countries. Different organizations can use the same calendar, but apply different exception dates. In addition, you can apply the same exception dates to different organizations.

You can optionally define exception templates, lists of exception dates, before you set up your workday calendar. Then when you define your calendar, you can choose an exception template, and apply its exception dates to that calendar.

## Shifts

For a given workday calendar, you can specify any number of shifts. Each shift can have a different weekend schedule and a list of specific work interval start and end times. For both calendars and shifts, you can assign sets of workday exceptions and

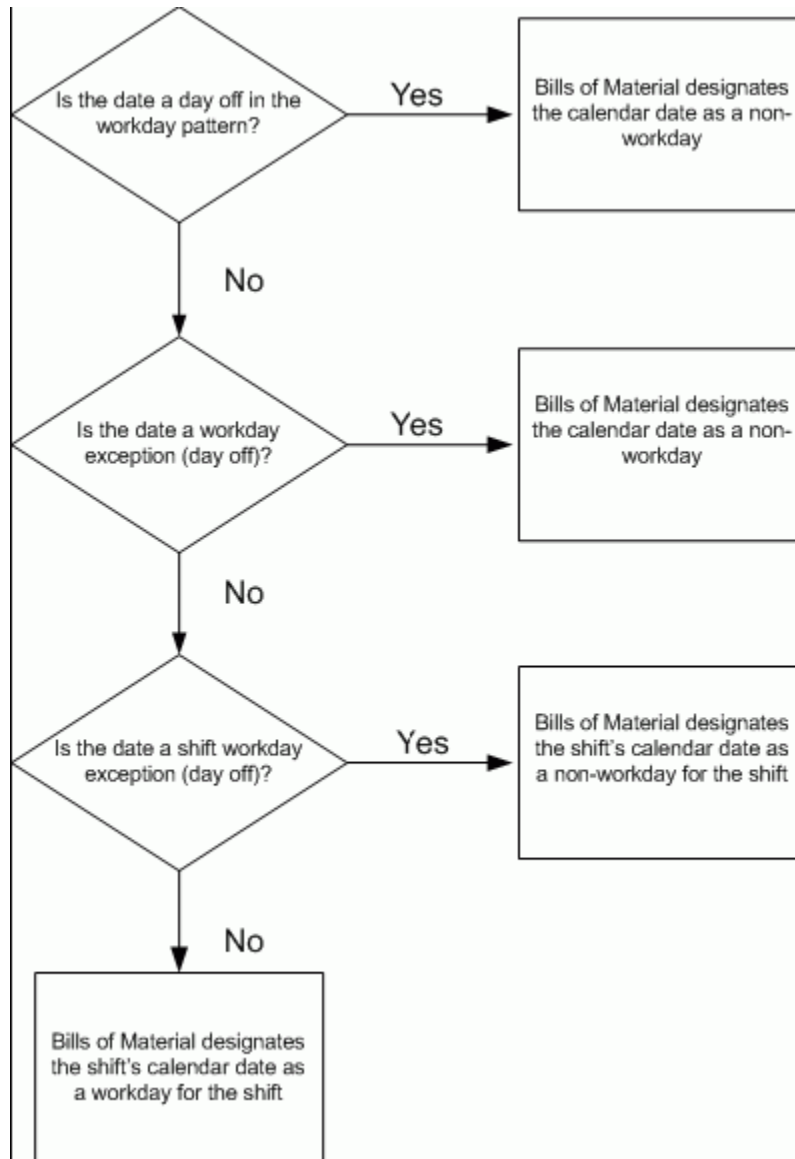
repeating workday patterns.

Shifts inherit workday exceptions and workday patterns from the base calendar. Shift exceptions can either add to or override those of the base calendar.

If an exception on the base calendar changes, those shifts that do not have an overriding exception on that date will automatically reflect the change. Those shifts that do have an overriding exception on that date will not reflect the change and must be changed manually if they are to reflect the change in the base calendar.

Shift exceptions are applied to a calendar the same way as workday calendar exceptions by selecting individual exception days, by defining exception templates, or by copying a set of exceptions from another shift.

The following diagram illustrates the steps Bills of Material uses to determine workdays from an organization's workday calendar and exception template information.



## Organizations

For each organization, you specify the calendar to use. All scheduling functions use the calendar you specify. Detailed scheduling uses specific resource availability information by department and shift to schedule resources. Dynamic lead time offsetting, however, uses an organization's workday calendar and does not consider shift information.

### To create a workday exception template:

Exception templates define and group deviations to your workday calendar, such as holidays, downtime, or scheduled maintenance.

When defining a workday calendar, specify which days (or shifts) are on and off. The workday calendar, in combination with the exceptions to it, determine the work pattern for each organization.

1. Navigate to the Exception Templates window.

The screenshot shows the 'Exception Templates' window. It features a title bar with the text 'Exception Templates' and standard window controls (minimize, maximize, close). Below the title bar, there are three input fields: 'Template', 'Description', and 'Inactive On'. The 'Inactive On' field has a small calendar icon to its right. Below these fields is a section titled 'Dates'. This section contains a table with three columns: 'Date', 'Days On', and a column with square checkboxes. The 'Date' column has a scrollable list of date input boxes. The 'Days On' column has a scrollable list of checkboxes. The third column has a scrollable list of checkboxes, each corresponding to a date and a 'Days On' checkbox.

2. Enter a unique name for the exception template.
3. Enter a date on which this template becomes inactive.
4. Enter all exception dates, and indicate whether each is an on or off workday.

### To create a workday calendar:

A workday calendar consists of a start date, and end date, and on and off days that follow one or more defined workday patterns. A workday calendar can also include shift information and exception dates, such as holidays or scheduled down time.

Use a workday calendar for forecasting and planning material requirements, use shift information for job scheduling, and capacity analysis.

Workday exceptions identify deviations to the workday calendar. Shift exceptions identify deviations for a shift.

**Important:** Shift exceptions take precedence over workday exceptions. (This is only relevant if a workday exception and a shift exception

overlap.)

To assign workday exceptions to a workday calendar or calendar shift, either select them intuitively from the Calendar Dates (or Shift Calendar Dates) window, or apply them from an existing template, calendar, or shift.

1. Navigate to the Workday Calendar window.

The screenshot shows a window titled "Workday Calendar" with the following fields and controls:

- Name:** An empty text input field.
- Description:** An empty text input field.
- Quarterly Type:** A dropdown menu currently showing "4/4/5 Week Pattern".
- Calendar Date Range:** A section containing:
  - From:** A date picker set to "01/JAN/2001".
  - To:** A date picker set to "01/JAN/2005".
  - Monday:** A day picker set to "Monday".
  - Saturday:** A day picker set to "Saturday".
- Buttons:** Three buttons at the bottom: "Workday Pattern", "Shifts", and "Dates".

2. Enter a name for the workday calendar.

3. Select a quarterly calendar type:

*4/4/5 Week Pattern:* Two four-week periods followed by one five-week period.

*5/4/4 Week Pattern:* One five-week period followed by two four-week periods.

*Calendar Months:* Twelve periods per year based on calendar months.

*13 Periods:* Thirteen four-week periods per year.

**Note:** If you use Oracle Master Scheduling/MRP, choose the 4/4/5 Weekly Pattern or the 5/4/4 Weekly Pattern to report MRP information in weeks and months. Otherwise, if you choose the 13 Periods calendar or Calendar Months, you can only report MRP information in monthly buckets.

4. Enter a date range for the workday calendar. The default end date is four years from the start date.

**Note:** Days on and off are calculated based on the start date and the day of the week. For example, if you want a standard five day workweek to start on 01-JAN, you must enter the start date as the Monday before 01-JAN (unless 01-JAN falls on a Monday).

**Note:** Set profile option BOM: Week and Period Start Day, to determine the start date. This profile option works in conjunction with the Workday Calendar. See: Bills of Material Profile Options, page 1-50.

5. Continue creating the workday calendar by choosing one of the following buttons:

*Workday Pattern:* Set workdays on or off.

*Shifts:* Assign shifts to the workday calendar.

*Dates:* Review your work so far and its effect on the workday calendar. Do this before you build or rebuild the workday calendar you are now creating. (You can only do this after you have defined a workday pattern.)

Once you have created a workday pattern, assigned shifts, assigned workday and shift exceptions, and reviewed your work, you must build the calendar and assign it to an organization.

6. Save your work.

### To copy a calendar or shifts:

You can copy the entire calendar, including workday patterns, exceptions, and all or none of its specific shift information. Or, you can copy a specific shift, including the workday patterns, exceptions, and shift times.

Exactly what is copied depends upon how you navigate to the Copy window:

- From the Workday Calendar, Calendar Dates, and Workday Patterns windows, all workday patterns, all exceptions, and selected shift information are copied.
- From the Shifts, Shift Times, Shift Dates, or Shift Workday Patterns windows, the shift workday patterns, shift exceptions, and all shift times for the specified shift are copied.

**Note:** If you copy calendar information to an existing calendar, all new information is *appended* to the existing calendar; existing information, in other words, is retained.

1. Navigate to the Copy window. Do this by choosing Copy from the Tools menu.

2. If you are copying calendar information, enter the calendar to copy information from and indicate if you want none, all, or specific shift information. If you select a specific shift, enter the shift number.

If you are copying shift information, enter the calendar you want to copy the shift information from and the specific shift number.

### **To create a workday pattern:**

1. Navigate to the Workday Patterns (or Shift Workday Patterns) window. You can do this by choosing the Workday Pattern button from either the Workday Calendar or Shifts window.
2. Enter a sequence number in which the workday patterns are applied when the calendar is built.
3. Enter the number for consecutive workdays on and off. For example, if you want Monday through Friday on and Saturday and Sunday off, enter 5 for Days On and 2 for Days Off.
4. Enter a description for the sequence.

Repeat the previous three steps for each workday pattern to create. All defined sequences are repeated for the duration of the workday calendar. If there are two sequences, sequence 1 will be in effect first, then sequence 2, then 1 again, and so on.

For example, assume that sequence 1 is 5 on and 2 off, and sequence 2 is 4 on and 3 off. The calendar shows 5 on, 2 off, 4 on, and 3 off.

5. Save your work. Doing so ensures that you can view calendar dates.

### **To create shifts and shift times:**

1. Navigate to the Shifts window. You can do this by choosing the Shifts button from the Workday Calendar window.
2. Enter a shift number and a description.
3. Choose the Times button to open the Shift Times window.
4. Enter the start and stop times for each shift.

You can enter multiple start and stop times, but the start and stop times for a shift cannot overlap.

If you create a shift without first creating a workday pattern, a default workday pattern of 5 days on and 2 days off is created. You can then update that workday

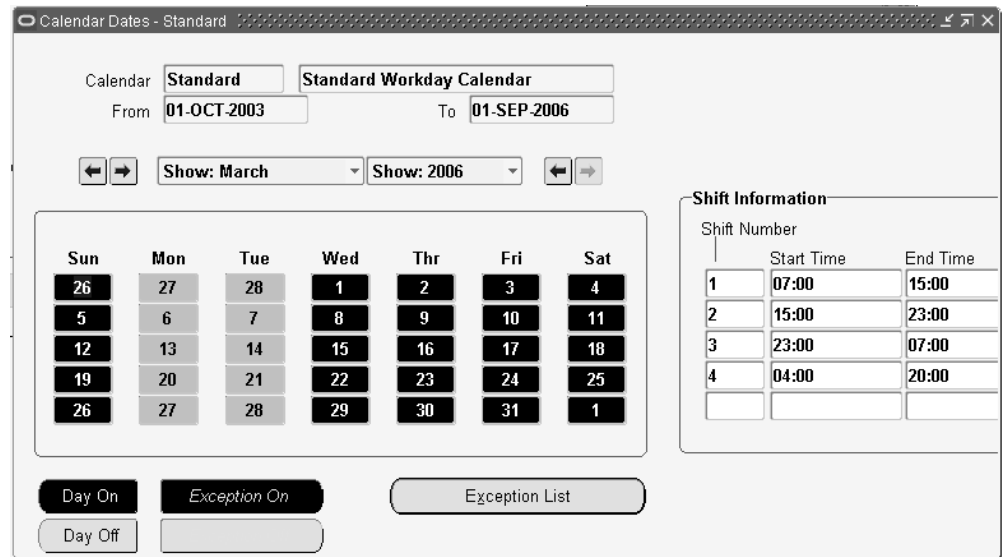


pattern.

5. Save your work.

### To select workday or shift exceptions:

1. Navigate to the Calendar Dates window (or Shift Calendar Dates window). Do this by choosing the Dates button from the Workday Calendar window.



2. Select individual days of the month to toggle them on or off. Days you change become either workday or shift exceptions, depending on how you entered the window.

The shift information displayed is specific to the date selected.

3. Save your work.

### To load existing workday or shift exceptions:

1. Navigate to the Exceptions window. Do this by choosing the Exception List button from the Calendar Dates window.

2. Chooses the Load button and select whether existing exceptions should be applied from a template, a calendar, or a shift.

If you select Template, enter a template name.

If you select Calendar, enter a calendar name.

If you select Shift, enter the calendar name that the shift belongs to and the shift

number.

3. When finished, choose OK to save your work.

### To review the calendar:

1. Navigate to the Calendar Dates window (or Shift Calendar Dates window). Do this by choosing the Dates button from either the Workday Calendar or Shifts windows.

### To build the workday calendar:

**Caution:** Rebuilding an existing workday calendar affects all organizations that reference the same calendar and exception template. Changes to your workday information impacts your material plans, capacity plans, scheduling, and any other function in Oracle Manufacturing that uses the workday calendar. (This does not apply if you are building a calendar for the first time.)

1. From the Tools menu, choose Build (or Rebuild).

### To import bills and routings:

The Bill and Routing Interface program enables you to import bill and routing information.

Imported bills include revision, component, substitute component, and reference designator information.

Imported routings include routing revision, operation, instruction, and resource information. The Routing Open Interface program imports network routings (see: *Creating a Routing Network, Oracle Flow Manufacturing User's Guide* and *Creating a Network Routing, Oracle Shopfloor Management User's Guide*) as well as single routings.

See: The Bills of Material section in the Oracle Integration Repository, which you can access under the Integrated SOA Gateway responsibility.

1. Navigate to the Submit Request window.
2. Indicate whether to include all organization codes in the bill of material and routing interface tables, or just the current organization.

**Important:** If you specify just the current organization, rows in the interface tables that do not have either an organization code or an organization ID assigned are ignored.

3. Indicate whether to import routings from the interface tables.
4. Indicate whether to import bills of material from the interface tables.
5. Indicate whether to delete processed rows from the bill of material and routing interface tables.
6. Indicate whether to import bills of material and routings for only a certain batch ID.

**Tip:** You can segment your import data by assigning a batch identifier to each segment. This enables you to break apart large data sets and process them concurrently, which improves data loading efficiency.

## Related Topics

Organization Parameters Window, *Oracle Inventory User's Guide*

## Defining Lookups

The following lookup types are accessible from the Bills of Material menu:

- Bonus codes
- Scrap codes
- Resource down codes

**Warning:** If you had entered an alphanumeric value for a BOM Resource down code in the Resource Down Codes Lookups window, then you cannot attach any down code to a resource while creating the resource from the Resources window.

- Resource capacity change reasons

Optionally, define the lookups for each lookup type.

### To define lookups:

- For information on defining lookups, see: Application Utilities Lookups and Application Object Library Lookups, *Oracle Applications online help*.

## Related Topics

To define a reason for a resource capacity change, page 1-33

Resource Down Codes, *Oracle Shop Floor Management User's Guide*

Scrap Codes, *Oracle Shop Floor Management User's Guide*

Bonus Codes, *Oracle Shop Floor Management User's Guide*

To create a standard operation for a Shop Floor Management enabled organization, page 5-22

## Assigning View-only Privileges to Forms

The system administrator can choose to exclude certain responsibilities from adding or updating information by function. Even though the system administrator excludes the function from a responsibility's menu, the responsibility retains view-only privileges for the function. The functions that can be excluded are:

- Bills of Material: Update (Bills of Material window)
- Workday Calendars: Update (Workday Calendar window)
- Delete Constraints: Update (Deletion Constraints window), including:
  - Deletion Statements
- Delete Groups: Update (Deletion Groups window)
- Exception Templates: Update (Exception Templates window)
- Departments: Update (Departments window)
- Resources: Update (Resources window)
- Product Family: Update (Product Families window)
- Standard Operations: Update (Standard Operations window), including:
  - Standard Event
  - Line Operations
  - Standard Process
- Routings: Update (Routings window), including:
  - Engineering Flow Routings

- Engineering Lot Based Routings
- Engineering Routings: Transfer
- Engineering Routings
- Flow Routings
- Routings: Delete
- Maintenance Routings
- Lot Based Routings
- Routings: LeadTimes

**To assign view-only privileges to forms:**

1. Navigate to the Responsibilities window.

Find the responsibility name for which you want to restrict window access.

The screenshot shows the Oracle Responsibilities window with the following details:

- Responsibility Name:** Bills of Material
- Application:** Bills of Material
- Responsibility Key:** BILLS\_OF\_MATERIAL
- Description:** Bills of Material Super user responsib
- Effective Dates:** From 01-JAN-1951, To (empty)
- Available From:**
  - Oracle Applications
  - Oracle Self Service Web Applications
  - Oracle Mobile Applications
- Data Group:**
  - Name:** Standard
  - Application:** Bills of Material
- Request Group:**
  - Name:** (empty)
  - Application:** (empty)
- Menu Exclusions tab:**

Type	Name	Description
Function	Bills of Material: Update	
Function		

2. In the Menu Exclusions tab, Type field, select Function from the list of values.
3. Search for and select the name of the function that you want to make view-only.
4. Navigate to the Users window.

Find the user name to which you want to assign the responsibility containing the view-only function(s).

Responsibility	Application	Description	Security Group	From	To
Portal Intelligence Concur	Manufacturing		Standard	27-JUN-2001	
Bills of Material	Bills of Material		Standard	18-APR-2006	
Flow Manufacturing	Bills of Material		Standard	05-DEC-1997	
Supply To Order Workben	Bills of Material		Standard	26-OCT-2004	
Supply Chain Planner	Master Scheduling/M		Standard	21-OCT-2005	

5. In the Direct Responsibilities tab, find and select the responsibility containing the view-only function(s).
6. Save your work.

**Additional Information:** When you select the view-only menu option from the responsibility menu, the menu option and the window name appear with the word "View" in front of it. For example, if you made the Bills of Material: Update function view-only in the Bills of Material responsibility, then the menu option appears as View Bills and the window name appears as View Bills of Material.

## Related Topics

Overview of Function Security, *Oracle E-Business Suite Security Guide*

## Bills of Material Profile Options

During implementation, you set a value for each user profile option to specify how Bills of Material controls access to and processes data.

The system administrator sets up and maintains profile values.

## Profile Option Settings

You can set or view profile options in Oracle Bills of Material. The following table includes some profile options from other applications that are used by Oracle Bills of Material. The second column, *User*, references the user, while the next four columns, *User*, *Resp*, *App*, and *Site*, reference the System Administrator. The last two columns, *Required* and *Default Value*, reference requirements.

### *Profile Option Settings*

<b>Profile Option</b>	<b>User</b>	<b>User</b>	<b>Resp</b>	<b>App</b>	<b>Site</b>	<b>Required?</b>	<b>Default Value</b>
BOM: Automatic Reservations	-	+	+	+	+	Optional	Yes
BOM: Check for Duplicate Configuration	-	0	0	0	+	Optional	No
BOM: Component Item Sequence Increment	-	+	+	+	+	Optional	10
BOM: Configuration Item Delimiter	-	0	0	0	+	Optional	No
BOM: Configuration Item Type	-	0	0	0	+	Optional	No
BOM: Days Past Before Starting Cutoff of Order Management Bills	-	0	0	0	+	Optional	0
BOM: Default Bill of Material Levels	-	+	+	+	+	Optional	1
BOM: Default WIP Supply Values for Components	-	0	0	0	+	Optional	Yes

Profile Option	User	User	Resp	App	Site	Required?	Default Value
BOM: Hour UOM	-	0	0	0	+	Optional	1
BOM: Inherit Option Class Operation Sequence Number	-	0	0	0	+	Optional	No
BOM: Model Item Access	-	+	+	+	+	Optional	Yes
BOM: Perform Lead Time Calculations	-	0	0	0	+	Optional	No
BOM: Planning Item Access	-	+	+	+	+	Optional	Yes
BOM: Save Configurator Details Flag	-	+	+	+	+	Not used	(blank)
BOM: Standard Item Access	-	+	+	+	+	Optional	Yes
BOM: Update Resource UOM	-	0	0	0	+	Optional	No
BOM: Week or Period Start Day	-	+	+	+	+	Optional	Monday

+ You can update the profile option.

- You can view the profile option value but you cannot change it.

0 You cannot view or change the profile option value.

## Profile Option Descriptions

### BOM: Automatic Reservations

Indicates whether the system will attempt to automatically reserve existing on hand inventory after matching a configuration. During Autocreate Configuration, if a match has been found and this profile is set to Yes, CTO will attempt to reserve on hand



inventory for any order line having a schedule date within the OM: Reservation Time Fence. If progressing the order via the workflow, a message will display with details of the match and reservation performed. If you are using the batch program, the log file provides details of the match and reservations performed.

**BOM: Check for Duplicate Configuration**

Indicates whether to search for an existing duplicate configuration rather than create a new item.

**BOM: Component Item Sequence Increment**

Indicates the value by which to increment the sequence of the component item on the bill.

**BOM: Configuration Item Delimiter**

Indicates a character used to separate the order and line numbers when you replace the base model's segment value with the order number/line number.

**BOM: Configuration Item Type**

Indicates the item type of the new configuration items that the create configuration program creates.

**BOM: Days past for starting cutoff of Order Entry bills**

Indicates the starting revision date used in the Order Management explosion.

**BOM: Default Bill of Material Levels**

Indicates the number of explosion levels to use as a default for bill of material indented explosions.

**BOM: Default WIP Supply Values for Components**

Indicates whether to default WIP Supply Type, WIP Supply Subinventory, and WIP Supply Locator from item master for a component item when defining a bill. If set to No, WIP reads the item master.

**BOM: Delete BOM Explosion Data**

Indicates that when this profile is set, the concurrent program "Delete from Bom Explosions Table" deletes data from bom\_explosions table.

**BOM: Hour UOM**

Indicates the unit of measure that represents an hour. You cannot schedule resources whose unit of measure is not in the same class as the hour unit of measure.

**BOM: Inherit Option Class Operation Sequence Number**

Indicates whether to allow components on model bills to inherit operation information from parent items.

**BOM: Model Item Access**

Indicates whether a holder of this responsibility can define and update bills of material

for model and option class items.

**BOM: Perform Lead Time Calculations**

Indicates whether to perform lead time calculations when you autcreate configuration items.

The profile option will be at the system level. The first value of the profile option would include the calculation: Lead time (days) = Lead time (Hours) /24 always and the second value would calculate lead time as: Lead time (days) = Lead time (Hours) /Line hours (Stop Time- Start Time of the Production Line).

**BOM: Planning Item Access**

Indicates whether a holder of this responsibility can define and update bills of material for planning items.

**BOM: Resource Usage Rounding Value**

Resource Usage Rounding Value is a profile that is created to set the rounding off value for resource usage and inverse. You can update the profile option at the system administrator level only.

**BOM: Save Configurator Details Flag**

Not used.

**BOM: Standard Item Access**

Indicates whether a holder of this responsibility can define and update bills of material for standard items.

**BOM: Update Resource UOM**

Indicates whether you can update the resource unit of measure.

**BOM: Week or Period Start Day**

Indicates whether the workday calendar starts on a weekly or period basis. This profile option works in conjunction with the Workday Calendar. See: Overview of Workday Calendar, page 1-37.

For example, the BOM: Week or Period Start Day profile is set to Monday. Your Workday Calendar is set to start on January 1, which is a Friday, with a five days on/two days off work day pattern. After building the calendar, the system creates a start day of the following Monday, January 4.

## Related Topics

Setting Your Personal User Profile, *Oracle E-Business Suite User's Guide*

Common User Profile Options, *Oracle E-Business Suite User's Guide*

User Profiles and Profile Options in Oracle Application Object Library, *Oracle E-Business Suite Setup Guide*

Defining Items, *Oracle Inventory User's Guide*

## Subscribing to Bills of Material Business Events

Using Oracle Workflow, you can automatically trigger actions based on the following Oracle Bills of Material business events:

- bill of material creation
- modification to a bill of material header, component, or component attribute
- bill of material deletion
- error during a bill of material deletion
- creation or modification of a substitute component, reference designator, or component operation
- component deletion using a delete group
- error during a component deletion

Examples of actions you can trigger include issuing notifications or launching a workflow.

### Business Event Examples

The following scenarios show how subscribing to a business event can simplify business processes:

- A business needs to notify a contract manufacturer each time a bill of material changes. The business can set up Oracle Workflow to automatically send the contract manufacturer an email each time this occurs.
- A business maintains bills of material in the master organization. Every time a bill of material is created in the master organization, the business needs to copy the bill or create a common bill in the child organizations.

For more information about setting up and subscribing to business events, see the related topics listed below.

### Related Topics

Business Events, page C-1

Sample Subscription Functions, page C-9

Managing Business Events, *Oracle Workflow Developer's Guide*

Defining Procedures and Functions for Oracle Workflow, *Oracle Workflow Developer's Guide*

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## Bills of Material

This chapter provides you with everything you need to know to define and use bills of material.

This chapter covers the following topics:

- Overview of Bills of Material
- Creating a Bill of Material
- Copying Bill and Routing Information
- Referencing Common Bills and Routings
- Assigning Descriptive Elements
- Creating Reference Designators
- Assigning Substitute Components
- Defining Item Revisions
- Defining Bill or Routing Operation Documents
- Attaching Files
- Checking for Bill Loops
- Modifying Components and Bills
- Mass Changing Bills of Material
- Viewing an Indented Bill of Material
- Comparing Bills of Material
- Viewing Item Usage
- Bills of Material Field Reference
- Bill/Component Validation Rules
- Creating a Product Family

## Overview of Bills of Material

Oracle Manufacturing and Oracle Order Management use bills of material to store lists of items that are associated with a parent item and information about how each item is related to its parent. Oracle Manufacturing supports standard, model, option class, and planning bills of material.

### Bill of Material Types

#### Standard Bill of Material

A standard bill of material is the most common type of bill and lists the mandatory components, the required quantity of each component, and information to control work in process, material planning, and other Oracle Manufacturing functions. Examples include bills for manufacturing assemblies, pick-to-order bills, kit bills, and phantoms.

A configuration bill (a type of standard bill) is a set of option choices made from a model bill that comprise a buildable, sellable product. Configuration items and bills are automatically created from model bills after a customer chooses options on a sales order. Or, you can manually create configuration bills by choosing options directly from a model bill.

#### Model Bill of Material

A model bill of material defines the list of options and option classes you can choose in Oracle Order Management to order a configuration. A model bill also specifies mandatory components or included items that are required for each configuration of that model. You do not order or build the model itself: you order and build configurations of the model. A model bill can be either assemble-to-order or pick-to-order.

#### Option Class Bill of Material

An option class is an item that groups optional components on a bill. An option class is an item that becomes a level in your model bill of material. Option classes can also have mandatory components that apply for all of its options. For example, when you order a computer, the monitor is an option class, and the specific type of monitor you order is an option within that option class. An option class bill can be either assemble-to-order or pick-to-order.

#### Planning Bill of Material

A planning bill of material is a bill of material structure that includes a percentage distribution for its components. The percentages associated with the components on a planning bill of material do not need to add to 100%. You can define alternate and common planning bills, where the bill you reference as a common must be another planning bill.

Planning items can be nested within one another any number of times. When you nest planning items, Oracle Master Scheduling explodes forecasts level by level and applies

planning percentages at each level.

### **Engineering Bills of Material**

You can define an engineering bill of material as an alternate for a manufacturing bill. The typical use for an alternate engineering bill is to prototype variations from the primary bill that produce the same assembly.

You can specify a list of item catalog descriptive elements for model and option class engineering bills. After you release the engineering bill to manufacturing and take customer orders for specific configurations, Bills of Material creates the new configuration item and automatically assigns values to each catalog descriptive element.

Oracle Engineering users are allowed to assign manufacturing and engineering items as components to an engineering bill. Bills of Material users can assign only manufacturing items as components to manufacturing bills.

## **Phantoms**

A phantom assembly is a non-stocked assembly that lets you group together material needed to produce a subassembly. When you create a bill of material for a parent item, you can specify whether a component is a phantom. One bill of material can represent a phantom subassembly for one parent item, and a stocked subassembly for another parent item.

Oracle Work in Process explodes through a phantom subassembly to the components as if the components were tied directly to the parent assembly. You can define routing for phantom assemblies the same way as other assemblies. Work in Process ignores phantom assembly routings when you define a job or repetitive schedule.

You can compute manufacturing and cumulative lead times for phantom assemblies that have routings. If you do not want to offset the components of a phantom assembly in the planning process, exclude the phantom item from the lead time calculations.

In general, phantom assemblies behave like normal assemblies when they represent a top level assembly, such as when you master schedule them or manufacture them using a discrete job. As a subassembly, however, they lose their identity as distinct assemblies and are a collection of their components. The components of the phantom subassembly are included on the job and on the pick list of the job—not the phantom itself.

Oracle Master Scheduling/MRP plans the phantom subassembly using the lot-for-lot lot-sizing technique. Otherwise, the same rules apply to phantoms as for other assemblies. Set the lead time of a phantom to zero to avoid lead time offset during the planning process.

When model or option class bills are components to another bill of material, the component supply type is phantom. See: Two-Level Master Scheduling, *Oracle MRP User's Guide*.

The cost rollup treats phantom assemblies the same as regular assemblies. The phantom is treated as a distinct entity; the cost elements of the phantom (material, resource, and

so on) are added to the cost elements of the higher assembly. Also, the full cost rollup process sets the pending phantom assembly burden to 0.

## Primary and Alternate Bills of Material

A primary bill is a list of the components you most frequently use to build a product. An alternate bill is another list of components for the same basic assembly. The primary bill is the default for rolling up costs, defining a job, and calculating cumulative item lead times.

You must define a primary bill before you define an alternate. A primary bill can have many alternate bills. Any bill of material type can have an alternate.

Oracle Master Scheduling/MRP uses the primary bill to plan your material. Oracle Order Management uses the primary bill for model and option class products to list available options.

When you build an item, roll up costs, and perform other functions that use bills of material, you can specify whether to use the primary bill (the default) or an alternate bill. You can also use engineering change orders to control changes to primary and alternate bills of material.

Use alternate bills to account for manufacturing variations that produce the same assembly, by specifying the parent item number and an alternate name when you create a bill. You cannot enter new revisions for alternate bills of material.

You can use an alternate to define an engineering bill or routing. The alternate used as a prototype variation from the primary manufacturing bill that produces essentially the same assembly.

Bills and routings can share alternate labels. If you create an alternate bill with the same label as an alternate routing, components are assigned to operations on the alternate routing. If there is no routing with the same alternate label, components are assigned to operations on the primary routing.

## Item and Routing Revisions

You can define any number of revisions for the item and any number of routing revisions for an item's routing.

**Important:** Item revisions and routing revisions function alike and are discussed together below. However, item revisions and routing revisions are two distinct pieces of information. They are created and maintained separately and have no influence over each other.

Assign each revision a unique three character alphanumeric revision identifier (such as A, B, B1, and so on) and a revision date. Revisions are sorted according to ASCII rules. Each revision must be greater than the previous revision. Therefore, you cannot use revision 10 after revision 9 because, according to ASCII sorting, 10 *precedes* 9.



Use letters and/or numbers to label revisions. Letters are always upper case and numbers may include decimals. To ensure that revisions sort properly (according to ASCII sorting rules), decimals should always be followed by a number. Therefore, valid revisions can include: A, B, 1, 2, A1, B1, 1A, 1B, 0.0, 0.1, A.0, A.1, and so on. When you create an item or a routing, the beginning revision defaults to the value for Starting Revision in the Organization Parameters window.

When you create or update a bill of material or routing, you can choose to create a new revision or modify an existing revision. When adding new revisions, you should be sure that the revision date you enter does not overlap with other existing revision dates. Revisions are time-stamped, so you can determine the latest revision for multiple revisions defined on the same date. New revision numbers must be greater than the revision number of the currently effective revision.

Different versions of a bill of material or routing can be defined within the same revision. You can change component information for bills or operation information for routings without modifying the revision.

For example, assume that you defined an initial revision A on 18-AUG and made a change on 20-AUG without creating a new revision. If you make another change on 22-AUG, you can create a new revision B, effective 22-AUG. There are now three different versions of the item: revision A of 18-AUG, revision A of 20-AUG, and revision B of 22-AUG.

## Components

Bills of Material restricts the types of items you can assign as components based on the type of bill you are defining.

The following table lists valid components for each parent item type.

### ***Valid Parent/Component Relationships***

<b>Parent BOM Item Type</b>	<b>Component BOM Item Type</b>
Standard Item	Standard Item
Model Item	Standard Item, Model Item, Option Class Item
Option Class Item	Standard Item, Model Item, Option Class Item
Planning Item	Standard Item, Model Item, Option Class, Planning Item

Each bill of material can have many components. For each component, you specify attributes, such as operation sequence, item sequence, usage quantity, yield, supply type, supply subinventory and locator, and others.

The following table lists valid component attributes for each type of bill.

***Valid Component Attributes and Bill Types***

<b>Component Attributes</b>	<b>Standard Parent Item</b>	<b>Model Parent Item</b>	<b>Option Class Parent Item</b>	<b>Planning Parent Item</b>
Item	Yes	Yes	Yes	Yes
Item Sequence	Yes	Yes	Yes	Yes
Operation Sequence	Yes	Yes	Yes	No
Effective Date Range	Yes	Yes	Yes	Yes
Planning Percent	No	Yes	Yes	Yes
Yield	Yes	Yes	Yes	No
Enforce Integer Requirements	Yes	Yes	Yes	Yes
Include in Cost Rollup	Yes	Yes	Yes	No
Supply Type	Yes	Yes	Yes	No
Supply Subinventory	Yes	Yes	Yes	No
Supply Locator	Yes	Yes	Yes	No
Mutually Exclusive Options	No	Yes	Yes	No
Optional Flag	No	Yes	Yes	No
Check ATP	Yes	Yes	Yes	No
Minimum Quantity	No	Yes	Yes	No

Component Attributes	Standard Parent Item	Model Parent Item	Option Class Parent Item	Planning Parent Item
Maximum Quantity	No	Yes	Yes	No
Basis	No	Yes	Yes	No
Include in Shipping Doc.	Yes	Yes	Yes	No
Required to Ship	Yes	Yes	Yes	No
Required for Revenue	Yes	Yes	Yes	No
Quantity	Yes	Yes	Yes	No
Descriptive Flexfield	Yes	Yes	Yes	Yes
Comments	Yes	Yes	Yes	Yes

## Access Control by Item Type

Control access to bills of material by item type using the following profile options:

- BOM: Standard Item Access
- BOM: Planning Item Access
- BOM: Model Item Access (also controls access to option class items)

Each profile option can have either a Yes or No value. A Yes value indicates that you can create and update bills for the associated item type. For example, you might specify No at the site level for BOM: Standard Item Access profile to restrict access for creating standard bills. But you might specify Yes for BOM: Planning Item Access profile option at the user level for specific engineers so they can update engineering bills of material for planning items.

**Note:** Profiles are ignored in query mode. A user with no access to any type of item can query all types of bills.

## Related Topics

Bill of Material Types, page 2-2

Phantoms, page 2-2

Primary and Alternate Bills of Material, page 2-2

Item and Routing Revisions, page 2-2

Components, page 2-2

Access Control By Item Type, page 2-2

Creating Alternates, page 1-10

Item and Operation Sequence Fields, page 2-42

Engineering Bills of Material and Routings, *Oracle Engineering User's Guide*

Overview of Routings, page 5-1

Effective Date Fields, page 2-42

Defining Item Revisions, *Oracle Inventory User's Guide*

Item and Operation Sequence Fields, page 2-42

Effective Date Fields, page 2-42

Yield Field, page 2-42

Planning Percent Field, page 2-42

Enforce Integer Requirements, page 2-42

Supply Subinventory and Locator Fields, page 2-42

Mutually Exclusive and Optional Fields, page 2-42

Check ATP (Available to Promise) Field, page 2-42

Minimum and Maximum Quantity Fields, page 2-42

Basis Field, page 2-42

Shipping Details Fields, page 2-42

Bill / Component Validation Rules, page 2-48

Consolidated Bill of Material Report, page 11-12

Supply Types, *Oracle Work in Process User's Guide*

Bills of Material Profile Options, page 1-50

Defining Items, *Oracle Inventory User's Guide*

## Creating a Bill of Material

A bill of material contains information on the parent item, components, attachments, and descriptive elements. Each standard component on a bill can have multiple reference designators and substitute components.

You can create an engineering, manufacturing, or asset (maintenance) bill, copy an existing bill, or reference a common bill. When you create a bill, it exists only in the current organization. To use a bill in another organization, you must either copy it or reference it as a common. You can define bills of material with dual UOM items as assembly and component items.

The procedure below describes how to create a bill. In addition, see: *Setting Up Maintenance Bills of Material*, *Oracle Enterprise Asset Management User's Guide*, Copying Bill and Routing Information, page 2-17, and Referencing Common Bills and Routings, page 2-21.

### Prerequisites

- Define the parent item and all components as inventory items and set the BOM Allowed attribute to Yes and BOM Item Type to model, option class, planning or standard. See: *Defining Items*, *Oracle Inventory User's Guide* .

#### **To create a bill of material:**

1. Navigate to the Bills of Material window.

Item Seq	Operation Seq	Component	Description	Revision	UOM	Basis
310	1	OC42556	Supply	A	Ea	Item
80	20	SB10299	Assembly	A	Ea	Item
90	20	SB34701	Assembly	A	Ea	Item
100	30	CM67433	Drive - 1.44 MB	A	Ea	Item
110	30	OC68020	Drive Option Class	A	Ea	Item

**Note:** If your current responsibility does not include the Privilege to Maintain security function, you can only view bill information. If so, enter selection criteria in the Find Bills window and choose the Find button. The Bills Summary folder window appears.

2. Enter the parent item for which you are creating a bill, and if you are creating an alternate bill, enter the alternate.

**Note:** Bills and routings can share alternate labels. If you create an alternate bill with the same label as an alternate routing, components are assigned to operations on the alternate routing. If there is no routing with the same alternate label, components are assigned to operations on the primary routing.

3. Enter or select the revision and the revision date.
4. If you are updating or viewing a bill, use the Display poplist to display all, current, or future and current components effective as of the revision date you specify. Check the Implemented Only field to further restrict the components to display. See: ECO Statures, *Oracle Engineering User's Guide*.

The Bills of Material window contains the following tabbed regions: Main, Date Effectivity, Unit Effectivity, ECO, Component Details, Material Control, Order Management, Shipping, and Comments.

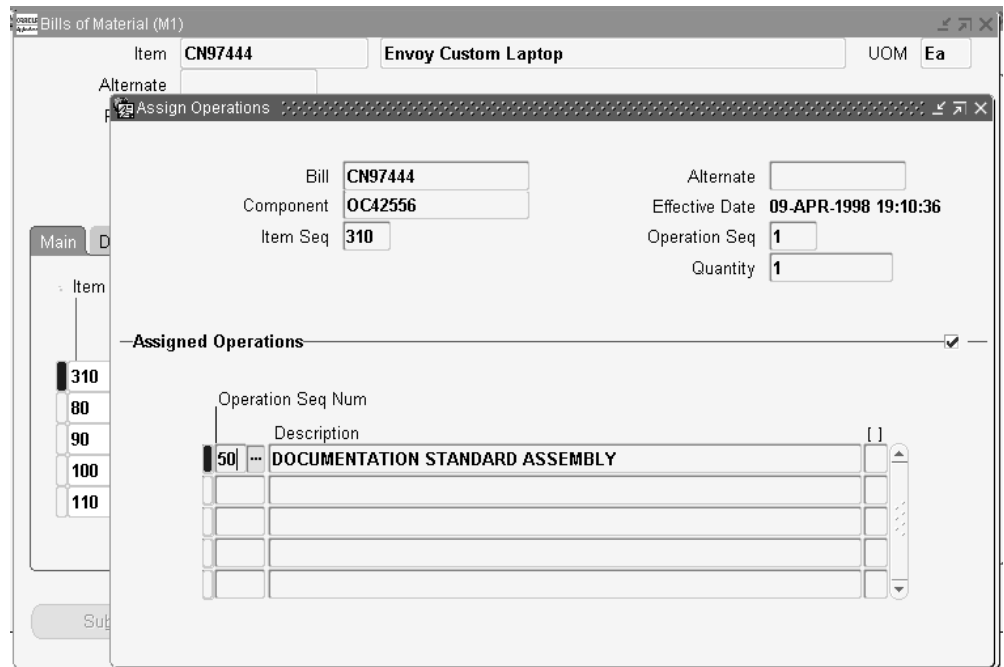
5. Enter the item sequence, operation sequence, and the component item. See: Item and Operation Sequence Fields, page 2-42.
6. If you need to specify an additional operation within this operation, choose the Operations button to navigate to the Assign Operations window.

In the Operation Seq Num field column, enter the additional operation sequences to perform, along with the operation listed in the Bills of Material window.

**Additional Information:** The Operations button is only enabled for optional components.

### Specifying Additional Operations Example

In an automobile factory, one operation sequence on an automobile's bill of material is Install Wheels. The front wheels require 5 percent more torque than the back wheels during this operation. Ensure that this extra torque operation is performed by specifying the Additional Torque operation in the Assign Operations window for the Install Wheels operation sequence.



7. In the Basis field, select whether the quantity of the component used is a fixed amount (Lot) or increases linearly along with the quantity produced (Item).

If the component quantity required increases or decreases linearly along with changes to the work order or job quantity, then select Item. If the component quantity required remains the same regardless of the work order or job quantity, then select Lot.

### **Basis Field Constraints**

- You can define the Basis field as Item or Lot for mandatory components in an ATO Option Class or an ATO Model bill of material.
- You can only define the Basis field as Item for option items, option classes or submodels in an ATO Option Class or ATO Model bill of material.
- You can only define the Basis field as Item for any component in an ATO or PTO Model or Option class.
- You can only define the Basis field as Item when the WIP Supply Type is Phantom. See: *Phantoms*, page 2-2.

See: *Fixed Component Usage, Oracle Work in Process User's Guide*

8. In the Main tabbed region, enter either the Quantity or Inverse Usage used to make one unit of this assembly item at the current operation.

The Inverse Usage field calculates a fractional quantity for you in the Quantity field, to 42 decimal places. Use the Quantity field when the quantity used is a whole number. Use the Inverse Usage field when the quantity used is a fractional number. When you enter a value in either field, the system automatically calculates and populates the value in the other field. Inverse usage is also available using Work in Process, Shop Floor Management, and Product Hub.

The Quantity and Inverse Usage fields can include negative or decimal values, subject to the following rules:

- Pick-to-order bills cannot have fractional component quantities if Oracle Order Management is installed.
- Pick-to-order option class components cannot have negative values.
- Components with Check ATP turned on cannot have negative or zero quantities.
- If the component has Quantity Related turned on, then the component quantity cannot be fractional or negative.
- If an implemented component has Quantity Related turned on, then the component quantity must be equal to the number of reference designators. See: *By-Product Recovery, Oracle Work in Process User's Guide*.

**Important:** The planning process in Oracle Master Scheduling/MRP ignores negative requirements on standard discrete jobs and components with a negative usage on a bill of material when netting supply and demand.



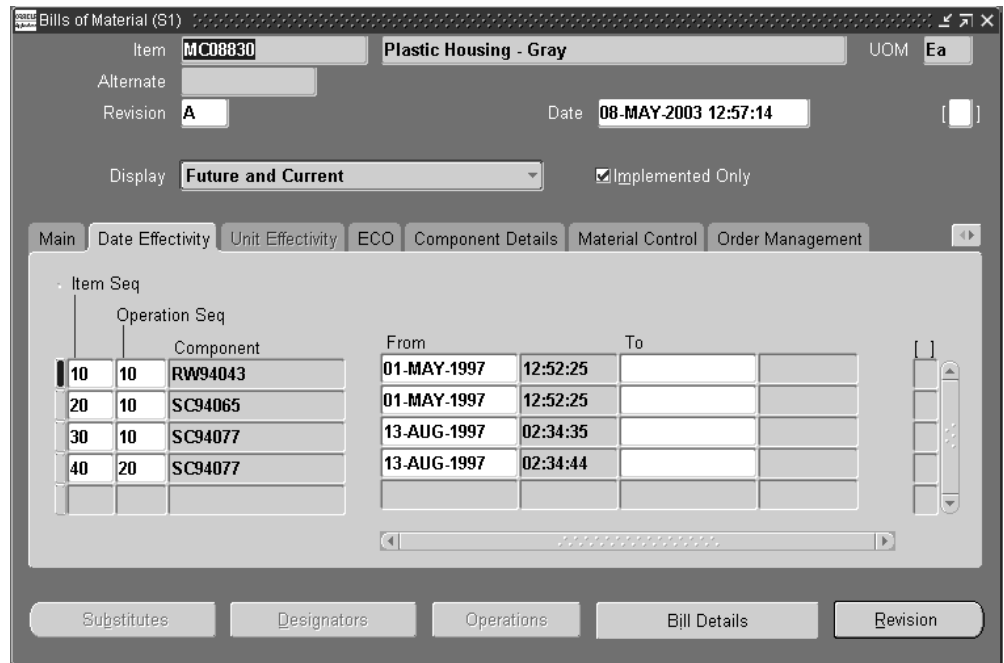
**Note:** If you enter a negative quantity for a component, you should enter either Assembly pull or Operation pull for the supply type to ensure that you transact the material when you build the bill.

The Revision field displays the current revision of the component as of the revision date of the parent item.

The Eng Item field displays a checkmark if the item is defined as a prototype item in Oracle Engineering. See: Overview of Engineering Prototype Environment, *Oracle Engineering User's Guide*.

9. Select Auto Request Material to automatically create move orders or purchase orders for the component item.
10. Open the Date Effectivity tabbed region and enter the effective date range for each component. See: Effective Date Fields, page 2-42.

The Date Effectivity tab is disabled if the BOM item's effectivity control is set to Model/Unit Number. See: Bills of Material Attribute Group, *Oracle Inventory User's Guide*.



11. Open the Unit Effectivity tabbed region and enter the effective unit number range for each component. The unit number list of values displays all of the unit numbers defined in the master organization. See: Model/Unit Effectivity, *Oracle Project Manufacturing Implementation Manual*.

The Unit Effectivity tab is disabled if the BOM item's effectivity control is set to

Date. See: Bills of Material Attribute Group, *Oracle Inventory User's Guide*.

12. Open the ECO tabbed region and verify the following:

The Implemented check box indicates whether the component is implemented.

*Unchecked:* Component is on a pending Engineering Change Order (ECO)

*Checked:* Component is on an implemented ECO or was added directly to the bill

If the component is part of a pending or implemented ECO, the ECO field displays this ECO.

The screenshot displays the Oracle Bills of Material (S1) interface. At the top, the item is identified as 'MC08830' with the description 'Plastic Housing - Gray' and a unit of measure 'Ea'. The revision is 'A' and the date is '08-MAY-2003 12:57:14'. The display is set to 'Future and Current' and the 'Implemented Only' checkbox is checked. The interface has several tabs: 'Main', 'Date Effectivity', 'Unit Effectivity', 'ECO', 'Component Details', 'Material Control', and 'Order Management'. The 'ECO' tab is active, showing a table with columns for 'Item Seq', 'Operation Seq', 'Component', 'Implemented', and 'ECO'. The table contains four rows of data:

Item Seq	Operation Seq	Component	Implemented	ECO
10	10	RW94043	<input checked="" type="checkbox"/>	
20	10	SC94065	<input checked="" type="checkbox"/>	
30	10	SC94077	<input checked="" type="checkbox"/>	
40	20	SC94077	<input checked="" type="checkbox"/>	

At the bottom of the interface, there are buttons for 'Substitutes', 'Designators', 'Operations', 'Bill Details', and 'Revision'.

13. Open the Component Details tabbed region and enter the planning percent. See: Planning Percent Field, page 2-42.

Bills of Material (S1)

Item **MC08030** Plastic Housing - Gray UOM **Ea**

Alternate

Revision **A** Date **08-MAY-2003 13:37:23**

Display **Future and Current**  Implemented Only

Main Date Effectivity Unit Effectivity ECO Component Details Material Control Order Management

Item Seq	Operation Seq		Component	Planning %		Yield	Enforce Integer Req.	Include In Cost Rollup	Type	Status
10	10		RW94043	100	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Purchased item	Active
20	10		SC94065	100	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Purchased item	Active
30	10		SC94077	100	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Purchased item	Active
40	20		SC94077	100	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Purchased item	Active

Substitutes Designators Operations Bill Details Revision

Enter the yield. See: Yield Field, page 2-42.

Enter the Enforce Integer Requirement, or select a value from the list of values. Acceptable values are up, down and none. See: Enforce Integer Requirements, page 2-42.

Indicate whether the component should be included in cost rollups. If enabled, the material cost of this component, but not the routing cost, is included in the cost of the parent item.

- Optionally, open the Material Control tabbed region and enter the supply type. See: Supply Types, *Oracle Work in Process User's Guide*.

Item Seq	Operation Seq	Component	Supply Type	Subinventory	Locator
10	10	RW94043	Operation Pull		
20	10	SC94065	Operation Pull		
30	10	SC94077	Operation Pull		
40	20	SC94077	Operation Pull		

Enter the supply subinventory and the locator. See: Supply Subinventory and Locator Fields, page 2-42.

If you have set the BOM: Default WIP Supply Values for Components profile option to Yes, these values default from the item master. If any of these values are left blank, Work in Process will read the values contained in the item master. See: Bills of Material Profile Options, page 1-50.

- For model, option class, and kit bills, open the Order Management tabbed region and enter the minimum and maximum sales order quantities. See: Minimum and Maximum Quantities, page 2-42.

**Note:** You can add ATO items as components to a PTO Kit bill. You can also make ATO items as mandatory or optional components to a PTO Model BOM.

Indicate whether to check ATP. See: Check ATP (Available to Promise) Field, page 2-42.

Indicate whether the component is optional and mutually exclusive. See: Mutually Exclusive and Optional Fields, page 2-42.

Enter the sales order basis. See: Sales Order Basis Field, page 2-42.

- Open the Shipping tabbed region, and choose whether the component should be listed on shipping documents, required to ship, or required for revenue. See: Shipping Details Fields, page 2-42.

17. Open the Comments tabbed region, and enter any comments about the component.
18. Choose buttons to perform related tasks:
  - Substitutes*: Assign substitute components. See: Assigning Substitute Components, page 2-29.
  - Designators*: Create reference designators. See: Creating Reference Designators, page 2-27.
  - Operations*: Specify additional operation sequences within a bill of material operation sequence. See the step explaining the Operations button, page 2-11, described previously in this procedure.
  - Bill Details*: Reference common bills. See: Referencing Common Bills and Routings, page 2-21.
  - Revision*: Define item revisions. See: Defining Item Revisions, page 2-29.

## Related Topics

- Copying Bill and Routing Information, page 2-17
- Referencing Common Bills and Routings, page 2-21
- Assigning Descriptive Elements, page 2-27
- Creating Reference Designators, page 2-27
- Assigning Substitute Components, page 2-29
- Defining Item Revisions, page 2-29
- Attaching Files, page 2-30
- Checking for Bill Loops, page 2-30
- Deleting Components and Operations, page 6-1
- Creating a Product Family, page 2-50
- Bill / Component Validation Rules, page 2-48
- Bill of Material Listing Report, page 11-2
- Bills of Material Profile Options, page 1-50
- Customizing the Presentation of Data, *Oracle E-Business Suite User's Guide*

## Copying Bill and Routing Information

You can save time defining new, similar bills or routings by copying their information rather than creating them manually.

You can copy a bill or routing from your current organization or from another organization that shares your same item master organization. You can then modify

your new bill or routing as necessary.

You can copy any revision of a primary or alternate bill or routing.

Subinventory and locator information are not copied across organizations.

## **Bills of Material Only**

When you copy bills from your current organization, everything is copied to the new bill including the supply type and the supply subinventories and locators.

You can only copy bills between items having the same BOM Item Type attribute. For example, if the new bill is a model bill, you can only copy existing bills that are model bills.

Know the structure of the bill you are copying, since the copy function only copies single level components of the bill. For example, if the parent item whose bill you want to copy has single level components that are subassemblies, the bill copy function will *not* copy the components of the subassembly.

When you copy the bill from another organization, the components on the bill you are copying must exist in the target organization. The supply subinventories and locators are not copied. Substitute component items must also exist in the target organization to be copied.

When copying an engineering bill to manufacturing, only those single-level manufacturing (not engineering) components are copied.

## **Routings Only**

When copying from another organization, only operations occurring in departments that exist in both organizations are copied. Similarly, only resources that exist in both organizations are copied. The resource must also belong to the same department in the target organization.

### **To copy a bill of material:**

1. Navigate to the Bills of Material window, and enter an assembly number in the Item field.

The screenshot shows a dialog box titled "Copy Bill (M1)". It is divided into two main sections: "Copy From" and "Copy Option".

**Copy From:**

- Organization: M1 (dropdown), Seattle Manufacturing (text field)
- Item: (empty text field)
- Alternate: (empty text field)
- Revision: (empty text field)
- Date: 08/MAR/2001 19:27:26 (text field)
- Engineering Bill:  (checkbox)

**Copy Option:**

- Current:  (radio button)
- Future and Current:  (radio button)

Buttons: Cancel, Copy

2. Choose Copy Bill From in the Tools menu to display the Copy Bill window if this item does not have an associated bill of material.
3. If this item does have an associated bill of material, select an alternate bill type from the Alternate list of values window, and choose OK.

**Note:** You can only use one assembly number and alternate type combination once.

4. In the Copy Bill window, enter the item number for the bill you want to copy in the Item field.
5. Enter any other information to specify the assembly bill of material to copy such as Organization, Alternate, Revision, and Revision Date.
6. If the new bill created is an engineering bill of material, enable the Engineering Bill check box.
7. Select a copy option:
  - All:* All components and operations.
  - Current:* Components or operations effective on the revision date.
  - Future and Current:* Current and all future components and operations.
8. Choose Copy.

A Note appears stating what has been copied to this new bill of material such as components, references, and operations.
9. Choose OK to close the dialog box and display the Bills of Material window.

You can now edit fields for this copied bill of material to create a new version of this bill for your assembly.

10. Save your record and close the window.

### To copy a routing:

1. Navigate to the Routings window, and enter an assembly number in the Item field.

**Note:** You can access the Routings window from both the Navigator or the Tools menu in the Bills of Material window.

2. Choose Copy Routing From in the Tools menu to display the Copy Routing window if this item does not have an associated routing.
3. If this item does have an associated routing, select an alternate routing type from the Alternate list of values window, and choose OK.

**Note:** You can only use one assembly number and alternate type combination once.

4. In the Copy Routing window, enter the assembly number for the bill you want to copy in the Item field.
5. Enter any other information to specify the assembly routing to copy such as Organization, Alternate, Revision, and Revision Date.
6. If the new routing created is an engineering routing, enable the Engineering Routing check box.
7. Select a copy option:
  - *All*: All components and operations.
  - *Current*: Components or operations effective on the revision date.
  - *Future and Current*: Current and all future components and operations.

8. Choose Copy.

A Note appears stating what has been copied to this new routing such as operations, resources, and instructions.

9. Choose OK to close the dialog box and display the Routings window.



10. You can now edit fields for this copied routing to create a new version of this routing for your assembly.
11. Save your record and close the window.

## Related Topics

Bill / Component Validation Rules, page 2-48

Defining Items, *Oracle Inventory User's Guide*

## Referencing Common Bills and Routings

Any two items that are of the same bill type can share common bills and routings. If two different items share the same bill or routing, you can define the bill or routing once and then maintain one copy instead of two.

The following notes apply to both bills and routings:

- You cannot reference another bill or routing as a common if that bill or routing also references a common. In other words, you cannot create a chain of common references.
- You can only reference another bill or routing as a common if it has the same alternate name assigned to it.
- If the current bill you are creating is a manufacturing bill, the common bill must also be a manufacturing bill.

## Common Bills of Material

If two or more organizations manufacture the same item using the same bill of material, you can define the bill in one organization and reference it from the other organizations. Necessary changes must then be made to the referenced bill. Optionally, you can reference all but the following five fields in a bill, maintaining these fields by individual bill of material.

- Supply Type
- Subinventory
- Locator
- Operation Seq
- Include In Cost Rollup

You can create a common bill within the same organization, and across multiple

organizations. You have the option to create common bills in all organizations under the current organization in the chosen organization hierarchy, or create common bills in all organizations that have the same item master organization as the current organization and are accessible by the user responsibility. Sharing bills across multiple organizations minimizes the maintenance of your bills of material.

When you enter orders for models, kits, and assemblies in Oracle Order Management, you must define all bills of material in your item master organization (your OE: Item Validation Organization profile option value). Using common bills of material, you can share bills of material that exist in your manufacturing organizations with your item master organization.

When you define a bill for a new assembly, you can reference another assembly and organization as a common bill of material. You do not need to make any further entries for the bill of material.

The following notes apply to bills of material:

- You can only reference bills from organizations that have the same item master organization as the current organization.
- If components already exist for the new bill, you cannot reference another bill as a common.
- If your new assembly is in a different organization than the bill you reference, all component items must exist in the new bill's organization. This also applies to substitute components.

## Common Routings

The following notes apply to routings:

- You cannot reference a routing outside your current organization.

## To reference a common bill:

1. In the Bills of Material window, find the bill that you want to use as the source, or common, bill.
2. Navigate to the Create Common Bills window. Do this by choosing Create Common Bill from the Tools menu.

**Create Common Bills (M1)**

Item

Alternate

---

**Common Bill**

**Scope**

Single Organization     Hierarchy     All Organizations

Hierarchy

Organization

Item

Enable attributes update

3. In the Scope region, select one of the following three options:

- Single Organization
- Hierarchy
- All Organizations

If you select Single Organization, enter the organization and item that will reference the common bill. If you select Organization Hierarchy, enter the required name of the organization hierarchy. In this case, the common bill created is referenced by all organizations below the current organization in the chosen organization hierarchy. If you select All Organizations, then the common bill created is referenced by all organizations that have the same item master organization as the current organization.

4. Optionally, select the Enable attributes update box.

Selecting this box enables you to update the following fields in the bills that reference this common bill.

- Supply Type
- Subinventory
- Locator
- Operation Seq

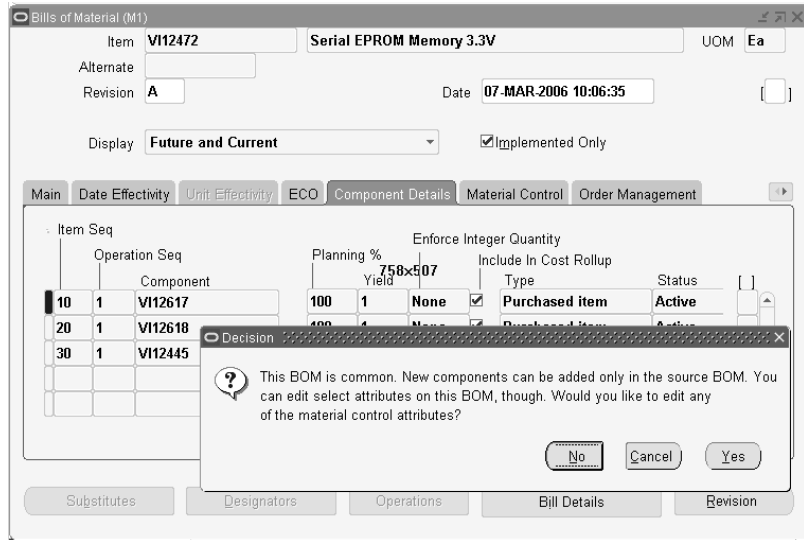
- Include in Cost Rollup

**Note:** Initially, the values in the above fields within the bills that reference the source bill are copied from the source bill, but you can change these values at a later time.

The profile option BOM: Default WIP Supply Values for Components governs the behavior for defaulting the Supply Type, Subinventory, and Locator field values for components in the common bill. If this profile value equals Yes, then the item attributes Supply Type, Subinventory, and Locator for the component in the source organization default to the common bill of material in another organization. If this profile value equals No, then the Supply Type value in the source bill is retained in the common bill. The Subinventory and Locator field values default to NULL in the common bill.

**Caution:** Once you enable the material control attributes in a common bill and save the bill, you cannot disable the attributes. If you need to disable the attributes, then delete the bill and enter a new bill.

**Additional Information:** You can choose to enable the above attributes at a later time, too. To do this find a common bill. Select one of the above five fields. A message appears and asks if you would like to edit any of the five attributes. Choose Yes. You can now update the above five fields.



5. Choose OK.

**Tip:** In addition to navigating to the Create Common Bills window, you can also create common bills by running the concurrent program Create Common Bills.

### To identify the common bill used:

Use the Bill Detail window to identify the common, or source, bill referenced by the bill in the Bills of Material window.

1. From the Bills of Material window, choose Bill Detail.

The Common Bill region in the Bill Detail window identifies the organization and item used as the source (common) bill. If the Organization and Item fields are blank, then the bill in the Bills of Material window is not referencing a common bill.

The screenshot shows the 'Bill Detail (M1) - VI12472' window. It contains the following fields and values:

- Description: [Empty text box]
- EAM Item Type: [Empty text box]
- Item Type: [Empty text box]
- Base Model: [Empty text box]
- Common Bill** (Expanded):
  - Organization: V1 (Vision Operations)
  - Item: VI12472 (Serial EPROM Memory 3.3V)
  - Enabled for Attributes Update

2. Optionally, select the Enabled for Attributes Update box to enable you to update the following fields in the bill that references a source (common) bill.

- Supply Type
- Subinventory
- Locator
- Operation Seq
- Include in Cost Rollup

If this box is selected, you can change the values in these fields so that they are different than the source (common) bill.

**Caution:** Once you select the Enabled for Attributes Update box, you can no longer change the above field values in the common bill and have them default in to this bill.

### To reference a common routing:

1. In the Routings window, enter the item for which you want to create a routing.
2. Navigate to the Common Routing window. Do this by choosing Assign Common Routing from the Tools menu.
3. In the Common Item field, select the item routing that you want to use as the source

(common) routing.

4. Choose OK.

The operations from the common routing default into the Operations region.

5. Save your work.

## Related Topics

Creating Organization Hierarchies, *Using Oracle HRMS-The Fundamentals*

## Assigning Descriptive Elements

For each model and option class bills only, you can specify a list of item catalog descriptive elements. Values are assigned to catalog descriptive elements when new configuration item are created. The descriptive element value of the chosen option is assigned for each descriptive element.

## Prerequisites

- For model bills, you must assign the item to a catalog group. See: Defining Item Catalog Groups, *Oracle Inventory User's Guide*.

### To assign descriptive elements:

1. Navigate to the Descriptive Elements window.
2. Enter a descriptive element to assign automatically based on the option chosen in the current bill.

For model bills, you can only specify a descriptive element name within the model item catalog group. For option class bills, you can specify a descriptive element name from any catalog group.

When you order a configuration, Bills of Material automatically creates and assigns the configuration item to the model's item catalog group, and assigns values to the descriptive elements in this group.

## Related Topics

Overview of Configure to Order, page 7-1

## Creating Reference Designators

Reference designators are sequenced comments and instructions that pertain to a

component. For example, you may have drawings that clarify the assembly process for certain components, or further instructions for the use of a large quantity of the same component. You can specify whether to assign one reference designator for every usage of the component or assign any number of reference designators to the component.

Planning bills and model, option class, and planning components cannot have reference designators.

Reference designators are sorted in alphanumeric order on inquiries and reports. You can also specify a comment for each reference designator.

### **To create reference designators:**

1. Navigate to the Reference Designators window. Do this by choosing the Designators button from the Bills of Material window.
2. Indicate whether you want component quantity related to the number of reference designators.

*Off:* Assign any number of reference designators to each component (the default). The number of reference designators is independent of the component quantity. With Quantity Related unchecked, if the usage quantity of the component is four, you could, for example, define six or more reference designators.

*On:* Use one reference designator per usage of the component. The component usage quantity must be a positive integer in order for you to use this option. When the bill requires a quantity of four of a given component, you assign four reference designators to that component, one for each usage.

3. Do one of the following:
  - Enter a reference designator for the component. (A reference designator must be ten characters or less.)
  - Choose the Add Range or Delete Range button to open the Range window. Enter a prefix and a suffix for the range of reference designators to add or delete. For example, if you enter A as the Prefix, 1 and 4 as the starting and ending values, and XYZ as the Suffix; A1XYZ, A2XYZ, A3XYZ, and A4XYZ are the reference designators.
  - To number reference designators, use the Starting Value field to define the beginning value for a range of reference designators. Then either enter the number of values to add or delete, or define the ending value in the Ending field.
4. Save your work.



## Assigning Substitute Components

You can assign any number of substitute items to each bill component and you can assign the same substitute item to more than one component. The substitute item quantity is the quantity needed to replace the full component quantity. The quantity can differ from the component usage quantity. Oracle Master Scheduling/MRP reports these substitutes on some planning reports, such as the MRP Detail Report. Oracle Work in Process does not consider substitute items in its pick lists.

Planning bills and model, option class, and planning components cannot have substitute components. Items with dual unit of measure can also be added as substitute components.

### To assign substitute components:

1. Navigate to the Substitute Components window. Do this by choosing the Substitutes button from the Bills of Material window.
2. Enter a substitute item for the component. If you are using Bills of Material, use a manufacturing item; if you are using Oracle Engineering, use an engineering or a manufacturing item.
3. Enter the quantity of the substitute item needed to replace the full component quantity. This quantity can differ from the bill usage quantity of the component.

## Defining Item Revisions

A bill of material revision is an item revision which indicates that the components of an item have changed. You do not have to use item revisions when you change bills of material, however, in some industries, it is best to create a new item revision when you change a bill of material.

### To define an item revision:

1. Navigate to the Item Revisions window. Do this by choosing the Revisions button from the Bills of Material window.
2. Enter an alphanumeric revision for the item.
3. Enter the effective date of the item revision.

## Related Topics

Item and Routing Revisions, page 2-2

## Defining Bill or Routing Operation Documents

You can attach documents to bills of material or to routing operations.

### To define bill or routing operation documents:

1. Navigate to either the Bill Documents or Operation Documents window.

## Related Topics

Attaching Files, page 2-30

Attachments, *Oracle E-Business Suite User's Guide*

## Attaching Files

You can attach text and files, such as spreadsheets, graphics, and OLE objects to bills of material, engineering change orders, routings, routing revisions, and routing operations.

For example, an attached file may include comments, such as a graphical representation of the bill structure, or detailed instructions and schematic diagrams for routing operations.

### To attach files:

1. From the Bills of Material, Engineering Change Orders, Routings, or Routing Revisions window, choose the Attachments icon.

**Note:** To attach a file to a bill or ECO, position the cursor in the header region. To attach a file to a routing operation, position the cursor in the Operations region.

## Related Topics

Defining Bill or Routing Operation Documents, page 2-30

Attachments, *Oracle E-Business Suite User's Guide*

## Checking for Bill Loops

Bill loops occur when a bill is assigned as a component to itself somewhere in the multilevel structure of the bill. The loop check program searches for such loops.

The Check for Loops program can be run from the Tools menu of the Bills of Material

window.

### To check for bill loops:

1. Navigate to the Bills of Material window.

**Note:** The Check for Loops item on the Tools menu is only available when creating a new bill, after that new bill has been saved.

2. Choose Check for Loops from the Tools menu.

## Related Topics

Bill of Material Loop Report, page 11-4

## Modifying Components and Bills

You can receive notification when components and bills are modified by subscribing to Oracle Workflow events.

## Prerequisites

Your system administrator can help you subscribe to Oracle Workflow events. Refer to the *Oracle Workflow User's Guide* and *Oracle Workflow Developer's Guide* for more information on business events and how to subscribe to them.

The following Oracle Bills of Material business events trigger Oracle Workflow events:

Business Event	Workflow Event
Creating a bill of material	oracle.apps.bom.structure.created
Changing a bill of material	oracle.apps.bom.structure.modified
Deleting a bill of material	oracle.apps.bom.structure.deleteSuccess or oracle.apps.bom.structure.deleteError
Creating a component	oracle.apps.bom.component.created
Changing a component	oracle.apps.bom.component.modified

Business Event	Workflow Event
Deleting a component	oracle.apps.bom.component.deleteSuccess or oracle.apps.bom.component.deleteError

## Related Topics

Overview of the Oracle Workflow Business Event System, *Oracle Workflow User's Guide*  
To Create or Update an Event Subscription, *Oracle Workflow Developer's Guide*

## Mass Changing Bills of Material

Use the Mass Change Bills window to mass change your manufacturing or engineering bills of material. You can define a mass change to add, delete or replace a component, alter a component quantity or yield, or change other component information. You can mass change all using bills of material or choose a subset of bills by item range, item category, or item type. You can mass change primary and alternate bills of material for each using assembly. For engineering bills, you can schedule the mass change for a future effective date. For manufacturing bills, you can implement the changes immediately. You can also report effective changes for all using assemblies or components.

If you are using Oracle Engineering, you can create an engineering change order (ECO) from the mass change order that affects both engineering and manufacturing bills. You can then implement the ECO and report on any effected using assemblies.

Bills of Material or Engineering take into account all the actions you enter to determine if the change is applicable. For example, suppose you add component A and delete component B. This change is made only if component A does not exist and component B does exist on the selected bills. The change is applied only if both conditions are met. In this example, two records are affected.

## Prerequisites

- You must create at least one bill of material. See: *Creating Bills of Material*, page 2-9.
- You must create at least one change order type. See: *Defining ECO Types*, *Oracle Engineering User's Guide*.

## To mass change bills of material:

1. Navigate to the Mass Change Bills window.

Mass Change Bills (M1)

Number

Type

Description

**Mass Change Details**

Effective Date  Unit Number

Increment Revision  Update Jobs / Schedules

**Parent Items**

Category Set

Categories  -

Items  -

Alternate Selection

Base Model

Item Type

**Actions**

Report  Implement

2. Enter a mass change order number and a change order type. If you have Engineering installed and have set up ECO Autonumbering, a default value will appear. See: *Defining ECO Autonumbering, Oracle Engineering User's Guide*.  
The change order type describes your changes and determines the type of bills to modify.

3. Enter the effective date for the change (for engineering bills only).

**Note:** You cannot enter a future effective date for revised item associated with editable common bill.

4. Select a single item unit number.
5. Indicate whether to increment the parent item's revision by 1 (numeric based revisions only).

**Note:** Revisions are sorted as per ASCII rules. Each revised number must be greater than the previous revised number. Therefore, you

cannot revise to 10 after revision 9 because according to ASCII sorting 10 precedes 9. If the current revision is 9 and increment revision check box is checked, then the mass change program will result in an error. To avoid this, set default revision as 001 instead of 1. Then the mass change increment revision functionality will not return an error until the revision reaches 999.

6. Indicate whether to update Work in Process material requirements of any unreleased discrete job, or any release or unreleased repetitive schedule associated with the parent items.

7. Specify the parent items to change.

You can use a category set, a category range, or an item range. Alternatively, indicate whether to change all primary bills, all primary and alternate bills, or a specific alternate bill.

Optionally, enter a base model to mass change configuration items related to this model that meets your other selection criteria.

If the mass change involves editable common BOM assemblies, then the mass change ignores the editable common bills when you update the non-material control attributes.

8. Enter an item type for the parent items.

9. Choose the Changes button to enter component changes.

**Caution:** If you do not wish to replace the values for the Supply Type, Supply Subinventory, and Supply Locator fields, you must enter the current value when executing a mass change. If you leave the Supply Type, Supply Subinventory, and Supply Locator fields blank when entering component changes, their values will be replaced by the blank (null) value when the mass change is executed.

10. When finished, select the action(s) to take.

For Bills of Material, select Report (to see affected bills), Implement (to perform the mass change), both, or neither.

For Engineering, select Report, Create ECO, both, or neither.

If you make no selection, the mass change order is saved for you to work on later.

**Note:** You cannot undo a mass change. However, you can create

another mass change to reverse the effects of a previous mass change.

11. Choose the Submit button to launch the selected actions.

**To enter component changes:**

1. Choose the Changes button on the Mass Change Bills window.
2. For each component item to change, indicate the action to perform. You can add or delete components to or from a parent item.  
  
Or, you can update existing information about the component on the parent item. With this option a new row is created that you enter new information into.
3. In the Main tabbed region, enter the item sequence, operation sequence, the quantity, and the inactive date for each component. See: Item and Operation Sequence Fields, page 2-42.
4. Open the Component Detail tabbed region and enter the planning percent. See: Planning Percent Field, page 2-42.  
  
Enter the yield and indicate whether the component should be quantity related and included in cost rollups. See: Yield Field, page 2-42.
5. Open the Material Control tabbed region and enter the supply type. See: Supply Types, *Oracle Work in Process User's Guide*.  
  
Enter the supply subinventory and locator identifiers. See: Supply Subinventory and Locator Fields, page 2-42.
6. For model, option class, and kit bills, open the Order Entry tabbed region and enter the minimum and maximum sales order quantities. See: Minimum and Maximum Quantity Fields, page 2-42.  
  
Indicate whether to check ATP. See: Check ATP (Available to Promise) Field, page 2-42.  
  
Indicate whether the component is optional and mutually exclusive. See: Mutually Exclusive and Optional Fields, page 2-42.
7. Open the Shipping tabbed region, and choose whether the component should be listed on shipping documents, required to ship, or required for revenue. See: Shipping Details Fields, page 2-42.

**To set Engineering Change Order (ECO) options:**

For Oracle Engineering only.

1. From the Mass Change Bills window, choose the Tools menu item and choose Set ECO Options.
2. Use the Plan check box to indicate whether you want Oracle Master Scheduling/MRP to include the revised item in the planning process.
3. Indicate whether each revised item's effective date is based upon the planned item's use-up date. If so, check the Use Up check box.
4. Enter an item whose use-up date is tied to each revised item effective date. The default is the use-up item associated with the plan name. This can be the revised item or a component of the revised item.

Oracle Alert automatically notifies the planner for the revised item if the use-up date changes based on information from a new MRP plan.

**Note:**

- In the Engineering Change Orders form, you will be able to query the implemented mass change orders for bills of material and view their details.
- It is recommended to use specific "Change Order Types" for mass changing bills of material. You can query only those specific Change Order Types in ECO form.

## Related Topics

Bill / Component Validation Rules, page 2-48

Engineering Change Order Schedule Report, *Oracle Engineering User's Guide*

Overview of Engineering Change Orders, *Oracle Engineering User's Guide*

**See Also**

Engineering Change Order Schedule Report, *Oracle Engineering User's Guide*

Overview of Engineering Change Orders, *Oracle Engineering User's Guide*

## Viewing an Indented Bill of Material

An indented (multilevel, exploded) manufacturing or engineering bill of material displays the structure of a manufacturing or engineering item.

**To view an indented bill of material:**

1. Navigate to the Indented Bill of Material window.
2. In the Find Indented Bills window, enter the item and/or the alternate for the bill.



**Note:** If you entered an alternate, the explosion process will search for all components with the same alternate label. If, at any level, an alternate with the same label is not found, the primary is used. The explosion process then continues searching for the original alternate label.

3. Enter the revision, the revision date, and the number of levels to explode for this bill. See: Bills of Material Profile Options, page 1-50.
4. Select a Display option: All, Current, or Future and Current components effective as of the revision date you specify.

Use the Implemented Only field to further restrict the components displayed. See: Engineering Change Orders Field Reference, *Oracle Engineering User's Guide*.

5. Select a sort option for each level of the bill, by operation sequence then item sequence, or item sequence then operation sequence.
6. Indicate whether to see costing information, and if so, enter the cost type.

You can simulate product costs for budgeting and planning analysis purposes. To do so, the Privilege to View Cost security function must be enabled for the responsibility.

Indicate whether to view lead time and/or material control information, and whether to use planning percents when calculating component quantities.

Any field that is checked here causes a corresponding tabbed region to appear on

the Indented Bill of Material window.

7. Choose the Find button to explode the bill.

The Indented Bill of Material window appears and displays the first level of the bill.

The Components window contains the following tabbed regions, some of which may be disabled according to the display options you selected: Item Details, Bill Details, Quantities, Effectivity, Material Control, Lead Time, Order Entry, Costing, and Shipping.

8. Use the control buttons to expand or collapse portions of the indented bill. You can only expand up to the explosion level indicated in the Find window.

## Related Topics

Item and Operation Sequence Fields, page 2-42

Effective Date Fields, page 2-42

Yield Field, page 2-42

Planning Percent Field, page 2-42

Supply Subinventory and Locator Fields, page 2-42

Extended Quantity, page 2-42

Mutually Exclusive and Optional Fields, page 2-42

Check ATP (Available to Promise) Field, page 2-42

Minimum and Maximum Quantity Fields, page 2-42

Basis Field, page 2-42

Shipping Details Fields, page 2-42

Overview of Lead Time Management, page 9-1

Viewing Item Usage, page 2-40

Overview of Routings, page 5-1

Bill of Material Structure Report, page 11-6

Supply Types, *Oracle Work in Process User's Guide*

Searching for Data (Using Query Find), *Oracle E-Business Suite User's Guide*

Searching for Data (Using Query Operators), *Oracle E-Business Suite User's Guide*

Searching For Data, *Oracle E-Business Suite User's Guide*

Searching For Data (Performing Query-by-Example and Query Count), *Oracle E-Business Suite User's Guide*

## Comparing Bills of Material

You can compare any two bills. For example, compare the primary to an alternate bill, the same bill across organizations, or the current revision of an item to a future revision.

**Note:** The two assemblies and their attributes are referred to as Bill 1 and Bill 2, or simply as 1 and 2.

### To compare two bills of materials:

1. Navigate to the Bill Components Comparison (or the Report Bill of Material Comparison) window.

1	2	Item	Item Seq	Operation Seq	Planning %	Quantity	Optional
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SG101	10	1	100	1	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SG102	20	1	100	2	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>

2. In the Find Bills to Compare window, enter selection criteria for Bill 1. Do the same for Bill 2.
3. Check comparison criteria check boxes for the attributes to compare the bills on.
4. Select an Order By option: by item sequence then operation sequence, or by operation sequence then item sequence.
5. To view only the differences between bills, check the Differences Only check box.
6. Choose the Compare button to compare the bills online. (If you are running the Bill of Material Comparison Report, choose the Report button.)

The Bill Components Comparison window displays both bills. Two columns of

check boxes, one for assembly #1 and one for assembly #2, indicate if the component appears in the assembly.

The Main tabbed region displays the item and operation sequences, the planning percent, the quantity, and whether the item is optional.

The Effectivity tabbed region displays the effective date range and whether the item is implemented.

## Related Topics

Item and Operation Sequence Fields, page 2-42

Planning Percent Field, page 2-42

Yield Field, page 2-42

Effective Date Fields, page 2-42

Bill of Material Comparison Report, page 11-2

## Viewing Item Usage

View an imploded list of all the using assemblies for a specified component.

### To view item where used:

1. Navigate to the Find Item Where Used window.

The screenshot shows the 'Find Item WhereUsed (M1)' window with the following fields and values:

- Item: [Empty]
- UOM: [Empty]
- Revision: [Empty]
- Levels: 1
- Date: 30-MAY-2002 10:25:01
- Org: Current Organization
- Hierarchy: [Empty]
- Serial Number: [Empty]
- Unit Number: [Empty]
- Engineering Item:
- Implemented Only:
- Future and Current: [Dropdown]
- Buttons: Clear, Find

2. In the Find Item Where Used window, enter the item, the revision, the revision date, and the number of levels to implode for this bill of material.

**Tip:** Only Current components effective as of the revision date you specify will be displayed.

3. Indicate whether you need to inquire about component usage for the current organization, the current organization and all subordinate organizations in the chosen organization hierarchy, or all organizations that have the same item master organization as the current organization. You have the ability to specify the organization hierarchy name because current organizations can be accessed from more than one organization hierarchy.

**Additional Information:** Use the Implemented Only field to further restrict the components to display.

4. Choose the Find button to open the Item Where Used window.

The level bill of material where the inventory item appears in the using assembly is displayed, starting at 1 (level 2 signifies the parent of level 1; level 3 signifies the parent of level 2, and so on.)

The Item Where Used window has three tabbed regions: Item Details, Bill Details, and Effectivity.

The Item Details tabbed region displays the revision, the type, and the status for the component.

The Bill Details tabbed region displays the alternate, whether the bill is an engineering bill, the usage quantity (of the item in the immediate parent assembly), the ECO that implemented the component (if it has been implemented), and the operation sequence.

The Effectivity tabbed region displays the effective date range and whether the item is implemented. See: Effective Date Fields, page 2-42.

5. Use the control buttons to expand or collapse portions of the indented item usages.

## Related Topics

Viewing An Indented Bill of Material, page 2-36

Item Where Used Report, page 11-17

Consolidated Bill of Material Report, page 11-12

Creating Organization Hierarchies, *Using Oracle HRMS-The Fundamentals*

Searching For Data (Using Query Find), *Oracle E-Business Suite User's Guide*

Searching For Data (Using Query Operators), *Oracle E-Business Suite User's Guide*

Searching For Data (Searching For Information), *Oracle E-Business Suite User's Guide*

Searching For Data (Performing Query-by-Example and Query Count), *Oracle E-Business Suite User's Guide*

## Bills of Material Field Reference

This section describes the use of certain major fields.

### Item and Operation Sequence Fields

#### Item Sequence Field

The item sequence indicates the sequence of the item on the bill. It is used to sort components on reports and when choosing options from a model bill in Oracle Order Management. This defaults to the value of the highest existing component item sequence plus the value of the BOM: Component Item Sequence Increment profile option. If this profile option is not set, the default is 10. You can override or change this number.

#### Operation Sequence Field

Every routing carries operations. You can use the Routings form to assign operations to routings. Each operation must have a sequence number called the Operation Sequence Number.

On a bill, the operation sequence indicates the order in which you perform operations on a routing. You can have the system automatically generate Operation Sequence Numbers using a user-defined increment factor. A profile must be created where you can indicate how much the Operation Sequence Number will increment every time a new operation is generated. You can change the generated value if necessary in the Routings form. Valid values range from 1 to 9999999.

You can assign any component to any operation on the routing, including all components to the same operation (such as the first operation). The planning process assigns material requirement dates based on the operations to which you assign each component.

You can define bills of material for items with or without routings. If you use routings, you can either define the bill first or the routing first.

With component-to-operation assignments, you can schedule and issue component material to the operation that requires the component on the exact requirement date. You can also assign the same component on the bill to different operations on the routing, with different usage quantities for each assignment.

If no routing exists for the item, all components default to operation sequence 1. You cannot change this value until you define a routing for the item. After you define the routing, you can update your bill of material with routing operations if you want specific component-to-operation assignments.

If you define the routing before you define a bill, assign components to valid routing operations, or an operation sequence 1 when you define the bill. If you define an

alternate routing and then define the alternate bill, you can assign components to the alternate routing operations. If you define an alternate bill and no alternate routing exists, you can assign components to the primary routing operations.

## Effective Date Fields

Effective date fields appear throughout Oracle Manufacturing products. These are defined as follows:

- *Effective From / Effectivity Date*: First date and time the component or operation becomes effective. For components, the effective date is the first day a component becomes effective for a bill. For routings, it is the first day an operation becomes effective in a routing.
- *Effective To / Disable Date*: Last date and time the component or operation is effective. After this date, you can no longer assign the operation to a routing. From this date, you can no longer assign the component to a bill.
- *Inactive On*: The first date and time the component or operation is inactive. As of 12:00AM on this date, you can no longer assign the component to a bill or the operation to a routing. If this date equals the effective date, the component or operation is inactive.

To avoid confusion, make sure that effective dates for one revision do not overlap with those of another.

For example, if you must introduce three new components to a bill in a specific order, you should assign each change to the appropriate parent item revision. So, component 1 of revision B may be effective today, component 2 of revision C tomorrow, then component 3 of revision D may be effective the following day. If there are two operations on a routing and you replace the first operation with a new operation, you should set the effective date for the new operation to the date the operation you are replacing becomes inactive.

Effective dates can be either the current date or a date in the future; you cannot enter a date in the past.

For components, the default effective date is the later of the current date or the date entered for the bill. If an inactive date already exists for the operation sequence/item combination, the default effective date of any subsequent rows with the same operation sequence/item combination is the same as the inactive date. That means that the subsequent operation sequence/item combination becomes effective immediately after the previous one becomes inactive.

You cannot assign duplicate components to the same operation with overlapping effective date ranges. For example, suppose component A001 at operation 10 is effective from 10-JAN to 14-FEB. You may not add another component A001 at operation 10 to the bill with an effective date of 10-FEB.

Use Oracle Master Scheduling/MRP to identify any overlapping effective dates.

## Yield Field

The yield is the percentage of the component that survives the manufacturing process. A yield factor of 0.90 means that only 90% of the usage quantity of the component on a bill actually survives to be incorporated into the finished assembly.

To compensate for the expected gain or loss, any function that explodes a bill of material increases or decreases the material requirements for the component, based on the yield.

---

$$\text{component requirements} = \text{component usage quantity} / \text{component yield}$$

---

For example, when Master Scheduling/MRP plans a component with a usage quantity of 10 units per assembly and a component yield of 50% (or 0.5), the resulting component requirements increase to 20 units per assembly.

**Note:** You cannot enter component yield for an option class item or for any components of a planning bill.

The default is 1, indicating 100% yield (no loss or gain).

## Planning Percent Field

Master Scheduling/MRP uses component planning percentages in forecast explosions through planning, model, and option class bills of material.

Assign planning percentages to components on model, option class, and planning bills.

**Note:** You can assign planning percents to mandatory components on model or option class bills only if the Forecast Control attribute is set to Consume and Derive.

Enter a component planning percent to specify a distribution percentage for the components. You can enter a planning percent greater than 100 to overplan a component. The default is 100.

## Enforce Integer Requirements

The Enforce Integer Requirements attribute enables you to generate demand in integer quantities and eliminate pegging partial quantities across the demand. If you pass the demand in integer values for lower level components in the BOM, you avoid passing fractional values across the BOM. This enables pegging to reflect the true integer nature of supply and demand. You can select from one of three following values:



- *Up*: The system rounds the gross requirements for every demand for the component to the next higher integer value. To set the value to up, you must set the item master attribute Rounding in Oracle Inventory.
- *Down*: The system rounds the gross requirements for every demand for the component to the next lower integer value.
- *None*: This is the default value. Leaving the value at none allows pegging in fractional quantities across the BOM.

**Additional Information:** If you use Oracle Work in Process, select None. Oracle Work in Process does not support Enforce Integer Requirements.

## Extended Quantity Field

The extended quantity of the component used in the parent item is calculated as follows:

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$$\frac{((\text{explosion quantity of parent item} \times \text{component usage quantity}) / \text{component yield})}{(1 - \text{shrinkage rate for parent})}$$


---

## Supply Subinventory and Locator Fields

Work in Process pulls components from the supply subinventory and the locator within the subinventory during backflushing.

Assign a supply subinventory and locator, if applicable, to components that have a supply type of Assembly pull or Operation pull. You must specify a supply locator if you have mandatory locator control for the supply subinventory. The system validates any item subinventory and locator restrictions you defined during your Oracle Inventory setup.

## Mutually Exclusive and Optional Fields

The following pertains to options for model and option class bills. All components are mandatory on standard and planning bills. Model and option class bills can have both mandatory and optional components.

The Optional field indicates whether the component is mandatory or optional. The Mutually Exclusive field applies only to option class bills and indicates whether you can choose one or many options within an option class.

Oracle Order Management uses the Mutually Exclusive check box in combination with the Optional check box to determine the number of option items you can or must

choose to order the components of the option class bill. Refer to the table below for details on how the Optional check box and the Mutually Exclusive check box work together.

Description	<input type="checkbox"/> Mutually Exclusive (default)	<input checked="" type="checkbox"/> Mutually Exclusive
<input checked="" type="checkbox"/> Optional	Choose any number or no options on the option class bill	Choose one or no options on the option class bill
<input type="checkbox"/> Optional (default)	Choose at least one option on the option class bill	Choose one, and only one, option on the option class bill

## Minimum and Maximum Quantity Fields

Oracle Order Management uses the minimum and maximum quantities to determine the number of optional items available when orders are placed for components on option class bills. If you enter a minimum sales order quantity, you must also enter a maximum sales order quantity. You can only enter a minimum and maximum quantity range that contains the quantity for the component. If you update the component quantity, the minimum and maximum values are changed to include the new component quantity.

**Caution:** These attributes do not apply to mandatory standard components.

## Sales Order Basis Field

If the component is an option class item, you must indicate whether you want to override the default quantity for the option class when a sales order is entered (the default). Option class quantities affect the mandatory standard components assigned to the option class.

If you select None for the Sales Order Basis field, Oracle Order Management can override the default quantity for the option class. Order Management defaults the total quantity to release as the component quantity multiplied by the option class extended quantity.

If you select Option class for the Sales Order Basis field, Order Management cannot override the default quantity for the option class. Order Management calculates the total quantity to release as the component quantity multiplied by the option class extended quantity.

**Note:** Set the sales order basis to Option class for an ATO option class component. When creating a configuration bill, Oracle Manufacturing computes the total quantity required for a mandatory standard component as the component quantity multiplied by the option class extended quantity-regardless of the quantity entered on the sales order.

## Shipping Details Fields

- *Shippable:* Indicates whether the component item is shippable. The default is determined by the value of the Shippable Item attribute in the item master.
- *Include on Ship Docs:* Indicates whether Oracle Order Management prints the components on external shipping documents, such as pack slips and commercial invoices. The default is off.
- *Required to Ship:* Indicates whether the component is required to ship the order. You can only update this check box if the Assemble to Order item attribute for the assembly item in the Define Item window is disabled. This attribute only affects PTO included items (not ATO items or configurations).
- *Required for Revenue:* Indicates whether the component is required to recognize revenue before you ship the order. You can only update this check box if the Assemble to Order item attribute for the assembly item in the Define Item window is disabled. This attribute is recognized by the Receivables Interface in Order Management. Required for Revenue components prevent their parent item from invoicing until they are shipped. For example, if you have an option class bill with a non-optional component with the Required for Revenue attribute set to Yes, then the option class will not invoice until the non-optional component has shipped. This field does not affect mandatory or optional components for an ATO item or configuration.

## Related Topics

MPS/MRP Planning Attributes, *Oracle Inventory User's Guide*

Overview of Material Requirements Planning, *Oracle MRP User's Guide*

Bills of Material Profile Options, page 1-50

Creating a Routing, page 5-9

Overview of Material Control, *Oracle Work in Process User's Guide*

Overview of Material Requirements Planning, *Oracle MRP User's Guide*

Item and Routing Revisions, page 2-2

Overview of Material Requirements Planning, *Oracle MRP User's Guide*

Overview of Material Requirements Planning, *Oracle MRP User's Guide*

Overview of Two-Level Master Scheduling, *Oracle MRP User's Guide*

Overview of Two-Level Master Scheduling, *Oracle MRP User's Guide*

Overview of Material Control, *Oracle Work in Process User's Guide*

## Bill/Component Validation Rules

The following bill and component validation rules apply when defining, copying, or mass changing bills of material:

- Depending on the setting of the profiles that limit access to different bill types (BOM: Model Item Access, BOM: Planning Item Access, BOM: Standard Item Access), you may not be able to modify bills.
- You cannot add a component with an operation sequence number that does not exist in the routing. The only exception is for operation sequences that are equal to 1.
- You cannot add a component to a bill where the component item is the same as the parent.
- You cannot add a component to a bill where the same component, with the same operation sequence and effectivity, already exists on the bill.
- Only manufacturing items can be added to manufacturing bills.
- You cannot add a component to a bill that is being referenced as a common bill from another organization, where the component does not exist in the other organization.
- You cannot add components to common bills.
- For ATO, PTO, and phantom bills where the parent item has ATP Components set to No, you receive a warning when you add a component that has either the *item* attributes Check ATP set to Yes or ATP Components set to Yes. The warning says "Order details for the parent item specifies NO for ATP Components", but you can add the component.
- You cannot add an optional component to a bill that is neither model or option class.
- You cannot add a component, whose planning percent is not equal to 100, to a standard bill.
- You cannot add a mandatory component, whose planning percent is not equal to 100 and has the Forecast Control attribute set to Consume or None, to a model or

option class bill.

- When adding a component to a bill, the mass change will set the Check ATP *component* attribute to No if the component quantity is less than or equal to 0.

The following table presents the validation rules used for adding components to different bill types.

**Bill/Component Validation Rules**

<b>Description</b>	<b>Planning</b>	<b>PTO Model</b>	<b>PTO Option Class</b>	<b>PTO Item (kit)</b>	<b>ATO Model</b>	<b>ATO Option Class</b>	<b>ATO Item</b>	<b>Standard Item</b>
Planning Bill	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PTO Model Bill	No	Yes	Yes	Yes	Yes	No	Yes	Yes
PTO Option Class Bill	No	Yes	Yes	Yes	Yes	No	Yes*	Yes
PTO Item (kit)	No	No	No	Yes	No	No	Yes	Yes
Configuration Item Bill***	No	No	No	No	Yes	Yes	Yes	Yes
ATO Model Bill	No	No	No	No	Yes	Yes	Yes	Yes
ATO Option Class Bill	No	No	No	No	Yes	Yes	Yes	Yes
ATO Item Bill	No	Yes***	No	Yes	No	No	Yes**	Yes

Description	Planning	PTO Model	PTO Option Class	PTO Item (kit)	ATO Model	ATO Option Class	ATO Item	Standard Item
Standard Item Bill	No	No	No	No	No	No	Yes**	Yes

**Note:** ATO Items can ONLY appear under PTO Models as mandatory components.

#### Table Values

- Yes: You can add this component type to this bill type.
- No: You cannot add this component type to this bill type.
- \*: These components must be mandatory.
- \*\*: These components are treated as standard subassemblies.
- \*\*\*: The Configuration Item must have a Base Model. ATO Model and ATO Option class components will get WIP Supply Type Phantom.

"Configured" items are Assemble to Order (ATO) items that have a base item identification. ATO items have the Assemble to Order attribute set to Yes. Pick to Order (PTO) items have the Pick Component attribute set to Yes.

For example, if the parent item is a PTO model, it is not allowed to have a component that is a planning item, it is allowed to have a component that is a configured item.

## Related Topics

Creating a Bill of Material, page 2-9

Copying Bill and Routing Information, page 2-17

Referencing Common Bills and Routings, page 2-21

Deleting Components and Operations, page 6-1

Mass Changing Bills of Material, page 2-32

## Creating a Product Family

A product family is a grouping of products whose similarity in resource usage, design, and manufacturing process facilitates planning at an aggregate level. A product family

cannot be a part of a Standard, Model, Option Class, or Planning Bill of Material. Consequently, a product family is a single level bill. Members of a product family can belong to one and only one product family. You will be able to plan based on the planning percentages and effectivity of the product family members.

**Caution:** You must make sure that the Product Family flex structure is configured to match the System Items structure. If the System Items structure is changed it should be reflected in the Product Family structure as well. See: System Items (Item Flexfield), *Oracle Inventory User's Guide*.

### To create a product family item:

1. Navigate to the Master Item window.

**Additional Information:** If you are a Flow Manufacturing customer, select Product Family from the Flow Manufacturing window. The product family template is automatically applied.

2. Apply the product family template. See: Item Templates, *Oracle Inventory User's Guide*.

To define a default template for product family items, you must select a template from the INV: Product Family Item Template Name profile option. The template assigned in this profile option will be automatically applied when you create a new product family item.

**Note:** You are not required to use the product family template. If you choose not to use a template, make sure that you define the correct product family attributes. Specifically, the item must be an inventory item and the BOM Item Type must be Product Family. The item must also be BOM allowed.

Each product family corresponds to an item category. A new category is added for each product family item that is defined. The relationship between the product family item and the product family category is established by the equality of their concatenated key flexfield segment values. The category has the same name as the product family item. Consequently, product family item categories have the same flexfield structure as the System Items Flexfield. A new structure called Product Family has been defined for the Item Categories Flexfield. Each product family member item and the product family item itself are assigned to the corresponding category within the Product Family category set. The assignment is removed when an item is no longer a member of a product family.

**To assign product family members:**

1. Navigate to the Product Family window.

**Note:** If you are using Oracle Flow Manufacturing, you can select Product Family Members from the Flow Manufacturing menu.

2. Select a product family item.
3. Select item members of the product family. The description, type, forecast control, and planning method for the member items are displayed for the items selected.

**Additional Information:** When an item is included in a product family, it will be automatically assigned to the same category as the family item.

4. Commit the record by selecting Save from the File menu.

**Additional Information:** You can commit a record without assigning planning percentages. The default planning percent is 100. The default effectivity date is the system date.

**To assign planning percentages to product family members:**

1. Navigate to the Product Family window. Do this by selecting Defining Product Families from the Bills of Material menu.
2. To assign planning percentages for a member item, choose the Allocation button.
3. Enter the product family member's planning factor.
4. Enter effectivity dates for the item. Effectivity dates cannot overlap.
5. Optionally, enter comment text.
6. Commit the record by selecting Save from the File menu.

**Additional Information:** You can commit a record without assigning planning percentages. The default planning percent is 100. The default effectivity date is the system date.



## **Related Topics**

Overview of Flow Manufacturing, *Oracle Work in Process User's Guide*

Creating a Flow Routing, *Oracle Flow Manufacturing User's Guide*

Overview of Mixed Model Map, *Oracle Flow Manufacturing User's Guide*



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## Oracle Bills of Material Command Center

This chapter provides information about Oracle Bills of Material Command Center dashboards.

This chapter covers the following topics:

- Bills of Material Command Center Overview
- Bills of Material Dashboard
- Change Orders Dashboard

# Bills of Material Command Center

## Bills of Material Command Center Overview

The Bills of Material Command Center enables users to efficiently manage product configuration and change order implementations. You can use key metrics, drillable graphs, tag clouds, and network diagrams that are available in the dashboards to explore product configurations, manage products, and perform impact assessments on change orders. Based on your role, you can use the Bills of Material Command Center to:

- Track manufacturing and engineering items graphically with all revisions and effectivity dates.
- Visualize current and future bills before approving and implementing manufacturing changes.
- Find and review alternate bills of material for assemblies.
- Analyze change order reasons, revised items, and component change details.
- Analyze items that undergo frequent changes to improve product lifecycle strategies.
- Monitor component usage and manage bills of material to reduce manufacturing costs.
- Drill down to analyze pending change orders grouped by stages.
- Track change orders reasons to improve products and process flows.

**Note:** The Oracle Bills of Material Command Center currently supports date effective bills. Unit effective bills are not supported.

Before you load data from Oracle E-Business Suite into the Bills of Material Command Center, ensure that your EBS data is accurate and current.

The following Manufacturing Command Center dashboards enable search functions using Enterprise Command Center integration:

- **Bills of Material** dashboard, page 3-3 - Use this dashboard to view detailed information on bills and also explore the intended bills for assemblies. This dashboard is comprised of the Bills dashboard and the Indented Bills dashboard.
- **Change Orders** dashboard, page 3-16 - Use this dashboard to view and analyze the

complete lifecycle of an engineering change order (ECO). You can view complete details of ECOs along with their statuses, new item revisions, and change details.

## Searching Enterprise Command Center Dashboards

Use the dashboard sidebars to refine (filter) the data on each dashboard. You can select a value or record from the Available Refinements component, or use Search to find a keyword, a value, or a specific record. The type-ahead feature suggests matches for your entry that correspond to the available refinements. When you submit a search, the search term is added to the Selected Refinements list, and the dashboard data is refined to include only records that match the search. You can add multiple refinements and remove any of them at any time. Use **Saved Search** to create and save your search. You can edit, delete, or refer to this saved search.

Use an asterisk (\*) or percent sign (%) to perform a partial keyword or record search that matches any string of zero or more characters. You can also use a question mark (?) to perform a partial search that matches any single character.

**Additional Information:** For more information about searching for and refining data in enterprise command centers, see *Search in Highlights of an Enterprise Command Center, Oracle E-Business Suite User's Guide*.

## Bills of Material Dashboard

The Bills of Materials dashboard in the Bills of Material Command Center is comprised of the following dashboards:

- **Bills** dashboard, page 3-4 - Use this dashboard to quickly search for bills of material across manufacturing bills or engineering bills and view bills with pending changes.
- **Indented Bills** dashboard, page 3-11 - Use this dashboard to view and analyze the indented (multilevel and exploded) manufacturing or engineering bills of material of a manufacturing or engineering item using a network diagram.

As a product manager, manufacturing engineer, or production manager you can use the Bills of Material dashboards to efficiently manage product configurations across a product lifecycle. Use these dashboards to:

- Track primary and alternate bills, including common bills for manufacturing, across organizations.
- Identify and track bills with pending change orders.
- Explore and visualize indented bills for assemblies.

- Manage bills of material revision implementation and their component effectivity dates.

As an engineering supervisor, you can use the Bills of Material dashboards to effectively manage bills of material and their component usage. Use these dashboards to:

- Track bill types and components for manufacture with quantities across organizations.
- Identify noneditable common bills, editable common bills, alternates, and bills with pending change orders.
- Manage bills revisions with effectivity dates.
- Explore and visualize the intended bills of material for an assembly using network diagrams.

## Bills Dashboard

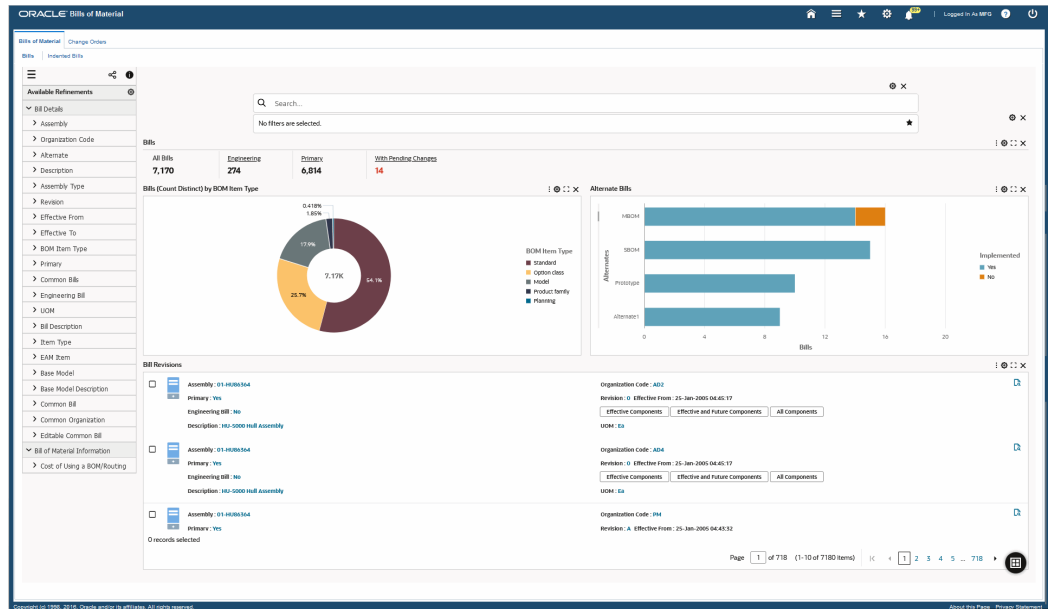
The **Bills** dashboard provides bill of materials information including details of the assembly, organization, alternates, and revisions. Use this dashboard to quickly search for manufacturing bills or engineering bills and view bills with pending changes. Also ensure that you use the Bills dashboard to navigate to the Indented Bills dashboard.

You can search using an assembly name or description. You can also view bills information based on the available refinements such as assembly, organization code, alternate, common bills and BOM item types. See Bills of Material Command Center Overview, page 3-2 for more information.

From the Manufacturing and Distribution Manager responsibility, navigate to the **Bills** dashboard:

(N) **Bills of Material >Bills >Bills >Bills of Material >Bills** (tab)

## Bills Dashboard



The following table describes the **Bills** dashboard components:

Component	Description
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### Bills (summary bar)

The **Bills** summary bar displays the following key metrics:

- **All Bills**  
This metric displays the total number of all bills (excluding bill revisions).
- **Engineering**  
This metric displays the number of engineering bills.
- **Primary**  
This metric displays the number of primary bills.
- **With Pending Changes**  
This metric displays the bills that have pending changes.

Click a metric to refine the information on the dashboard.

### BOM (Count Distinct) by BOM Item Type (chart)

This drill-down chart provides information on bills based on the following BOM item types:

- Standard
- Option Class
- Model
- Product Family
- Planning

You can refine the displayed data by clicking a data point on the chart and the dimension and metric value for a data point.

Click the **Options** icon to select BOM Item Type, Common Bills, or Organization Code from the **Dimension** menu. Select Bills (Count Distinct) from the **Group Dimensions** menu.

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**Alternate Bills** (chart)

This bar chart provides information on alternate bills that provide alternate lists of component items to produce assemblies.

You can refine the displayed data by clicking a data point on the chart and the dimension and metric value for a data point.

Click the **Options** icon to select Implemented from the **Dimension** menu and Alternate from the **Group Dimensions** menu.

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## Bill Revisions (grid)

Use the **Bill Revisions** grid to view information about bills based on assembly name, organization code, revision, unit of measure, and whether the bills are primary bills or alternate bills. You can also view the effective from date for various revisions of an assembly. Note that the alternate does not appear for primary bills in the bills revision.

Click the **Record Details** icon for a bill revision to view bill details such as assembly, assembly type, organization, alternate, description, revision, effective from and effective to dates, UOM, item type, common bill, common organization, whether it is a editable common bill, base model, base model description, and bills of material descriptive flexfield information if any.

**Note:** The effective dates of the consecutive revisions shown, vary with one second only. Additionally, the Effective To date does not appear for the last revision of a bill.

You can click a linked assembly name to view item attribute details in the **Item Overview** page.

It is recommended that you use the Bills dashboard to navigate to the Indented Bills dashboard to view the network diagram for assemblies:

- Click **All Components** to view information about past, current, and pending components associated with the bill in the Indented Bills diagram. Selecting All Components applies the Assembly Name, Organization Code, Alternate, Revision Start Date and Revision End Date filters in the diagram.
- Click **Effective Components** to view information about all components that are effective per the revision date for a bill in the Indented Bills diagram. Selecting Effective Components applies the

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Assembly Name, Organization Code, Alternate, Effective From date, Effective To date, Revision Start Date and Revision End Date filters to the diagram. It also applies the Implemented = Y filter to show only the implemented current and effective components.

- Click **Effective and Future Components** to view information about all effective and future components effective per the revision date of the bill in the Indented Bills diagram. Selecting Current and Future Components applies the Assembly Name, Organization Code, Alternate, Effective To Date, Revision Start Date and Revision End Date filters to the diagram.

The Effective From and Effective To dates that display in the selected filters in the Indented Bills dashboard, both have the From and To date range components. Depending on whether you click Effective Components or Effective and Future Components, note the following information when you view the bill revision dates in the Indented Bills dashboard:

- The To date component in the Effective From date shows the bill revision date. The From date component in the Effective From date gives a past date to render the diagram.
- The From date component in the Effective To date shows the bill revision date. The To date component in the Effective To date gives a future date to render the diagram.

**Note:** For the current revision of an assembly, note that the:

- 
- Effective to date is set as the system date in Revision Start Date.
  - Effective from date is set as the system date in the Revision End Date.

**Note:** When you click Effective Components or Effective and Future Components to navigate to the Indented Bills dashboard, you can modify the Effective From and Effective To date filters to view the bills for a specific date. If you remove the date filters, you would need to navigate back to the Bills dashboard and return to the Indented Bills dashboard to restore the Effective From and Effective To date filters.

**Important:** You must not modify or remove the Revision Start Date and Revision End Date filters. These filters are set to render the diagram correctly by showing the details of the selected revision.

Click the links in the table columns to refine the information available in the dashboard.

The following actions are available from the **Options** icon:

- **Compare** - Select multiple rows to compare information.
  - **Export** - Export the information in a comma-separated values (CSV) file format.
-

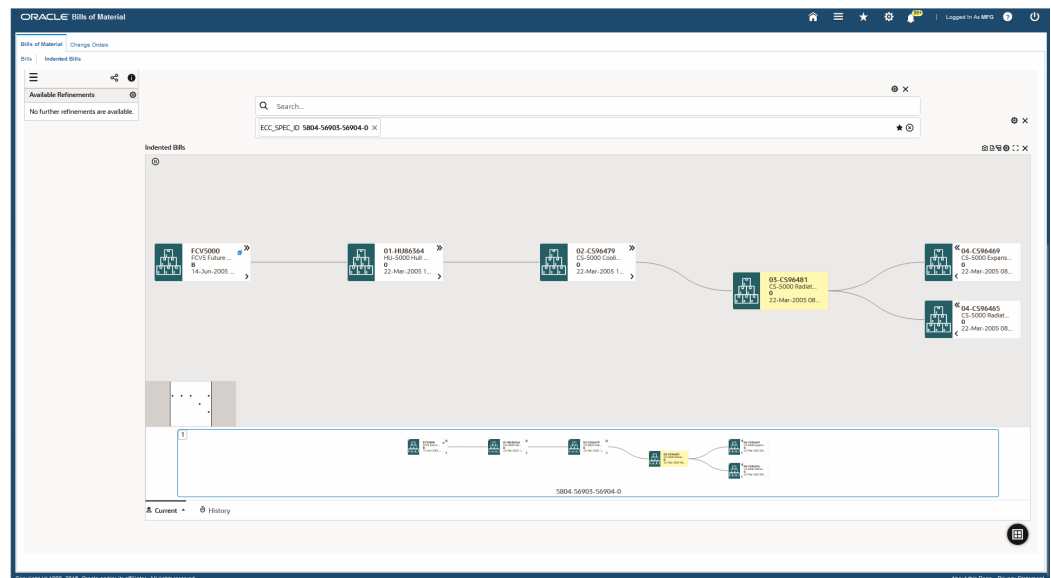
## Indented Bills Dashboard

The **Indented Bills** dashboard enables you to view, track and trace the manufacturing or engineering bill of material for manufacturing or engineering items in a network diagram. You can use the diagram to graphically view the assembly and monitor component changes and their effectivity dates. The diagram also displays the components for the bill of material of an assembly that you select in the **Bills Summary** grid. Ensure that you use the Bills dashboard to navigate to the Indented Bills dashboard.

Using the available refinements, you can view indented bill information based on assembly name, alternate, effective from date, and effective to date. See Bills of Material Command Center Overview , page 3-2for more information.

From the Manufacturing and Distribution Manager responsibility, navigate to the **Bills** dashboard and ensure that you use the Bills dashboard to navigate to the **Indented Bills** dashboard.

### Indented Bills Dashboard



The following table describes the **Indented Bills** dashboard components:

Component	Description
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### Indented Bills (diagram)

Use this diagram to view the indented (multilevel and exploded) manufacturing or engineering bill of material of a manufacturing or engineering item.

Each node displays the assembly name, assembly description, revision, and the effective from date.

**Note:** The node for the searched assembly shows the revision start effective from date in the Indented Bills diagram.

You must not modify or remove the Revision Start Date and Revision End Date filters. These filters are set to render the diagram correctly by showing the details of the selected revision.

Note that in the selected filters, the Effective From and Effective To date entities both have the From and To date range components. For example, for a bill revision that is effective between 03-March-2022 and 07-March-2022, the following dates appear:

- Effective From:
  - From - 01-Jan-1970 (50 years in the past)
  - To - 07-Mar-2022 (per the revision end date)
- Effective To:
  - From - 07-Mar-2022 (per the revision date)
  - To - 1-Jan-2070 (50 years in the future)

Note that the bill revision date appears in the:

- To date component in the Effective From date.
-

- 
- From date component in the Effective To date.

The From date component in the Effective From date and the To date component in the Effective To date are given values to render the network diagram.

**Note:** To render the Indented Bills network diagram, the following dates are substituted while loading the indented bills data set:

- For all root assemblies, the From component in the Effective From date is substituted with the value 01-Jan-1971 00:00:00 and the To component in the Effective To date is substituted with the value 01-Jan-2069 00.
- If the To component in the Effective To date is blank for a component, then it is substituted with the value 01-Jan-2069 00:00:00.

You can modify the Effective From date and Effective To date filters to view the bill for a specific date. To modify these date filters, ensure that you enter the same date in the following date components:

- Effective From > To field
- Effective To > From field

#### **Modifying Effective From and Effective To Date Filters:**

The following example demonstrates changing the date filters in the Indented Bills dashboard to view a bill dated 05-March-2022 .

If you select the Effective Components button to navigate to the Indented Bills dashboard, modify the dates that appear in the selected filters using the following steps:

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- 
1. Click the **Effective From** date.
  2. In the **To** field enter the date of the bill you want to view, such as 05-Mar-2022.
  3. In the **From** field reselect the date 01-Jan-1971.
  4. Click **Select Filter**.
  5. Click the **Effective To** date.
  6. In the **From** field select and enter 05-Mar-2022.

**Note:** You must enter the same dates in the Effective From > To field and the Effective To > From field.

7. In the **To** field select and enter 01-Jan-2069.
8. Click **Select Filter**.

If you select the Effective and Future Components button to navigate to the Indented Bills dashboard, modify the dates that appear in the selected filters using the following steps:

1. Click the **Effective To** date.
2. In the **From** field select and enter 05-Mar-2022 as the date of the bill you want to view.
3. In the **To** field select and enter 01-Jan-2069.
4. Click **Select Filter**.

Right-click a node to select the following options available for the node:

- **Make Anchor Node** - Select this option to
-



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make a node the main node.

- **Show Adjacent Nodes** - Select this option to expand a node to see its related nodes.
- **Highlight Path** - Select this option to highlight the specific path of a node. You can right-click and select **Unhighlight Path** to remove highlighting a path.
- **Explore Node** - Select this option to explore the node further.
- **Compare** - Select multiple nodes and click Compare for a side-by-side comparison of the records of each selected node.
- **Show Details** - Select this for a node to open the Details window to view all the attributes of bill such as the assembly description, effective from and effective to dates, organization code, component item number, operation sequence number, basis type, WIP supply type, component quantity, change notice, change action, supply locator, component remarks, and if the component is implemented or not and included in cost rollups.

On the Details window, select multiple filters and then click:

- **Find Similar** to apply these filters to the diagram.
- **Search Within** to search for your selected filter within the diagram.

Right-click a node and then select from the following actions:

- **View Change Order Detail** - Select this action to navigate to the **Change Orders** dashboard.

- 
- **View Item Detail** - Select this action to view item attributes in the **Item Overview** page.

The nodes display the following icons as visual indicators for the component status of assemblies:

- **Alternate Exists** - Indicates that an alternate bill exist for this assembly or subassembly.
- **Added Component** - Indicates that a new component has been added using a change order.
- **Modified Component** - Indicates that an existing component has been changed using a change order.
- **Disabled Component** - Indicates that an existing component has been disabled using a change order.

The following icons are available for the Indented Bills diagram:

- **Export to Image** - Export the Indented Bills diagram information as image.
  - **Export to CSV** - Download and export the information as a CSV file.
  - **Export to PDF** - Download and export the information in the PDF format.
  - **Row Expander** - View the information for the assembly components in a hierarchial row format. To go back to the diagram view, click the **Network Diagram** icon.
- 

## Change Orders Dashboard

The **Change Orders** dashboard enables you to view and analyze the complete lifecycle of an engineering change order.

**Note:** Currently, the Change Orders dashboard only shows information about changes to bills through change orders.

As a product manager, manufacturing engineer, or production manager you can use the Change Orders dashboard to efficiently manage product configuration. Use this dashboard to:

- Monitor and track high priority change orders and ensure their on-time implementation.
- Review change reason, revised items, and component changes.
- Approve or reject product configuration for manufacturing implementation.
- Analyze products that frequently undergo change to determine product obsolescence strategies.

As an engineering supervisor you can use the **Change Orders** dashboard to ensure that product details are up-to-date and that product development is on track. Use this dashboard to:

- Analyze change orders statuses across change reasons.
- Monitor change orders and the revised item status for products with the priority codes.
- Update the status for change orders.

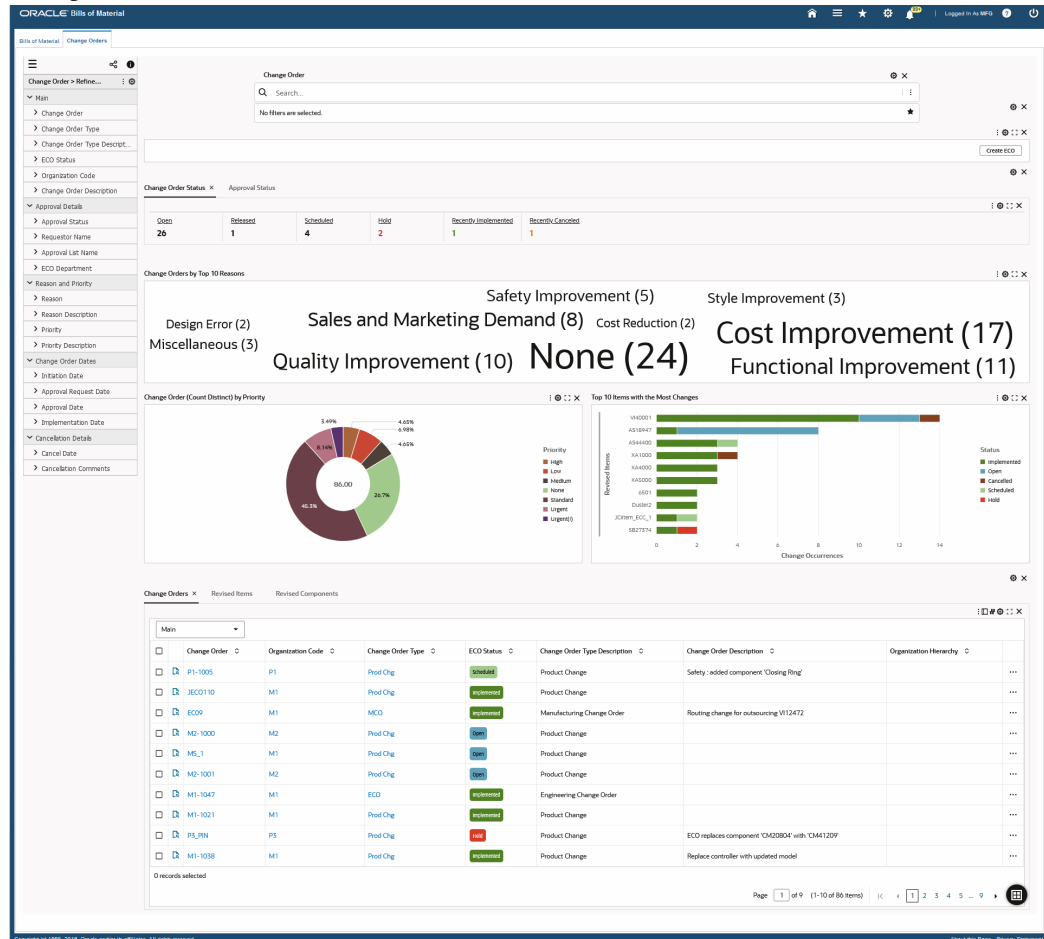
You can search using a change order and description. You can also view change orders information based on the available refinements for the change order, revised items, and revised components data sets. See Bills of Material Command Center Overview , page 3-2for more information.

From the Manufacturing and Distribution Manager responsibility, navigate to the **Change Orders** dashboard using one of the following navigation paths:

(N) **Engineering >ECOs >Change Orders >Change Orders** (tab)

(N) **Bills of Material >Bills >Bills >Change Orders** (tab)

## Change Orders Dashboard



The following table describes the **Change Orders** dashboard components:

Component	Description
<b>Create ECO</b> (button)	To create an engineering change order (ECO), click <b>Create ECO</b> to navigate to the <b>Engineering Change Orders</b> window.

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**Change Order Status (tab)**

This tab displays the following key metrics:

- **Open**  
This metric displays the number of change orders that are open.
- **Released**  
This metric displays the number of change orders that are released.
- **Scheduled**  
This metric displays the number of change orders that are scheduled.
- **Hold**  
This metric displays the number of change orders that are on hold.
- **Recently Implemented**  
This metric displays the number of change orders that have been recently implemented.
- **Recently Canceled**  
This metric displays the number of change orders that have been recently canceled.

Click on a metric to refine the dashboard data.

**Note:** The metrics for recently implemented and recently canceled change orders display information for the past 14 days by default. You can change and configure this value using the ECC developer responsibility.

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**Approval Status** (tab)

This tab displays the following key metrics:

- **Not Submitted for Approval**  
This metric displays the number of change orders that are not yet submitted for approval.
- **Approval Requested**  
This metric displays the number of change orders for which approval is requested.
- **Recently Approved**  
This metric displays the number of change orders that have been recently approved.
- **Recently Rejected**  
This metric displays the number of change orders that have been recently approved.

Click a metric to refine information on the dashboard.

**Note:** The metrics for recently approved and recently rejected change orders display information for the past 14 days by default. You can change and configure this value using the ECC developer responsibility.

**Change Orders by Top 10 Reasons** (tag cloud)

This tag cloud displays the top 10 reasons based on reason descriptions for engineering change orders.

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**Change Order (Count Distinct) by Priority**  
(chart)

Use this drill-down chart to view change orders based on priority codes such as standard, urgent, and none (if there is no assigned priority). You can also view change order information in this chart based on ECO status and approval status.

You can refine the displayed data by clicking a data point on the chart and the dimension and metric value for a data point.

Click the **Options** icon to select Priority Code, ECO Status, and Approval Status from the **Dimension** menu. Select Bills (Count Distinct) from the **Group Dimensions** menu.

**Top 10 Items with the Most Changes** (chart)

Use this chart to view the top ten assemblies which were changed the most number of times based on revised items, and status.

You can refine the displayed data by clicking a data point on the chart and the dimension and metric value for a data point.

Click the **Options** icon to select Status from the **Dimension** menu and Revised Item from the **Group Dimensions** menu.

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**Results Tables** (tab layout)

The Change Orders dashboard tables provide information in the following tabs:

- **Change Orders** - You can view information about change orders from the following entries in the drop-down list:
    - Main
    - Approval Details
    - Reason and Priority
    - Project Details
    - Change Order Dates
    - Cancellation Details
    - Additional Information
  - On the **Change Orders** tab, click the **Actions** icon, and select:
    - **Update** – Select this action to update a change order in the Engineering Change Orders window.
    - **Quick Approval** - Select this action to open the ECO Approval Notification page to approve, reject, reassign, or request more information for the change order.
  - **Revised Items** - You can view information about revised items from the following entries in the drop-down list:
    - Main
    - Item Details
    - Revised Item Dates
-



- 
- Use-Up Details
  - Routing Details
  - Work in Process
  - Cancellation Details
  - Comments
  - Additional Information
  - On the **Revised Items** tab, click the **Actions** icon, and select to:
    - **View Indented Bill** - Select this action to view information on the **Indented Bills** dashboard.
    - **View Item Detail** - Select this action to view item attributes in the **Item Overview** page.
  - **Revised Components** - You can view information about revised components from the following entries in the drop-down list:
    - Main
    - Item Details
    - Component Details
    - Material Control
    - Order Entry
    - Shipping
    - Comments
    - Additional Information

On the **Revised Component** tab, you can

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click **Add** to select a component.

Click the **Record Details** icon on the Change Orders, Revised Items, and Revised Components tabs to view details for change order, revised item, or revised component.

You can view the information in the change order, revised items, and revised components tables in the default Table View or the Timeline View.

To view key events for change order, revised items, and revised components in the Timeline View, click the **Timeline View** icon in the following tabs:

- Change Orders - The timeline attributes show the change order, organization code, and the ECO status. You can view the following dates for change order events in the Timeline View:
    - Initiation Date
    - Approval Request Date
    - Approval Date
    - Implementation Date
    - Cancel Date
  - Revised Items - The timeline attributes show the change order, revised item and status. You can view the following dates for revised item events in the Timeline View:
    - Effective Date
    - Early Effective Date
    - Implementation Date
    - Cancel Date
-

- 
- Revised Components - . The timeline attributes show the component, revision, and the revised item. You can view the following dates for revised component events in the Timeline View:

- Effective From
- Effective To
- Cancel Date

Note that indicators with tooltips appear for the following timeline events:

- Change Order events:
  - Initiation Date - Open and Hold
  - Approval Request Date - Open
  - Approval Date - Released and Scheduled
  - Implementation Date - Implemented
  - Cancel Date - Canceled
- Revised Item events:
  - Effective Date - Open, Implemented, Scheduled, and Released
  - Early Effective Date - Open Implemented, and Scheduled
  - Implementation Date - Implemented
  - Cancel Date - Cancel

Right click and select **Show Details** to see details for the change order or revised item or the revised component.

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Click the **Timeline View Option** icon to enable the overview display and the maximum number of color-coded events of up to 500. You can also use the Timeline View Option icon to add and remove events.

Click the links in the table columns to refine the information available in the dashboard.

The following actions are available from the **Options** icon on the **Change Orders** dashboard tables:

- **Compare** - Select multiple rows to compare information.
- **Export** - Export the search results in a comma-separated values (CSV) file format.

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# Oracle Bills of Material Command Center Setup

This chapter provides information about setup and configuration steps to enable and use Oracle Bills of Material Command Center dashboards.

This chapter covers the following topics:

- Setting Up Bills of Material Command Center
- Setup and Configuration Steps
- Setting Profile Options for Bills of Material Command Center
- Loading Bills of Material Command Center Data

# Bills of Material Command Center Product Configuration

## Setting Up Bills of Material Command Center

The Bills of Material Command Center product configuration setup must be completed after the installation and common configurations are completed as described in My Oracle Support Knowledge Document 2495053.1, *Installing Oracle Enterprise Command Center Framework*, 12.2.

## Setup and Configuration Steps

To complete setup of the Bills of Material Command Center:

1. Set profile options, page 4-2
2. Load Oracle Bills of Materials and Oracle Engineering data, page 4-3

## Setting Profile Options for Bills of Material Command Center

Set a value for the following profile options to specify how the Bills of Material Command Center controls and loads data:

Profile Option Name	Description	Default Value
BOM: Days Since Components Effective for Loading Bills in ECC	<p>This site-level profile value extracts and loads both bill headers and components. For example, if you set this profile to 30 days, the bill headers with at least one component that is effective since last 30 days are loaded. Similarly, components that are effective for the last 30 days are loaded into the Bills of Material Command Center.</p> <p><b>Note:</b> Note that the Bills of Material ECC Data Load program also considers the time fence profile BOM: Days Since Components Effective for Loading Bills in ECC while loading revisions for both bill headers and the components during full loads only. This is not applicable for incremental loads.</p>	180 Days
ENG: Days Since Change Orders Created for Loading Change Orders in ECC	<p>This site-level profile value extracts and loads the engineering change orders historical data. For example, if you set this profile to 30 days, all engineering change orders created within the past 30 days are extracted and loaded into the Bills of Material Command Center.</p>	180 Days

## Loading Bills of Material Command Center Data

To load Oracle E-Business Suite data into the Bills of Material Command Center, run the concurrent program **Bills of Material ECC Data Load**. You can find this concurrent program under Requests in the Oracle Bills of Material and Oracle Engineering

applications.

**Note:** To set up profile options before running data loads, see: Setting Profile Options for Bills of Material Command Center, page 4-2.

Run the concurrent program from the **Submit Request** window.

(N) **Bills of Material >Others >Requests >Find Requests**

(N) **Engineering >Others >Requests >Find Requests**

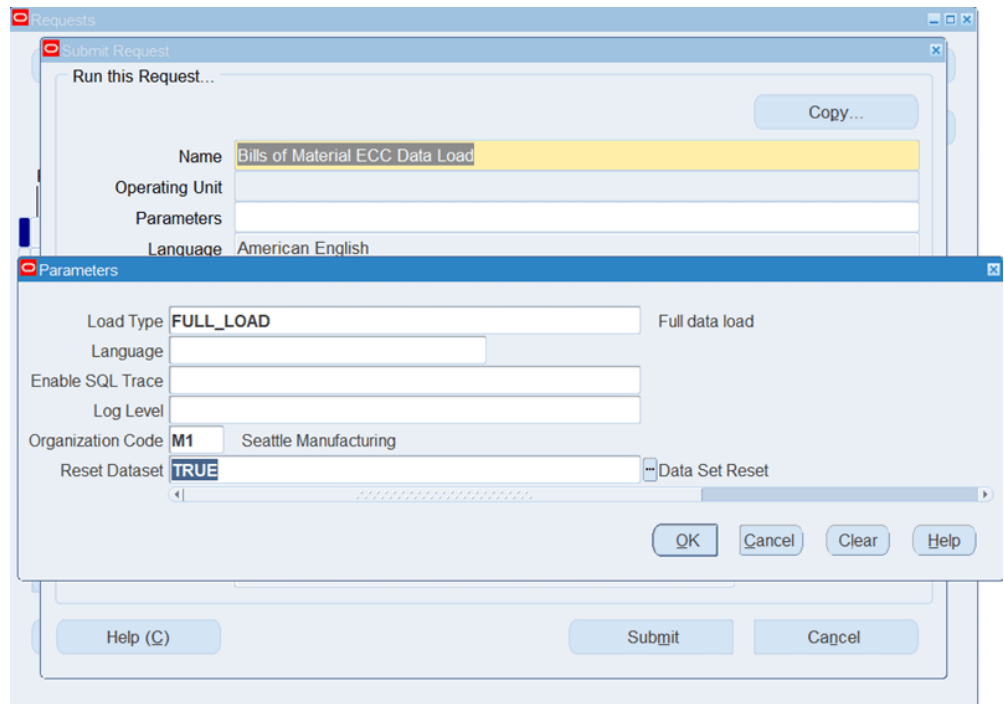
### **To load Oracle Bills of Material Command Center data:**

1. On the **Find Requests** window, click **Submit a New Request**.
2. On the **Submit Request** window, select **Bills of Material ECC Data Load** from the list of values in the **Name** field.
3. Use the **Parameters** window to enter the parameters information.
4. In the **Load Type** field, select the appropriate load type:
  - **Full data load** - This process loads all the Bills of Material and Engineering data and is required to be run for the first data load. The full data load process also includes metadata load. If you select and run full load for subsequent requests, then this program clears the previous Bills of Material and Engineering data from ECC and loads fresh data.
  - **Incremental data load** - This process loads the data modified and updated from the previous load only. Incremental load should be scheduled to run as often as required to keep the ECC dashboard current. Ensure that you run the incremental load after running a full load to avoid any data loading errors.
  - **Metadata load** - This process ensures the application waits for other tasks such as consolidation, data entry, or other load processes to finish before it loads the files. Note that the full data load process includes metadata load.
5. In the **Language** field, enter one or more language codes for the output. For multiple language codes, use the format AA,BB,NN. For example, enter US,AR,KO. If the field is left blank, then the data will be loaded for the base language only (usually US).
6. In the **Enable SQL Trace** field, select TRUE to enable the SQL trace. Otherwise, select FALSE.
7. In the **Log Level** field, select the program you want to report. The default value is ERROR.



8. In the **Organization Code**, you can select and enter the organization code for which you want to run the concurrent program.
9. In the **Reset Dataset** field, select from the following values:
  - TRUE - when you want to reset the data set completely.
  - FALSE - when you want to extend the existing data set.

The default value is FALSE. You can only use the Reset Dataset option when you run a full data load.



10. Click **OK** on the **Parameters** window.
11. Click **Submit** on the **Submit Requests** window to submit the concurrent request.
12. Review your request using the **Requests** page.
13. Monitor data loading using the **Data Load Tracking** page of the ECC Developer responsibility.

**To review request details:**

1. From the menu, click **Requests**. The **Find Requests** window appears.
2. Select the **All My Requests** radio button and click **Find**. The **Requests** window

appears and displays all of your requests.

3. In the **Requests** window, select the row that contains your request and then click **View Details**. The **Request Detail** window appears and displays the ECC- Run Data Load information.
4. Click **OK** to exit and close the window.

**Tip:** If you are using the Bills of Material Command Center for the first time, in order to load minimal data and view the dashboards quickly, use the following steps:

1. Set up a new organization.
2. Assign a limited number of items to bills to the organization.
3. Create a limited number of bills using those items. You can use the Copy bill functionality.
4. Perform a full data load by providing the new organization you have set up in the **Organization Code** field.
5. Once the data load completes, you can view the bills for this new organization only and explore the available data on the Bills of Material Command Center dashboards.

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# Routings

This chapter tells you everything you need to know to use routings.

This chapter covers the following topics:

- Overview of Routings
- Creating a Routing
- Creating a Standard Operation
- Viewing Resource Usage
- Routings Field Reference

## Overview of Routings

A routing defines the step-by-step operations you perform to manufacture a product. Each routing can have any number of operations. For each operation you specify a department that determines the resources you may use for that operation.

## Primary and Alternate Routings

A primary routing is the list of operations most frequently performed to build a product. You can define one primary routing and many alternate routings an item. When you define a new primary routing, you specify only the item (no alternate name) and you can assign a routing revision. For example, you can define a routing for an item that includes two operations-an assembly and a testing operation. You typically build your product with these operations, so you define this routing as the primary routing for the item.

The following table presents an example primary routing.

### ***Primary Routing***

<b>Item</b>	<b>Alternate Name</b>	<b>Operation Sequence</b>	<b>Description</b>
A	n/a	10	Assembly
n/a	n/a	20	Test A/B

You can define an alternate routing to describe a different manufacturing process used to produce the same product. Unlike a new primary routing, specify the item and alternate name to define an alternate routing. You must define a primary routing before you can define alternate routings, and you can define any number of alternate routings for an item. For example, you have three test machines, one new machine capable of performing both tests A and B and two older machines that can only perform test A or test B. Ideally you would like to use the new machine that can perform both tests, but if it is unavailable, you use the other machines to complete the job.

The following table presents an example of a primary and alternate routing for Item A.

### ***Primary and Alternate Routings***

<b>Item</b>	<b>Alternate Name</b>	<b>Operation Sequence</b>	<b>Description</b>
A	n/a	10	Assembly
n/a	n/a	20	Test A/B
A	Split Test	10	Assembly
n/a	n/a	20	Test A
n/a	n/a	30	Test B

Bills and routings can share alternate labels. If you create an alternate bill with the same label as an alternate routing, components are assigned to operations on the alternate routing. If there is no routing with the same alternate label, components are assigned to operations on the primary routing.

## **Engineering Routings**

You can define an engineering routing as an alternate for a manufacturing routing. This would typically be used to prototype a variation from the primary routing that produces the same assembly.

Both engineering and manufacturing routings share the same resource, department, and standard operation information.

## Flow Routings

In a Flow Manufacturing environment, products are produced on a flow line to meet customer demand. Typically one flow line makes a mix of products.

Product Synchronization is the process of defining your product's process flow. This is done through the Flow routing where you are able to define processes, events and operations for your flow line. Although you can only define processes, events, and operations using Oracle Flow Manufacturing, you are defining them in windows owned by Oracle Bills of Material.

## Dynamic Routings

Paths that jobs take are not always known at creation. Depending on initial operations and their results, operation flexibility is frequently required. There can be numerous possibilities defined as part of a routing network, any one of them being selectable based on the outcome of the last operation, within the job performed. All possible operation paths that a route may flow through are first determined. This networked, predefined path definition provides for dynamic, flexible operation.

## Lot-Based Flow Routing

A flow route is defined as a comprehensive routing network. It enables you to model your shop floor, define possible re-work points, or it can be linear. Conceptually, a flow routing consists of a series of nodes and paths, which make up the entire routing network.

A WIP lot will begin with any one of the possible routes that a job can potentially take, which consists of a route having only the beginning and ending tasks. As the job progresses through the production cycle, you can populate the Build Class route with the operations that the WIP lot actually goes through, selectable from the Flow Route. Within each sector, the operations that a WIP lot can progress to will be mapped out in the lot-based type routing. All operations that the WIP lot can potentially progress to are listed as operations for the lot-based routing. Lot-based routings are extensions of standard routings, and have network entities defined for their operations.

## Operations

To define a routing operation you first specify an operation sequence number to indicate the order to perform operations. Components in your bill of material can reference an operation sequence. Next, you can choose either a standard operation, or you can enter a new operation.

## Sequence of Operations

Routings define the step-by-step descriptions, or operations, for manufacturing an assembly. Each operation on a routing defines a specific portion of the manufacturing process for the assembly. You can use operations to identify the location, the quantity, and the state of completion of the assemblies you are currently manufacturing.

For each component item on the bill of material associated with a routing, you can specify the operation sequence where you require the item. You can then only issue material where and when it is needed. See: *Creating a Bill of Material*, page 2-9.

## Standard Operation

A standard operation is a commonly used operation that you define as a template to default operation information when you define routings. When you define a new operation on a routing, you can specify a standard operation whose information Bills of Material copies into the operation you are currently defining. You can then change any of the copied information for the new operation. See: *Creating a Standard Operation*, page 5-22.

## Setup Standard Operation

A setup standard operation is the same as a standard operation except that it defines an operation used for setting up machine type resources only. Use the setup standard operation to specify the operation used during changeovers. See: *Defining Resource Setup Information*, page 1-33.

## Backflushing Transactions

You can specify at what point in the routing you backflush component material. Moves automatically backflush the appropriate components at the time they are needed. You can postpone the backflush of material at time-critical operations until a later operation. See: *Issuing and Returning Specific Components*, *Oracle Work in Process User's Guide*.

## Minimum Transfer Quantities

You can set the minimum quantity that you move from an operation when you define a routing. The Move Transactions window in Oracle Work in Process issues a warning when you move a quantity less than this minimum.

## Attachments

You can attach files, which may include instructions, to routing operations. See: *Attaching Files to Bills and Routing Operations*, page 2-30.

## Option Dependent Operations

When you define routings for model and option class items, you can indicate the operations that appear in a configuration item's routing only if you choose an option that references that operation. Bills of Material automatically creates a configuration

item's routing including all operations that are not option-dependent and any option-dependent operations referenced by a chosen option. See: Configure to Order Environments, page 7-4.

## Resource Usage

You can associate multiple resources with an operation on a routing. For each resource, you can determine if you want to include that resource in scheduling and lead time calculations. You can also collect costs for a resource on a routing if you specified the resource as a costed resource. See: Defining a Resource, page 1-24. If a resource is unavailable, you can define alternate resources. An alternate resource can be a single resource or a set of resources.

Resource parents and resource sets are used to group similar resources. Routings can then be defined with their general resource requirements, while WIP lots are tracked with the usage of the specific resources. While a resource can belong to several resource sets, a resource can only belong to one parent resource. When a WIP lot is at an operation with a parent resource or resource set attached to it, you are prompted to enter a valid resource used in processing the WIP lot.

## Alternate Resources

You can define alternate resources for each resource. You can define an alternate resource or set of alternate resources to describe a different manufacturing step used to produce the same product. For example, you have a routing for an item TEST. The routing includes an operation with operation sequence number 70. The operation includes two operation resources, R1 (resource sequence 10) and R2 (resource sequence 20). The Substitute Group Number 10 groups the substitute resources R3, R4, and R5. These three resources are further classified into Replacement Group 10 and 20. Replacement Group 10 includes the resource R3 and Replacement Group 20 contains the resources R4 and R5. If the resources R1 or R2 are not available, you can replace them with either Replacement Group 10 or 20, so either R3 or R4 and R5 can replace R1 or R2. The following table describes how this example is set up in the Operation Resources and Operation Alternate Resources windows.

***Primary and Alternate Resources for Item TEST, Sequence 70***

<b>Resource</b>	<b>Resource Seq</b>	<b>Substitute Group Number</b>	<b>Replacement Group</b>
R1	10	10	n/a
R2	20	10	n/a
R3	10 or 20 (default)	10 (default)	10

Resource	Resource Seq	Substitute Group Number	Replacement Group
R4	10 or 20 (default)	10 (default)	20
R5	10 or 20 (default)	10 (default)	20

### Item or Lot-Based Resources

You can specify resource usage as a fixed rate per job for activities such as setup and teardown, and variable rates for resources whose usage depends on the number of units processed. For lot based resources you choose the Lot basis type and your usage rate is fixed, and for item based resources you choose the Item basis type to indicate that your usage rate is variable.

For example, you might define an operation where you schedule lot based and item based resources, as presented in the following table:

#### *Scheduling by Item or Lot*

Operation Sequence	Resource Sequence	Activity	Resource	Usage	UOM	Basis	Resource Unit Cost
10	1	Queue	Time	1	HR	Lot	\$0
n/a	2	Run	Labor 01	.2	HR	Item	\$10

Oracle Cost Management divides lot based resource usages by lot size to determine item costs. For example, you might define a lot based resource that represents time spent setting up a machine, and a resource that represents the time to tear down the machine for the next job or schedule. You could schedule and collect costs for both the setup and tear down resources.

### Resource Scheduling

You can specify usage rates either as resource units per item unit, or the inverse - item units per resource unit. For example, you could specify usage rate for a machine hour resource in either units per hour, or hours per unit. For each routing operation, you can specify multiple resources and usage rates.

For each resource, you can specify whether to schedule it, and whether it overlaps the prior or next operation. If you specify that a resource overlaps the prior operation, Oracle Work in Process schedules the resource so that the last resource on the prior



operation ends at the same time as this resource. Conversely, if you specify a resource that overlaps the next operation, Work in Process schedules the resource so that the first resource on the next operation begins at the same time as this resource.

Resources can be defined as simultaneous or alternates with other resources, independent of an assembly's routing. Two or more resources can be scheduled to be working concurrently within the same job operation. For example, a drilling machine and machinist must be scheduled at the same time. Each operation contains a scheduled sequence of resources. You can define the sequence in which resources are consumed. The information in the Schedule Seq field is only used when constraint based scheduling is enabled in Oracle Production Scheduling, though. See: *Creating a Routing*, page 5-9 and *Defining Simultaneous and Alternate Resources*, *Oracle Production Scheduling User's Guide*. You can create a different resource or group of resources that can be used to substitute the primary resource or group of resources within a job operation. For example, if unskilled labor is unavailable to perform a task, it can be substituted with skilled labor. The scheduling system will schedule the skilled labor if the unskilled labor is fully committed. This is referred to as alternative scheduling.

Work in Process schedules assuming that the department uses up to the number of assigned units of the resource simultaneously - up to the number that exist in the department.

If you specify that a resource is available 24 hours (such as time in a drying area), Work in Process schedules it around the clock regardless of shifts. See: *To assign a resource to a routing operation*, page 5-9.

### **Resource Charging Method**

You can associate multiple resources with an operation on a routing, and for each resource you can determine how the resource is charged. You can automatically charge resources in Work in Process based on move transactions and purchase order receipts (for outside processing). You can also manually charge resources. See: *Overview of Resource Management*, *Oracle Work in Process User's Guide*.

You can collect and group resource charges by activity for cost reporting. See: *Manufacturing Standard Cost Transactions* in *Oracle Cost Management User's Guide*.

### **Resource Capacity Modifications**

For each resource on a shift, you can override the number of resource units available (such as number of machines) and specify additions or reductions to the amount of time the resource is available on that shift. These capacity modifications are assigned to simulation sets that you can use later when you generate a capacity plan or schedule discrete jobs or repetitive schedules to simulate capacity changes. See: *Overview of Capacity Planning*, *Oracle Capacity User's Guide*.

### **Resource Usage Rate or Amount**

The usage rate or amount is the amount of the resource consumed at the operation,

either the quantity per item or per lot. If you assign more than one resource unit to work at an operation, Work in Process considers the number of units when scheduling a resource at an operation. (Assign the usage rate for the resource as the total quantity per item or lot, regardless of the number of resource units you specify.) For example, if you define a machine resource to require 10 hours per item and you assign 2 resource units to the resource, Work in Process automatically schedules 2 machines for 5 hours.

### **Standard Resource Costs**

When you define a routing, you specify the resources you use to build the items, and each resource has costs associated with it. By defining the routing with specific resources, you establish standard resource costs for any item that uses the routing. See: *Setting Up Standard Costing for Manufacturing in Oracle Cost Management User's Guide*.

### **Outside Processing**

You can define outside processing resources and then assign these resources to operations on a routing. Work in Process considers any operation that has an outside processing resource as an outside operation. See: *Outside Processing, Oracle Work in Process User's Guide*.

### **Labor Skill Validation**

You can define competencies for a resource to perform a particular operation. Labor Skill Validation ensures that job operations are performed by competent operators who have the required qualifications, competencies and certifications. This prevents potential errors and issues that arise from incompetent operators performing job operations.

### **Related Topics**

Item and Routing Revisions, page 2-2

Creating a Routing, page 5-9

Defining a Department, page 1-15

Defining a Resource, page 1-24

To switch between a primary and alternate routing, page 5-9

Creating Alternates, page 1-10

Primary and Alternate Bills of Material, page 2-2

Defining Flow Manufacturing Standard Processes, *Oracle Flow Manufacturing User's Guide*

Defining Flow Manufacturing Standard Events, *Oracle Flow Manufacturing User's Guide*

Defining Flow Manufacturing Standard Line Operations, *Oracle Flow Manufacturing User's Guide*

Creating a Routing, page 5-9

Creating a Standard Operation, page 5-22

Creating a Network Routing, *Oracle Shop Floor Management User's Guide*

Setup Steps (Defining Parameters), *Oracle Shop Floor Management User's Guide*

## Creating a Routing

For each routing, define the operations, the sequence to perform them, and the resources required at each operation. You can define either a primary or an alternate routing. If you are a Flow Manufacturing customer you can also create a Flow Routing. See: Creating a Flow Routing, *Oracle Flow Manufacturing User's Guide*.

**Caution:** You cannot create routings for planning or pick-to-order items.

**Note:** Use attachments, such as detailed operation instructions, for routing operations. See: Attaching Files, page 2-30.

You can create a routing manually, copy an existing routing, or reference a common routing. See: Copying Bills and Routing Information, page 2-17. See: Referencing Common Bills and Routings, page 2-21.

The procedure below describes how to manually create a routing.

### Prerequisites

- You must define at least one department before you can create a routing.
- BOM Allowed must be set to Yes for the item you are creating a routing for.

#### To create a routing:

1. Navigate to the Routings window.

Item: SB68415    Chassis - Sentinel Multimedia    UOM: Ea

Alternate:     Capable To Promise

Revision: A    Date: 23-JAN-2009 03:19:54

Display: Future and Current     Implemented Only

Operations

Seq	Code	Department	Option Dependent	Lead Time %
10	SDAS	ASSEMBLY	<input type="checkbox"/>	0
20	SBAS	ASSEMBLY	<input type="checkbox"/>	71.43
30	SFAS	ASSEMBLY	<input type="checkbox"/>	78.57
			<input type="checkbox"/>	
			<input type="checkbox"/>	

Buttons: Routing Details, Operation Competencies, Routing Revisions, Operation Resources

**Note:** If your current responsibility does not include the Privilege to Maintain security function, you can only view routing information. If so, enter selection criteria in the Find Routings window and choose the Find button. The Routings Summary folder window appears.

2. Enter a manufacturing item for which you will create a routing.
3. If you are creating an alternate routing, enter an alternate. For a primary routing, do not enter an alternate. See: Primary and Alternate Routings, page 5-1.
4. If you are updating an existing routing, enter the routing revision and the effective date.

To update the revision, choose the Routing Revisions button to open the Routing Revisions window. See: To create or update a routing revision, page 5-9.

5. If you would like this routing to be capable to promise, then select the Capable to Promise checkbox. See: Capable to Promise (CTP), *Oracle MRP User's Guide*.

**Note:** Capable to promise describes an available to promise calculation that considers both available material and capacity of manufacturing and distribution resources. You are able to define one and only one CTP routing for each item.

6. Select a display option to display All, Current, or Future and Current operations effective as of the revision date you specify.

To enter completion subinventory and locator information, or view a common routing, choose the Routing Details button to open the Routing Details window. See: Completion Subinventory and Locator, page 5-30.

7. Enter the operation sequence, or let the system automatically generate it for you, according to your profile setup. See: Item and Operation Sequence Fields, page 2-42.

8. To copy or reference standard operations into a routing, use the Operation Code list of values. You can define a new standard operation by selecting Standard Operations from the Tools menu.

If you use a standard operation code, the operation information for that code will be copied into the operation you are currently defining. You can then update that information as desired. See: Creating a Standard Operation, page 5-22.

**Tip:** You can assign the same standard operation to more than one operation sequence within the same routing.

The Routings window has five tabbed regions: Main, WIP, Date Effectivity, Operation Yield, ECO, and Description.

9. Enter the department in which the operation is performed.
10. For operations in ATO model or option class routings only, indicate whether the operation is option dependant, that is, whether the operation is dependant on the choice of an optional component. All mandatory components and their related operations appear on the routing for each configuration. The default is enabled. See: Overview of Configure to Order, page 7-1.

11. Optionally, enter the item's manufacturing lead time percent required to complete all previous operations on the routing. See: Calculating Lead Times, page 9-14.

If the manufacturing lead time equals 10 days and all previous operations combined require 2 days, the lead time percent is 20%.

12. Open the Date Effectivity tabbed region and enter an effective date range. See: Effective Date Fields, page 2-42.

13. Open the WIP tabbed region and select Count Point and Autocharge options. See: Count Point and Autocharge, page 5-30. See: Charge Type, page 5-30.

Indicate whether to backflush components on shop floor moves at this operation. A backflush transaction automatically pulls Operation pull components from inventory. Work in Process also pulls all Operation pull components at non-backflush operations preceding this operation (through the previous completed

backflush operation.) See: Backflush Transaction Options, *Oracle Work in Process User's Guide*.

Enter the minimum transfer quantity of assemblies to move from this operation to the next. Work in Process will warn you if you attempt to move a number less than this value. If you used a standard operation, this value defaults to minimum transfer quantity defined for the standard operation. Otherwise the default is 0.

14. Open the Operation Yield tabbed region. You can define routing networks for Standard, Flow, and Lot-based routings.

If the routing is standard or lot-based, then the Yield, CUM Yield, Reverse CUM Yield, and Include in Rollup fields will display. To enable Operation Yield in Shop Floor Management, enter expected operation yields for each operation listed. For example, enter 0.9 for a 90% yield. These fields are displayed for Shop Floor Management enabled organizations.

15. Indicate whether the operation yield is to be considered in the cost rollup, as required by the costing team.

16. Open the ECO tabbed region and verify the following:

The Implemented check box indicates whether the component is implemented.

*Checked:* Operation is on a pending Engineering Change Order (ECO)

*Unchecked:* Operation is on implemented ECO or was added directly to the routing

17. Open the Description tabbed region and enter a description of the operation.

### **To calculate lead times for a routing:**

You can create and calculate lead times from the Routings form.

1. Navigate to the Routings form.
2. Query on a manufacturing item's routing.
3. From the main menu, select Tools > Compute Lead Times or Rollup Lead Times.

If the item's Effectivity Control attribute is set to Date, a concurrent program will run automatically to calculate the lead times. If the item's Effectivity Control attribute is set to Model/Unit Number, a window will display to enter the Unit Number parameter. When this number is entered, a concurrent program will launch, calculating lead time attributes. See: Bills of Material Attribute Group, *Oracle Inventory User's Guide*.

### **See also:**

Calculating Lead Times, page 9-14

Defining a Department, page 1-15

Creating a Standard Operation, page 5-22

Defining Bill or Routing Operation Documents, page 2-30

Defining a Resource, page 1-24

Deleting Components and Operations, page 6-1

Attaching Files, page 2-30

Creating a Bill of Material, page 2-9

Routing Report, page 11-23

Customizing the Presentation of Data in a Folder, *Oracle E-Business Suite User's Guide*

### **See Also**

Creating a Network Routing, *Oracle Shop Floor Management User's Guide*

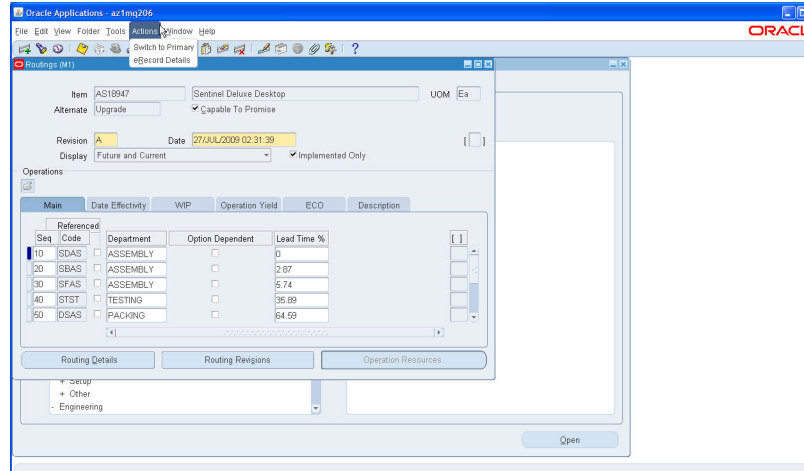
Setup Steps (Defining Parameters), *Oracle Shop Floor Management User's Guide*

### **To switch between a primary and alternate routing:**

From the Routings window you can switch between Primary and Alternate routings.

1. Navigate to the Routings window.
2. Perform a query to display the alternate routing which you would like to switch to the primary routing.
3. Choose the Actions menu and select Switch to Primary.

**Note:** Switch To Primary option appears in Actions menu.

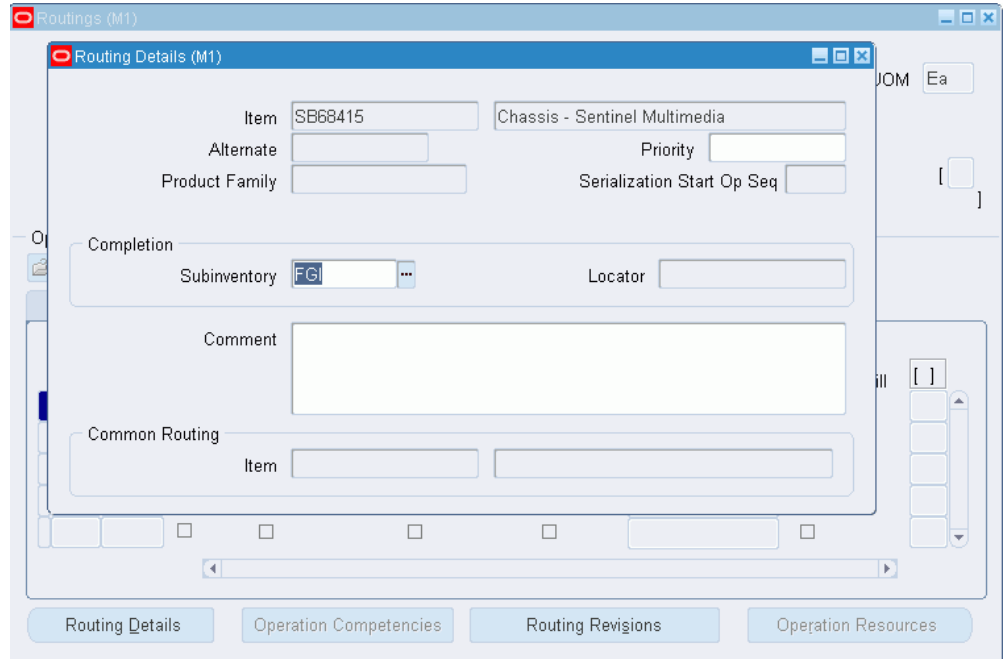


4. After the switch is completed a message will appear confirming the switch. Choose OK.

**To assign a completion subinventory and locator:**

1. Navigate to the Routing Details window. You can do this by choosing the Routing Details button from the Routings window.





2. Enter the completion subinventory and locator.

### See Also

Completion Subinventory and Locator, page 5-30

### To begin using serial number tracking at an operation:

The Serialization Start Op Seq flag in the Routing Details window indicates that item tracking with serial numbers begins at this particular operation. This enables you to track items using serial numbers prior to the completed transaction. See: *Viewing Serial Genealogy, Oracle Inventory User's Guide*.

1. Navigate to the Routing Details window.
2. In the Serialization Start Op Seq field, enter the operation sequence number where you want to begin tracking items with serial numbers.

**Important:** You must check this field to use serial number tracking for Oracle Work in Process transactions. See: *Serial Number Tracking Throughout Manufacturing, Oracle Work in Process User's Guide*.

### To define competencies for performing routing operations:

1. Navigate to the Routings window.

2. Query on the manufacturing item's routing.
3. Select the Check Skill check box for the operation sequence for which you would like to define the competence.

The screenshot shows the 'Routings (M1)' window with the following details:

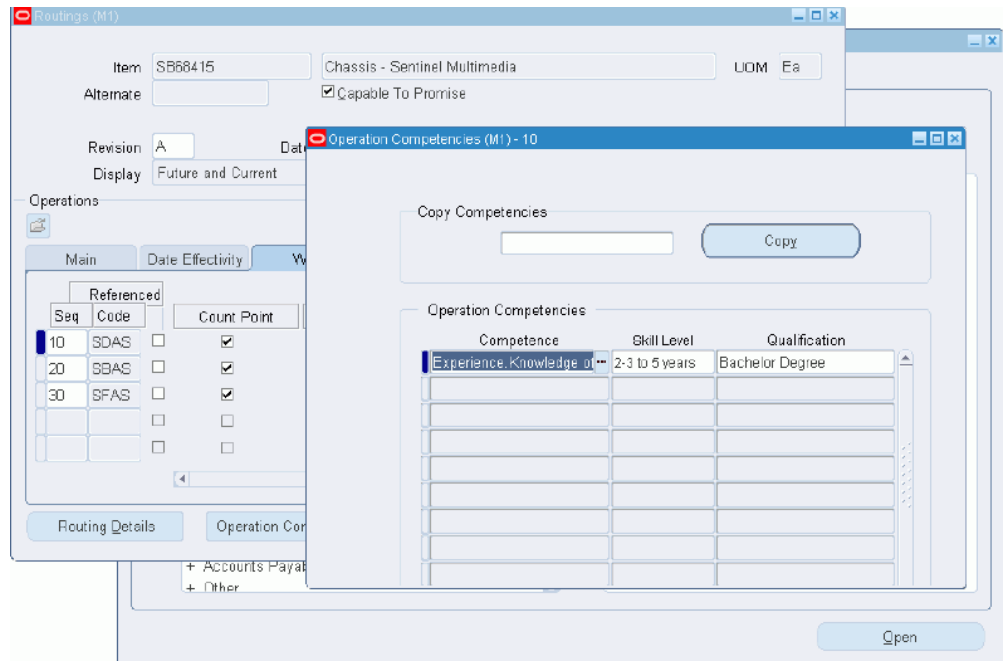
- Item: SB68415
- Description: Chassis - Sentinel Multimedia
- UOM: Ea
- Capable To Promise:
- Revision: A
- Date: 23-JAN-2009 02:07:51
- Display: Future and Current
- Implemented Only:

The 'Operations' section is active, showing a table with the following columns: Seq, Code, Referenced, Count Point, Autocharge, Backflush, Min Transfer Qty, and Check Skill.

Seq	Code	Referenced	Count Point	Autocharge	Backflush	Min Transfer Qty	Check Skill
10	SDAS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
20	SBAS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0	<input type="checkbox"/>
30	SFAS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

Buttons at the bottom: Routing Details, Operation Competencies, Routing Revisions, Operation Resources.

4. Click on the Operation Competencies button.  
Operation Competencies button will be enabled only when you select Check Skill check box.
5. Select the Competence level for the operation sequence.  
Based on the Competence selected, the skill level values for the selected competence appear in the drop down menu of the Skill Level field.
6. Enter the skill level.
7. Enter the qualification required for the competence.



8. Save your work and close the Operation Competencies window.

**See Also**

Moving and Completing Assemblies., *Oracle Manufacturing Execution System for Discrete Manufacturing User's Guide*

Operator Skill Validation., *Oracle Manufacturing Execution System for Discrete Manufacturing User's Guide*

Adding and Updating Operations., *Oracle Work in Process User's Guide*

Qualification Types., *Oracle HRMS Workforce Sourcing, Deployment, and Talent Management Guide*

Defining Competencies., *Oracle HRMS Workforce Sourcing, Deployment, and Talent Management Guide*

**To create or update a routing revision:**

1. Navigate to the Routing Revisions window. You can do this by choosing the Routing Revisions button from the Routings window.
2. Enter the routing revision.
3. Enter an effective date and time.

The implementation date, which is either the date the revision was added or the date the routing was transferred from Oracle Engineering, is displayed. If the routing was transferred from Engineering, the ECO text is displayed.

## See Also

Item and Routing Revisions, page 2-2

See Transferring or Copying Engineering Items, Bills, and Routings, *Oracle Engineering User's Guide*

### To assign a resource to a routing operation:

1. Navigate to the Operation Resources window. You can do this by choosing the Operation Resources button from the Routings window.

Seq	Resource	UOM	Basis	Usage	Inverse
10	LBR-DTASSY	HR	Item	.083333	12

2. Enter the sequence number of the resource and the resource name. You can use any resource assigned to the department. Valid values for sequence range from 1 to 9999999 and must be unique for the operation.
3. Select a basis type by which to charge and schedule the resource. The default is the basis specified for the resource.

*Item:* Charge and schedule the resource by multiplying the usage rate by the job or schedule quantity for the assembly. Select Item when your charges fluctuate with quantity change.

*Lot:* Charge and schedule the resource by charging the usage rate or amount once per job or schedule. Select Lot when your resource usage quantity is the amount required per job or schedule, for example, setup charges.

4. Enter a value for the Rate or Amount in either the Usage or Inverse fields. That is, enter the resource consumed at the operation (per item or per lot) or it's inverse.

Entering a value for either field updates the other field.

Resources with time-based unit of measures must have usage rates greater than zero.

Enter an inverse when you know the number of units a resource can process (rather than the duration an assembly unit consumes the resource. For example, if you know a resource can process 10 units per hour, enter 10 for the inverse.

Usage or Inverse can be negative only for resources that cannot be scheduled and where the charge type is neither PO move nor PO receipt.

5. Open the Scheduling tabbed region and enter the Schedule Sequence Number. Two or more resources can be scheduled to be working concurrently within the same job operation. Simultaneity is implemented by having more than one resource with the same Schedule Sequence Number.

**Note:** The Schedule Sequence Number field is independent of the resource sequence, which is used only as part of the primary key to list the resources. The Schedule Sequence Number shows the actual sequence of each resource used in the operation.

6. Optionally, enter the Substitute Group Number.

Resources with the same substitute group number are substituted together with alternate resources that have the same substitute group number as the operation resource and the same replacement group number. See: Alternate Resources, page 5-1 for an explanation of using the Substitute Group Number field when defining alternate resources.

7. Enter the number of assigned units to the resource. See: Resource Usage, page 5-1.
8. If the unit of measure of the resource is time-based, select a schedule value. See: Schedule, page 5-30 and Defining a Resource, page 1-24.

**Caution:** When defining either primary or alternate resources within the same Schedule Sequence Number, you must set the Schedule field value for the next resource to:

- Prior or No if another resource within the same Schedule Sequence Number has a Schedule field value of Prior
- Next or No if another resource within the same Schedule Sequence Number has a Schedule field value of Next

9. o

Enter the resource offset percent within this routing.

For example, a value of 50 means that you utilize the resource when the routing is half completed. This value is automatically calculated when you compute the lead time for the assembly.

10. Indicate which resource is the principle resource, within a group of simultaneous resources.

Users can schedule two or more resources to work concurrently within the same routing operation by having more than one resource with the same schedule sequence number. The Principal Flag defines which resource to use first when there is a choice. Similarly, when defining alternate resources, you must define one of the alternates as the principal substitute resource within a replacement group. Although you can have many replacement groups, you can only designate one principle resource per replacement group.

11. Open the Costing tabbed region and enter an activity to perform when you use the resource. Use activities to group resource charges for cost reporting. The default is the activity associated with the resource. See: *Defining Activities and Activity Costs in Oracle Cost Management User's Guide*.

12. Indicate whether to charge jobs or schedules based on the standard rate defined for the resource (default).

*Off:* Use this option if you import charges from an outside labor system and want to record actual costs, or to record the labor rate of an employee.

*On:* For outside processing resources, if you charge a job and repetitive schedule at the standard rate, Oracle Purchasing computes any purchase price variance and posts it to the rate variance account.

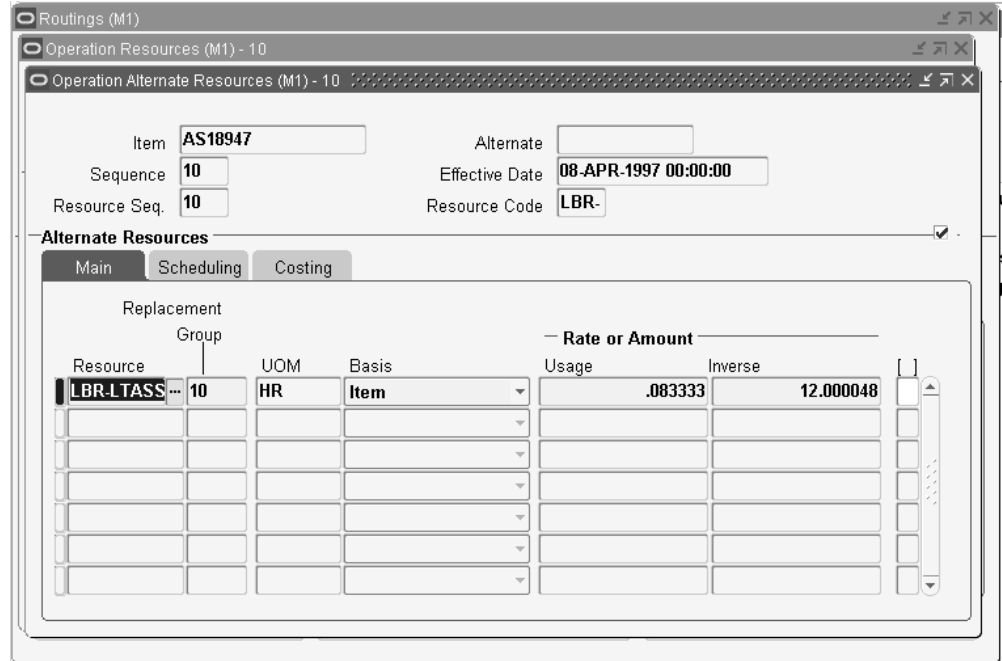
13. Select a charge type. The default is the charge type specified for the resource. See: *Charge Type*, page 5-30.

14. Select the Alternates button.

Optionally, you can define substitute resources for each primary resource group defined. This enables you to specify resource sequences that can replace the primary resource group.

15. Enter the substitute resource name.

This is one of the resources that may replace the resource group.



16. Enter the Replacement Group.

This is used to group substitute resources together, to substitute a resource group. See: Alternate Resources under Resource Usage, page 5-1 for an explanation of using the Replacement Group field when defining alternate resources.

17. Select a basis type by which to charge and schedule the resource. The default is the basis specified for the resource.

18. Enter a value for the Rate or Amount in either the Usage or Inverse fields. That is, enter the resource consumed at the operation (per item or per lot) or it's inverse. Entering a value for either field updates the other field.

**See Also**

Viewing Resource Usage, page 5-29

Resource Report, page 11-21

**To roll up costs:**

From the Routing window, you can perform a single-level cost rollup for the currently-selected routing.

1. Navigate to the Cost Rollup window. Do this by choosing Cost Rollup from the Tools menu.
2. Enter the cost type.

3. Enter the effective date and time to determine the structure of the bill of material to use in the cost rollup. You can use this to roll up historical and future bill structures using current rates and component costs. The default is the current date and time.
4. Indicate whether to include unimplemented engineering change orders (ECO).
5. Indicate whether to produce the Indented Bill of Material Cost Report, which lists the detailed cost structure by level.
6. Choose OK.

#### **See Also**

Indented Bills of Material Cost Report, *Oracle Cost Management User's Guide*.

## **Creating a Standard Operation**

Standard operations are commonly used operations that you can define as a template for use in defining future routing operations. If you assign the operation code of standard operation in a routing, then the standard operation information is copied into the operation you are currently defining. You can then modify the operation information in your new operation.

You can also create setup standard operations that are used only when setting up machine type resources. When defining resource setup information (see: Defining Resource Setup Information, page 1-33), you have the option of specifying the standard operations used during changeovers.

### **Prerequisites**

- You must define at least one department before you can define a standard operation. See: Defining a Department, page 1-15.

#### **To create a standard operation:**

1. Navigate to the Standard Operations window.



Code	Description	Department	Min Transfer Qty	Task Type	Option Dependent	Count Point	Autoch
APRT	Assemble Printer	ASSEMBLY	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
RTOP	Fabrication	METAL_FAB	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ASBL	Assemble Complete	ASSEMBLY	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
BDOP	batching std op	BD-HEAT	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CBRN	CD Burning	CONTENT	0		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CPAK	CD Packing	PACKING	0		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CPRT	Connect Printer	ASSEMBLY	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CTST	CD Testing	TESTING	0		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2. Enter a unique operation code to identify a standard operation.

**Note:** If Oracle Warehouse Management is installed, the Standard Operations form is used to define which resources of a given department are required in order to perform a warehouse task. Oracle Warehouse Management refers to standard operations as Task Types. The rules engine uses the Code defined for the Standard Operation to reference the Task Type. A bulk picking task may require a forklift machine and a pallet picker manual resource. Oracle Warehouse Management uses a rules based system to determine the task type, or standard operation, each task should be associated with. Tasks of a given type are then dispatched to users associated with the resource definition, who have the qualified equipment for the task available to them. See: Set Up Warehouse Task Types, *Oracle Warehouse Management Implementation Guide*.

3. Enter the department where the operation is performed.
4. Enter the minimum transfer quantity of assemblies to move from this operation to the next.
5. For operations in ATO model or option class routings only, indicate whether the operation is option dependant, that is, whether the operation is dependant on the choice of an optional component. All mandatory components and their related operations appear on the routing for each configuration. The default is enabled. See: Overview of Configure to Order, page 7-1.

6. Select your Count Point and Autocharge options. See: Count Point and Autocharge, page 5-30.

7. Indicate whether to backflush components on shop floor moves at this operation.

A backflush transaction automatically pulls Operation pull components from inventory. Work in Process also pulls all Operation pull components at non-backflush operations preceding this operation (through the previous completed backflush operation.)

8. Select the Check Skill option to enable check skill.

If the Check Skill option is selected, then you have to capture the requirement for skill check.

**Tip:** The value in this check box is only a default value in routing and can be overridden in the Routing window.

9. If you are creating operations for a Shop Floor Management enabled organization, see: To create a standard operation for a Shop Floor Management enabled organization, page 5-22. If not, choose the Operation Resources button to assign resources to the standard operation. See: To assign a resource to a standard operation, page 5-22.

**To create a standard operation for a Shop Floor Management enabled organization**

1. To enable operation yield in Shop Floor Management, enter the Yield for each operation listed. The valid values range between zero and one. This field is displayed for Shop Floor Management enabled organizations.
2. Indicate whether this operation yield needs to be considered in the cost rollup, as required by the costing team. This field is displayed for Shop Floor Management enabled organizations.
3. Select the Shop Floor Transaction tab and select the following fields, if appropriate. See: *Oracle Shop Floor Management User's Guide* for information about each field. This tab is enabled for Shop Floor Management enabled organizations.
  - Lowest Acceptable Yield
  - Use Organization Settings
  - Queue Mandatory Flag
  - Run Mandatory Flag

- To Move Mandatory Flag
  - Show Next Operation by Default
  - Show Lot Attributes
  - Show Scrap Codes
4. Optionally, select the Stocking Point tab and enter the default subinventory and locator for the standard operation.
  5. Optionally, choose Codes and Exclusions to enter Bonus Codes, Scrap Codes, and Responsibility Exclusions for a Shop Floor Management enabled organization.

#### **To define operation competencies for standard operations**

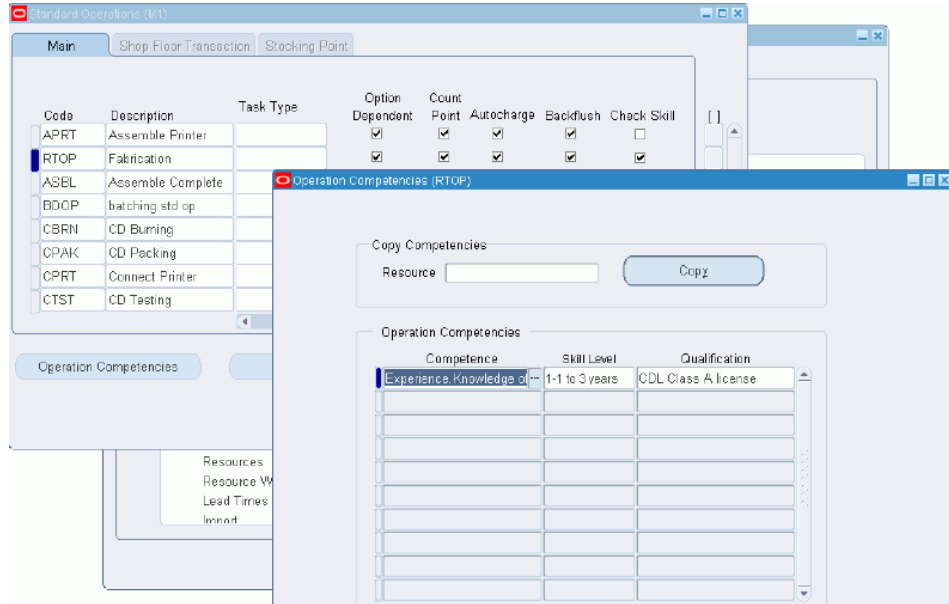
Use the Operation Competencies window to enter the competencies required for carrying out the operation. You can add the competency for a resource only once and you cannot enter duplicate records in the operation competency set.

For standard operations and routing, the Check Skill option will remain unchecked when imported. For discrete jobs created through the interface, the job operations will have competencies and check Skill values inherited from the routing. While adding standard operations through the interface the values for Check Skill and competencies will be inherited from standard operation.

Competence and Skill Level are related fields. The Skill Level field is enabled if you enter value in the Competence field and tab out and the Skill Level will have the values relevant to that Competence.

The competencies defined in the resource definition are added to the operation by selecting the assigned resources in the list of values and clicking the Add button.

6. Navigate to the Operation Competencies window by choosing Operation Competencies from the Standard Operations window.
7. Create a standard operation.
8. Select the Check Skill check box.



9. Click on the Operation Competencies button.

Operation Competencies button will be enabled only when you select Check Skill check box.

The Operation Competencies window opens. Based on the Competence selected, the skill level values for the selected competence appear in the drop down menu of the Skill Level field.

10. Enter the skill level.
11. Enter the qualification required for the competence.
12. Save your work and close the Operation Competencies window.

### See Also

Moving and Completing Assemblies, *Oracle Manufacturing Execution System for Discrete Manufacturing User's Guide*

Operator Skill Validation, *Oracle Manufacturing Execution System for Discrete Manufacturing User's Guide*

Adding and Updating Operations, *Oracle Work in Process User's Guide*

Qualification Types, *Oracle HRMS Workforce Sourcing, Deployment, and Talent Management Guide*

Defining Competencies, *Oracle HRMS Workforce Sourcing, Deployment, and Talent Management Guide*

### To enter codes and exclusions

Use the Codes and Exclusions window to define the bonus and scrap codes available for this operation at manufacturing execution time. See: Bonus and Scrap Codes, *Oracle Shop Floor Management User's Guide*. This window also enables you to exclude certain job roles from updating this operation at manufacturing execution time. Responsibility exclusions identify job roles that cannot perform this operation. For example, you can exclude users assigned to the Accounting responsibility from updating a grinding machine operation.

If you gain something or lose something at this operation, you assign either a bonus or scrap code to it. At manufacturing execution time, use the bonus or scrap code available for this operation. Use the responsibility to indicate who cannot perform this operation. For example, a foreman shouldn't be able to use the grinding machine.

13. Navigate to the Codes and Exclusions window by choosing Codes and Exclusions from the Standard Operations window.
14. Select the Bonus Codes tab and enter the sequences and codes for this operation.
15. Select the Scrap Codes tab and enter the sequences and codes for this operation.
16. Select the Responsibility Exclusions tab and enter the responsibilities to exclude from updating this operation.
17. Save your work and close the Codes and Exclusions window.

### To assign a resource to a standard operation

18. In the Standard Operations window, choose the Operation Resources button to assign resources to the standard operation. See: To assign a resource to a routing operation, page 5-9.

**Caution:** To assign resources to the standard operation, follow the same steps as you would to assign a resource to a routing operation with one exception. When assigning resources to a standard operation, the Schedule Sequence Number field in the Resources window, Scheduling tab does not exist. If you use the Schedule Sequence Number functionality, you must manually update this field when adding a new operation to a routing using the Standard Operations window.

19. If the unit of measure of the resource is time-based, select a schedule value. See: Schedule, page 5-30 and Defining a Resource, page 1-24.

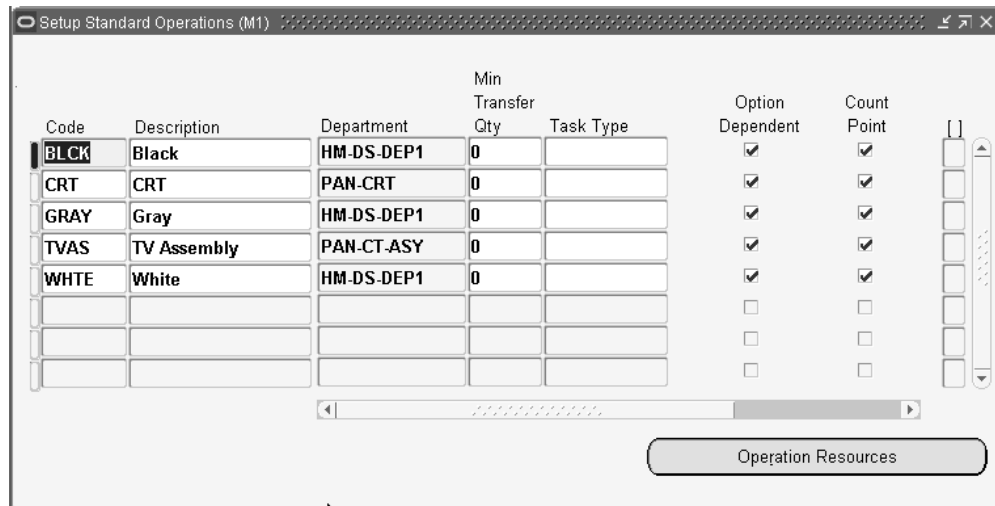
**Caution:** When defining either primary or alternate resources within the same Schedule Sequence Number, you must set the Schedule field value for the next resource to:

- Prior or No if another resource within the same Schedule Sequence Number has a Schedule field value of Prior
- Next or No if another resource within the same Schedule Sequence Number has a Schedule field value of Next

**To create a setup standard operation:**

Use a setup standard operation only when specifying the standard operation used during a changeover in the Changeover Times window. You cannot use a setup standard operation as a routing operation. See: Defining Resource Setup Information, page 1-33.

1. Create a setup standard operation the same way you create a standard operation (see: To create a standard operation, page 5-22), omitting the steps used to create standard operations for a Shop Floor Management enabled organization.



**Related Topics**

Defining a Department, page 1-15

Overview of Routings, page 5-1

Overview of Bills of Material, page 2-2

Defining Activities and Activity Costs, *Oracle Cost Management User's Guide*.

Defining Bill or Routing Operation Documents, page 2-30

Manufacturing Standard Cost Transactions, *Oracle Cost Management User's Guide*

Standard Operation Report, page 11-25

Setup Steps (Defining Parameters), *Oracle Shop Floor Management User's Guide*

Overview of Shop Floor Control, *Oracle Work in Process User's Guide*

## Viewing Resource Usage

You can view the operations and routings that use a particular resource.

### To view resource usage:

1. Navigate to the Resource WhereUsed window.

Item	Alternate	Operation Seq	Dept	- Effective From	- Effective To	Rev	

2. Enter the name of the resource for which to view the operation and routing usage.

3. Enter an effective date. Operation information effective on this date is displayed.

The Resource WhereUsed window contains four tabbed regions: Operation Details, Resource Details, Descriptions, and More.

The Operation Details tabbed region displays the operation sequence, department, the effective date range, and the routing in which the resource is used.

The Resource Details tabbed region displays the resource, the basis type, the usage rate (or amount) and its inverse, and the number of resource units assigned.

The More tabbed region displays the resource sequence, the activity for the

resource, the scheduling type (Yes, No, Prior, Next), and whether this is an engineering routing.

## Related Topics

To assign a resource to a routing operation, page 5-9

Resource Where Used Report, page 11-22

## Routings Field Reference

This section describes the use of certain major fields.

### Completion Subinventory and Locator Fields

In a routing, you can define the completion subinventory and locator where you store finished assemblies upon completion. When you define a job or repetitive schedule, Work in Process uses these values as the default, and you can change the completion subinventory and locator if necessary. Upon completion of assemblies, the completion subinventory and locator you defined for the job and repetitive schedule is the default, and you can change these values if necessary.

### Count Point and Autocharge Fields

You can define which operations in a routing record move transactions by defining how resources are consumed at that operation.

The Count Point and Autocharge check boxes work together. In the following discussion, the Count Point and Autocharge check boxes can be set to either on or off. However, you cannot set Count Point on and Autocharge off.

When you move assemblies from an operation with Count Point on / Autocharge on operation to another count point operation set the same way, Work in Process automatically completes all Count Point off / Autocharge on count point operations between them.

To transact a Count Point off / Autocharge off count point operation, you must explicitly move assemblies into and out of that operation. Moving assemblies past a Count Point off / Autocharge off count point operation acts as though the operation did not exist in the routing. This is particularly useful for rework or debug operations that are performed on a portion of the assemblies you process.

If you issue components with a supply type of Operation pull to an assembly at a Count Point off / Autocharge off count point operation, Work in Process backflushes these components when you move out of the Count Point off / Autocharge off count point operation into a count point operation that allows backflushing. Work in Process never pulls components with a supply type of Assembly pull from Count Point off / Autocharge off count point operations. However, you must turn Backflush on for Count



Point off / Autocharge offcount point operations. The Backflush field should always be turned on for the last operation in a routing. See: Overview of Shop Floor Control, *Overview of Shop Floor Control*.

In the following example, the routing has five operations. The second and fourth operations are not count points, and you must explicitly move units in and out of the fourth operation if you want to charge the job or repetitive schedule for the consumed resources.

The following table presents an example of count point operations.

**Count Point Operations**

<b>Operation Sequence</b>	<b>Description</b>	<b>Count Point</b>	<b>Backflush</b>	<b>Instructions</b>
10	Assembly 1	Yes-Autocharge	Yes	n/a
20	Assembly 2	No-Autocharge	No	n/a
30	Painting	Yes-Autocharge	Yes	If color and texture do not meet standards, send to Op 40. If job meets standards, send to Op 50.
40	Painting Rework	No-Direct charge	Yes	Sand finish and repaint to meet standards.
50	Packaging	Yes-Autocharge	Yes	Ship directly to customer site when finished with this operation.

**Count Point off / Autocharge on**

Assign this count point to operations that you always perform in a routing, but where you do not want to monitor assembly moves into, out of, and through the operation. For example, choose this count point for non-bottleneck operations that are not labor or time-intensive, such as inspection or minor assembly operations.

Work in Process automatically completes the operation and charges its WIP move resources to your job or schedule when you record a move transaction through or

beyond the operation, as with Count Point on / Autocharge on count point operations.

Work in Process does not default the operation, unlike Count Point on / Autocharge on count point operations. You can still record movements into, out of, and through the operation by overriding the default in Work in Process.

### **Count Point off / Autocharge off**

Assign this count point to operations that you do not typically perform in a routing. For example, a rework operation that you only perform on occasion. If you choose this count point for an operation, Work in Process does not complete the operation and charge its resources to your job or schedule unless you explicitly record a move transaction into and through the operation.

Work in Process does not default the operation. You can still record movements into, out of, and through the operation by overriding the default in Work in Process.

### **Count Point on / Autocharge on**

Assign this count point to operations you want to automatically default as destination operations in the Move Transactions window. You should always assign this count point to the final operation in a routing, to insure that you record move transactions into the operation, and then record completion transactions.

You can automatically complete and charge operations in a routing with this count point. Work in Process automatically completes an operation and charges its WIP Move resources to your job or schedule when you record a move transaction through or beyond the operation.

For operations that you always perform in a routing, you can also monitor assembly moves into, out of, and through the operation. For example, choose this count point for critical, time-intensive, or bottleneck operations.

## **Schedule Field**

- **Yes:** Include this resource when scheduling an operation from a job or repetitive schedule and calculating manufacturing lead time for the assembly.
- **No:** Do not include scheduling the operation or calculating the lead time.
- **Prior:** Include this resource when scheduling a job or schedule by backward scheduling the previous operation from the end of this resource. Use this option when setup resources can work in parallel with previous operations. The lead time is calculated the same way Work in Process schedules the job or repetitive schedule.
- **Next:** Include this resource when scheduling a job or repetitive schedule by forward scheduling the next operation from the start of this resource. Use this option when the teardown of the current operation can overlap with the execution of the next operation. The lead time is calculated the same way Work in Process schedules the

job or repetitive schedule.

## Charge Type Field

You can determine how each resource is charged in Work in Process. When an operation completes, Work in Process records the units applied to the job or repetitive schedule in the resource unit of measure. You can charge resources manually or automatically.

- **Manual:** Work in Process does not automatically charge this type of resource to a job or repetitive schedule. You must manually charge it to a job or repetitive schedule using Work in Process.
- **PO Receipt:** Automatically charge this resource upon receipt of a purchase order in Oracle Purchasing. The assemblies are not automatically moved to the next operation upon receipt, so you must manually move them using Work in Process.
- **PO Move:** Automatically charge this resource upon receipt of a purchase order in Oracle Purchasing and move the assemblies to the Queue intraoperation step of the next operation, or to the To move intraoperation step if this is the last operation.
- **WIP Move:** Work in Process automatically charges this type of resource to a job or repetitive schedule when you complete an operation.

## Related Topics

Assembly Completions and Returns, *Oracle Work in Process User's Guide*

Overview of Routings, page 5-1

Overview of Shop Floor Control, *Oracle Work in Process User's Guide*



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## Deleting Information

This chapter tells you everything you need to know to delete item, bill, and routing information.

This chapter covers the following topics:

- Deleting Items, Bills, Routings, Components, and Operations
- Deletion Constraints and Statements

### Deleting Items, Bills, Routings, Components, and Operations

Set up groups of entities to check, delete and optionally archive. Entities can include items, bills of material, components, routings, or operations.

What entities you can delete depends on what Oracle application you are currently using and what applications you have installed.

- if you are using Oracle Bills of Material, you can delete only bills, routings, components, and operations
- if you are using Oracle Engineering, you can delete any engineering entity except ECOs
- if you are using Oracle Inventory and you *do not* have Bills of Material installed, you can only delete manufacturing items
- if you are using Inventory and you *do* have Bills of Material installed, you can delete only items, bills, and routings

Deleting physically removes information from the database tables. Deleted bill or routing information can be archived to database tables. (You cannot archive item-level information.) You can then write custom programs to report on the archived data. Summary information is saved for all deletion groups. You can report on deletion groups.

**Note:** Files or objects that are attached to bills or routings are not deleted. Instead, the link between the bill or routing and the attached file is severed. The files themselves remain intact in their original location.

Several deletion constraints and statements are installed with Bills of Material. However, you can define custom deletion constraints and statements. If what you are attempting to delete does not pass deletion constraints, it is not deleted. For example, you can define a constraint that prevents you from deleting a bill of material for an assembly that has an item status of active.

When you delete an entire bill, you delete all the components for the assembly along with their reference designators and substitute items. When you delete a routing, all operations are deleted. For both bills and routings, any links to attachments are severed.

Oracle Work in Process reflects any changes to the bills or routings using the delete functionality only if you re-explode the bill or routing in Work in Process.

### To define a deletion group:

1. Navigate to the Deletion Groups window.

Item	Description	Organization Type	Alternate

If you are updating an existing deletion group, the date it was last submitted (if applicable) is displayed.

2. Enter a group name to identify the group of entities to delete.
3. Select what type of entity to delete.

**Note:** If the type of entity to delete is a bill, then the checkbox, Common Bills Only, is enabled. If you check this box, only bills referencing the specified bill entities are considered for deletion. If you do not check this box, then both bills referencing the specified bill entities and non-specified bill entities are considered for deletion.

4. Indicate whether to create a delete group for the current organization, an organization hierarchy, or all organizations.

**Additional Information:** Create a delete group for the current organization by specifying the entities (Item, Bill, Routing) and subentities (Component, Routing) to be deleted. You can enter an organization hierarchy name while creating the delete group for the current organization. In this case, processing is done for all subordinate organizations in the chosen organization hierarchy. You can create a delete group for all organizations. In this case, processing is done for all organizations having the same item master organization as the current organization.

5. Indicate whether to archive the deleted entities in the archive tables.

**Note:** You can archive bill and routing information, but *not* item information. The option to archive is not available if you are deleting only items.

6. Enter the item, bill, or routing to delete, or from which to delete components or operations.

The Details tabbed region displays the organization the entity belongs to, its type, and the alternate (if applicable). The Effectivity tabbed region displays the effective date range. See: Effective Date Fields, page 2-42.

The Results tabbed region displays the delete status and the date of deletion (if applicable).

7. To delete an alternate bill or routing, enter the alternate.
8. If you are deleting components, choose the Components button; if you are deleting operations, enter the Operations button.
9. When finished, choose either the Delete Group button or the Check Group button.

**To specify components to delete:**

1. Navigate to the Components window. Do this by choosing the Components button from the Deletion Groups window.
2. Enter a component item to delete.

The Results tabbed region displays the status as Error, Check OK, or Deleted. A status of Pending indicates the delete program has not run yet. The Effectivity tabbed region displays the effective date range of the component. See: Effective Date Fields, page 2-42.

If the status is listed as Error, choose the Error button to review why the deletion failed.

**To specify operations to delete:**

1. Navigate to the Operations window. Do this by choosing the Operations button from the Deletion Groups window.
2. Enter the operation sequence to delete.

The Results tabbed region displays the status as Error, Check OK, or Deleted. A status of Pending indicates the delete program has not run yet. The Effectivity tabbed region displays the effective date range of the operation. See: Effective Date Fields, page 2-42.

If the status is listed as Error, choose the Error button to review why the deletion failed.

**To check entities for deletion:**

**Note:** If you perform a check on the item, bill, and routing, the check program will return an Error status for the item. This simply indicates that the item's bill or routing still exists. In this case, disregard the Error status for the item.

1. Choose the Check Group button to verify whether any deletion constraints are violated.

The delete concurrent program updates the entity's status to Error, or Check OK. A status of Pending indicates the delete program has not run yet.

**To submit entities for deletion:**

1. Choose the Delete Group button to submit the delete concurrent program.

The delete concurrent program first performs a check for all the entities listed for



deletion. Once the check succeeds, the entities are deleted.

The delete concurrent program updates the entity's status to Error, Check OK, or Deleted. A status of Pending indicates the delete program has not run yet.

**Additional Information:** You can subscribe to an Oracle Workflow success or failure business event for item, structure, or component deletions in addition to verifying entity deletion from the Deletion Groups window. These workflow events tell you if an entity is successfully deleted or if there is an error associated with the deletion. You can also find out if an item is marked for deletion. See: *Modifying Components and Bills*, page 2-31.

### **To review errors:**

1. Choose the Errors button to see why the entity could not be deleted. Do this from either the Components, Operations, or Delete Groups windows.
2. Choose the View Constraint button or the drill down indicator to see the violated deletion constraint.

### **To delete components and operations:**

You can delete components from the Bills of Material or operations from the Routings window.

1. Navigate to either the Bills of Material or Routings windows.
2. Do one of the following:
  - If deleting a component, select a component.
  - If deleting an operation, select an operation.
3. Choose either the Delete Record icon, or Delete from the Edit menu.

The Delete Component or Delete Operation window appears. A default value for the delete group name may appear, depending upon the last entity deleted.
4. Do one of the following:
  - accept the default delete group name
  - select or enter an existing delete group name
  - enter a new delete group name
5. If you are entering a new delete group name, enter a description for the group.

6. Choose OK.
7. Navigate to the Delete Groups window and run the Delete Group concurrent process.

**Note:** Components and operations are not assigned to the delete group until you save the bill or routing. If you do not save the bill or routing, components and operations are not assigned to the delete group.

## Related Topics

Deletion Constraints and Statements, page 6-6

Creating Custom Deletion Statements and Constraints, page 1-11

To delete components and operations, page 6-1

Delete Items Report, page 11-14

Creating Organization Hierarchies, *Oracle HRMS-The Fundamentals*

Item Deletion, *Oracle Inventory User's Guide*

## Deletion Constraints and Statements

Predefined constraints for deleting bills of material or routings are as follows:

- a primary bill if an alternate exists
- a bill if it is used as a common in another bill
- a bill if a repetitive schedule references the bill
- a bill if a discrete job references the bill
- a bill if any sales orders are open for the parent item
- a bill if any demand exists for the parent item
- a model bill if any configuration items exist for the model
- an option class bill if it is a component of another bill
- a primary routing if an alternate exists
- a routing if it is used as a common routing

- a routing if a repetitive schedule references the routing
- a routing if a discrete job references the routing
- a component where the parent item is an option class or model and there is an open sales order for the parent item
- an item, bill, or component that is affected by a pending ECO
- mandatory standard components if there is demand for it

Predefined statements for deleting bills of material or routings are as follows:

- delete substitute components
- delete reference designators
- delete components
- delete dependent descriptive elements
- delete bill of material
- delete common reference designators
- delete common substitute components
- delete common components
- delete component operations
- delete common component operations
- delete sub operation resources
- delete operation resources
- delete operation sequences
- delete sub operations when deleting a routing
- delete network operations
- delete routing revisions
- delete routings

## Related Topics

Deleting Items, Bills, Routings, Components, and Operations, page 6-1

Item Deletion, *Oracle Inventory User's Guide*

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## Configure to Order

This chapter provides an overview of how to use the configure-to-order features within Oracle Bills of Material.

This chapter covers the following topics:

- Overview of Configure To Order
- Overview of Model and Option Class Bills of Material
- AutoCreate Configuration Items
- Deactivating Configuration Items

### Overview of Configure To Order

Oracle Manufacturing enables you to define options available for products and to process orders for unique product configurations while maintaining control of inventory, planning, and cost accounting.

A Configure to Order environment is one where the product or service is assembled or kitted on receipt of the sales order. Oracle Applications supports the Configure to Order environment with a range of features in order entry, demand forecasting, master scheduling, production, shipping, and financial accounting.

Configure to Order:

- includes Pick-to-Order (PTO) and Assemble-to-Order (ATO) items, models, and hybrids.
- supports building configurations using other configurations as sub-assemblies (multi-level configure-to-order)
- supports internal and external sourcing of ATO models at any level in the BOM
- supports multi-level PTO/ATO hybrids

## Information Sources

The *Oracle Configure to Order Process Guide* contains current, detailed information about how Oracle Applications E-Business Suite products support the configure to order capability. It provides detailed implementation consideration for every step of the process. Configure to Order shares business and setup information with other Oracle Applications products. Therefore, you may refer to other user's guides when you set up and use Oracle Configure to Order:

- Oracle Advanced Planning Implementation and User's Guide
- Oracle Cost Management User's Guide
- Oracle Engineering User's Guide
- Oracle Inventory User's Guide
- Oracle MRP User's Guide
- Oracle Order Management User's Guide
- Oracle Project Manufacturing User's Guide
- Oracle Purchasing User's Guide
- Oracle Quality User's Guide
- Oracle Work in Process User's Guide
- Using Oracle HRMS - The Fundamentals
- Oracle Projects User's Guide

## Definitions

Assemble-to-Order Model (ATO Configuration):

- Model bill of material with optional items and option selection rules
- Configuration manufactured from mandatory components and selected options, or purchased from a supplier

Assemble-to-Order Item:

- Standard bill of material with mandatory standard components
- Item manufactured from mandatory standard components, or purchased from a supplier

Pick-to-Order Model (PTO Configuration):

- Model bill of material with optional items and option selection rules
- Pick slip used to kit included items and selected options

Pick-to-Order Item (Kit):

- Standard bill of material with mandatory included items
- Pick slip used to kit included items

Hybrid:

- Pick-to-Order models with optional Assemble-to-Order items
- Pick-to-Order model containing Assemble-to-Order model

Multi-Level Assemble-to-Order Model (Multi-Level ATO Configuration):

- A model bill of material with a non-phantom model as a component
- Configuration manufactured from mandatory components selected options, configured sub-assemblies, or purchased from a supplier.

Multi-Level Assemble-to-Order Items:

- Standard bill of material with standard components and configured components
- Item manufactured from standard components and configured components

Multi-Organization Assemble-to-Order Model(Multi-Organization ATO):

- An ATO model which will be transferred from another organization

## **BOM Support for CTO**

- Support assemble-to-order (ATO), pick-to-order (PTO), buy to order (BTO) and hybrid (PTO/ATO, ATO/ATO) product structures
- Support for Multi-level ATO, PTO, and BTO multi-level ATO hybrid structures, which enables building configured items having other configured items as sub-assemblies
- Planning support for complex configurations where lower level configurations are sourced across the supply chain
- Mandatory and mutually exclusive option selection rules
- Option dependent routings

- Define sourcing rule for models and options at any level in the BOM

## Overview of Model and Option Class Bills of Material

Oracle Manufacturing enables you to define integrated multilevel bills that contain planning bills, model and option class bills, as well as standard product and subassembly bills.

The following table is an example of an indented planning bill of material:

***Indented Planning Bill of Material***

Level	Item	Item Type	Optional	Planning %	Qty
1	Training Computer	Planning	n/a	n/a	1
. 2	. Laptop Computer	ATO Model	No	60%	1
.. 3	.. Carrying Case	Product	No	100%	1
.. 3	.. Keyboard	Product	No	100%	1
.. 3	.. CPU	ATO Option Class	No	100%	1
... 4	... 386 Processor	Purchased Item	Yes	65%	1
... 4	... 486 Processor	Purchased Item	Yes	35%	1
.. 3	.. Monitor	ATO Option Class	No	100%	1
... 4	... VGA	ATO Option Class	Yes	70%	1
.... 5	.... VGA Manual	Purchased Item	No	100%	1



Level	Item	Item Type	Optional	Planning %	Qty
....5	....VGA1	Purchased Item	Yes	50%	1
....5	....VGA2	Purchased Item	Yes	50%	1
...4	...EGA	ATO Option Class	Yes	30%	1
....5	....EGA1	Product	Yes	55%	1
....5	....EGA2	Product	Yes	45%	1
...4	... Monitor Manual	Purchased Item	No	100%	1
..3	.. Operating System	ATO Option Class	Yes	90%	1
...4	... DOS	Phantom	Yes	80%	1
....5	.... DOS Manual	Purchased Item	No	100%	1
....5	.... DOS Diskettes	Subassembly	No	100%	1
...4	... UNIX	Phantom	Yes	20%	1
....5	.... UNIX Manual	Purchased Item	No	100%	1
....5	.... UNIX Diskettes	Subassembly	No	100%	1

### Planning Bills of Material Example

In the table below, the Training Computer (at level 1) is a planning item that represents a family of products whose demand you want to forecast by family. The Training Computer planning bill contains three components (at level 2) that are each ATO models. Each component specifies a planning factor that represents the percentage of Training Computer orders that are for that model. All components in the bill for a planning item must have a planning percentage. Planning percentage totals can exceed

100% to over plan.

The following table is an example of a single level, planning bill of material:

**Single Level Bill for Training Computer**

Level	Item	Item Type	Optional	Planning %	Qty
1	Training Computer	Planning	n/a	n/a	1
.2	. Laptop Computer	ATO Model	No	60%	1
.2	. Desktop Computer	ATO Model	No	20%	1
.2	. Server Computer	ATO Model	No	20%	1

Optional components of model and option class bills can also have planning factors. Notice that in the example in the table above, the Laptop Computer has a planning percent of 60% and the Operating System option class has a planning percent of 90%. The two options under the option class (DOS and UNIX) have 80% and 20% respectively. If there is a forecast for 100 units of the Training Computer, Oracle Master Scheduling/MRP computes the forecasts for DOS and UNIX by exploding the forecast for 100 units considering each planning percent:

**DOS forecast =**

$$100 \times .60 \times .90 \times .80 = 44 \text{ units}$$

**UNIX forecast =**

$$100 \times .60 \times .90 \times .20 = 11 \text{ units}$$

## Configure to Order Environments

You can define model and option class bills of material that list the options your customers can choose from when they place a sales order for an assemble to order configuration. To define assemble to order models whose configurations you assemble using work order, flow schedules, or purchase orders. You must set the Assemble to Order Item Master field to Yes for the model and option class items. The following table shows an example of this:

### ***Item Attributes for Configure to Order Items***

<b>Item</b>	<b>Item Type</b>	<b>BOM Item Type</b>	<b>Assemble to Order</b>	<b>Pick Components</b>
Laptop Computer	ATO Model	Model	Yes	No
CPU	ATO Option Class	Option Class	Yes	No
Modem	ATO Item	Standard	Yes	No

When you assign an option class item to a model or option class bill of material, the component item (option class) must have the same value for the Assemble to Order Item Master field or Pick Components Item Master field as the parent item (model or option class). So, you can only assign assemble to order option classes to assemble to order models and pick-to-order option classes to pick-to-order models.

You can also define hybrid model bills where you list some options that you pick and some options that you assemble using a final assembly order. When you place an order, your customers can choose the options for the assembled configurations as well as the picked options that ship with the order. For each of these hybrid model bills, you set the Pick Components Item Master field to Yes for the top model item and assign assemble to order model items as components (where the Assemble to Order Item Master field is Yes). So the components of a PTO model can include ATO models as well as PTO option classes and included items. Also, an option under a PTO model or option class can be a standard ATO item that requires a manufacturing work order to assemble it, but unlike the ATO model, has no options.

### **Model Bills of Material**

A model bill lists the option classes, options, and standard items that exist for a model. The bill of material for a PTO model lists the option classes, options, and included items that exist for that model. In the example below, the Promotional Laptop is a PTO model where you have both picked and assembled components. The single level bill under the Promotional Laptop contains one option, one option class, two included items and an ATO model. Both the Accessories option class and Diskettes are optional, and you can choose any number of options under the Accessories option class. The included items, Battery Pack and Laptop Computer, are not optional in the bill.

The single level bill under the Laptop Computer ATO model contains two mandatory components and three option classes. The mandatory components, Computer Case and Keyboard, are standard items that are not optional in the bill. CPU and Monitor are mandatory option classes since they are not optional, while Operating System is an

optional option class. You must choose at least one option under mandatory option classes. CPU and Operating System option classes are mutually exclusive which means you can only choose a single option under each. However, you can choose any number of Monitors.

The following table presents an example of a model bill of material:

***Indented Bill for Promotional Laptop***

<b>Level</b>	<b>Item</b>	<b>Item Type</b>	<b>Optional</b>	<b>Planning %</b>	<b>Mutually Exclusive</b>
1	Promotional Laptop	PTO Model	n/a	n/a	n/a
.2	. Battery Pack	Kit	No	100%	n/a
.2	. Accessories	PTO Option Class	Yes	40%	No
.2	. Diskettes	Purchased Item	Yes	95%	n/a
.2	. Laptop Computer	ATO Model	No	100%	n/a
.2	. Laptop Computer	ATO Model	n/a	60%	n/a
..3	.. Carrying Case	Product	No	100%	n/a
..3	.. Keyboard	Product	No	100%	n/a
..3	.. CPU	ATO Option Class	No	100%	Yes
..3	.. Monitor	ATO Option Class	No	100%	No
..3	.. Operating System	ATO Option Class	Yes	90%	Yes

When you place an order for the Promotional Laptop, you choose from the list of options (Diskettes, Accessories options) and from the list of options under the Laptop

Computer bill of material, such as DOS, VGA1 and 386 Processor. As described earlier, you open a work order or flow schedule for the Laptop Computer configuration.

Order Management then includes the completed Laptop Computer configuration on the sales order pick slip for the Promotional Computer configuration, along with any other chosen options and included items. See: Mutually Exclusive and Optional Fields, page 2-42.

### Option Class Bills of Material

Option class bills can contain standard components, options, as well as other option classes. Oracle Manufacturing lets you structure any number of levels of option classes within option classes so you can create an indented hierarchy of choices. You can also specify a mandatory component under any option class in the indented structure that would automatically be included anytime you choose an option from that option class (or a lower level option class).

In the example below, the indented Promotional Computer (exploded to three levels) contains one option class at level 2 (Accessories) and three option classes (CPU, Monitor, and Operating System) in its structure at level three. The Accessories option class has one included item (Peripherals Guide) and three options, Mouse, LaserPrinter, and Scanner. When you place an order for the Promotional Laptop, you can choose as many options as you like (or no options) from the Accessories option class. If you choose at least one option, you automatically include the Peripherals Guide for the order.

The Laptop Computer bill contains three option classes at level 3 and the Monitor option class has two option classes (VGA and EGA) in its structure at level 4. The Monitor option class has a mandatory component (Monitor Manual) that is included for any monitor choice. The VGA option class has a mandatory component (VGA Manual) that is included if you choose VGA1 or VGA2.

The following table presents a BOM with multiple layers of option classes:

***Indented Bill of Material for Promotional Laptop***

Level	Item	Item Type	Optional	Planning %	Mutually Exclusive
1	Promotional Laptop	PTO Model	n/a	n/a	n/a
.2	. Battery Pack	Kit	No	100%	n/a
.2	. Accessories	PTO Option Class	Yes	40%	No

<b>Level</b>	<b>Item</b>	<b>Item Type</b>	<b>Optional</b>	<b>Planning %</b>	<b>Mutually Exclusive</b>
.2	. Diskettes	Purchased Item	Yes	95%	n/a
.2	. Laptop Computer	ATO Model	No	60%	n/a
..3	.. CPU	ATO Option Class	No	100%	Yes
...4	... 386 Processor	Purchased	Yes	65%	n/a
...4	... 486 Processor	Purchased	Yes	35%	n/a
..3	.. Monitor	ATO Option Class	No	100%	No
...4	... VGA	ATO Option Class	Yes	70%	No
....5	.... VGA Manual	Purchased Item	No	100%	n/a
....5	.... VGA1	Purchased Item	Yes	50%	n/a
....5	.... VGA2	Purchased Item	Yes	50%	n/a
...4	... EGA	ATO Option Class	Yes	30%	No
....5	.... EGA1	Product	Yes	55%	n/a
....5	.... EGA2	Product	Yes	45%	n/a
...4	... Monitor Manual	Purchased Item	No	100%	n/a

Level	Item	Item Type	Optional	Planning %	Mutually Exclusive
.. 3	.. Operating System	ATO Option Class	Yes	90%	Yes
... 4	... DOS	Phantom	Yes	80%	n/a
... 4	... UNIX	Phantom	Yes	20%	n/a

### Multi-Level Bills of Material

A model item can be a component of another model assembly. If you specify any supply type other than phantom for the lower level models, they will be treated as sub-assemblies during the AutoCreate Configuration process.

In the example above, change the monitor to a Model instead of an option class. Give it a BOM supply type other than phantom. When you place an order for a Promotional Laptop, you choose from the same list of options as you would in the original example. However, now a new configuration item, BOM, and routing is created for both the Laptop Computer and the Monitor.

**Note:** If the Monitor is a model with a BOM supply type of phantom, it will be treated like an option class.

### Multi-Organization Bills of Material

Any non-phantom model can be sourced from any organization or from a supplier. In a multilevel structure, this means that the sub-models can be made in an organization other than the parent. To set up the BOM correctly in this environment, create the BOM and routing for each model in its manufacturing organization.

In the example above, the Laptop Model BOM and Routing may be created in the Seattle organization, while the Monitor Model BOM and Routing may be created in the Chicago organization. Each would have its corresponding option class and standard bills under the model.

If you are purchasing a configuration, set up the model BOM in the receiving organization.

As with standard items, sourcing rules are used to find the organization where the sub-assembly is manufactured.

### Standard Bills of Material

Standard bills are bills of material for manufactured products, kits, subassemblies,

phantoms, or purchased assemblies. Standard bills appear at the bottom levels of the indented structure.

In the example below, the DOS option in the model bill for the Laptop Computer is a phantom item whose bill contains DOS Manual and DOS Diskettes. Each time you order a Laptop Computer and choose the DOS option, your configured bill will contain the DOS phantom item. Oracle Work in Process automatically explodes through the requirement for DOS to its components, DOS Diskettes and DOS Manual, since the DOS option is a phantom item. DOS Diskettes is a subassembly, so it also has a standard bill of material although it is not shown below.

The following table presents a model bill of material with a standard bill of material underneath it:

***Model Bill of Material with Standard Bill Underneath***

<b>Level</b>	<b>Item</b>	<b>Item Type</b>	<b>Optional</b>	<b>Supply Type</b>	<b>Qty</b>
. 2	. Laptop Computer	ATO Model	No	n/a	1
.. 3	.. Operating System	ATO Option Class	Yes	n/a	1
... 4	... DOS	Phantom	Yes	n/a	1
.... 5	.... DOS Manual	Purchased Item	No	Assembly Pull	1
.... 5	.... DOS Diskettes	Subassembly	No	Assembly Pull	1

**Option Quantity Ranges**

For each option, you can specify a quantity range that limits the quantity of the option you can order during Order Management. In the example below, you can order only one CPU and Operating System but you can order up to 10 VGA1 or VGA2 monitors and up to 20 EGA1 or EGA2 monitors.

The following table presents an example option quantity range for a laptop computer:



**Option Quantity Ranges for Laptop Computer**

<b>Level</b>	<b>Item</b>	<b>Item Type</b>	<b>Optional</b>	<b>Min Qty</b>	<b>Max Qty</b>
1	Promotional Laptop	PTO Model	n/a	n/a	n/a
.2	. Battery Pack	Kit	No	n/a	n/a
..3	.. Recharger	Purchased Item	No	n/a	n/a
..3	.. 12Hour Battery	Purchased Item	No	n/a	n/a
.2	. Accessories	PTO Option Class	Yes	n/a	n/a
..3	.. Mouse	Product	Yes	1	1
..3	.. LaserPrinter	Product	Yes	1	1
..3	.. Scanner	Product	Yes	1	1
..3	.. Peripherals Guide	Purchased Item	No	n/a	n/a
.2	. Diskettes	Purchased Item	Yes	1	20
.2	. Laptop Computer	ATO Model	No	n/a	n/a
..3	.. CPU	ATO Option Class	No	n/a	n/a
...4	... 386 Processor	Purchased Item	Yes	1	1
...4	... 486 Processor	Purchased Item	Yes	1	1

Level	Item	Item Type	Optional	Min Qty	Max Qty
..3	.. Monitor	ATO Option Class	No	n/a	n/a
...4	... VGA	ATO Option Class	Yes	n/a	n/a
....5	.... VGA1	Purchased Item	Yes	1	10
....5	.... VGA2	Purchased Item	Yes	1	10

### Basis Option Class

You can define a basis of option class for PTO Option Class items. This means Order Management prevents you from modifying the extended order quantity of the option class item. You can still modify the extended quantity of the options below the PTO Option Class.

In the example below, basis is set to Option Class for the Accessories option class item, and the extended order quantity for the option class is 3. You cannot modify the extended order quantity for the Accessories option class. You can, however, modify the extended order quantity for any of the options below the accessories option class (Mouse, LaserPrinter, and Scanner). The Peripherals Guide included item's extended quantity is based on the extended order quantity of the option class, so this quantity cannot be changed by modifying the accessories option class.

The following table presents an example of a basis set to Option Class:

Level	Item	Item Type	Basis	Qty	Qty Ordered	Extend Qty
1	Promotional Laptop	PTO Model	n/a	1	3	3
.2	. Accessories	PTO Option Class	None	1	n/a	3
..3	.. Mouse	Option	Option Class	1	n/a	3

Level	Item	Item Type	Basis	Qty	Qty Ordered	Extend Qty
..3	.. LaserPrinter	Option	n/a	1	n/a	3
..3	.. Scanner	Option	n/a	1	n/a	3
..3	.. Peripherals Guide	Included Item	n/a	1	n/a	3

### ATP Check Controls

Oracle Manufacturing lets you specify the components in model and option class bills of material for which you want to check Available to Promise before scheduling a ship date for a configuration. Oracle Manufacturing lets you specify for each item in the item master whether you must check ATP for that item itself and whether the item has bill of material components that require an ATP check.

For example, you might need to check ATP for the keyboard and CPU each time you order a Laptop Computer configuration but the supply of all other components is not constrained. In that case, you would set the ATP Components Item Master field to Yes for the Laptop Computer and the CPU option class, and you would set the Check ATP Item Master field to Yes for the Keyboard and CPUs. That way, when you order a Laptop Computer and choose a 486 Processor, Oracle Order Management performs an ATP check for each component in the Laptop Computer bill where Check Component ATP is set to Yes (Keyboard only) and it would check ATP for the 486 Processor since that option was selected.

**Note:** If the Check ATP item master field is set to Yes, you can change this value when you create a bill of material. If the Check ATP is set to No, it cannot be updated when you create the bill.

**Note:** ATP Check is based on the results of your planning input. See: *Planning Process, Oracle Advanced Supply Chain Planning User's Guide.*

The following table presents an example of ATP check control:

**ATP Checks for Laptop Computer**

<b>Level</b>	<b>Item</b>	<b>Item Type</b>	<b>Check ATP</b>	<b>ATP Components</b>
1	Promotional Laptop	PTO Model	No	Yes
.2	. Battery Pack	Kit	No	Yes
..3	.. Recharger	Purchased Item	No	No
..3	.. 12Hour Battery	Purchased Item	Yes	No
.2	. Accessories	PTO Option Class	No	Yes
..3	.. Mouse	Product	Yes	No
..3	.. LaserPrinter	Product	No	No
..3	.. Scanner	Product	No	No
..3	.. Peripherals Guide	Purchased Item	No	No
.2	. Diskettes	Purchased Item	No	No
.2	. Laptop Computer	ATO Model	No	Yes
..3	.. Carrying Case	Product	No	No
..3	.. Keyboard	Product	Yes	No
..3	.. CPU	ATO Option Class	No	Yes
...4	... 386 Processor	Purchased Item	Yes	No
...4	... 486 Processor	Purchased Item	Yes	No

ATP calculation can also be done for a product family. A product family calculation

takes into account demand and supply for individual items that are members of the product family.

Oracle supports multiple levels of ATP check components. For example, a standard component of a model could contain a phantom item with ATP check components in its bill. In that case, you would set the ATP Components Item Master field to Yes for both the model and the phantom item. That way, Order Management knows to continue exploding the bill through the phantom item looking for components to include in the group ATP check for the configuration.

**Note:** Multi-level, multi-organization environments require that ATP Check be based on the results of your planning input. See: Planning Process, *Oracle Advanced Supply Chain Planning User's Guide*.

### Multi-Organization Bills of Material Setup

You can enter sales orders for assemble to order configurations, with a warehouse as the shipping organization, and build the configurations in other organizations. In a multi-level structure, each level can be built in a different organization. Using common bills of material, you can share model and option class bills of material between organizations. You define the model and option class bills in the primary manufacturing organization that owns each bill, creating common bills in your item validation organization (and other manufacturing organizations) to reference the bill in the primary manufacturing organization.

For example, you can enter orders for the Laptop Computer in your item master organization (Global Computers) and build the Laptop Computer in two other organizations-Sacramento and Austin. And, all engineering changes to the Laptop Computer (and its components) originate from the Sacramento organization. You define the Laptop Computer model item in your item master organization (Global Computers) and assign the item to the Sacramento and Austin organizations. Then you can define the Laptop Computer's model bill of material in the Sacramento organization, creating common bills of material in the Global Computers and Austin organizations. Each common bill references the model bill in the Sacramento organization. For each component that has its own bill of material (option class and standard items), you define the component's bill in the Sacramento organization and create common bills in the Global Computers and Austin organizations (where each common bill references a bill in the Sacramento organization).

The following table presents an example of a bill of material shared between organizations. The Organization, Item, and Alternate columns represent Common Bill Details:

### ***Shared Bills of Material for Laptop Computer***

<b>Organization</b>	<b>Alternate</b>	<b>Common Bill Details Organization</b>	<b>Common Bill Details Item</b>	<b>Common Bill Details Alternate</b>
Sacramento	Primary	n/a	n/a	n/a
Global Computers	Primary	Sacramento	Laptop Computer	Primary
Austin	Primary	Sacramento	Laptop Computer	Primary

### **Option Dependent Routing Steps for Discrete Manufacturing**

Oracle Bills of Materials lets you define routing steps for models that can be selected as options for configurations. You can assign multiple routing steps to a single optional component. You can specify that a routing step is option dependent which causes the configuration to include that routing step only if an option referencing that step was chosen.

You can assign multiple routing steps to a single optional component model bill. You specify one value in the op sequence column on the main BOM form. The operation you specify on the main window is used as the back flush location for the item.

You can assign additional operation sequence to the components by using a child window. The child window is available from any optional BOM component line by button.

The following table presents an example of option dependent routing steps:

### ***Indented Bill of Material for Laptop Computer***

<b>Level</b>	<b>Item</b>	<b>Item Type</b>	<b>Op Seq</b>	<b>Optional</b>	<b>Qty</b>
. 2	. Laptop Computer	ATO Model	n/a	No	1
.. 3	.. Carrying Case	Product	10	No	1
.. 3	.. Keyboard	Product	20	No	1

Level	Item	Item Type	Op Seq	Optional	Qty
.. 3	.. CPU	Option Class	30	No	1
... 4	... 386 Processor	Purchased Item	30	Yes	1
... 4	... 486 Processor	Purchased Item	25, 45, 47	Yes	1
.. 3	.. Monitor	Option Class	40	No	1
... 4	... VGA	Option Class	40	Yes	1
.... 5	.... VGA Manual	Purchased Item	40	No	1
.... 5	.... VGA1	Purchased Item	40	Yes	1
.... 5	.... VGA2	Purchased Item	40	Yes	1
... 4	... EGA	ATO Option Class	40	Yes	1
.... 5	.... EGA1	Product	40	Yes	1
.... 5	.... EGA2	Product	40	Yes	1
... 4	... Monitor Manual	Purchased Item	40	No	1
.. 3	.. Operating System	ATO Option Class	50	Yes	1
... 4	... DOS	Phantom	50	Yes	1
... 4	... UNIX	Phantom	50	Yes	1

### ***Routing Steps for Laptop Computer***

<b>Op Seq</b>	<b>Option Dependent</b>	<b>Department</b>	<b>Operation Description</b>
10	No	Casing	Cut and smooth case edges
20	No	Assembly 1	Attach keyboard and cable
25	Yes	Assembly 2	Clean processor
30	No	Assembly 2	Insert processor into board
40	No	Assembly 3	Attach monitor cable/glare screen
45	Yes	Assembly 2	Test Processor
47	Yes	Assembly 2	Enter Supplier Certification
50	No	Packaging	Wrap OS kit with power supply

The table above presents an example of how Oracle Manufacturing automatically includes Operation Sequences 25, 45 and 47 in any configuration routing containing a 486 processor since the 486 processor option in the bill references step 25, 45 and 47. These routing steps can also add to the standard cost for configurations with the 486 Processor, since Oracle Manufacturing performs a single level rollup for configurations and accounts for all costed resources used in the configuration routing.

The routing for your model should include all steps that any configuration might require. You can then establish option class routings by referencing the model routing as a common routing. That way, lower level options can still reference the model's routing. For example, you can reference the Laptop Computer's routing as a common routing for the CPU option class, referencing the Laptop Computer's routing steps in the option class bill.

In a multi-level, multi-organization environment, each non-phantom model should have its routing defined in its manufacturing organization.



## Option Dependent Events for Flow Manufacturing

A flow routing consists of processes, line operations and events. You can designate option dependent events by checking the Optional check box for an event. On your bills of material, you associate an option with event sequences via operation sequences on the BOM. You can assign multiple routing steps to a single optional component. The option dependent events will only be included in the configuration routing if an option referencing that event was chosen.

In a multi-level, multi-organization environment, each non-phantom model should have its routing defined in its manufacturing organization.

## Operation Sequence Inheritance

You can specify that items within the model structure inherit the operation sequence from their parent option class or model. You invoke this option by setting the site level profile BOM: Inherit Option Class Operation Sequence Number to yes. Bills of Material applies inheritance logic for all items in the model structure with an operation sequence defaulted to 1. You should maintain a routing for the top level model, but may not need to maintain a routing for any option class or model where all items below it have an operation sequence of 1.

In the example below, the profile option is set to yes, and the CPU and Monitor option class items have operation sequence numbers for the Laptop Computer routing. The processor options are defaulted to an operation sequence of 1, and inherit operation sequence 30 from the CPU option class item. The VGA Option class, options and included item are defaulted to an operation sequence of 1, and inherit operation sequence 40 from the manual option class item. Routings are not required for the CPU, Monitor, and VGA option classes.

The following table presents an example operation sequence inheritance:

### *Operation Sequence Inheritance*

<b>Level</b>	<b>Item</b>	<b>Item Type</b>	<b>Op Seq</b>	<b>Operation Sequence Inherited</b>
. 2	. Laptop Computer	ATO Model	n/a	n/a
.. 3	.. CPU	Option Class	30	Retains 30
... 4	... 386 Processor	Option	1	Inherits 30
... 4	... 486 Processor	Option	1	Inherits 30

Level	Item	Item Type	Op Seq	Operation Sequence Inherited
.. 3	.. Monitor	Option Class	40	Retains 40
... 4	... VGA	Option Class	1	Inherits 40
.... 5	.... VGA Manual	Included Item	1	Inherits 40
.... 5	.... VGA1	Option	1	Inherits 40
.... 5	.... VGA2	Option	1	Inherits 40

## Cataloging Configurations

Oracle Manufacturing provides features that help you catalog your assemble to order configurations so you can easily find on hand configurations that meet customer requirements, or find configuration item numbers that were used to fulfill previous orders for the same configuration. Oracle Manufacturing lets you set up rules to automatically assign Item Catalog descriptive element values to assemble to order configurations based on the options selected.

For example, you might want to catalog computer configurations using descriptive elements that indicate the Processor Type, Monitor Type, and Operating System chosen for each configuration. You could then assign the Laptop Computer model item to a catalog group that specifies those descriptive elements, but not assign any values to those attributes since the Laptop Computer is a model, not a specific configuration. You would also assign each option item to a catalog group with descriptive elements that describe that option. So you would assign the processor option items (386,486) to a "Processors" catalog group containing a Processor descriptive element as well as others that might describe more specific processor attributes.

The following table presents cataloging configurations:

### *Catalog and Descriptive Elements*

Item	Catalog Group	Descriptive Element Name	Descriptive Element Value
Laptop Computer	Personal Computers	Processor	n/a

Item	Catalog Group	Descriptive Element Name	Descriptive Element Value
n/a	n/a	Monitor	n/a
n/a	n/a	OS	n/a
386 Processor	Processors	Processor	Slow
486 Processor	Processors	Processor	Fast
VGA1	Monitors	Monitor	VGA
VGA2	Monitors	Monitor	VGA
EGA1	Monitors	Monitor	EGA
EGA2	Monitors	Monitor	EGA
DOS	Operating Systems	OS	MS-DOS
UNIX	Operating Systems	OS	SCO-Unix

You would also specify which descriptive elements to assign automatically to an ordered configuration, based on options chosen under each option class in the Laptop Computer's bill. For example, when you defined the bill for the CPU option class, you would specify that the Processor descriptive element should be assigned automatically based on options chosen under this class. The Bills of Material window lets you specify descriptive elements for each model or option class bill of material. If you want the autocreate configuration items process to concatenate descriptions, you must specify descriptive elements for each model and option class bill. An example of a concatenated description might be "486-VGA-DOS".

The following table presents descriptive elements assigned to an ordered configuration:

***Descriptive Elements for Bills of Material***

Item	Item Type	Element Name
CPU	Option Class	Processor
VGA	Option Class	Monitor

Item	Item Type	Element Name
EGA	Option Class	Monitor
Operating System	Option Class	OS

## Related Topics

Overview of Bills of Material, page 2-2

Two-Level Master Scheduling, *Oracle MRP User's Guide*

Overview of Routings, page 5-1

Defining Items, *Oracle Inventory User's Guide*

On-hand and Availability, *Oracle Inventory User's Guide*

## AutoCreate Configuration Items

Once you have entered and scheduled a sales order for an assemble-to-order model, Bills of Material automatically defines a new, unique configuration item complete with a bill of material and routing (based on the model primary bill and primary routing) for every non-phantom model in your configuration. Configured BOMs and routings are created in the organizations according to the following settings:

- Model item attribute: Create Configured Item, BOM
  - Based on Sourcing
 

This option creates a configured item, BOM, and routing according to the sourcing chain ship from organization.
  - Items based on Model, BOMs based on Sourcing
 

This option creates a configured item in all organizations where the model item is assigned. It also creates a configured item, BOM, and routing according to the sourcing chain ship from organization.
  - Based on Model
 

This option creates a configured item, BOM, and routing in all organizations where the model item is assigned.
- BOM Parameter: Config BOM Creation Allowed
 

If this parameter is unchecked, then the BOM and routing are not created for the configured item in this organization, even if the configuration BOM and routing

creation is eligible according to the model item attribute Create Configured Item, BOM.

- Sourcing rules set up for the model item in the default assignment set  
Sourcing rules for the model item are referred by the concurrent program if the model item attribute Create Configured Item, BOM is set to either BOMs based on Sourcing or Items based on Model, BOM based on Sourcing.
- Option-specific sourcing for the model item and options  
Configuration BOM and routing creation is performed only in those organizations that are defined as valid organizations in the option specific sourcing set up for the combination of model and options.
- Whether the BOM and routing exist for the model item in the organization  
If the model BOM and routing do not exist in the organization, then the configured BOM and routing are not created. Even if the model routing exists without a bill of material, the BOM and routing are not created for the Configured item.

The batch program Autocreate Configured Items, while honoring the above settings, also picks up the scheduled, but non-booked sales that match the other program parameters to create the configured items.

When Bills of Material creates a configuration item for a sales order, it links the new top level configuration item to the sales order such that Order Management ships the new item to fulfill the order.

For a model with no option specific sourcing defined, sourcing rules for the configured item are inherited from the sourcing rules of the model item. If option specific sourcing is defined, sourcing rules are derived based on the intersection of option specific sourcing and the model sourcing rules.

Configured item attributes are derived from different logic. Some attributes are inherited from the model item attributes. Other attributes are hard coded to control the configured item behavior. For more information, see: *Configure To Order Process Guide*.

**Note:** The functions documented here are for use in ATO environments only.

## Steps Taken to AutoCreate Configuration Items

Create unique configuration items complete with bills of material and routings (based on the model bill and routing) to fulfill customer orders for manufactured configurations. As part of this process, you can optionally perform cost rollup, lead time rollup, purchase price rollup, and flow calculations by specifying the AutoCreate Configuration Items concurrent program parameters. You can also default these parameters by setting the initial values to the following profile options:

- BOM: CTO Perform Cost Rollup
- BOM: CTO Perform List Price and Purchase Price Rollup
- BOM: CTO Perform Flow Calculations
- BOM: Perform Lead Time Calculations

You can execute the individual calculations separately by running the following individual concurrent programs:

- CTO Calculate Cost Rollup
- CTO Purchase Price Calculation
- CTO Calculate Lead Time

For more information, see: *Configure To Order Process Guide*.

**Note:** The function documented here is for use in ATO environments only.

**To autcreate configuration items:**

1. Submit the AutoCreate Configuration Items concurrent program using one of the following navigation path options:
  - Bills of Materials > ATO. Select Single Request, then choose OK.
  - Navigate to the Submit Request window. See: Submitting Requests, *Oracle E-Business Suite User's Guide*.
2. From the Name field list of values, select AutoCreate Configuration Items.
3. To autcreate a configuration item based on an order number, enter the order number. Otherwise skip the Sales Order Number field.
4. If you chose not to enter an order number, enter the number of release offset days for the configuration items. To minimize the impact of order changes, you can delay creating configuration items. You can create configuration items for only those sales orders where the estimated discrete job release date is within the number of days you specify. See: Program Parameters Definition, page 7-24 for information on how the system calculates an expected work order release date.
5. If you chose not to enter an order number, enter the organization in which you want to autcreate configuration items.
6. Indicate whether to compute the standard lead time for each new configuration item by actually scheduling a test WIP job to be completed on the requirement date.

If this is disabled, (the default), the configuration item lead time value is derived from the value of the base model.

7. Indicate whether you want to perform flow calculations. If you specify Yes, Total Product Cycle Time, Yield, Net Planning %, and Operation times will be calculated for your processes, operations and events in the configuration flow routing. If you specify No, the data will be copied from the model.
8. Indicate whether you want to perform a cost rollup. If you specify yes, a cost rollup is performed for each new configuration. This establishes accurate standard costs that are posted to cost of goods sold. If you specify no, the cost rollup is skipped during the AutoCreate Configured Items process. You can run the Perform Cost Rollup concurrent program separately when required.
9. Indicate whether you want to perform a list price rollup. If you specify yes, the list prices and blanket prices are rolled up for the configuration. If you specify no, purchase prices are not calculated. You can run the Perform Cost Rollup concurrent program separately when required.

### **Batch Versus Online Mode**

You can launch the AutoCreate Configuration Items concurrent program to create configuration items for one or more sales orders. You can also create a configuration item for a single sales order line online, from the Sales Order pad Action button (Progress Order).

### **Sales Order Pad Action Button - Progress Order**

You can create a configuration item for one sales order line from the Sales Order Pad. This mode does not give you the option to decide whether to perform the lead time calculations, flow routing calculations, cost rollup and purchase price rollup. It inherits the default values for the parameters Perform Lead Time Calculations, Perform Flow Calculations, Perform Purchase Price Rollup, and Perform Cost Rollup from the values entered for the following profile options:

- BOM: Perform Lead Time Calculations
- BOM: CTO Perform Flow Calculations
- BOM: CTO Perform List Price and Purchase Price Rollup
- BOM: CTO Perform Cost Rollup

If you create configured items from the sales order work flow using the Progress Order action, the work flow refers to these profile option settings when determining whether to execute the corresponding action.

If you create configured items using the Autocreate Configured Items concurrent

program, this program uses the settings of the profile options to default the corresponding program parameters into the Perform Lead Time Calculations, Perform Flow Calculations, Perform Purchase Price Rollup and Perform Cost Rollup programs. Optionally, you can override these default values when running Autocreate Configured Items manually.

## Program Parameters Definition

### Release Date Option

When you start the AutoCreate Configuration Items concurrent program, you can specify Release Offset Days or Flow Schedule start date, to help you minimize the impact of order changes on the planning process. By entering the Release Offset Days, you can create configuration items only for sales orders whose work order or flow schedule must be released within that number of days. In other words, if you specify Release Offset Days = 2, then you only create configuration items for orders whose work order or flow schedule must begin within two days.

The AutoCreate Configuration Item process searches your new orders, finds your orders for assemble-to-order models, and assigns an estimated work order or flow schedule release date to these order lines. Oracle Manufacturing computes the estimated work order or flow schedule release date by offsetting the scheduled ship date by the order lead time (through the workday calendar). Using the lead time information for the model item (as specified in the item master), Oracle Manufacturing calculates order lead time as follows:

**fixed lead time + (quantity x variable lead time)**

After assigning the estimated work order or flow schedule release dates to the new orders, the AutoCreate Configuration Item process finds all orders whose work order or flow schedule release date is within the Release Offset Days you specified and automatically creates configuration items for those orders.

Bills of Material automatically defines a new, unique configuration item in the item master and assigns a bill of material and routing. See tables in the Resulting Bills of Material, page 7-24 and Resulting Routings, page 7-24 sections, presenting what will be assigned to the new configuration item.

**Note:** Do not use the parameter Release Offset Days if you use Oracle Advanced Supply Chain Planning (ASCP) and ATP based on planning output. ASCP does not plan scheduled sales orders for which a configuration has not yet been created.

### Lead Time Calculation Option

#### Discrete Manufacturing

Bills of Material lets you optionally compute the manufacturing and cumulative lead



times for each new configuration item to establish accurate lead times based only on the options chosen. The configuration manufacturing and cumulative lead times are calculated for the configuration item, based on the configuration item routing. This calculation is performed in all organizations where routings are created for the configured item.

For example, the AutoCreate Configuration Item concurrent program could automatically compute fixed and variable lead times for the Laptop Computer configuration based on the routing steps that were included from the model routing. In this case, the Clean Processor step would contribute to the lead time. So, if the Clean Processor step included one hour of setup time, then it would contribute one hour to the fixed lead time for the configuration.

**Note:** When your model's routings has no option dependent routing steps (or has a minimum amount of time spent at option dependent steps), you can choose not to calculate lead times for each configuration item. Oracle Manufacturing automatically assigns the model item's lead time information to the new configuration item when you do not specify to calculate lead times for the configuration item.

### Flow Manufacturing

Configuration items with flow manufacturing routings inherit the lead times from the model item master in the appropriate manufacturing organization. Flow manufacturing environments do not calculate lead time. However, Total Product Cycle Time is an optional calculation during the AutoCreate Configuration Item process.

## Item Numbering Methods

You can choose from four methods to automatically assign item numbers to configuration items:

- Replace model item number with a sequence number
- Replace model item number with the order number/line number

**Note:** When using the order number/line number option in a multi-level environment, the top level model item will be replaced with the order number/line number. Sub-level models will be replaced with the number/line number/sequence number to differentiate them from the top level configuration.

- Append a sequence to the model number
- User defined Configuration Item numbering

For each method, you can specify which segment of the item flexfield you want to either

append or replace. For the Order number/line number method, you can specify a delimiter to separate order number and line number.

For example, the following table illustrates the item numbers that would be created for different sales orders and different model item numbers. In this example, you have a two segment item flexfield with '-' as the delimiter, you have chosen '/' as the order number/line number delimiter, the sales order number is 123, the line number is 21, and the next available sequence number is 2001.

**Assign Item Numbers**

Method	Numbering Segment	Model Item Number	Configuration Item Number
Append with Sequence	2	Computer-00	Computer-002001
Replace with Sequence	2	Computer-00	Computer-2001
Replace with order # / line #	2	Computer-00	Computer-123/21
Append with Sequence	1	Computer-00	Computer-2001-00
Replace with Sequence	1	Computer-00	2001-00
Replace with order # / line #	1	Computer-00	123/21-00

You can also generate unique configuration numbers by using the user defined configuration item numbering method. You can develop a numbering scheme that works for your own unique business needs which must return an item number consistent with the existing ATO architecture. The unique configuration number segment returned by the package will be accepted and used to form the configuration item number. The length of the returned number should be 40 or the maximum size specified in the config segment parameter, which ever is greater. If it is longer than forty it will be truncated to 40.

**Note:** If the System Items flexfield has been configured to use multiple segments, then only the column specified in the BOM parameter Config Segment is available for customized modifications. Modifications to all other segments will be ignored and these segments will be inherited

from the ATO model's item flexfield.

**Note:** Preconfigure the items in the mult-level environment. Sub-models append automatically with sequence number, and do not depend on the profile.

**Caution:** When using the Append with Sequence method to assign item numbers to configuration items, be aware that the sequence numbers used can become quite large (6 digits or greater) if you have imported many items. Both the item import and AutoCreate Configuration Items programs use the same counter to assign a sequence number (MTL\_SYSTEM\_ITEMS\_INTERFACE\_S).

### Example

When using the autocreate configuration items process, you notice that the sequence number for the item starts with 34,800. You wanted the sequence to begin with 1. You chose the Append with Sequence method.

The Append with Sequence number generates from the sequence\_name: MTL\_SYSTEM\_ITEMS\_INTERFACE\_S. View the sequence with the following SQL statement:

```
select * from all_sequences
```

```
where sequence_name = 'MTL_SYSTEM_ITEMS_INTERFACE_S';
```

Both the item import and autocreate configuration items processes use this sequence number, which ensures uniqueness. In this scenario, you can ensure that your autocreate configuration items sequence starts with 1 by using a user-defined numbering method that allows customization of the ATO numbering methodology. See: *BOM AutoCreate Configuration - User Defined Configuration Item Numbering*, My Oracle Support, Note Number 1020052.102.

## Match and Reserve

Match and Reserve ATO Configurations enables you to check for an existing matching configuration and to reserve against it. While entering an order, you can search for matching active ATO configurations or pre-configured items, and reserve any available on-hand material that is in the shipping organization. If the BOM: Use Custom Match Function profile is set to Yes and the model item attribute Configuration Match is set for either Standard Match or Custom Match, existing pre-configured ATO items, or auto-created configuration items are matched and used at all levels.

You can check for matches from the sales order pad, by choosing the Match action

button. You can also match and reserve using AutoCreate Configuration Items, accessed from the Assemble To Order submenu, within the BOM responsibility. You can match and reserve using the Create Configuration Item Workflow activity. Finally, you can match and reserve by creating your own custom matching. The profiles BOM: Match to Existing Configuration and BOM: Use Custom Match Function and the model item attribute Configuration Match control whether the match performs using the Standard Match function or Custom Match function. For more information, See: Profiles, *Oracle Configure To Order Process Guide*. To select a matching configuration the following criteria must be met:

- The order must be both booked and scheduled when progressing the order on line or choosing Actions from the menu, then Match and Reserve. However, the Autocreate Configured Items concurrent program finds a match for the configuration on non-booked, but scheduled orders. For more information, see: *Oracle Configure To Order Process Guide*.
- The order line cannot have an associated configuration item assigned.
- The profile option BOM: Match to Existing Configurations must be set to Yes and the model item attribute Configuration Match must be set to either Standard Match or Custom Match.
- The routing type of the model's primary routing and the configuration item's primary routing are the same. In other words, if the model currently has a flow routing as its primary, it will only match to a configuration item with a flow routing as its primary routing. If the routing currently has a discrete routing as its primary, it will only match to a configuration item with a discrete routing as its primary.

To reserve a configuration item in all modes, the following additional criteria must be met:

- The profile option BOM: Automatic Reservations must be set to Yes
- The profile option OM: Reservation Time Fence must not be null
- The order schedule date must be within the time fence defined in the OM: Reservation Time Fence profile option.
- There must be available on-hand quantity of the configuration item in the shipping organization

## Match and Reserve for Multi-Level Configurations

Multi-level configuration environments create configurable subassemblies that can be sourced from anywhere in the supply chain. You can match top assemblies and each configured subassembly in a multi-level ATO configuration. The system will first try to match the entire configuration. If a match is found, it will link the matching configuration item to the sales order, and attempt to reserve any on-hand, as described

above.

If a match for the top assembly is not found, the AutoCreate Configuration process will create a new configuration item for the top level assembly, and attempt to find matches at the sub-assembly levels. If a matching sub-assembly is found, it will use the existing configuration item's BOMs and routings. A new item is created for any unmatched configuration.

The system automatically matches a configuration against existing configurations, independent of their sourcing organizations, enabling you to match across all relevant organizations.

### **Match During ATP**

ATP performs a match prior to performing the availability check. If a match is found, ATP promises the matched item instead of the model and options. This provides accurate ATP and scheduling throughout the sales order lifecycle, as well as enables customers to manage a combination of make-to-stock and make-to-order business processes. Oracle Advanced Supply Chain Planning (ASCP) identifies that a sales order for the model and option matches an existing configuration item. ASCP then nets existing supplies of pre-configured stock at any supply chain bill of material level.

If a forecast exists for the matched item, its forecast is consumed first, then the model and option forecast is consumed, if needed.

### **Weight and Volume Calculation**

AutoCreate Configuration Items calculates the weight and volume for the configured item, by rolling up the weight and volume of the components in the OM validation organization. For Multi level configurations the weight and volume are first calculated for the lowest level configuration and then rolled up until the weight and volume of the top model is determined. The weight and volume are calculated in the unit of measure for the base model. If the unit of measure is not defined on the base model, the system calculates the weight and volume in the base units of the UOM class for one of the components of the model. If the model and options are not all from the same UOM class, the system uses the UOM conversions defined in inventory. If any required UOM conversions have not been defined, the system does not calculate the weight and volume for the configuration. The weight and volume of the top level configuration is not calculated if the corresponding weight on volume of any of the lower calculations can not be calculated.

The following table presents an example of the Laptop Computer configuration we are going to use for our calculation:

Level	Item	Item Type	Quantity	Optional?
1	Laptop Computer	ATO Model	1	No
. 2	. Carrying Case	Purchased Item	2	Yes
. 2	. Keyboard	Purchased Item	1	Yes
. 2	. Laptop Manual	Purchased Item	1	No
. 2	. CPU	ATO Option Class	1	No
.. 3	.. 486 Processor	Purchased Item	1	Yes
. 2	. Monitor *111	ATO Item	2	Yes
.. 3	.. Monitor	ATO Model	1	Yes
... 4	... VGA	ATO Option Class	1	Yes
.... 5	.... VGA2	Purchased Item	1	Yes
... 4	... Monitor Manual	Purchased Item	2	No

In this example, the calculation starts with the monitor which is a configured sub-assembly: Weight / Volume of Monitor\*111 = Wt / Vol of Monitor Model + Wt / Vol of VGA OC \* (1) + Wt / Vol of VGA2 (1 \* 1). The weight and volume of the laptop configuration contains the weight and volume of the monitor configuration. Weight / Volume of Laptop Configuration = Wt / Vol of Laptop Computer Model \* 1 + Wt / Vol of Carrying case \* 2 + Wt/Vol of Keyboard \*1 + Wt / Vol of CPU OC \*1 + Wt / Vol of 486 Processor \* (1 \* 1) + Wt / Vol of Monitor \* 111 \* 2.

Note that the weight and volume of the Laptop manual (a required item) should be included in the weight and volume assigned to the Laptop Computer Model, since required items are not included in the weight and volume calculations. Similarly, the weight and volume of the Monitor Manual (a required item) should be included in the weight and volume assigned to the Monitor Option Class.

**Additional Information:** While performing the weight and volume

calculation, AutoCreate Configuration Items retrieves the weight and volume of individual, optional components from the OM validation organization. The calculated weight and volume of the configured item is updated in all organizations to which the item is assigned.

## Resulting Bills of Material

### Single Level Bill of Material

Bills of Material creates the new configuration item and then, if there are no sub-assembly (non-phantom) models in the structure, assigns a single level bill of material with the following components:

- Options from the sales order
- Mandatory components of the model and any option class that was included on the sales order
- The Model and each Option Class included on the sales order.

The model and option classes appear on configuration bills as phantom components only to consume forecast and to consume master schedules. Material Requirements Planning and Work In Process do not use them since all mandatory components from the model and option classes are also included directly on the single level bill. If you do not forecast or master schedule options and option classes, they perform no function on configuration bills, but they are still included automatically.

For example, the single level bill for the Laptop Computer configuration that was ordered in the example would include the Computer Case and Keyboard because they are mandatory components for the model, the 486 processor, the VGA1 monitor, and DOS since they are options that were explicitly chosen. It would also include VGA Manual and Monitor Manual since they are mandatory components of the VGA option class and the Monitor option class respectively. And, it would include the Laptop Computer model itself plus the CPU, Monitor, VGA, and Operating System option classes.

The following table presents a single level bill of material:

#### *Single Level Bill of Material*

Operation	Item Sequence	Optional	Mutually Exclusive	Component Item
1	10	No	No	Laptop Computer

Operation	Item Sequence	Optional	Mutually Exclusive	Component Item
10	10	No	No	Computer Case
20	20	No	No	Keyboard
30	30	No	No	CPU
25	320	No	No	486 Processor
40	40	No	No	Monitor
40	410	No	No	VGA
40	420	No	No	VGA-1
40	430	No	No	VGA Manual
40	440	No	No	Monitor Manual
50	50	No	No	Operating System
50	510	No	No	DOS

Bills of Material assigns each component to the operation sequence and the item sequence from its original bill. For example, the 486 processor is item sequence 20 in the CPU option class bill and it references operation 25 in that bill.

### Multi-Level Bill of Material

In a multi-level, multi-organization setup, the model bill of material in the manufacturing organization is used for the creation of a configuration bill of material. The configuration bill of material is only created in the organizations that meet the following conditions:

- The Create Configured Item, BOM item attribute is set to Based on Model.
- Config BOM Creation Allowed is checked in the BOM Parameters window.
- The sourcing rules are set up for the model item in the default assignment set.
- The model item and options have option-specific sourcing.



- The BOM and routing exist for the model item in the organization.

For more information, see: *Oracle Configure To Order Process Guide*.

The following tables present the configuration bills of material in the respective manufacturing organizations, assuming the following:

- The same options were selected as in the single level example (See: Indented Bill of Material for Promotional Laptop, page 7-4).
- The model item attribute Create Configured Item, BOM is set to Items based on Model, BOMs based on Sourcing.
- Option-specific sourcing is not defined.
- The BOM parameter Config BOM Creation Allowed is checked in all organizations.

Notice that the Laptop configuration BOM has the monitor configuration as a sub-assembly.

**Organization M1**

Level	Item	Item Type	Optional	Selected
. 1	. Laptop Computer	ATO Item (Configuration)	No	Yes
.. 2	.. Laptop Computer	ATO Model	n/a	n/a
.. 2	.. CPU	ATO Option Class	No	Yes
.. 2	.. 486 Processor	Purchased	Yes	Yes
.. 2	.. Monitor*001	ATO Item (Configuration)	Yes	Yes

**Organization M2**

Level	Item	Item Type	Optional	Selected
.. 2	.. Monitor*001	ATO Item (Configuration)	No	Yes

Level	Item	Item Type	Optional	Selected
.. 2	.. Monitor	ATO Model	No	Yes
.. 2	.. VGA	ATO Option Class	Yes	Yes
.. 2	.. VGA Manual	Purchased Item	No	n/a
.. 2	.. VGA1	Purchased Item	Yes	Yes
.. 2	.. Monitor Manual	Purchased Item	No	n/a

## Resulting Routings

In a discrete environment, Bills of Material automatically assigns a routing to each configuration item by copying the model's primary routing and then dropping any option dependent routing steps for which no component exists that references that step. Each routing step it includes has the Option Dependent operation field set to No, since the new item is a mandatory item with no options in its bill. The routing for the Laptop Computer configuration includes step 25 to Clean processor since the 486 processor was chosen which referenced step 25. Since step 25 is Option Dependent in the model routing, it would have been dropped if you had not chosen the 486 processor option.

You can create ATO configurations with flow routings. You can define multiple routings for an ATO model, and designate them as a flow or non-flow routing. AutoCreate Configuration Items uses the primary routing of the base model and creates a flow routing if the primary routing is a flow routing, and vice versa.

The following table presents a discrete routing for a configuration item:

### *Discrete Routing for Configuration Item*

Operation	Option Dependent	Department	Operation Description
10	No	Casing	Cut and smooth case edges
20	No	Assembly 1	Attach keyboard and cable

Operation	Option Dependent	Department	Operation Description
25	No	Assembly 1	Clean processor
30	No	Assembly 2	Insert processor into board
40	No	Assembly 3	Attach monitor cable/glare screen
50	No	Packaging	Wrap OS kit with power supply

In a flow manufacturing environment, routings are structured with operations, processes and events. Operations and processes have networks associated with them, and events are assigned to the operations and processes. When a configured routing is created in a flow environment, Bills of Material copies the entire model primary routing and network, then drops any option dependent events for which no component exists referencing that event. All process and line operations and their associated network are copied from the model routing.

**Note:** In a multi-level, multi-organization environment, a routing is created for the top model, and each non-phantom sub-model in the manufacturing organization, defined by the sourcing rules on the model.

## Cost Rollup

If the organization is using a Standard costing method, in a single level environment, a single level Cost Rollup is performed for the configuration item, using the configuration BOM and routing. If the organization is using an Average costing method, the configuration item has zero cost for the Average cost type.

Configuration items do not pick up any cost from models or option classes in their single level bill. Models and option classes are only considered by forecast consumption and master schedule relief functions.

In a multi-organization environment, cost rollup is performed using supply chain cost rollup. Cost rollup for each configuration item is performed in the manufacturing (sourcing) organization. The cost of the configuration (transfer cost) in the receiving organization (transfer to organization) is established by taking the configuration item cost in the manufacturing organization, plus any transfer charge defined in the shipping network. Currency conversion is also taken into consideration if the organization uses different currencies.

## Preconfiguring Items

You can invoke Oracle Configurator from within Oracle Bills of Material to create a configured bill of material and routing for a pre-defined ATO item. This is very useful in a business to business environment where the same configuration is ordered repeatedly. Preconfigured items can be built to forecast and kept on hand. Customers can order the preconfigured items directly, as they would a standard ATO item.

You can create pre-configured Multilevel and Multi-organizational ATO items. When you create a preconfigured ATO item if the base model BOM has child level non-phantom models, the configurator displays the multi level structure defined in the OM item validation organization associated with the operation unit defined in the profile option MO: operating unit. When you select done from the configurator screen, the system automatically creates the item, the BOM, and the routing for all non-phantom models in the structure. The system generates unique names for lower level configuration items by appending a sequence to the model name. If you define sourcing rules for any of the child models in the base model BOM, the system assigns the sourcing rule to the configured items, and creates the BOM and routing in the appropriate manufacturing organization. In this case you cannot see the entire configured bill structure for the organization.

A match is attempted during pre-configuring processing if the profile BOM: Match to Existing Configurations is set to Yes and the base model item attribute Configuration Match is set to Standard Match. If a similar configuration exists, the system gives you a choice to use the existing configuration or to create a new configuration for the pre-defined item. If you choose the existing configuration, the process aborts, and no BOM or Routing is created for the item. If you choose not to use the existing configuration, the system creates a new BOM and Routing for the item, but reuses the lower level matched configurations. The system updates the match tables with the new preconfigured item and BOM, so future matches reflect the new preconfigured item.

You must set the configurator URL properly to enable you to call the configurator from within BOM.

### **To preconfigure an item:**

1. Create a new item in the master organization and assign it to the appropriate manufacturing organization.
2. Enter the base model item (on which the pre-configured item is configured) in the Base Model field on the BOM tab of the item master for the pre-configured item.
3. In the manufacturing organization, create a new bill of material for your item, without components.
4. Place your cursor in the Components region.
5. From the Tools menu, choose Configure Bill.

The Configurator window displays, enabling you to pick your options. Once done, this item can be planned, ordered and stocked, just like a standard item.

**Note:** Preconfiguring also creates routing.

See: Profiles, *Oracle Configure To Order Implementation Manual*.

## Configuration Item Catalog

Bills of Materials helps you catalog your configurations so you can easily search for a pre-existing configuration item definitions, or on hand configurations.

The AutoCreate Configuration Item concurrent program automatically assigns the new configuration item to the same Item Catalog Group as the model and assigns catalog descriptive element values based on the options chosen, depending on how you setup your item catalog and model and option class bills. And, you can specify that certain catalog descriptive elements should become part of the configuration item's description.

For example, you could define item catalog groups for personal computers, processors, monitors, and operating systems and assign descriptive elements to each that represent key characteristics of items in that group. The Personal Computers catalog group might have all descriptive elements while the catalog groups for the main components of a personal computer would have only the element that applies to that type of component.

The following table presents catalog groups:

### **Catalog Groups**

<b>Catalog Group</b>	<b>Element Name</b>	<b>Include in Item Description</b>
Personal Computers	Processor Type	Yes
Personal Computers	Monitor	Yes
Personal Computers	OS	Yes
Processors	Processor Type	No
Monitors	Monitor	No
Operating Systems	OS	No

You could assign the Laptop Computer model and its options to catalog groups and assign elements, as presented in the following table:

**Catalog Groups for Model Item**

<b>Item</b>	<b>Catalog Group</b>	<b>Element Name</b>	<b>Element Value</b>
Laptop Computer	Personal Computers	Processor Type	n/a
n/a	n/a	Monitor	n/a
n/a	n/a	OS	n/a
386 Processor	Processors	Processor Type	Slow
486 Processor	Processors	Processor Type	Fast
VGA1	Monitors	Monitor	VGA
VGA2	Monitors	Monitor	VGA
EGA1	Monitors	Monitor	EGA
EGA2	Monitors	Monitor	EGA
DOS	Operating Systems	OS	MS-DOS
UNIX	Operating Systems	OS	SCO-Unix

When you define the bill of material for models and option classes, you can specify a list of descriptive elements that the AutoCreate Configuration Item program should assign automatically to the configuration item. In this example, when you define the bill for the CPU, VGA, EGA, and Operating System option classes, you would specify a single descriptive element for each option class as shown in the table below:

**Specify Descriptive Elements**

<b>Item</b>	<b>Item Type</b>	<b>Element Name</b>
CPU	Option Class	Processor Type
VGA	Option Class	Monitor
EGA	Option Class	Monitor

Item	Item Type	Element Name
Operating System	Option Class	OS

In the example where you order a Laptop Computer with a VGA1 monitor, and 486 processor, and a DOS operating system, Bills of Material would automatically assign the following values to descriptive elements, as presented in the following table:

***Assign Descriptive Elements***

Configuration Item	Catalog Group	Element Name	Element Value
Laptop Computer-01	Personal Computers	Processor Type	Fast
n/a	n/a	Monitor	VGA
n/a	n/a	OS	MS-DOS

Since the Personal Computers catalog group specifies that each of the three descriptive elements should be included in the item description, Bills of Material would automatically assign the description "Fast-VGA-MS-DOS" to the configuration item.

## Related Topics

Defining Bills of Material Parameters, page 1-7

Overview of Lead Time Management, page 9-1

Overview of Bills of Material, page 2-2

Overview of Routings, page 5-1

Creating a Flow Routing, *Oracle Flow Manufacturing User's Guide*

Overview of Item Catalogs, *Oracle Inventory User's Guide*

Searching For Items, *Oracle Inventory User's Guide*

## Deactivating Configuration Items

Bills of Material lets you automatically deactivate item numbers associated with completed configuration orders. You can also deactivate configuration items to remove them from item master reports and screens before you actually purge them from the database. See: Deletion Constraints and Statements, page 6-6.

You can deactivate configuration items in a multilevel/ multi-organization Bill of

Material. The deactivation program deactivates the item in the current organization only because the item may have existing demand or pending transactions in other organizations. To deactivate the item in all organizations, you must run the deactivate items process in each organization.

When you set up Inventory and Bills of Material, you can define an item status to identify inactive configuration items. You can use this status to disable the configuration item from all Oracle Manufacturing functions. You would normally specify No for each of the following item attributes for inactive configuration items:

- BOM allowed
- Build in WIP
- Transactable
- Stockable

When defining bills of material parameters, specify the item status to use for completed configuration items. See: *Defining Bills of Material Parameters*, page 1-7.

You can run the Deactivate Configuration Items concurrent program to automatically deactivate all configuration items that have the following conditions in the organization you run the deactivate program.

- No open demand (sales orders)
- No future demand (demand in interface tables)
- No open supply (discrete jobs, flow schedules, purchase requisition, or purchase orders)
- No material transactions for the number of days ago you specify
- Does not exist in a child organization
- Does not have a common bill and routing

Each deactivated configuration item has its status updated. BOM components and routing operations are deactivated as well.

**To deactivate configuration items:**

1. Submit the Deactivate Configuration Items concurrent program using one of the following navigation path options:
  - Bills of Materials > ATO. Select Single Request, then choose OK.
  - Navigate to the Submit Request window. See: *Submitting Requests*, *Oracle E-Business Suite User's Guide*.



2. From the Name field list of values, select Deactivate Configuration Items.
3. Enter the organization for which you want to deactivate configuration items that were completed.
4. Enter the shipped number of days ago. Configuration items with material transaction within the time frame are evaluated for deactivation. Material transactions include: WIP, Sales Order, and Internal Sales Order. The default number of days is 90.

**Note:** You can delete item information for completed configurations from the database, including the bills of material and routings.

The ability to delete configuration items is subject to the same deletion constraints that operate for other item types as well.

5. You can choose to deactivate the configured items based on the base model and option item. For example, you can choose to deactivate all configured items that have the base model as Laptop Computer and option 386 Processor.

## Related Topics

Deletion Constraints, page 6-6

Deleting Items, Bills, Routings, Components, and Operations, page 6-1



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# Manufacturing Scheduling

This chapter tells you everything you need to know about manufacturing scheduling.

This chapter covers the following topics:

- Overview of Manufacturing Scheduling
- Detailed Scheduling
- Repetitive Line Scheduling
- Dynamic Lead Time Offsetting
- Required Lead Time Information
- Lead Time Offsetting Computations

## Overview of Manufacturing Scheduling

Oracle Manufacturing schedules production orders and operation dates using three scheduling methods:

- detailed scheduling
- repetitive line scheduling
- dynamic lead time offsetting

## Oracle Manufacturing Products and Scheduling

The following table lists the Oracle Manufacturing products that schedule orders and operations, and indicates their scheduling method:

## ***Manufacturing Scheduling***

<b>Product</b>	<b>Scheduling Function</b>	<b>Scheduling Method</b>
Oracle Work in Process	Schedule Discrete Jobs	Detailed Scheduling
Oracle Work in Process	Schedule Repetitive Schedules	Repetitive Line Scheduling
Oracle Bills of Material	Compute Manufacturing Lead Times	Detailed Scheduling
Oracle Master Scheduling/MRP	Compute Planned Order Start Date	Dynamic Lead Time Offsetting
Oracle Master Scheduling/MRP	Compute Planned Order Component Requirement Dates	Dynamic Lead Time Offsetting
Oracle Capacity	Load Planned Order Resource Requirements	Dynamic Lead Time Offsetting
Oracle Inventory	Compute Requirement Dates for Assemble to Order Item Components for ATP Checks	Dynamic Lead Time Offsetting

## **Detailed Scheduling**

Detailed scheduling is based on detailed resource availability and usages and is the most precise scheduling method in Oracle Manufacturing. It takes into account minute to minute resource availability information as well as exact resource requirements from routings to schedule precise start and end dates and times for jobs and operations. Detailed scheduling is an infinite scheduling algorithm-so it does not take into account load from other discrete jobs. However, you can simulate the scheduling impact of the load by adding queue, move, and wait resources.

## **Job and Operation Scheduling**

Oracle Work in Process schedules discrete jobs using detailed scheduling. Each resource required on a job is scheduled consecutively. Work in Process can either forward schedule, backward schedule, or both from an operation.

Work in Process schedules repetitive production using repetitive line scheduling, schedules each resource in sequence based upon the shift workday calendar, the

amount of the resource required, and the number of assigned resources that can be simultaneously scheduled.

## Related Topics

Overview of Routings, page 5-1

Overview of Discrete Manufacturing, *Oracle Work in Process User's Guide*

Overview of WIP Scheduling, *Oracle Work in Process User's Guide*

## Repetitive Line Scheduling

Repetitive line scheduling is based on production line attributes including start and stop times, line speed, line capacity, and lead time. Repetitive line scheduling uses your workday calendar and the line start and stop times rather than detailed resource shift availability.

### Repetitive Assembly

For lines with a lead time basis of Fixed, you must enter a fixed lead time. Oracle Manufacturing uses this fixed lead time for all repetitive assemblies assigned to the line. For lines with a lead time basis of Routing-based, you can automatically compute manufacturing lead time based upon a repetitive assembly's routing.

Work in Process lets you specify the production line where you build each assembly and the line speed determines the production run rate to schedule that assembly on that line. If you have a fixed speed line, all assemblies should use the same line speed. For variable speed lines, you need to specify different speeds for each assembly. The line speed for any particular assembly cannot exceed the line's maximum rate.

### Define Production Lines

Work in Process lets you define production lines and specify a start and stop time for each line. You must also specify the minimum and maximum hourly rate on each line, and specify whether a line's lead time is fixed or routing based.

### Repetitive Assembly

## Related Topics

Overview of Lead Time Management, page 9-1

Defining Production Lines, *Oracle Work in Process User's Guide*

## Dynamic Lead Time Offsetting

Dynamic lead time offsetting is based on order quantity, lead times, and the workday calendar. It is a faster scheduling method that quickly estimates the start date of an order, an operation, or a resource.

Dynamic lead time offsetting always computes a date that is a particular number of days from a specified date in the workday calendar. It accounts for changes in lead time based on order quantity, using the fixed and variable components of manufacturing lead time, as well as operation and resource offsets.

## Uses of Dynamic Lead Time Offsetting

Oracle Manufacturing functions whose processing performance is most critical use dynamic lead time offsetting while other functions that schedule exact operation and resource start and end times use detailed scheduling.

For example, Master Scheduling/MRP generates MRP plans as quickly as possible, so it schedules planned order start dates using dynamic lead time offsetting. Work in Process, however, uses detailed scheduling to schedule jobs since it schedules resource usages in departments with exact start date, end dates and times, not scheduling a resource when one is not available.

Results from detailed scheduling and dynamic lead time offsetting may differ. The more resource availability exceptions and capacity modifications from the workday calendar you have, the more detailed scheduling results differ from dynamic lead time offsetting results. Assigning preprocessing lead time to manufactured items can also produce different results; detailed scheduling does not use lead times in its calculations while dynamic lead time offsetting does.

## Material Requirement Dates

Master Scheduling/MRP computes component requirement dates for planned orders using the offset percentage for the operation where each component is used. Master Scheduling/MRP multiplies the operation offset percentage times the planned order lead time to get offset days, and then finds the workday that is the number of days past the planned order start date.

## Resource Load by Department / Date for Planned Orders

Oracle Capacity offsets resource requirement dates the same way that Master Scheduling/MRP offsets component requirement dates, except it uses resource offset percentages. Oracle Capacity computes resource offset days as the planned order lead time multiplied by the resource offset percentage. Oracle Capacity then finds the workday that is the number of days past the work order start date to find the resource start date and time.

## Component Requirement Dates for ATP Checks

Oracle Inventory lets you check component available to promise (ATP) for assemble to order (ATO) and Pick to Order (PTO) items. Oracle Bills of Material allows you to specify the components of an ATO or PTO product that must be promised using ATP. When you check ATP for a product having such components, Inventory determines the requirement date for components by first computing the manufacturing lead time for that product using the dynamic lead time calculation and then finding the date that is the number of workdays before the requested ship date. Inventory assumes that all ATO product components are required at the beginning of the ATO job.

## Related Topics

Overview of Lead Time Management, page 9-1

Overview of Material Requirements Planning, *Oracle MRP User's Guide*

Overview of On-hand and Availability, *Oracle Inventory User's Guide*

## Required Lead Time Information

Bills of Material lets you automatically compute item, bill of material and routing information required for dynamic lead time offsetting. You can also maintain lead time information manually.

## Manufactured Items

Dynamic lead time offsetting uses the following lead time attributes for discretely manufactured items:

- fixed lead time
- variable lead time
- preprocessing lead time

Dynamic lead time offsetting uses the following lead time attributes for repetitively manufactured items:

- processing lead time
- fixed lead time

## Purchased Items

Dynamic lead time offsetting uses the following lead time attributes:

- preprocessing time

- processing lead time
- post-processing lead time

## Routings

When computing manufacturing lead times, operation and resource offsets are automatically assigned to a routing. For material and resource requirement planning, you can optionally include offsets when computing requirement dates.

## Related Topics

Overview of Lead Time Management, page 9-1

## Lead Time Offsetting Computations

Dynamic lead time offsetting offsets dates in two steps, computing total lead time and offsetting the date by total lead time. Total lead time contains both fixed lead time and the quantity-dependent portion of lead time. Preprocessing lead time is also included for discrete items.

**Note:** Total lead time equals processing lead time.

To compute the total lead time for discrete items use the following equation:

**preprocessing lead time + fixed lead time +(order quantity x variable lead time)**

Compute the total lead time for repetitive items using the following equation:

**fixed lead time + (daily rate x processing lead time)**

Offset the date by total lead time using the following equation:

**start date = requirement date - total lead time**

**Important:** Oracle Manufacturing offsets the requirement date by the total lead time using the workday calendar, accounting for any non-workdays. Before subtracting total lead time, Oracle Manufacturing determines the workday for the requirement date. After offsetting by total lead time, the calendar date is derived from the starting workday.

### Example

Master Scheduling/MRP uses dynamic lead time offsetting to compute a planned order release date. Master Scheduling/MRP computes total lead time and then uses the workday calendar to calculate the planned order release date.

Suppose your MRP plan produced a requirement for 100 discretely manufactured assemblies on March 12 and the following information exists for that assembly:



- Requirement date = 12-MAR
- Fixed lead time = 2 days
- Variable lead time = .05 days (1 day per 20 units)
- Preprocessing lead time = 0 days
- Order quantity = 100

Master Scheduling/MRP first computes the total lead time as follows:

**Total lead time = 0 + 2 + (100 x .05) Total lead time = 7 days**

Suppose your organization's workday calendar has a workday pattern with five days on and two days off. Workdays 1 - 5 are March 1 - 5. Saturday and Sunday, March 6 and 7, are off. Workdays 6 - 10 are March 8 - 12.

Master Scheduling/MRP then calculates the planned order release date as follows:

**Start date = requirement date - total lead time Start date = (12-MAR) - 7 days**

Convert planned order requirement date to a workday (using your organization's workday calendar).

**Start date = Date ((Workday 10) - 7) Start date = Date (3)**

Finally, determine the start date.

**Start date = 03 - MAR (planned order release date)**

## Related Topics

Overview of On-hand and Availability, *Oracle Inventory User's Guide*

Overview of Material Requirements Planning, *Oracle MRP User's Guide*



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# Manufacturing Lead Times

This chapter tells you everything you need to know about manufacturing lead times.

This chapter covers the following topics:

- Overview of Lead Time Management
- Calculating Lead Times

## Overview of Lead Time Management

Oracle Manufacturing uses dynamic (quantity dependent) lead times to plan material and resource requirements, and to determine material requirement dates for available to promise (ATP) calculations. When computing requirement dates, both the fixed and variable components of an item's manufacturing lead time are used. When setting time fences for planning and available to promise calculations, an item's cumulative lead times are used.

## Computed vs. Assigned Lead Times

For manufactured items, you can automatically compute manufacturing and cumulative lead times for a specific item or a range of items. You can also maintain this information manually. You must manually assign all lead time information for purchased items.

**Note:** You can calculate manufacturing and cumulative lead times for manufacturing or engineering items.

## Changing Lead Times

Updating the values assigned to your lead times may impact functions that use dynamic lead time offsetting- such as material and resource requirements planning. Updating cumulative lead times can also impact material plans and available to promise calculations if these lead times are used to set time fences.

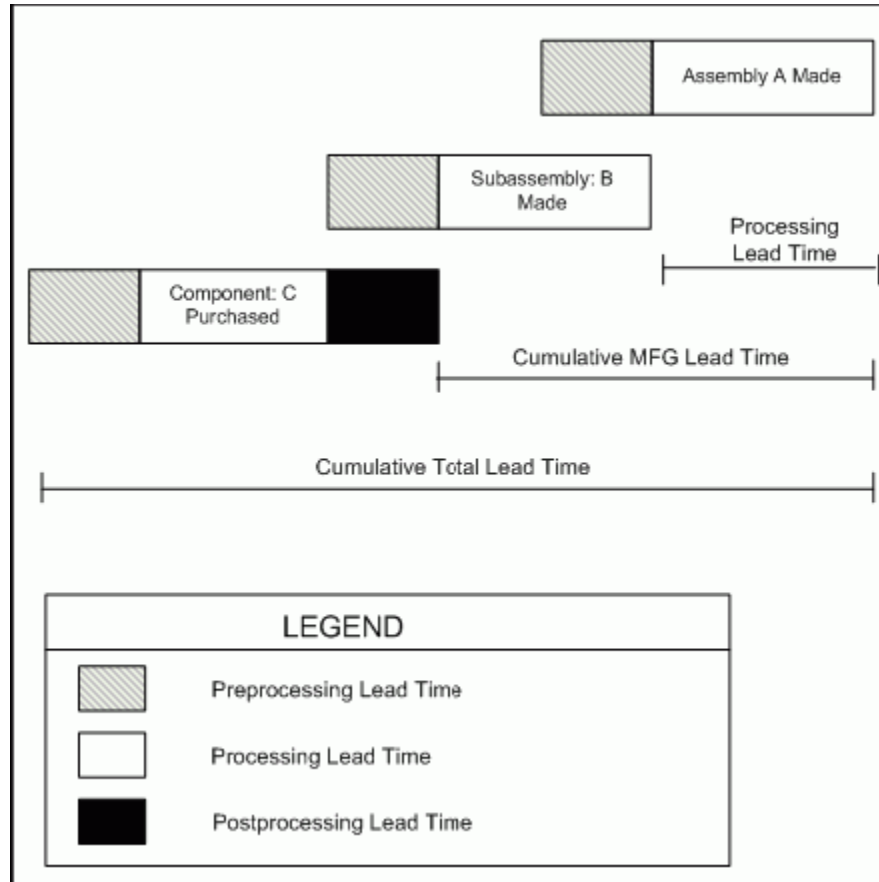
## Item Lead Time Attributes

For all scheduled time elements, which are less than the standard workday, the system will compute the lead time day by dividing the lead time element by 24. The standard workday is defined in the workday calendar. Oracle Manufacturing stores the following lead time information for each item:

- *Fixed Lead Time*: The portion of manufacturing lead time that is independent of order quantity. You can enter this factor manually for an item, or compute it automatically for manufactured items.
- *Variable Lead Time*: The portion of manufacturing lead time that is dependent on order quantity. You can enter this factor manually for an item, or compute it automatically for manufactured items.
- *Preprocessing Lead Time*: A component of total lead time that represents the time required to release a purchase order or create a job from the time you learn of the requirement. You can manually enter preprocessing lead time for both manufactured and purchased items.
- *Post Processing Lead Time*: A component of total lead time that represents the time to make a purchased item available in inventory from the time you receive it. Manually enter postprocessing lead time for each purchased item. Postprocessing lead time for manufactured items is not recognized.
- *Processing Lead Time*: The time required to procure or manufacture an item. You can compute processing lead time for a manufactured item, or manually assign a value. Processing lead time is computed as the time as total integer days required to manufacture 1 lead time lot size of an item. You must manually assign a processing lead time for purchased items. Processing lead time does not include preprocessing and postprocessing lead times.
- *Lead Time Lot Size*: The quantity you use to calculate manufacturing lead times. You can specify an item's lead time lot size to be different from the standard lot size.
- *Dynamic Lead Time Offsetting*: A scheduling method that quickly estimates the start date of an order, operation, or resource. Dynamic lead time offsetting schedules using the organization workday calendar.
- *Total Lead Time*: The fixed lead time plus the variable lead time multiplied by the order quantity. The planning process uses the total lead time for an item in its scheduling logic to calculate order start dates from order due dates.
- *Cumulative Manufacturing Lead Time*: The total time required to make an item if you had all raw materials in stock but had to make all subassemblies level by level. Oracle Bills of Material automatically calculates this value, or you can manually assign a value.

- *Cumulative Total Lead Time:* The total time required to make an item if no inventory existed and you had to order all the raw materials and make all subassemblies level by level. Bills of Material automatically calculates this value, or you can manually assign a value.

As described in the text above, the following diagram illustrates the relationship between preprocessing, processing, and postprocessing lead times for manufactured items (assembly A and subassembly B) and purchased items (component C). This diagram also describes the cumulative manufacturing lead time and cumulative total lead time for a manufactured item (assembly A).



## Manufacturing Lead Time Computations

Bills of Material computes manufacturing lead times from item, routing and resource availability information. Item and routing information is updated as part of the computation.

## Lead Time Lot Size

Processing lead time is computed as the time required to complete 1 lead time lot size of an item (the time required to complete the second scheduled job). Bills of Material

determines an item's lead time lot size from two item master fields: standard lot size and lead time lot size.

For items that you plan and cost by the same lot size, you can specify a value only for the standard lot size. Bills of Material then computes manufacturing lead time using the standard lot size quantity.

**Note:** If an item's routing references another item's routing as a common, set both items' lead time lot size to the same value. If you do not specify a lead time lot size, ensure that both items' standard lot sizes are equal.

For items that you plan with one lot size and cost with a different lot size, you can enter a lead time lot size. Bills of Material then calculates manufacturing lead time using this value (rather than the standard lot size). If an item does not have a value for the standard or lead time lot size, Bills of Material uses a quantity of one to compute manufacturing lead times.

**Note:** If you enter a lead time lot size for an item, consider the item's planning lot size to accurately offset lead times. For planned items with a fixed order quantity, set the lead time lot size to the fixed order quantity. If a planned item has varying lot sizes, assign a lead time lot size that represents the typical lot size.

## Routings

Oracle Manufacturing uses routing, operation, and resource information to compute fixed, variable, and processing lead times for manufactured items. Lead times are not calculated for purchased items even if they have a routing.

When computing manufacturing lead times, primary routings are automatically updated with lead time and offset percents. As with the item lead time attributes, you can also manually assign these values.

## Lead Time Percent

Oracle Manufacturing stores the lead time percent for each routing operation as the percent of manufacturing (processing) lead time required for previous operations, calculated from the start of a job to the start of an operation.

For example, if an item's manufacturing lead time is two days and the primary routing has two operations with the same duration (1 day), the first operation's lead time percent is zero and the second operation's lead time percent is 50%.

## Offset Percent

Oracle Manufacturing stores the offset percent for each resource on a routing operation as the percent of manufacturing (processing) lead time required for previous

operations, calculated from the start of the job to the start time of a resource at an operation.

For example, both operations in the previous example for lead time percent require one day (eight hours) to perform. If you have two different resources assigned to the second operation, and each resource requires four hours to complete their task, the offset percent is 50% for the first resource and 75% for the second resource.

### **Fixed and Variable Lead Times**

You can automatically compute processing, fixed, and variable lead times for manufactured items, whether they are produced using discrete jobs or repetitive schedules.

A value of zero is assigned to the fixed, variable, and processing lead times of a manufactured item that does not have a routing and is not assigned to a production line.

#### **Discrete Jobs Lead Times**

Bills of Material computes manufacturing lead time by forward scheduling two jobs: the first job is scheduled for a quantity of zero and the second job is scheduled for a quantity equal to the item's lead time lot size. The first job determines the fixed lead time and the second job determines the variable and processing lead times.

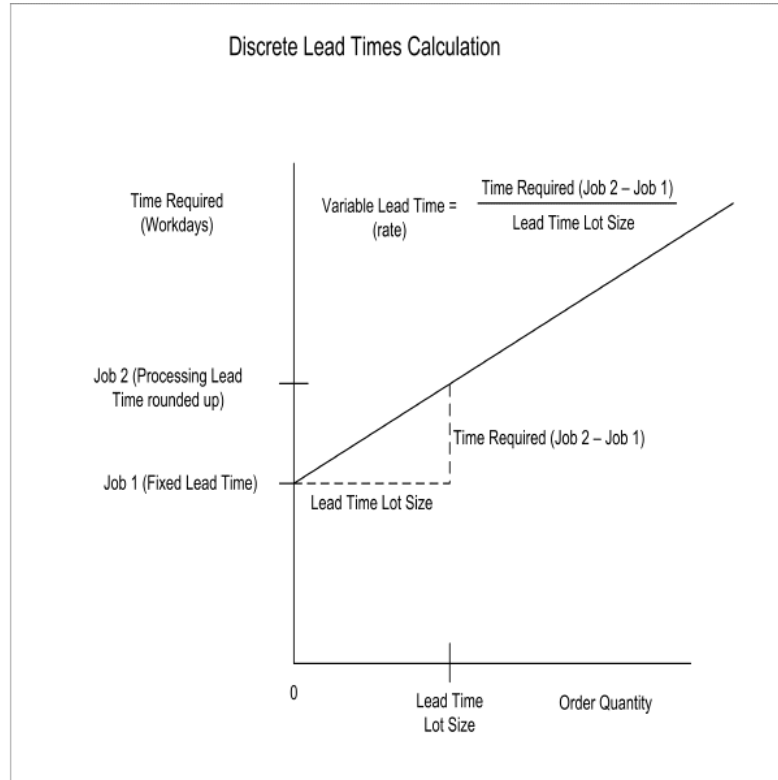
The second job's duration rounded up to an integer value represents the Processing Lead Time (in days). The difference between the duration of the second job and the duration of the first job divided by the Lead Time Lot Size represents the Variable Lead Time. Generally, the duration of the first job is 0 or very close to 0, hence, the Variable Lead Time variation based on Lead Time Lot Size changes may not be observable.

Variable Lead Time (rate) = (Job2 Duration – Job1 Duration)/Lead Time Lot Size.

Job1 Duration = the time required to complete a job for 0 quantity (and it represents the Fixed Lead Time).

Job2 Duration = the time required to complete a job for a quantity equal to the assembly item's Lead Time Lot Size (this value rounded up to an integer value represents the Processing Lead Time in days).

The following diagram illustrates discrete lead times calculation, as described in the text above:



**Important:** Although Bills of Material uses detailed scheduling to compute lead times, all calendar days are considered workdays regardless of days off, workday exceptions, or shift exceptions.

**Additional Information:** Resource availability is calculated based on the average shift capacity. Shifts assigned to a resource typically specify work shift patterns. If the shift patterns change on different days, the sum of the total hours available across all shifts in a day is usually the same. If the total hours is different, Oracle uses the average total hours per work day.

**Example**

In the following example, Oracle Bills of Material assumes that the resource availability for Resource A is 8 hours  $((10 + 10 + 4)/3 = 8)$ .

Operation	Resource	Shift	Shift Hours	Day
Operation 10	Resource A	Shift 1	00:00 - 05:00	Monday



Operation	Resource	Shift	Shift Hours	Day
Operation 10	Resource A	Shift 2	08:00 - 13:00	Monday
Operation 10	Resource A	Shift 3	08:00 - 18:00	Tuesday
Operation 10	Resource A	Shift 4	10:00 - 14:00	Wednesday
Operation 10	Resource B	Shift 5	06:00 - 18:00	Wednesday

The resource availability for Resource A is calculated as 8 hours  $((10 + 10 + 4)/3 = 8)$ . Notice that the shift hours defined for the same workday (Monday) were added together and the resource availability is an average. In this case, if the resource usage rate is 10 hours for Resource A and 12 hours for Resource B, then the variable leadtime is calculated as  $10/8 + 12/12 = 2.25$  days. This number is reasonable because if an actual job to produce this assembly was scheduled over a Wednesday, it would take slightly more than 2 days to produce the assembly. On Wednesdays, there is only 6 hours of availability as opposed to the normal 10 hour shifts during the other workdays.

**Additional Information:** You cannot schedule a resource unless all prior quantities scheduled have been completed.

Sequential operations and resources assume that all quantities are scheduled in their entirety through a resource before the next quantity is scheduled to begin. For example, the time scheduled for two resources cannot overlap on a given day. However, when you schedule the job, the leadtime is slightly longer than you expected:

#### **Operation 10**

Resource	Usage Rate (Hours)	Shift Assigned
1	3	00:00 - 03:00
2	3	05:00 - 08:00

There is no fixed leadtime and the leadtime lot size is 2. The variable leadtime is 2 days because you need to complete the entire quantity of 2

(which takes 2 days) before you can start the second resource.

Bills of Material uses the following formulas to compute fixed and variable lead times:

Schedule a job for zero quantity beginning on the system date and compute fixed lead time as follows:

**completion date (of one item) - system date**

Schedule a job for the lead time lot size beginning on the system date and compute variable lead time (rate) as follows:

**[(completion date (of all items) - system date) - fixed lead time] / lead time lot size**

**Repetitive Schedule Lead Times**

A lead time lot size of 1 is always used to compute lead times for items produced on routing-based schedules.

The following terms apply to repetitive schedules:

- *Day*: A day is equal to the number of hours the production line is active. If the line is active from 8:00 to 16:00, the day is 8 hours long.
- *Production Rate (Line Speed)*: The number of assemblies built per line, per hour.
- *Line Fixed Lead Time*: The fixed lead time of the production line, that is, the amount of time for one assembly to travel down a production line.
- *Production Interval*: The time between two assemblies on a production line. If the production rate (line speed) is 10 assemblies per hour, then the production interval is .1 hours or once every .0125 days, or  $1/(10*8)$ , for a line that runs 8 hours per day.  
 $1 / (\text{production rate} * \text{day})$

The Calculate Manufacturing Lead Times program calls the scheduler twice, first using a quantity of 1, then using a quantity of 0. For each case, the scheduling lead time (expressed in days) is returned. This is the total time taken to build the assemblies. The program then converts the two values into the fixed lead time and the variable lead time item attributes, respectively.

The following table illustrates how scheduling lead times are calculated:

Assembly's Routing	Scheduling Basis	Quantity	Scheduling Lead Time
No routing	routing	0	0
No routing	routing	1	production interval

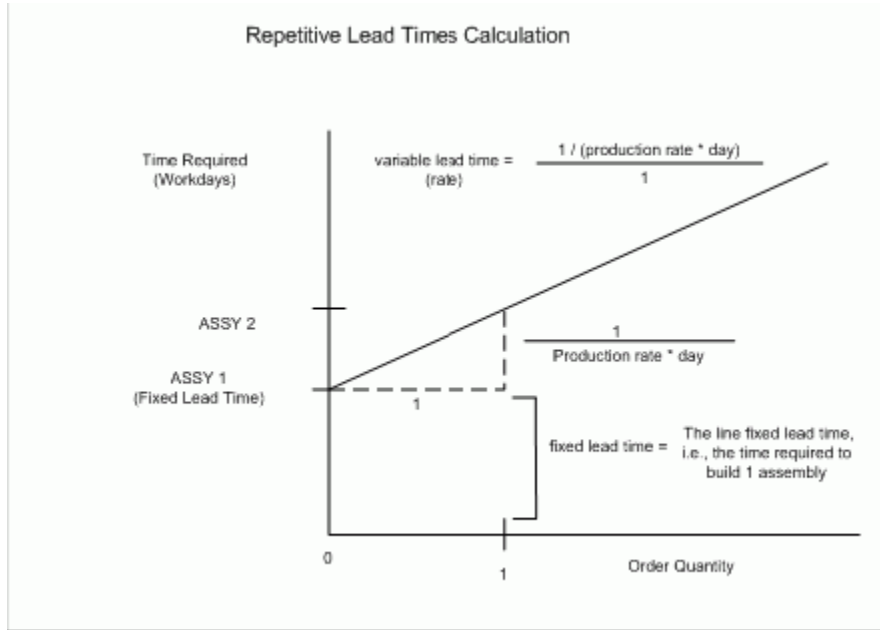
Assembly's Routing	Scheduling Basis	Quantity	Scheduling Lead Time
No routing	fixed	0	line fixed lead time
No routing	fixed	1	line fixed lead time + production interval
Assembly with item-based resources only	routing	0	fixed lead time - production interval
-	routing	1	(fixed lead time - production interval) + production interval
-	fixed	0	line fixed lead time
-	fixed	1	line fixed lead time + production interval
Assembly with item- and lot- based resources	routing	0	fixed lead time - production interval
-	routing	1	(fixed lead time - production interval) + production interval
-	fixed	0	line fixed lead time
-	fixed	1	line fixed lead time + production interval

For fixed lead time lines, the fixed and variable lead times are not based on whether a routing exists. The fixed lead time is always the *line fixed lead time*, the amount of time for one assembly to travel down a production line. The variable lead time is always the *production interval*:

$$\text{variable lead time (repetitive schedule)} = 1 / (\text{production rate} * \text{day})$$

For a routing-based line, the fixed lead time is the time required to build one assembly; the fixed lead time includes the time for both item and lot-based resources.

The following diagram illustrates repetitive lead times calculation, as described in the text above:



**Processing Lead Time**

Bills of Material also computes the processing lead time as the time required to complete the second scheduled job (where the job starts on the system date):

**completion date (of one item) - system date**

Processing lead time is presented in whole days rounded to the next day.

**Example**

For example, if for item A, you had the following data:

- Lead time lot size = 10 units
- System date = 01-JAN
- End date for work in process job for 1 unit = 10-JAN
- End date for work in process job for 10 units = 13-JAN

Then:

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<b>fixed lead time =</b>	<b>completion date (of one item) - system date</b>
<b>fixed lead time =</b>	<b>= 10-JAN - 01-JAN</b>
<b>fixed lead time =</b>	<b>= 10 days</b>

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Variable lead time =	$[(\text{completion date} - \text{system date}) (\text{rate}) - \text{fixed lead time}] / \text{lead time lot size}$
Variable lead time =	$[(13\text{-JAN} - 01\text{-JAN}) - 10] / 10$
Variable lead time =	$[13 - 10] / 10$
Variable lead time =	0.3 days/unit

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Processing lead time =	completion date - system date
Processing lead time =	13-JAN - 01-JAN
Processing lead time =	13 days

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### Offset Computations

The corresponding operation lead time percent for operations in the primary routing is updated automatically.

For example, if the routing operations for item A had the following start dates (on a job for 10 assemblies), Bills of Material would compute and update the following operation lead time percentages, as shown in the table below:

#### *Operation Lead Time Percent*

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Op Seq	Start Date and Time	End Date and Time	Time Required	Previous Op Time Required	Lead Time Percent
10	01-JAN - 00:00	02-JAN - 24:00	2	0	0/10 = 0%
20	03-JAN - 00:00	04-JAN - 24:00	2	2	2/10 = 20%
30	05-JAN - 00:00	09-JAN - 24:00	4	4	4/10 = 40%
40	09-JAN - 00:00	10-JAN - 24:00	2	8	8/10 = 80%

---

Bills of Material also computes, for each operation resource in an item's primary routing, the percent of total lead time required for previous resource operations in that routing.

For example, if your resource start and end times were as follows, Bills of Material would compute these resource offset percents, as shown in the table below:

**Resource Offset Percent**

Op Seq	Res. Seq	Start Date and Time	End Date and Time	Time Required	Previous Res Time Required	Offset Percent
10	1 2	01-JAN - 00:00 02-JAN - 00:00	01-JAN - 24:00 02-JAN - 24:00	1 1	0 1	0/10 = 0% 1/10 = 10%
20	1	03-JAN - 00:00	04-JAN - 24:00	2	2	2/10 = 20%
30	1 2	05-JAN - 00:00 07-JAN - 00:00	06-JAN - 24:00 08-JAN - 24:00	2 2	4 6	4/10 = 40% 6/10 = 60%
40	1	09-JAN - 00:00	10-JAN - 24:00	2	8	8/10 = 80%

**Cumulative Lead Time Computations**

Bills of Material computes cumulative manufacturing lead time and cumulative lead time by stepping through indented bill structures. Item information is updated as part of the both cumulative calculations.

**Cumulative Manufacturing Lead Time**

Bills of Material sets an item's cumulative manufacturing lead time equal to its own manufacturing lead time plus the maximum value of the cumulative manufacturing lead time for any component, adjusted for operation offset. The operation offset is the lead time percent for the operation where the component is used times the item's manufacturing lead time (based on one lead time lot size).

Purchasing items have no cumulative manufacturing lead time.

Bills of Material uses the following formula to compute cumulative manufacturing lead time:

**manufacturing lead time for item + Maximum [(cumulative manufacturing lead time**

- offset days) for any component]

### Cumulative Total Lead Time

Bills of Material sets an item's cumulative total lead time to its own total lead time plus the maximum value of cumulative total lead time less operation offset for any component. Operation offset for a component is the lead time percent for the operation where the component is used times the item's manufacturing lead time (based on one lead time lot size).

Bills of Material calculates cumulative total lead time using the following equation:

**total lead time for item + Maximum [(cumulative total lead time - offset days) for any component]**

For example, suppose Item A is made up of B, C, and D. B, C, and D are used at operations 20, 30, and 40 respectively and the manufacturing (processing) lead time for A (for the lead time lot size) equals 10. The following table illustrates the component, offset days, and lead time percent for each component:

#### *Cumulative Manufacturing Lead Time*

Component	Cum. Mfg. Lead Time.	Op Seq.	Lead Time Percent	Offset Days	Cum Mfg. Lead Time - Offset Days
B	15	20	20	2	13
C	20	30	40	4	16
D	22	40	80	8	14

Bills of Material calculates cumulative manufacturing lead time as follows:

**manufacturing lead time for A + Maximum [(cumulative manufacturing lead time - offset days)for component B, C, or D]**

**Cumulative manufacturing lead time = 10 + 16 = 26 days**

The following table illustrates the cumulative total lead times assigned to components B, C, and D:

### **Cumulative Total Lead Time**

<b>Component</b>	<b>Cum. Total Lead Time.</b>	<b>Op Seq.</b>	<b>Lead Time Percent</b>	<b>Offset Days</b>	<b>Cum Total Lead Time - Offset Days</b>
B	19	20	20	2	17
C	20	30	40	4	16
D	23	40	80	8	15

Bills of Material calculates cumulative total lead time for A as follows:

**total lead time for A + Maximum [(cumulative total lead time - offset days) for component B, C, or D]**

**Cumulative total lead time = 10 + 17 = 27 days**

## **Related Topics**

Creating a Routing, page 5-9

Calculating Lead Times, page 9-14

Overview of Work in Process Scheduling, *Oracle Work in Process User's Guide*

Overview of Manufacturing Scheduling, page 8-1

Overview of Material Requirements Planning, *Oracle MRP User's Guide*

Defining Items, *Oracle Inventory User's Guide*

## **Calculating Lead Times**

You can calculate manufacturing lead times for one item, a range of items, or a category of items. The calculation updates the lead time attributes of all manufacturing items that you include, regardless of whether you manually maintain an item's lead times.

**Additional Information:** Leadtime for items with network routings is calculated using only resources on the primary path. For more information about network routings, see: *Creating a Routing Network, Oracle Flow Manufacturing User's Guide* and *Creating a Network Routing, Oracle Shopfloor Management User's Guide*.



## Lead Times By Item Category

You can limit the items included in the manufacturing lead time calculation by specifying an item range or item category range when you submit the manufacturing lead time program. Using item categories, you can segregate the manufactured items whose lead times you manually maintain from those items you include in the manufacturing lead time calculation. You can also limit the parent items included in the cumulative lead time calculations by using item categories.

## Recomputing Lead Times

Changes to routing and resource usages can impact an item's lead times. After each change you make to a routing (adjusting usages, adding operations, and so on), recalculate the manufacturing lead time for the item.

## Prerequisites

You must define a bill of material for the parent item and member items whose lead time is to be calculated. See: *Creating a Bill of Material*, page 2-9.

You must define a routing for each item that will be used in the lead time calculation. See: *Creating a Routing*, page 5-9.

You must define a lead time lot size for the parent item whose lead time is to be calculated. See: *Creating a Routing*, page 5-9.

### To calculate lead times:

1. Navigate to the Calculate Lead Times window. See: *Submitting Requests, Oracle E-Business Suite User's Guide*.
2. Select a Type:  
*Request*: calculate or roll up lead times without a report.  
*Set*: calculate lead times and produce either the Bills of Material Structure Report or the Routing Report.
3. If you selected Set in the previous step, select one of the following:  
*Calculate Cumulative Lead Times Set GUI*: calculates cumulative lead times and produces the Bills of Material Structure Report.  
*Calculate Manufacturing Lead Times Set GUI*: calculates manufacturing lead times and produces the Routing Report.  
If you selected Request in the previous step, select Calculate Manufacturing Lead Times.
4. Indicate range of items or a specific item.

5. If you chose a specific item, enter the item.
6. Optionally, enter a revision for the item.  
Enter the date and time to snapshot the bill or routing. All data effective as of this date and time are included in the calculation.
7. If you chose to calculate lead times for a range of items, enter a beginning and ending range.
8. If you chose to calculate lead times for a range of items, you may enter a category set to calculate the lead times of the items associated with this category set. The default is the category set you defined for your functional area.
9. If you chose to enter a category set, enter a beginning and ending category.

Changes to the indented bill of material and component lead times can impact a parent item's cumulative lead times. After each change made to a bill (adding components, assigning to a different operation, and so on) or the item lead times, roll up the cumulative lead times.

**To roll up cumulative lead times:**

1. Navigate to the Calculate Lead Times window. See: *Submitting Requests, Oracle E-Business Suite User's Guide*.
2. Select Request for the Type.
3. Select Rollup Cumulative Lead Times for the Name.
4. Indicate a range of items or a specific item.
5. If you chose a specific item, enter the item.
6. Optionally, enter a revision for the item.
7. Enter the date and time to explode the bill of material.
8. If you chose to roll up cumulative lead times for a range of items, enter a beginning and ending range.
9. If you chose to roll up cumulative lead times for a range of items, you may enter a category set to roll up the cumulative lead times of the items associated with this category set. The default is the category set you defined for your functional area.
10. If you chose to enter a category set, enter a beginning and ending category.

**Important:** You can calculate lead times from the Routings form,

when creating or updating a routing. See: Creating a Routing, page 5-9.

## **Related Topics**

Manufacturing Lead Time Computations, page 9-1

Bill of Material Structure Report, page 11-6

Routing Report, page 11-23

Creating a Bill of Material, page 2-9

Manufacturing Lead Time Computations, page 9-1



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## Oracle E-Records

This chapter discusses the acquisition of electronic signatures (e-signatures) on electronic records (e-records) in Oracle Bills of Material. E-records and e-signatures enable you to comply with the 21 CFR Part 11 regulations.

This chapter covers the following topics:

- 21 CFR Part 11 Overview
- E-records and E-signatures for Oracle Bills of Material
- Viewing Oracle E-Records and E-Signatures

### 21 CFR Part 11 Overview

The Food and Drug Administration (FDA) protects the public health by regulating the food and drug industries. In 1997, the FDA issued new regulations for quality systems using computerized software in the FDA Code of Federal Regulations (CFR) Title 21 Part 11, otherwise known as 21 CFR Part 11. The regulations strive to assure that computerized records are safe, secure, and as accurate as a paper based system.

According to 21 CFR Part 11, the software application's role in the data management process is to guarantee and substantiate that the manufactured product data is electronically captured, manipulated, extracted, and coded during the manufacturing of the product. All subject data and definitional objects (metadata) must have a complete audit trail.

In general, 21 CFR Part 11 describes the requirements that must be met when using electronic records (e-records) and electronic signatures (e-signatures), but does not describe where they are required. The FDA left the definition of where to use electronic records and which signatures to apply as electronic signatures to the discretion of the medical device manufacturers who use software applications as part of their quality management system. The predicate rule used by the medical device manufacturers is FDA 21 CFR Part 820. Oracle Discrete Manufacturing Applications enable electronic records and signatures for certain business events, as well as give users ways to choose which business events must meet 21 CFR Part 11 requirements, by using the Oracle E-

Records product. Refer to the *Oracle Manufacturing Implementing Oracle E-Records in Discrete Manufacturing Guide* and the *Oracle E-Records Implementation Guide* for information on how to tailor Oracle E-Records to meet your needs.

Depending on the type of business event, an electronic signature is either online or deferred. An online signature requires that you enter a valid signature before saving the event or transaction. A deferred signature enables you to save the event in a Pending Approval state before obtaining a final signature. Many times a deferred signature requires a workflow approval, so the event is saved before full approval is received back from the workflow process.

Certain business events also include any attachment made to the business event object in the e-record. For example, if a drawing depicting an engineering change is attached to an engineering change order, you can review the drawing in the e-record for the engineering change order.

The e-records and e-signatures (ERES) framework is a central tool designed to achieve 21 CFR Part 11 compliance for the necessary Oracle Applications business events. The ERES framework uses common Oracle Applications components such as Oracle Workflow business events, the XML Gateway, and others.

In order to enable electronic records and signatures for Oracle Bills of Material, you must follow the steps listed in *Implementing E-Records, Oracle E-Records Implementation Guide*. Otherwise, no e-records or e-signatures are required.

## Related Topics

E-records and E-signatures for Oracle Bills of Material, page 10-2

Viewing Oracle E-Records and E-Signatures, *Oracle Quality User's Guide*

## E-records and E-signatures for Oracle Bills of Material

The following table lists the Oracle Bills of Material events seeded in Oracle E-Records.

<b>Event</b>	<b>Online or Deferred E-signature</b>	<b>E-Record Includes Attachment</b>
Bill Creation	Online	Yes
Bill Update	Online	Yes
Routing Creation	Online	Yes
Routing Update	Online	Yes

Event	Online or Deferred E-signature	E-Record Includes Attachment
Mass Change Bills	Online	No

## Bill Creation or Update

The Bills of Material window starts the signature capturing process whenever a bill is created or updated. While the event is happening in the window, required signatures can be captured online. See: *Creating a Bill of Material, Oracle Bills of Material User's Guide*. No e-signature is requested when bills are created or updated by an ECO implementation or when engineering bills are transferred or copied to manufacturing. Instead, the ECO Approval, Transfer to Manufacturing, or Copy to Manufacturing events capture the e-signature. See: *E-records and E-signatures for Oracle Engineering, Oracle Engineering User's Guide*. Select eRecord Details from the Bills menu to view the e-record associated with the bill of material.

## Routing Creation or Update

The Routings window starts the signature capturing process whenever a routing is created or updated. While the event is happening in the window, required signatures can be captured online. See: *Creating a Routing, Oracle Bills of Material User's Guide*. No e-signature is requested when routings are created or updated by an ECO implementation or when engineering routings are transferred or copied to manufacturing. Instead, the ECO Approval, Transfer to Manufacturing, or Copy to Manufacturing events capture the e-signature. See: *E-records and E-signatures for Oracle Engineering, Oracle Engineering User's Guide*. Select eRecord Details from the Actions menu to view the e-record associated with the routing.

## Mass Change Bills

The Mass Change Bills window starts the online signature capturing process in different ways, depending on how you access the window:

- If you access the window by navigating to Bills of Materials > Bills > Mass Changes, the online signature capturing process begins once you select the Implement box and choose Submit.
- If you access the window by navigating to Engineering > ECOs > Mass Changes, the online signature capturing process begins once you select the Create ECO box and choose Submit.

See: *Mass Changing Bills of Material, Oracle Bills of Material User's Guide* and *Mass Changing ECOs, Oracle Engineering User's Guide*. Select eRecord Details from the Tools

menu to view the e-record associated with the changed bills.

## Related Topics

21 CFR Part 11 Overview, page 10-1

Viewing Oracle E-Records and E-Signatures, page 10-4

## Viewing Oracle E-Records and E-Signatures

You can view e-records and e-signatures using the following methods:

- Using the Oracle E-Records Evidence Store to query e-records and e-signatures. See: Evidence Store, *Oracle E-Records Implementation Guide*.
- Selecting the eRecord Details option from the Tools menu of a transaction or event initiating form. This option is available from many, but not all, of the transaction or event initiating forms.

## Related Topics

21 CFR Part 11 Overview, page 10-1

E-records and E-signatures for Oracle Bills of Material, page 10-2



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## Reports and Processes

This chapter describes Oracle Bills of Material reports and processes and their submission parameters.

This chapter covers the following topics:

- Bill of Material Comparison Report
- Bill of Material Listing
- Bill of Material Loop Report
- Bill of Material Structure Report
- Bills of Material Parameters Report
- Calculate Cumulative Yield for Network Routing
- Calculate Manufacturing Lead Times
- Consolidated Bill of Material Report
- Delete Items Report
- Department Classes Report
- Department Report
- Item Where Used Report
- Pre-Explode Configurable Bills of Material
- Resource Report
- Resource Where Used Report
- Rollup Cumulative Lead Times
- Routing Report
- Standard Operation Report
- Workday Exception Sets Report
- Oracle Configurator Concurrent Programs

## Bill of Material Comparison Report

Use the Bill of Material Comparison Report to report the comparison between two manufacturing assemblies. You can compare primary bills, manufacturing and engineering bills, alternates, and different revisions. Based on your comparison criteria, if the assemblies have identical components, item sequences, operation sequences, yields, quantities, and implementations, one line is printed for each identical component. Otherwise, the report prints a separate line for each different component.

### To submit the Bill of Material Comparison Report:

1. In the Submit Requests window, select Bill of Material Comparison Report from the Name list of values.

The Parameters window opens. The parameters for the Bill of Material Comparison Report are identical to those you supply when comparing bills of material online.

2. Choose OK.
3. Choose Submit.

## Related Topics

Comparing Bills of Materials, page 2-39

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Bill of Material Listing

Use the Bill of Material Listing to report manufacturing and engineering bills without any associated component or routing information.

### To submit the Bill of Material Listing:

1. In the Submit Requests window, select Bill of Material Listing from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- All Organizations

Choose one of the following options:

---

No

Report the bill listing for the current organization.

---

---

<i>Yes</i>	Report the bill listing for all organizations having the same item master organization as the current organization, and for those organizations accessible by the user responsibility.
------------	--

---

- Organization Hierarchy

Enter a valid organization hierarchy name from the list of values. If the value for the All Organizations parameter is set to No, and you have provided a value for the Organization Hierarchy parameter, then the report will provide bill listing information for the current organization and all organizations below the current organization in the specified organization hierarchy. If this parameter is left blank, and the All Organizations parameter is set to No, then the report will provide bill listing information for the current organization. You can enter a value in this field only if you have entered No in the All Organizations field.

- Items From/To

To restrict the report to a range of items, select the beginning and ending item numbers.

- Category Set

Enter a category set to report on. The default is the category set you defined for your functional area.

- Categories From/To

To restrict the report to a range of categories, select the beginning and ending category.

- Alternate Selection

Choose one of the following options:

---

<i>All</i>	Report the bill of material information for the primary and alternate assemblies.
<i>Primary</i>	Report the bill of material information for only the primary assembly.
<i>Specific</i>	Report the bill of material information for the alternate assembly you specify.

---

- Alternate  
Enter a specific alternate to report.
  - Common Organization  
Enter the organization where you define bills of material in your current organization reference. Oracle Bills of Material prints the bill information for each common bill of material.
  - Common Bill (Optional, Flexfield)  
Enter common bills that report bill of material information.
2. Choose OK.
  3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

Creating Organization Hierarchies, *Using Oracle HRMS-The Fundamentals*

## Bill of Material Loop Report

Use the Bill of Material Loop Report to check for loops in a bill of material. Bill loops occur when you assign an assembly as a component to itself somewhere in the multilevel structure. You must fix loops before you can run an accurate MRP, or define a discrete job or repetitive schedule for the assembly.

If loop exists, then the components that are in the loop for the assembly are shown in the report. If no loop exists, then no components are shown for the assembly in the report.

### To submit the Bill of Material Loop Report:

1. In the Submit Requests window, select Bill of Material Loop Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- Item Selection (Required, Default)  
Choose one of the following options:

---

<i>Range</i>	Check for loops in the bill of material structure for a range of items you specify.
<i>Specific</i>	Check for loops in the item you specify. Oracle Bills of Material displays this option as the default.

---

- Item (Optional, Flexfield)

Enter a top-level item (not a component of another item). Bills of Material checks for loops throughout the multilevel structure, starting with this level.

- Alternate Selection (Required, Default)

Choose one of the following options:

---

<i>All</i>	Verify the bill structure for both the primary and alternate assemblies.
<i>Primary</i>	Verify the bill structure for the primary assemblies only. Oracle Bills of Material displays this option as the default.
<i>Specific</i>	Verify the bill structure for a specific alternate only.

---

- Alternate (Optional)

Enter an alternate for the item. The bill structure for item associated with this alternate is checked.

- Revision (Optional, Default)

Enter a revision for the item.

- Date (Required, Default)

Enter the date and time to explode the bill of material.

- Items From/To (Optional, Flexfield)

To restrict the report to a range of items, select the beginning and ending item numbers.

- Category Set (Optional, Default)

Enter a category set. The bill structure associated with this category set is checked. The default is the category set you defined for your functional area. You can enter a value in this field only if you entered Range in the Item Selection field.

- Category From/To (Optional, Flexfield)

To restrict the report to a range of categories, select the beginning and ending category.

2. Choose OK.
3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Bill of Material Structure Report

Use the Bill of Material Structure Report to report the detail for all levels of an engineering or manufacturing bill of material. You can multiply the component usage by an explosion quantity to get an extended quantity.

### To submit the Bill of Material Structure Report:

1. In the Submit Requests window, select Bill of Material Structure Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- All Organizations

Choose one of the following options:

---

<i>No</i>	Report the bill structure for the current organization.
<i>Yes</i>	Report the bill structure for all organizations having the same item master organization as the current organization, and for only those organizations accessible by the user responsibility.

---

- Organization Hierarchy

Enter a valid organization hierarchy name from the list of values. If the value for the All Organizations parameter is set to No, and you have provided a value for the Organization Hierarchy parameter, then the report will provide bill structure information for the current organization and all organizations below the current organization in the specified organization hierarchy. If this parameter is left blank, and the All Organizations parameter is set to No, then the report will provide bill structure information for the current organization. You can enter a value in this field only if you have entered No in the All Organizations field.

- Item Selection (Required, Default)

Choose one of the following options:

---

<i>Range</i>	Report the bill structure for the range of items you specify.
<i>Specific</i>	Report the bill structure for the specific item you specify.

---

- Item (Optional, Flexfield)

Enter a specific item to report its bill structure.

- Alternate Selection (Required, Default)

Choose one of the following options:

---

<i>All</i>	Report the bill structure for the primary and alternate assemblies.
<i>Primary</i>	Report the bill structure for only the primary assembly.
<i>Specific</i>	Report the bill structure for the alternate assembly you specify.

---

- Alternate (Optional)

Enter a specific alternate to report.

- Revision (Optional)

Enter a revision for the item. The bill structure associated with this revision is printed.

- Date (Optional)

Enter a revision date and time. If you entered a specific item and a revision, the date defaults to the highest date of the revision. The bill structure effective as of this date and time is printed.

- Items From/To (Optional, Flexfield)

To restrict the report to a range of items, select the beginning and ending item numbers.

- Category Set (Optional, Default)

Enter a category set. The bill structure information associated with this category set is reported. The category set you defined for your functional area is the default.

- Categories From/To (Optional, Flexfield)

To restrict the report to a range of categories, select the beginning and ending category.

- Levels to Explode (Required, Default)

Enter the number of levels to explode for the bill of material. The default is the value specified when bill of material parameters were defined.

- Implemented Only (Required, Default)

Indicate whether to report only implemented or all components used by assemblies as of the effective date.

- Display Option (Required, Default)

Choose one of the following options:

---

<i>All</i>	Report all past, current, and pending components associated with the bill.
<i>Current</i>	Report all components effective as of the revision date.
<i>Future and current</i>	Report all future and current components as of the revision date.

---



- Explosion Quantity (Required, Default)  
Enter a quantity to explode. This quantity is used to calculate the requirements for the components of the parent item by multiplying this quantity by the component usage in the bill of material.
- Assembly Detail (Required, Default)  
Indicate whether you want to print assembly detail associated with the bill.
- Order Entry Detail (Required, Default)  
Indicate whether to print order entry detail for the components on the bill.
- Leadtime and Other Detail (Required, Default)  
Indicate whether to print lead time details associated with the components on the bill.
- Reference Designators (Required, Default)  
Indicate whether to print reference designators for the components on the bill.
- Substitute Components (Required, Default)  
Indicate whether to print substitute components for the components on the bill.
- Order By (Required, Default)  
Choose one of the following options:

---

*Item Seq, Op Seq*

For each bill level, order the components by item sequence, then by operation sequence.

*Op Seq, Item Seq*

For each bill level, order the components by operation sequence, then by item sequence.

---

- Use Planning Percent (Required, Default)  
Indicate whether you want to use the planning percent to calculate the component requirements of the present item. Component requirements are calculated by multiplying the component usage quantity by the explosion quantity, and then multiplying the component planning percent.
2. Choose OK.
  3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

Creating Organization Hierarchies, *Using Oracle HRMS-The Fundamentals*

## Bills of Material Parameters Report

Use the Bills of Material Parameters Report to report bill of material default parameters. You use these parameters to define modes of operation and default values for Oracle Bills of Material.

### To submit the Bill of Material Parameters Report:

1. In the Submit Requests window, select Bill of Material Parameters Report from the Name list of values.
2. Choose OK.
3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Calculate Cumulative Yield for Network Routing

Use the Calculate Cumulative Yield for Network Routing process to calculate the cumulative yield for each process and line operation in a network routing.

### To submit the Calculate Cumulative Yield for Network Routing Process:

1. In the Submit Requests window, select Calculate Cumulative Yield for Network Routing from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- Item Selection (Required, Default)

---

*Range*

Default value. Calculate the cumulative yield for the range of items you specify.

*Specific*

Calculate the cumulative yield for the specific item you specify.

---

- Item (Optional, Flexfield)  
Enter a specific item.
- Operation Type (Optional, Default)

---

<i>Event</i>	Default value. Calculate the cumulative yield for each event in the network routing.
<i>Line operation</i>	Calculate the cumulative yield for each line operation in the network routing.
<i>Process</i>	Calculate the cumulative yield for the network routing.

---

- Update Events (Optional, Default)

---

<i>Yes</i>	Default value. Update the cumulative yield for each event.
<i>No</i>	Do not update the cumulative yield for any event.

---

- Items From/To (Optional)

To restrict the report to a range of items, select the beginning and ending item numbers.

2. Choose OK.
3. Choose Submit.

## Related Topics

Operation Yields Calculations, *Oracle Flow Manufacturing User's Guide*

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Calculate Manufacturing Lead Times

Use the Calculate Manufacturing Lead Times or Calculate Manufacturing Lead Times GUI processes to calculate manufacturing lead times for one item, a range of items, or a

category of items. The calculation updates the lead time attributes of all manufacturing items that you include, regardless of whether you manually maintain an item's lead times.

**Important:** If you run the Calculate Manufacturing Lead Times GUI concurrent request for an assembly, it will not calculate the lead times of the components in BOM of that assembly. Hence, if you would like to compute the complete lead time for an assembly, then you must run the Cumulative MFG Lead Time request for all the items (components) in BOM and then run the Rollup Cumulative Lead Times GUI request for the assembly.

Refer to Calculating Lead Times, page 9-14, for instructions on how to run this process.

## Consolidated Bill of Material Report

Use the Consolidated Bill of Material Report to summarize component usage at all levels for a manufacturing bill of material.

### To submit the Consolidated Bill of Material Report:

1. In the Submit Requests window, select Consolidated Bill of Material Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- Item Selection (Required, Default)

Choose one of the following options:

---

<i>Range</i>	Report the consolidated bill for the range of items you specify.
<i>Specific</i>	Report the consolidated bill for the specific item you specify.

---

- Item (Optional, Flexfield)  
Enter a specific item.
- Alternate Selection (Required, Default)  
Choose one of the following options:

---

<i>All</i>	Report the consolidated bill for the primary and alternate assemblies.
<i>Primary</i>	Report the consolidated bill for only the primary assembly.
<i>Specific</i>	Report the consolidated bill for the alternate assembly you specify.

---

- **Alternate (Optional)**  
Enter a specific alternate to report.
- **Revision (Optional)**  
Enter a revision for the item. The consolidated bill associated with this revision is printed.
- **Date (Optional)**  
Enter a revision date and time. If you entered a specific item and a revision, the date defaults to the highest date of the revision. The consolidated bill effective as of this date and time is printed.
- **Items From/To (Optional)**  
To restrict the report to a range of items, select the beginning and ending item numbers.
- **Category Set (Required, Default)**  
Enter a category set. Routings associated with this category set are reported. The default is the category set you defined for your functional area.
- **Categories From/To (Optional)**  
To restrict the report to a range of categories, select the beginning and ending category.
- **Levels to Explode (Required, Default)**  
Enter the number of levels to explode the bill of material. The default is derived from the value entered when bill of material parameters were defined.
- **Implemented Only (Required, Default)**  
Indicate whether to report only implemented or all components used by assemblies as of the effective date.

- Display Option (Required, Default)

Choose one of the following options:

---

<i>All</i>	Report all past, current, and pending components associated with the bill.
<i>Current</i>	Report all components effective as of the revision date. Oracle Bills of Material displays this option as the default.
<i>Future and current</i>	Report all future and current components as of the revision date.

---

- Explosion Quantity (Required, Default)

Enter a quantity to explode. This quantity is used to calculate the requirements for the components of the parent item by multiplying this quantity by the component usage in the bill of material.

- Assembly Detail (Required, Default)

Indicate whether you want to print assembly detail associated with the bill.

- Use Planning Percent (Required, Default)

Indicate whether you want to use the planning percent to calculate the component requirements of the present item. Component requirements are calculated by multiplying the component usage quantity by the explosion quantity, and then multiplying the component planning percent.

2. Choose OK.

3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Delete Items Report

Use the Delete Items Report to report the delete history for items, components, bills of material, operations, and routings.

### **To submit the Delete Items Report:**

1. In the Submit Requests window, select Delete Items Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- Delete Group From/To (Optional)  
To restrict the report to a range of delete groups, select the beginning and ending delete group.
- Item (Required, Default)  
Indicate whether to print delete groups that delete items.
- Bill of Material (Required, Default)  
Indicate whether to print delete groups that delete bills of material.
- Routing (Required, Default)  
Indicate whether to print delete groups that delete routings.
- Bill and Routing (Required, Default)  
Indicate whether to print delete groups that delete bills and routings.
- Item, Bill and Routing (Required, Default)  
Indicate whether to print delete groups that delete items, bills, and routings.
- Component (Required, Default)  
Indicate whether to print delete groups that delete components.
- Operation (Required, Default)  
Indicate whether to print delete groups that delete operations.
- Pending Status (Required, Default)  
Indicate whether to print delete groups that have entities waiting to be checked or deleted.
- Check Ok Status (Required, Default)  
Indicate whether to print delete groups that have entities that were successfully checked and are eligible to be deleted.
- Error Status (Required, Default)  
Indicate whether to print delete groups that have entities that could not be checked or deleted because of an error.

- Deleted Status (Required, Default)

Indicate whether to print delete groups that you have successfully deleted entities from.

2. Choose OK.
3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Department Classes Report

Use the Department Classes Report to report department classes and their member departments. You can use department classes to identify manufacturing cells and flexible machine centers.

### To submit the Department Classes Report:

1. In the Submit Requests window, select Department Classes Report from the Name list of values.

The Parameters window opens. Enter a value for the following parameter:

Department Class Detail (Required, Default): Indicate whether to print member departments associated with the department classes.

2. Choose OK.
3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Department Report

Use the Department Report to report department resource and overhead information.

### To submit the Department Report:

1. In the Submit Requests window, select Department Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:



- Overhead Details (Required, Default)  
Indicate whether to print department overhead information.
  - Resource Details (Required, Default)  
Indicate whether to print department resource information.
  - Department Class (Optional)  
Enter a department class to print member departments.
  - Departments From/To (Optional)  
To restrict the report to a range of departments, select the beginning and ending department.
2. Choose OK.
  3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Item Where Used Report

Use the Item Where Used Report to report the assemblies that use the inventory items you specify.

### To submit the Item Where Used Report:

1. In the Submit Requests window, select Item Where Used Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- All Organizations (Required, Default)

Choose one of the following options:

---

*No*

Report assemblies for the current organization.

---

---

<i>Yes</i>	Report assemblies for all organizations having the same item master organization as the current organization, and for those organizations accessible by the user responsibility.
------------	--

---

- **Top Assemblies Only (Optional)**

Indicate whether to report detailed components such as bills with sub-assemblies or the top assemblies only.

---

<i>No (Default)</i>	The report output lists all assemblies that use the inventory item you specify.
<i>Yes</i>	The report output lists only top assemblies ignoring the Levels to Implode parameter.

---

You have the option to display either the top assemblies only or with detailed components for the three reports mentioned below:

- Item Where Used Report
- Item Where Used Report GUI
- Item Where Used Report GUI (XML)
- **Organization Hierarchy (Required, Default)**  
 Enter a valid organization hierarchy name from the list of values. If the value for the All Organizations parameter is set to No, and you have provided a value for the Organization Hierarchy parameter, then the report will provide assembly information for the current organization and all subordinate organizations in the specified organization hierarchy. If this parameter is left blank, and the All Organizations parameter is set to No, then the report will provide assembly information for the current organization. You can enter a value in this field only if you have entered No in the All Organizations field.
- **Report Option (Required, Default)**  
 Choose one of the following options:

---

<i>Range</i>	Report the range of items you specify.
--------------	--

<i>Specific</i>	Report the item you specify.
-----------------	------------------------------

---

- **Specific Item (Optional, Flexfield)**  
Enter an item to report where used information.
- **Items From/To (Optional)**  
To restrict the report to a range of items, select the beginning and ending item numbers.
- **Category Set (Optional, Default)**  
Enter a category set. Bills of Material reports item where used information associated with this category set. The default is the category set defined for your functional area.
- **Categories From/To (Optional)**  
To restrict the report to a range of categories, select the beginning and ending category.
- **Levels to Implode (Required, Default)**  
Enter the number of bill of material levels to implode. The default is 15.
- **Implemented Only (Required, Default)**  
Indicate whether to report only implemented or all components used by assemblies as of the effective date.
- **Display Option (Required, Default)**  
Choose one of the following options:

---

<i>All</i>	Report all past, current, and pending components associated with the bill. This option is only available if Levels to Implode is set to 1.
------------	--

<i>Current</i>	Report all components effective as of the revision date.
----------------	--

---

---

*Future and current*

Report all future and current components as of the revision date. This option is only available if Levels to Implode is set to 1.

---

- **Date (Required)**

Enter a revision date and time. Bills of Material uses the bill of material information associated with this date when determining item usage.

2. Choose OK.

3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

Creating Organization Hierarchies, *Oracle HRMS-The Fundamentals*

## Pre-Explode Configurable Bills of Material

Use the Pre-Explode Configurable Bills of Material process to show all available options in a bill of material during order entry.

### Example

A sales person enters sales orders for computers. Each computer has a large number of options available. The order entry screen lists all of the option classes, such as monitor, CPU, and keyboard, but does not list all of the options within an option class until the sales person selects the option class. The sales person must wait while the options (such as standard, ergonomic, and wireless for the keyboard option class) are retrieved before they can select one of them.

In order to eliminate this time the sales person (and customer) are waiting for options to load, run the Pre-Explode Configurable Bills of Material process on a nightly basis. This process explodes all of the options so they are viewable in the order entry screen without selecting an option class first.

### To submit the Pre-Explode Configurable Bills of Material Process:

1. In the Submit Requests window, select Pre-Explode Configurable Bills of Material from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- **Org (Required, Default)**

Enter a valid organization name from the list of values.

- Specific Assembly (Required)

When you select the Specific Assembly field, the System Items window opens. Enter a valid item or search for one by choosing the Combinations button.

- Explosion Type (Required, Default)

Choose one of the following options:

---

<i>All</i>	Explode all possible options in the model, including Included and Optional items.
<i>Included</i>	Explode only the Included items on the model.
<i>Optional</i>	Explode only the Optional items on the model.

---

2. Choose OK.
3. Choose Submit.

## Related Topics

Configure to Order Environments, page 7-4

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Resource Report

Use the Resource Report to report resource cost and overhead information.

### To submit the Resource Report:

1. In the Submit Requests window, select Resource Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- Resource Detail (Required, Default)

Indicate whether to print resource cost and overhead information for the resource.

- Resources From/To (Optional)  
To restrict the report to a range of resources, select the beginning and ending resources.
2. Choose OK.
  3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Resource Where Used Report

Use the Resource Where Used Report to report the manufacturing routings that use the resources you specify.

When using Oracle Engineering, use the Resource Where Used Report to report the operations in manufacturing and engineering routings that use a resource that you specify.

### To submit the Resource Where Used Report:

1. In the Submit Requests window, select Resource Where Used Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- Resource From/To (Optional)  
To restrict the report to a range of resources, select the beginning and ending resources.
- Effective Date (Required, Default)  
Enter an effective date. Bills of Material uses the routing information associated with this date when determining resource usage.

2. Choose OK.
3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Rollup Cumulative Lead Times

Use the Rollup Cumulative Lead Times or Rollup Cumulative Lead Times GUI process to roll up the cumulative lead times after each change made to a bill (adding components, assigning to a different operation, and so on) or the item lead times.

Refer to the steps in To roll up cumulative lead times, page 9-14, for instructions on how to run this process.

## Routing Report

Use the Routing Report for manufacturing routing information. A routing defines the steps for manufacturing an item. For each routing you define operations, the sequence in which to perform them, and the resources required at each operation.

### To submit the Routing Report:

1. In the Submit Requests window, select Routing Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- Item Selection (Required, Default)

Choose one of the following options:

---

*Range*

Report routings for the range of items you specify.

*Specific*

Report routings for the specific item you specify. Oracle Bills of Material displays this option as the default.

---

- Item (Optional, Flexfield)

Enter a specific item to report routing information.

- Alternate Selection (Required, Default)

Choose one of the following options:

---

<i>All</i>	Report routing information for the primary and alternate routings. Oracle Bills of Material displays this option as the default.
<i>Primary</i>	Report routing information only for the primary routing.
<i>Specific</i>	Report routing information for the alternate routing you specify.

---

- **Alternate (Optional)**  
Enter a specific alternate to report.
- **Revision (Optional)**  
Enter a routing revision for the item. The routing associated with this revision is printed.
- **Date (Required)**  
Enter a revision date and time. Bills of Material prints the routing effective as of this date and time.
- **Display Option (Required, Default)**  
Choose one of the following options:

---

<i>All</i>	Report all past, current, and future operations associated with the assembly.
<i>Current</i>	Report all operations effective as of the revision date.
<i>Future and current</i>	Report all future and current operations as of the revision date.

---

- **Operation Detail (Required, Default)**  
Indicate whether you want to print operation information associated with the routing.
- **Items From/To (Optional)**



To restrict the report to a range of items, select the beginning and ending item numbers.

- Category Set (Optional, Default)

Enter a category set. Bills of Material reports routings associated with this category set. The default is the category set defined for your functional area.

- Categories From/To (Optional)

To restrict the report to a range of categories, select the beginning and ending categories.

2. Choose OK.
3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Standard Operation Report

Use the Standard Operation Report to report standard operations to use in assembly routings. Standard operations are default templates that you use, with little or no modification, in more than one routing. If you assign a standard operation as the operation code in a routing, the standard operation information is loaded into the routing. You can then modify the standard operation information in the routing.

### To submit the Standard Operation Report:

1. In the Submit Requests window, select Standard Operation Report from the Name list of values.

The Parameters window opens. Enter values for the following parameters:

- Standard Operation Detail (Required, Default)

Indicate whether you want to print resource information associated with the standard operation.

- Standard Operations From/To (Optional)

To restrict the report to a range of standard operations, select the beginning and ending standard operations.

2. Choose OK.

3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Workday Exception Sets Report

Use the Workday Exception Sets Report to report exception sets. You can use workday exception sets to group workday changes for each organization. For example, you can define exception sets for holidays, schedule maintenance, or extended downtime.

You use exception sets in combination with your workday calendar, the days on/off pattern, and shift on/off pattern to generate a work pattern for your organization.

### To submit the Workday Exception Sets Report:

1. In the Submit Requests window, select Workday Exception Sets Report from the Name list of values.
2. Choose OK.
3. Choose Submit.

## Related Topics

Submitting a Request, *Oracle E-Business Suite User's Guide*

## Oracle Configurator Concurrent Programs

If you want to build configuration models based on BOM models, you can use a series of concurrent programs provided in Bills of Material to transfer BOM and Item Master data from the Bills of Material schema to the Oracle Configurator schema. The Oracle Configurator uses this data in its development environment, Oracle Configurator Developer, to define a configuration model.

See the *Oracle Configurator Implementation Guide* for more information on the following concurrent programs:

- Populate Configuration Models
- Refresh a Single Configuration Model
- Refresh All Imported Configuration Models
- Disable/Enable Refresh of a Configuration Model

# A

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## Oracle Bills of Material Windows and Navigator Paths

This appendix shows you the default navigator path for each Oracle Bills of Material window. Refer to this appendix when you do not already know the navigator path for a window you want to use.

This appendix covers the following topics:

- Bills of Material Windows and Navigator Paths

### Bills of Material Windows and Navigator Paths

Although your system administrator may have customized your navigator, typical navigational paths are presented in the following table:

**Note:** Text in brackets ([ ]) indicates a button. [M] indicates a menu selection.

#### *Bill of Material Responsibility*

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Window Name	Navigation Path
Add Range, page 2-27	Bills > Bills > [Designators] > [Add Range]
Alternates, page 1-10	Setup > Alternates
Bill Components Comparison, page 2-39	Bills > Comparison
Bill Details, page 2-21	Bills > Bills > [Bill Details]
Bill Documents, page 2-30	Bills > Documents

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<b>Window Name</b>	<b>Navigation Path</b>
Bills of Material, page 2-9	Bills > Bills
Calculate Lead Times, page 9-14	Routings > Lead Times
Calendar Dates, page 1-37	Setup > Calendars > [Dates] or Setup > Calendars > [Shifts] > [Dates]
Change Types, <i>Oracle Engineering User's Guide</i>	Setup > Change Types
Changeover Times, page 1-33	Routings > Resources [Setups] > [Changeovers]
Component Changes, page 2-32	Bills > Mass Changes > [Changes]
Delete Range, page 2-27	Bills > Bills > [Designators] > [Delete Range]
Deletion Constraints, page 1-11	Setup > Delete Constraints
Deletion Groups, page 6-1	Delete Groups
Deletion Statements, page 1-11	Setup > Delete Statements
Department Classes, page 1-14	Setup > Department Classes
Departments, page 1-15	Routings > Departments
Descriptive Elements, page 2-27	Bills > Bills > [M] Bills > Elements
Employees, page 1-24	Routings > Resources [Employees]
Exceptions, page 1-37	Setup > Calendars > [Dates] > [Exceptions]
Exception Templates, page 1-37	Setup > Exception Templates
Import Bills and Routings, page 1-37	Bills > Import or Routings > Import
Indented Bill of Material, page 2-36	Bills > Indented Bills
Instances, page 1-18	Routings > Departments [Resources] > [Instances]

<b>Window Name</b>	<b>Navigation Path</b>
Item Revisions, page 2-29	Bills > Bills > [Revision]
Item Where Used, page 2-40	Bills > Item WhereUsed
Locations (See: Setting Up Locations, <i>Oracle Human Resources Management Systems Enterprise and Workforce Management Guide (US)</i> )	Setup > Locations
Mass Change Bills, page 2-32	Bills > Mass Changes
Operation Competencies	Routings > Routings > Operation Competencies
Creating a Routing, page 5-9	Routings > Standard Operations > Operation Competencies
Creating a Standard Operation, page 5-22	Routings > Standard Operations > Operation Competencies
Operation Resources, page 1-24	Routings > Resources
Parameters, page 1-7	Setup > Parameters
Product Families, page 2-50	Flow Manufacturing: Products and Parts > Product Family Members
Reference Designators, page 2-27	Bills > Bills > [Designators]
Resource Capacity Change Reasons , page 1-33	Setup > Resource Capacity Change Reasons
Resource Groups (See: Resource Groups, <i>Oracle Capacity User's Guide</i> )	Setup > Resource Groups
Resources	To define a resource, page 1-24: Routings > Resources  To assign resources to a department, page 1-16 : Routings > Departments [Resources]
Resource WhereUsed, page 5-29	Routings > Resource WhereUsed
Responsibilities, page 1-48	System Administrator: Security > Responsibility

<b>Window Name</b>	<b>Navigation Path</b>
Routing Details, page 5-9	Routings > Routings > [Routing Details]
Routing Documents, page 2-30	Routings > Documents
Routing Revisions, page 5-9	Routings > Routings > [Routing Revisions]
Routings, page 5-9	Routings > Routings
Run Assemble to Order Processes, page 7-24	Routings > ATO
Setup Types, page 1-33	Routings > Setup Types or Setup > Setup Type
Setups, page 1-33	Routings > Resources > [Setups]
Simulation Sets (See: Creating Simulation Sets, <i>Oracle Capacity User's Guide</i> )	Setup > Simulation Sets
Shifts, page 1-37	Setup > Calendars > [Shifts]
Shift Times, page 1-37	Setup > Calendars > [Shifts] > [Times]
Standard Operations, page 5-22	Routings > Standard Operations
Substitute Components, page 2-29	Bills > Bills > [Substitutes]
Workday Calendar, page 1-37	Setup > Calendars
Workday Patterns, page 1-37	Setup > Calendars > [Workday Pattern]

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## Oracle Bills of Material Tools Menu

This appendix describes the options on the Oracle Bills of Material Tools menu.

This appendix covers the following topics:

- Bills of Material Tools Menu
- Oracle Bills Of Material Character Mode Forms and Corresponding GUI Windows

### Bills of Material Tools Menu

Depending upon the currently active window and other factors, the Tools menu for Bills of Material includes:

- *Roll Up Costs*: Navigates to the Cost Rollup window, where you can perform a cost rollup.
- *Roll Up Lead Times*: Executes the Calculate Cumulative Lead Times program.
- *Check for Loops*: Executes the Loop Check program that searches for loops in your bill. Bill loops occur when you assign a bill as a component to itself somewhere in the multilevel structure of the bill.
- *Transfer Bill / Rtg*: Navigates to the Transfer Engineering Data window so that you can transfer engineering data to manufacturing.
- *Copy Bill / Rtg From*: Navigates to the Copy Bill / Rtg From window where you can copy bills or routings.
- *Create Common Bill/Assign Common Routing*: Navigate to the Common Bill / Routing window where you can reference a common bill or routing.
- *Configure Bill*: Navigate to the Oracle Configurator window.

## Related Topics

Rolling Up Cumulative Lead Times, page 9-14

Checking for Bill Loops, page 2-30

Copying Bill and Routing Information, page 2-17

Referencing Common Bills and Routings, page 2-21

Rolling Up Assembly Costs, *Oracle Cost Management User's Guide*

Transferring or Copying Engineering Items, Bills, and Routings, *Oracle Engineering User's Guide*

## Oracle Bills Of Material Character Mode Forms and Corresponding GUI Windows

The following table matches character mode forms with their corresponding GUI windows or processes. This information supplements *Windows and Navigator Paths* in the product online documentation. Text in brackets ([ ]) indicates a button.

The GUI Navigator paths are based on the BOM Supervisor responsibility.

The following table presents more information on any window; navigate to the window and choose the help icon.

<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
Assemble to Order Reports and Processes \Navigate ATO	Run Assemble to Order Processes Navigator: Routings > ATO
Assign Descriptive Security Rules \Navigate Setup Flexfields Descriptive Security Define	Assign Security Rules Navigator: Setup > Flexfields > Descriptive > Security > Assign
Assign Key Flexfield Security Rules \Navigate Setup Flexfields Key Security Assign	Assign Security Rules Navigator: Setup > Flexfields
Assign Security Rules \Navigate Setup Flexfields Key Security Assign	Assign Security Rules Navigator: Setup > Flexfields > Key > Security > Assign



<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
Bill of Material Comparison Report \Navigate Report Bill Compare	Bill Components Comparison Navigator: Bills > Comparison
Bill of Material Loop Report \Navigate Report Bill LoopCheck	Bill of Material Reports Navigator: Reports > Bills
Bill of Material Structure Report \Navigate Report Bill Structure	Bill of Material Reports Navigator: Reports > Bills
Bills of Material Setup Reports \Navigate Report Setup Bills of Material	BOM Setup Reports Navigator: Reports > Setup
Calculate Lead Times \Navigate Leadtimes	Calculate Lead Times Navigator: Routings > Lead Times
Change Organization \Navigate Other ChangeOrg	Change Organization Navigator: Other > Change Organization
Define Alternates \Navigate Setup BOM Alternates	Alternates Navigator: Setup > Alternates
Define Bill of Material \Navigate Bill Define	Delete Range Navigator: Bills > Bills > [Designators] > [Delete Range] or Add Range Navigator: Bills > Bills > [Designators] > [Add Range]
Define Bills of Material Parameters \Navigate Setup BOM Parameters	Parameters Navigator: Setup > Parameters
Define Change Order types \Navigate Setup BOM Types	Change Types Navigator: Setup > Change Types

<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
Define Delete Constraint \Navigate Setup BOM Delete	Deletion Constraints Navigator: Setup > Delete Constraints
Define Department \Navigate Setup Organization Department	Departments Navigator: Routings > Departments
Define Department Classes \Navigate Setup Organization DeptClass	Department Classes Navigator: Setup > Department Classes
Define Key Flexfield Security Rule \Navigate Setup Flexfields Key Security Define	Define Security Rules Navigator: Setup > Flexfields > Key > Security > Define
Define Key Flexfield Segments \Navigate Setup Flexfields Key Segments	Key Flexfield Segments Navigator: Setup > Flexfields > Key > Segments
Define Key Segment Values \Navigate Setup Flexfields Key Values	Segment Values Navigator: Setup > Flexfields > Key > Values
Define Location \Navigate Setup Location	Location Navigator: Setup > Locations
Define Resource Groups \Navigate Setup Organization ResourceGroup	Application Utilities Navigator: Setup > Resource Group
Define Rollup Groups \Navigate Setup Flexfields Key Groups	Rollup Groups Navigator: Setup > Flexfields > Key > Groups

<b>Character Mode Form and Menu Path</b>	<b>GUI Window or Process, and Navigation Path</b>
Define Routing	Routing Details
\Navigate Routing Define	Navigator: Routings > Routings > [Routing Details] or Routing Revisions Navigator: Routings > Routings > [Routing Revisions] or Routings Navigator: Routings > Routings
Define Security Rule	Define Security Rules
\Navigate Setup Flexfields Validation Security Define	Navigator: Setup > Flexfields > Validation > Security > Define
Define Segment Values	Segment Values
\Navigate Setup Flexfields Validation Values	Navigator: Setup > Flexfields > Validation > Values
Define Shorthand Aliases	Shorthand Aliases
\Navigate Setup Flexfields Key Aliases	Navigator: Setup > Flexfields > Key > Aliases
Define Simulation Sets	Simulation Sets
\Navigate Setup Organization SimulationSets	Navigator: Setup > Simulation Sets
Define Standard Comments	Bill Documents
\Navigate Setup BOM Comments	Navigator: Bills > Documents
Define Standard Instructions	Operation Documents
\Navigate Setup BOM Instructions	Navigator: Routing > Documents
Define Standard Operation	Standard Operations
\Navigate Routing Define	Navigator: Routings > Standard Operations

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Define Value Set	Value Sets
\Navigate Setup Flexfields Validation Sets	Navigator: Setup > Flexfields > Validation > Sets
Define Workday Calendar	Calendar Dates
\Navigate Setup Calendar Define	Navigator: Setup > Calendars > [Dates]
	or
	Navigator: Setup > Calendars > [Shifts] > [Dates]
	or
	Shifts
	Navigator: Setup > Calendars > [Shifts]
	or
	Shift Times
	Navigator: Setup > Calendars > [Shifts] > [Times]
	or
	Workday Calendar
	Navigator: Setup > Calendars
	or
	Workday Patterns
	Navigator: Setup > Calendars > [Workday Pattern]
	or
	Exceptions
	Navigator: Setup > Calendars > [Dates] > [Exceptions]
Define Workday Exception Sets	Exception Templates
\Navigate Setup Calendar ExceptionSets	Navigator: Setup > Exception Templates

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Delete Item Information \Navigate Delete	Deletion Groups Navigator: Delete Groups or Navigator: Routings > Delete Groups
Delete Items Report \Navigate Report Setup Item	Delete History Report Navigator: Reports > Delete Groups
Indented Bill of Material Cost Report \Navigate Report Setup Cost Indented	Use the Cost Management responsibility and See: <i>Oracle Cost Management User's Guide</i> or online documentation.
Item Cost Information Report \Navigate Report Setup Item Cost CostItem	Use the Cost Management responsibility and See: <i>Oracle Cost Management User's Guide</i> or online documentation.
Item Usage Report \Navigate Report WhereUsed	Item WhereUsed Report Navigator: Reports > Bills
Manufacturing Setup Reports \Navigate Report Setup Organization	BOM Setup Reports Navigator: Reports > Setup
Mass Change Bills of Material \Navigate Bill MassChange	Mass Change Bills Navigator: Bills > Mass Changes
Mass Change Bills of Material \Navigate Bill MassChange	Component Changes Navigator: Bills > Mass Changes > Changes > [Changes]
Resource Usage Report \Navigate Report WhereUsed	Resource Usage Report Navigator: Reports > Routings
Routing Reports \Navigate Report Routing	Routing Reports Navigator: Reports > Routings

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Run Reports \Navigate Report Routing	GUI Obsolete
Substitute Components \Navigate Bill Define	Substitute Components Navigator: Bills > Bills > [Substitutes]
Update Personal Profile Options \Navigate Other Profile	Personal Profile Values Navigator: Setup > Profiles
View Bill of Material Comparison \Navigate Inquiry Bill Compare	Bill Components Comparison Navigator: Bills > Comparison
View Bill of Material Details \Navigate Inquiry Bill Detail	Bill Details Navigator: Bills > Bills > [Bill Details]
View Concurrent Requests \Navigate Other Requests	GUI Obsolete
View Delete History \Navigate Inquiry DeleteHistory	Deletion Groups Navigator: Routings > Delete Groups
View Department \Navigate Inquiry Organization Department	Departments Navigator: Routings > Departments
View Indented Bill of Material \Navigate Inquiry Bill Indented	Indented Bills of Material Navigator: Bills > Indented Bills
View Item Cost Information \Navigate Inquiry Item Cost	Use the Cost Management responsibility and See: <i>Oracle Cost Management User's Guide</i> or online help
View Item Revisions \Navigate Inquiry Item Revision	Item Revisions Navigator: Bills > Bills > [Revision]

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
View Item Usage	Item WhereUsed
\Navigate Inquiry WhereUsed Item	Navigator: Bills > Item WhereUsed
View Resource Usage	Resource WhereUsed
\Navigate Inquiry WhereUsed Resource	Navigator: Routings > Resource WhereUsed
View Routing Details	Routing Details
\Navigate Inquiry Routing	Navigator: Routings > Routings > [Routing Details]





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## Business Event Data for Oracle Bills of Material

This appendix covers the following topics:

- Business Events
- Sample Subscription Functions

### Business Events

Using Oracle Workflow, you can automatically trigger actions based on the following Oracle Bills of Material business events. Examples of actions you can trigger include issuing notifications or launching a workflow.

## **Business Events**

<b>Event Name</b>	<b>Event Description</b>	<b>Event Parameter Names and Descriptions</b>
Oracle.apps.bom.structure.created	Raise this event each time a bill of material is created. When importing bills in bulk using the open interface program, set the event type to BULK.	<p>PK1_Value: The PK1_Value of the bill. When Obj_Name = NULL, PK1_Value = the value of the Assembly_Item_Id.</p> <p>PK2_Value: The PK2_Value of the bill. When Obj_Name = NULL, PK2_Value = the value of the Organization_Id.</p> <p>Obj_Name: This value is NULL for items.</p> <p>Structure_Name: The alternate designator.</p> <p>Event_Entity_Name: This value equals 'Structure'.</p> <p>Event_Parent_Entity_Id: The value of the product bill's Bill_Sequence_Id. The value equals NULL for a bulk event.</p>

Event Name	Event Description	Event Parameter Names and Descriptions
Oracle.apps.bom.structure.modified	Raise this event when: <ul style="list-style-type: none"> <li>• updating the bill header</li> <li>• adding components to the bill</li> <li>• modifying the component attributes</li> </ul>	<p>PK1_Value: The PK1_Value of the bill. When Obj_Name = NULL, PK1_Value = the value of the Assembly_Item_Id.</p> <p>PK2_Value: The PK2_Value of the bill. When Obj_Name = NULL, PK2_Value = the value of the Organization_Id.</p> <p>Obj_Name: This value is NULL for items.</p> <p>Structure_Name: The alternate designator.</p> <p>Event_Entity_Name: This value equals 'Structure'.</p> <p>Event_Parent_Entity_Id: The value of the product bill's Bill_Sequence_Id. The value equals NULL for a bulk event.</p> <p>REVISED_ITEM_SEQUENCE : Indicates the revised item on an ECO, which affects a component row. It shows all the components that are updated for the particular revised item while implementing the ECO.</p>

Event Name	Event Description	Event Parameter Names and Descriptions
Oracle.apps.bom.structure.deleteSuccess	Raise this event when deleting a bill of material.	<p>PK1_Value: The PK1_Value of the bill. When Obj_Name = NULL, PK1_Value = the value of the Assembly_Item_Id.</p> <p>PK2_Value: The PK2_Value of the bill. When Obj_Name = NULL, PK2_Value = the value of the Organization_Id.</p> <p>Obj_Name: This value is NULL for items.</p> <p>Structure_Name: TThe alternate designator.</p> <p>Event_Entity_Name: This value equals 'Structure'.</p> <p>Event_Parent_Entity_Id: The value of the product bill's Bill_Sequence_Id. The value equals NULL for a bulk event.</p>
Oracle.apps.bom.structure.deleteError	Raise this event when an error occurs during a bill of material deletion.	<p>PK1_Value: The PK1_Value of the bill. When Obj_Name = NULL, PK1_Value = the value of the Assembly_Item_Id.</p> <p>PK2_Value: The PK2_Value of the bill. When Obj_Name = NULL, PK2_Value = the value of the Organization_Id.</p> <p>Obj_Name: This value is NULL for items.</p> <p>Structure_Name: TThe alternate designator.</p> <p>Event_Entity_Name: This value equals 'Structure'.</p> <p>Event_Parent_Entity_Id: The value of the product bill's Bill_Sequence_Id. The value equals NULL for a bulk event.</p>

Event Name	Event Description	Event Parameter Names and Descriptions
Oracle.apps.bom.component.modified	<p>Raise this event when creating or modifying a:</p> <ul style="list-style-type: none"> <li>• substitute component</li> <li>• reference designator</li> <li>• component operation</li> </ul> <p>Depending on the child entity that is modified, the event name will have either one of the values listed above.</p>	<p>PK1_Value: The PK1_Value of the component. When Obj_Name = NULL, PK1_Value = the value of the Component_Item_Id.</p> <p>PK2_Value: The PK2_Value of the bill. When Obj_Name = NULL, PK2_Value = the value of the Organization_Id.</p> <p>Obj_Name: This value is NULL for component-type items.</p> <p>Structure_Name: The alternate designator.</p> <p>Event_Entity_Name: Possible values include:</p> <ul style="list-style-type: none"> <li>• Component</li> <li>• Reference Designator</li> <li>• Component Operations</li> <li>• Substitute Component</li> </ul> <p>Event_Parent_Entity_Id: The value of the component's Component_Sequence_Id . The value equals NULL for a bulk event.</p>

Event Name	Event Description	Event Parameter Names and Descriptions
Oracle.apps.bom.component.deleteSuccess	Raise this event when deleting the components in a structure using a delete group.	<p>PK1_Value: The PK1_Value of the component. When Obj_Name = NULL, PK1_Value = the value of the Component_Item_Id.</p> <p>PK2_Value: The PK2_Value of the bill. When Obj_Name = NULL, PK2_Value = the value of the Organization_Id.</p> <p>Obj_Name: This value is NULL for component-type items.</p> <p>Structure_Name: The alternate designator.</p> <p>Event_Entity_Name: Possible values include:</p> <ul style="list-style-type: none"> <li>• Component</li> <li>• Reference Designator</li> <li>• Component Operations</li> <li>• Substitute Component</li> </ul> <p>Event_Parent_Entity_Id: The value of the component's Component_Sequence_Id . The value equals NULL for a bulk event.</p>

Event Name	Event Description	Event Parameter Names and Descriptions
Oracle.apps.bom.component.deleteError	Raise this event when an error occurs during a component deletion.	<p>PK1_Value: The PK1_Value of the component. When Obj_Name = NULL, PK1_Value = the value of the Component_Item_Id.</p> <p>PK2_Value: The PK2_Value of the bill. When Obj_Name = NULL, PK2_Value = the value of the Organization_Id.</p> <p>Obj_Name: This value is NULL for component-type items.</p> <p>Structure_Name: The alternate designator.</p> <p>Event_Entity_Name: Possible values include:</p> <ul style="list-style-type: none"> <li>• Component</li> <li>• Reference Designator</li> <li>• Component Operations</li> <li>• Substitute Component</li> </ul> <p>Event_Parent_Entity_Id: The value of the component's Component_Sequence_Id . The value equals NULL for a bulk event.</p>

**Note:** For bulk business events, the event parameters PK1\_Value, PK2\_Value, and Obj\_Name parameters are NULL.

### Common Event Parameters

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Event Parameter Name	Description
Event_Type	This parameter identifies the type of transaction that raised the event. <ul style="list-style-type: none"><li>• Single</li><li>• Bulk</li></ul>
Last_Updated_By	Identifier of the user
Last_Update_Date	Identifies the date the transaction occurred
Created_By	Identifier of the user.  <b>Note:</b> In bulk events that include both creation and update transactions, this parameter is irrelevant and not available.
Creation_Date	Identifies the date the creation transaction occurred.  <b>Note:</b> In bulk events that include both creation and update transactions, this parameter is irrelevant and not available.
Request_Identifier	When Event_Type = Bulk, this identifies the concurrent request that processed the bulk data set.

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### Related Topics

Using Business Events, page 1-55

Sample Subscription Functions, page C-9

Managing Business Events, *Oracle Workflow Developer's Guide*

Defining Procedures and Functions for Oracle Workflow, *Oracle Workflow Developer's Guide*



## Sample Subscription Functions

In order to trigger actions based on business events, you must subscribe to the business events. A subscription can trigger a simple action, such as delivering electronic notifications, or a more complex action, such as triggering a function. A function is a PL/SQL stored procedure that can define business rules, perform automated tasks within an application, or retrieve application information. The stored procedure accepts standard arguments and returns a completion result.

A function conforms to a specific signature as required by Oracle Workflow and business events. A generic subscription function looks like this:

```
CREATE OR REPLACE PACKAGE My_Subscription_PKG AS
    FUNCTION Test_Subscription
        ( p_subscription_guid IN RAW,
          p_event IN OUT NOCOPY wf_event_t
        )
        RETURN VARCHAR2;
END My_Subscription_PKG;
CREATE OR REPLACE PACKAGE BODY My_Subscription_PKG AS
    FUNCTION Test_Subscription
        ( p_subscription_guid IN RAW,
          p_event IN OUT NOCOPY wf_event_t
        )
        RETURN VARCHAR2 IS
        l_event_name      VARCHAR2(2000);
        l_event_key       VARCHAR2(2000);
        l_err_text        VARCHAR2(3000);
        l_param_list      WF_PARAMETER_LIST_T ;
    BEGIN
        l_event_name := p_event.getEventName();
        l_event_key  := p_event.GetEventKey()
        ...
        ...
        ...
        RETURN 'SUCCESS';
    EXCEPTION WHEN OTHERS THEN
        RETURN 'ERROR';

    END;
    /* End of test scription */
END My_Subscription_PKG;
/* End of package My_Subscription_PKG */
```

Following are two examples of subscription functions that perform specific tasks.

### Example: Synchronizing Bills of Material Across Multiple Organizations

You maintain bills of material in the master organization. Every time you create a new bill of material in the master organization, you must synchronize the bill with one or more child organizations. You need to maintain the component attributes and substitutes in individual organizations, so you cannot use a common bill of material. To meet these requirements, a function now needs to raise the following three events:

- oracle.apps.bom.structure.created
- oracle.apps.bom.structure.modified

- `oracle.apps.bom.component.modified`

For the `oracle.apps.bom.structure.created` event, the subscription function creates the bill of material in all child organizations.

```

CREATE or REPLACE PACKAGE Bom_Struct_Created_Sub AS

FUNCTION process_structure_created (p_subscription_guid IN RAW,
                                  p_event IN OUT NOCOPY wf_event_t)
RETURN VARCHAR2;

END Bom_Struct_Created_Sub;

CREATE or REPLACE PACKAGE BODY Bom_Struct_Created_Sub AS
/*****
*****
* Function      : process_structure_created
* Parameters    : Subscription guid
*               : Event
* Return        : Success/Error
* Purpose       : This is a subscription function for oracle.apps.bom.
structure.created
*               event. When a structure is created the business event
oracle.apps.
*               bom.structure.created event is raised which will invoke
this
*               API as part of subscription.
*****
*****/

FUNCTION process_structure_created (p_subscription_guid IN RAW,
                                  p_event IN OUT NOCOPY wf_event_t)
RETURN VARCHAR2 IS

/*
*Cursor to get all child orgs for a given organization id.
*/
CURSOR get_child_orgs(org_id NUMBER)
IS
        SELECT  organization_id child_org_id
        FROM    mtl_parameters
        WHERE   master_organization_id      = org_id
              AND master_organization_id <> organization_id;

/*
* Cursor to get the structure details  for a given item, org and
structure name.
*/
CURSOR get_structure_details(item_id NUMBER, org_id NUMBER,
structure_name VARCHAR2)
IS
        SELECT  *
        FROM    bom_structures_b
        WHERE   assembly_item_id           = item_id
              AND organization_id         = org_id
              AND NVL(alternate_bom_designator,'PRIMARY') =
structure_name;

l_param_list          WF_PARAMETER_LIST_T ;
l_param_name          VARCHAR2(240);
l_param_value         VARCHAR2(2000);
l_event_name          VARCHAR2(2000);
l_event_key           VARCHAR2(2000);
l_debug_file_dir      VARCHAR2(512);
l_log_file            VARCHAR2(240);
l_log_return_status   VARCHAR2(1);
l_error               VARCHAR2(4000);

l_structure_rec       get_structure_details%ROWTYPE;
l_bom_header_rec      BOM_BO_PUB.Bom_Head_Rec_Type;

```

```

l_bom_revision_tbl      Bom_Bo_Pub.Bom_Revision_Tbl_Type;
l_bom_component_tbl    Bom_Bo_Pub.Bom_Comps_Tbl_Type;
l_bom_ref_designator_tbl Bom_Bo_Pub.Bom_Ref_Designator_Tbl_Type;
l_bom_sub_component_tbl Bom_Bo_Pub.Bom_Sub_Component_Tbl_Type;
l_bom_comp_ops_tbl     Bom_Bo_Pub.Bom_Comp_Ops_Tbl_Type;

l_ass_item_id          NUMBER;
l_struct_name         VARCHAR2(10);
l_org_id              NUMBER;
l_child_org_id        NUMBER;
is_MasterOrg          VARCHAR2(1);
l_return_status       VARCHAR2(1);
l_msg_count           NUMBER      := 0;
l_assembly_type       NUMBER;
l_assembly_comment    VARCHAR2(240);
l_attr_category       VARCHAR2(30);
l_attr1               VARCHAR2(150);
l_attr2               VARCHAR2(150);
l_attr3               VARCHAR2(150);
l_attr4               VARCHAR2(150);
l_attr5               VARCHAR2(150);
l_attr6               VARCHAR2(150);
l_attr7               VARCHAR2(150);
l_attr8               VARCHAR2(150);
l_attr9               VARCHAR2(150);
l_attr10              VARCHAR2(150);
l_attr11              VARCHAR2(150);
l_attr12              VARCHAR2(150);
l_attr13              VARCHAR2(150);
l_attr14              VARCHAR2(150);
l_attr15              VARCHAR2(150);
l_orig_sys_ref        VARCHAR2(50);
l_imp_date            DATE;
l_entity_type         VARCHAR2(100);
BEGIN
    /*
    * Select the debug directory to write the log file and create the
    file name.
    *
    * These steps are required only for debugging and troubleshooting.
    * The location of the debug file is based on the database
    directories defined for PL/SQL file I/O
    */
    SELECT  VALUE
    INTO    l_debug_file_dir
    FROM    V$PARAMETER
    WHERE   NAME = 'utl_file_dir';

    IF INSTR(l_debug_file_dir, ',') <> 0 THEN
        l_debug_file_dir := SUBSTR(l_debug_file_dir, 1, INSTR
(l_debug_file_dir, ',') - 1);
    END IF;

    /*
    * Create the file name for debug log file.
    */

    l_log_file := 'BOM_STR_SUBSCR' || '_' || TO_CHAR(SYSDATE,
'DDMONYYYY_HH24MISS') || '.err';

    l_param_list := p_event.getparameterlist;
    l_event_name := p_event.getEventName();
    l_event_key  := p_event.GetEventKey();

    /*
    * Loop through the payload for the business event raised and get all

```

```

the parameters.
  * This gives the information about the structure created.
  */

IF l_param_list IS NOT NULL THEN
  FOR i IN l_param_list.FIRST..l_param_list.LAST
  LOOP
    l_param_name := l_param_list(i).getname;
    l_param_value := l_param_list(i).getvalue;

    IF (l_param_name = 'PK1_VALUE')
    THEN
      l_ass_item_id := l_param_value;
    ELSIF (l_param_name = 'PK2_VALUE')
    THEN
      l_org_id := l_param_value;
    ELSIF (l_param_name = 'STRUCTURE_NAME')
    THEN
      l_struct_name := l_param_value;
    END IF;
  END LOOP;
END IF;

/*
 * Check if it is a Master org.If it is a Master Org create structure
in all the
 * child orgs.
 */

BEGIN
  SELECT 'Y'
  INTO   is_MasterOrg
  FROM   DUAL
  WHERE  EXISTS
        (SELECT organization_id
         FROM   mtl_parameters
         WHERE  organization_id = l_org_id
              AND ( master_organization_id IS NULL
                  OR master_organization_id = l_org_id)
        );
  EXCEPTION
  WHEN NO_DATA_FOUND THEN
    is_MasterOrg := 'N';
END;

/*
 * This subscription API works only for event type as Single.
 */
IF (is_MasterOrg = 'Y' AND l_entity_type= 'Single')
THEN
  l_bom_header_rec      := Bom_Bo_Pub.G_MISS_BOM_HEADER_REC;
  l_bom_revision_tbl   := Bom_Bo_Pub.G_MISS_BOM_REVISION_TBL;
  l_bom_component_tbl  := Bom_Bo_Pub.G_MISS_BOM_COMPONENT_TBL;
  l_bom_ref_designator_tbl := Bom_Bo_Pub.
G_MISS_BOM_REF_DESIGNATOR_TBL;
  l_bom_sub_component_tbl := Bom_Bo_Pub.G_MISS_BOM_SUB_COMPONENT_TBL;
  l_bom_comp_ops_tbl   := Bom_Bo_Pub.G_MISS_BOM_COMP_OPS_TBL;

  OPEN get_structure_details(l_ass_item_id,l_org_id,l_struct_name);
  LOOP
    FETCH get_structure_details into l_structure_rec;
    EXIT WHEN get_structure_details%NOTFOUND;

    IF (l_struct_name = 'PRIMARY')
    THEN

```

```

l_struct_name := '';
    END IF;

    l_assembly_type      := l_structure_rec.Assembly_Type ;
    l_assembly_comment   := l_structure_rec.
Specific_Assembly_Comment;
    l_attr_category     := l_structure_rec.Attribute_category;
    l_attr1              := l_structure_rec.Attribute1;
    l_attr2              := l_structure_rec.Attribute2;
    l_attr3              := l_structure_rec.Attribute3;
    l_attr4              := l_structure_rec.Attribute4;
    l_attr5              := l_structure_rec.Attribute5;
    l_attr6              := l_structure_rec.Attribute6;
    l_attr7              := l_structure_rec.Attribute7;
    l_attr8              := l_structure_rec.Attribute8;
    l_attr9              := l_structure_rec.Attribute9;
    l_attr10             := l_structure_rec.Attribute10;
    l_attr11             := l_structure_rec.Attribute11;
    l_attr12             := l_structure_rec.Attribute12;
    l_attr13             := l_structure_rec.Attribute13;
    l_attr14             := l_structure_rec.Attribute14;
    l_attr15             := l_structure_rec.Attribute15;
    l_orig_sys_ref       := l_structure_rec.
Original_System_Reference;
    l_imp_date           := l_structure_rec.Implementation_Date;

    END LOOP;
    CLOSE get_structure_details;

    FOR each_record in get_child_orgs(org_id => l_org_id)
    LOOP
        BEGIN
            l_child_org_id                := each_record.
child_org_id;
            l_bom_header_rec.Assembly_item_name := Get_Item_Name
(l_ass_item_id,l_org_id);
            l_bom_header_rec.Organization_Code := Get_Org_Code
(l_child_org_id);
            l_bom_header_rec.Alternate_Bom_Code := l_struct_name;
            l_bom_header_rec.Assembly_Type     := nvl(l_assembly_type,
1);
            l_bom_header_rec.Transaction_Type := 'CREATE';
            l_bom_header_rec.Return_Status    := NULL;
            l_bom_header_rec.Row_Identifier   := NULL;
            l_bom_header_rec.Assembly_Comment := l_assembly_comment;
            l_bom_header_rec.Attribute_category := l_attr_category;
            l_bom_header_rec.Attribute1       := l_attr1;
            l_bom_header_rec.Attribute2       := l_attr2;
            l_bom_header_rec.Attribute3       := l_attr3;
            l_bom_header_rec.Attribute4       := l_attr4;
            l_bom_header_rec.Attribute5       := l_attr5;
            l_bom_header_rec.Attribute6       := l_attr6;
            l_bom_header_rec.Attribute7       := l_attr7;
            l_bom_header_rec.Attribute8       := l_attr8;
            l_bom_header_rec.Attribute9       := l_attr9;
            l_bom_header_rec.Attribute10      := l_attr10;
            l_bom_header_rec.Attribute11      := l_attr11;
            l_bom_header_rec.Attribute12      := l_attr12;
            l_bom_header_rec.Attribute13      := l_attr13;
            l_bom_header_rec.Attribute14      := l_attr14;
            l_bom_header_rec.Attribute15      := l_attr15;
            l_bom_header_rec.Original_System_Reference := l_orig_sys_ref;
            l_bom_header_rec.BOM_Implementation_Date := l_imp_date;

            /*

```

```

* Assign the item to child org if it is not assigned. The item
assignment
* code is not in here. So if the item is not assigned to the
child org
* we need to do the item assignment first before trying to
create structure
* in the child org.
*/

Bom_Bo_Pub.Process_Bom
( p_bo_identifier          => 'BOM'
, p_api_version_number    => 1.0
, p_init_msg_list         => TRUE
, p_bom_header_rec        => l_bom_header_rec

, p_bom_revision_tbl      => l_bom_revision_tbl
, p_bom_component_tbl     => l_bom_component_tbl
, p_bom_ref_designator_tbl => l_bom_ref_designator_tbl
, p_bom_sub_component_tbl => l_bom_sub_component_tbl
, x_bom_header_rec        => l_bom_header_rec
, x_bom_revision_tbl      => l_bom_revision_tbl
, x_bom_component_tbl     => l_bom_component_tbl
, x_bom_ref_designator_tbl => l_bom_ref_designator_tbl
, x_bom_sub_component_tbl => l_bom_sub_component_tbl

, x_return_status         => l_return_status
, x_msg_count             => l_msg_count
, p_debug                 => 'N' -- Set this to Y for
debugging
, p_output_dir            => l_debug_file_dir
, p_debug_filename        => l_log_file
, p_write_err_to_debugfile => 'Y'
);

EXCEPTION WHEN OTHERS THEN
    l_error := SQLERRM;
END;
END LOOP;
END IF;
RETURN 'SUCCESS';

EXCEPTION WHEN OTHERS THEN
    l_error := SQLERRM;
RETURN 'ERROR';

END process_structure_created;

/*****
* Function      : Get_Item_Name
* Parameters    : Inventory item id
*               : Organization id
* Return        : Assembly Item name
* Purpose       : This function is used to get the assembly item name
*               : for a given item id and organization id.
*****/

FUNCTION Get_Item_Name(p_item_id IN NUMBER,p_org_id IN NUMBER)
RETURN VARCHAR2
IS
    l_item_name MTL_SYSTEM_ITEMS_KFV.concatenated_segments%TYPE;
BEGIN
    SELECT concatenated_segments
    INTO   l_item_name
    FROM   mtl_system_items_kfv
    WHERE  inventory_item_id = p_item_id
    AND    organization_id   = p_org_id;

```

```

RETURN l_item_name;
    EXCEPTION
        WHEN NO_DATA_FOUND THEN
            return null;
    END Get_Item_Name;

/*****
* Function      : Get_Org_Code
* Parameters    : Organization id
* Return       : Organization Code
* Purpose      : This function is used to get the organization code
*               for a organization id.
*****/

FUNCTION Get_Org_Code(p_org_id IN NUMBER)
RETURN VARCHAR2
IS
    l_org_code MTL_PARAMETERS.organization_code%TYPE;
BEGIN
    SELECT organization_code
    INTO   l_org_code
    FROM   MTL_PARAMETERS
    WHERE  organization_id   = p_org_id;
    RETURN l_org_code;
    EXCEPTION
        WHEN NO_DATA_FOUND THEN
            return null;
    END Get_Org_Code;

END Bom_Struct_Created_Sub;

```

For the oracle.apps.bom.structure.modified event, the subscription function identifies the new or modified components and adds or changes them in the child organizations:



```

CREATE or REPLACE PACKAGE Bom_Components_Sync_Sub AS

FUNCTION sync_components(p_subscription_guid IN RAW,
                        p_event            IN OUT NOCOPY wf_event_t)
RETURN VARCHAR2;

END Bom_Components_Sync_Sub;

/*****
* Function      : Sync_Components
* Parameters    : Subscription guid
*               : Event
* Return        : Success/Error
* Purpose       : This function is subscribed for oracle.apps.bom.
structure.modified
*               : event.When a structure is modified either by adding new
components
*               : or by modifying existing component attributes,the
business event
*               : is raised.
*****/

CREATE or REPLACE PACKAGE BODY Bom_Components_Sync_Sub AS

FUNCTION sync_components (p_subscription_guid IN RAW,
                        p_event            IN OUT NOCOPY wf_event_t)
RETURN VARCHAR2 IS
/*
*Cursor to get all child orgs for a given organization id.
*/
CURSOR get_child_orgs(org_id NUMBER)
IS
        SELECT organization_id child_org_id
        FROM    mtl_parameters
        WHERE   master_organization_id = org_id
        AND    master_organization_id <> organization_id;

/*
* Cursor to get the component details for a given component
sequence id.
*/
CURSOR get_component_details(comp_seq_id NUMBER)
IS
        SELECT *
        FROM    bom_components_b
        WHERE   component_sequence_id = comp_seq_id ;

l_param_list          WF_PARAMETER_LIST_T ;
l_param_name          VARCHAR2(240);
l_param_value         VARCHAR2(2000);
l_event_name          VARCHAR2(2000);
l_event_key           VARCHAR2(2000);
l_debug_file_dir      VARCHAR2(512);
l_log_file            VARCHAR2(240);
l_log_return_status   VARCHAR2(1);
l_error               VARCHAR2(4000);

l_assembly_item_id    NUMBER;
l_comp_item_id        NUMBER;
l_org_id              NUMBER;
l_struct_name         VARCHAR2(10);
l_entity_name         VARCHAR2(240);
l_comp_seq_id         NUMBER;
l_bill_seq_id         NUMBER;

```

```

l_component_rec          get_component_details%ROWTYPE;
l_bom_header_rec        BOM_BO_PUB.Bom_Head_Rec_Type;
l_bom_revision_tbl      Bom_Bo_Pub.Bom_Revision_Tbl_Type;
l_bom_component_rec     Bom_Bo_Pub.Bom_Comps_Rec_Type;
l_bom_component_tbl     Bom_Bo_Pub.Bom_Comps_Tbl_Type;
l_bom_ref_designator_tbl Bom_Bo_Pub.Bom_Ref_Designator_Tbl_Type;
l_bom_sub_component_tbl Bom_Bo_Pub.Bom_Sub_Component_Tbl_Type;
l_bom_comp_ops_tbl      Bom_Bo_Pub.Bom_Comp_Ops_Tbl_Type;

is_MasterOrg            VARCHAR2(1);
l_child_org_id          NUMBER;
l_return_status         VARCHAR2(1);
l_msg_count              NUMBER      := 0;

l_disable_date          DATE;
l_planning_percent      NUMBER;
l_yield                 NUMBER;
l_cost_rollup           NUMBER;
l_wip_supply_type       NUMBER;
l_so_basis              NUMBER;
l_optional              NUMBER;
l_exclusive             NUMBER;
l_check_atp             NUMBER;
l_shipping_allowed      NUMBER;
l_req_to_ship           NUMBER;
l_req_for_revenue       NUMBER;
l_include_on_ship_docs  NUMBER;
l_qty_related           NUMBER;
l_supply_subinv         VARCHAR2(10);
l_low_qty               NUMBER;
l_high_qty              NUMBER;
l_attr_category         VARCHAR2(30);
l_attr1                 VARCHAR2(150);
l_attr2                 VARCHAR2(150);
l_attr3                 VARCHAR2(150);
l_attr4                 VARCHAR2(150);
l_attr5                 VARCHAR2(150);
l_attr6                 VARCHAR2(150);
l_attr7                 VARCHAR2(150);
l_attr8                 VARCHAR2(150);
l_attr9                 VARCHAR2(150);
l_attr10                VARCHAR2(150);
l_attr11                VARCHAR2(150);
l_attr12                VARCHAR2(150);
l_attr13                VARCHAR2(150);
l_attr14                VARCHAR2(150);
l_attr15                VARCHAR2(150);
l_from_end_item_unit_number VARCHAR2(30);
l_to_end_item_unit_number VARCHAR2(30);
l_orig_sys_ref          VARCHAR2(50);
l_enforce_int_req       NUMBER;
l_auto_req_material     VARCHAR2(1);
l_sugg_vendor_name      VARCHAR2(240);
l_unit_price            NUMBER;
l_event_type            VARCHAR2(500);

```

```

BEGIN
/*
* Select the debug directory to write the log file and create the file
name.
*
* These steps are required only for debugging and troubleshooting.
* The location of the debug file is based on the database directories
defined for PL/SQL file I/O
*/

```

```

SELECT  VALUE
INTO    l_debug_file_dir
FROM    V$PARAMETER
WHERE   NAME = 'utl_file_dir';

IF INSTR(l_debug_file_dir,',') <> 0 THEN
    l_debug_file_dir      := SUBSTR(l_debug_file_dir, 1, INSTR
(l_debug_file_dir, ',') - 1);
END IF;
l_log_file := 'BOM_COMP_SUBSCR'||'_'||TO_CHAR(SYSDATE,
'DDMONYYYY_HH24MISS')||'.err';

/* End of the section required for debug file */

l_param_list := p_event.getparameterlist;
l_event_name := p_event.getEventName();
l_event_key  := p_event.GetEventKey();

/*
* Loop through the payload for the business event raised and get all
the parameters.
* This gives the information about the structure created.
*/

IF l_param_list IS NOT NULL THEN
    FOR i IN l_param_list.FIRST..l_param_list.LAST
    LOOP
        l_param_name := l_param_list(i).getname;
        l_param_value := l_param_list(i).getvalue;

        IF (l_param_name = 'PK1_VALUE')
        THEN
            l_comp_item_id := l_param_value;
        ELSIF (l_param_name = 'PK2_VALUE')
        THEN
            l_org_id      := l_param_value;
        ELSIF (l_param_name = 'STRUCTURE_NAME')
        THEN
            l_struct_name := l_param_value;
        ELSIF (l_param_name = 'EVENT_ENTITY_NAME')
        THEN
            l_entity_name := l_param_value;
        ELSIF (l_param_name = 'COMPONENT_SEQUENCE_ID')
        THEN
            l_comp_seq_id := l_param_value;
        ELSIF (l_param_name = 'EVENT_ENTITY_PARENT_ID')
        THEN
            l_bill_seq_id := l_param_value;
        ELSIF (l_param_name = 'EVENT_TYPE')
        THEN
            l_event_type := l_param_value;
        END IF;
    END LOOP;
END IF;

BEGIN

IF (l_entity_name = 'Component' AND l_event_type = 'Single')
THEN
    BEGIN
        SELECT 'Y'
        INTO    is_MasterOrg
        FROM    DUAL
        WHERE   EXISTS
                (SELECT organization_id
                 FROM    mtl_parameters

```

```

WHERE   organization_id = l_org_id
        AND ( master_organization_id IS NULL
              OR master_organization_id = l_org_id)
        );
EXCEPTION
WHEN NO_DATA_FOUND THEN
    is_MasterOrg := 'N';
END;

IF (is_MasterOrg = 'Y')
THEN

    SELECT assembly_item_id
    INTO   l_assembly_item_id
    FROM   BOM_STRUCTURES_B
    WHERE  bill_sequence_id = l_bill_seq_id AND
           organization_id = l_org_id;

    l_bom_header_rec      := Bom_Bo_Pub.G_MISS_BOM_HEADER_REC;
    l_bom_revision_tbl    := Bom_Bo_Pub.G_MISS_BOM_REVISION_TBL;
    l_bom_component_rec   := Bom_Bo_Pub.G_MISS_BOM_COMPONENT_REC;
    l_bom_component_tbl   := Bom_Bo_Pub.G_MISS_BOM_COMPONENT_TBL;
    l_bom_ref_designator_tbl := Bom_Bo_Pub.
G_MISS_BOM_REF_DESIGNATOR_TBL;
    l_bom_sub_component_tbl := Bom_Bo_Pub.G_MISS_BOM_SUB_COMPONENT_TBL;
    l_bom_comp_ops_tbl    := Bom_Bo_Pub.G_MISS_BOM_COMP_OPS_TBL;

    OPEN get_component_details(l_comp_seq_id);
    LOOP
        FETCH get_component_details into l_component_rec;
        EXIT WHEN get_component_details%NOTFOUND;

        IF (l_struct_name = 'PRIMARY')
        THEN
            l_struct_name := '';
        END IF;

        --l_bom_component_rec.Start_Effective_Date      := l_component_rec.
Effectivity_Date;
        --l_bom_component_rec.Operation_Sequence_Number := l_component_rec.
Operation_Seq_Num;
        l_disable_date                := l_component_rec.Disable_Date;

        l_planning_percent             := l_component_rec.Planning_Factor;
        l_yield                        := l_component_rec.
Component_Yield_Factor;
        l_cost_rollup                 := l_component_rec.
Include_In_Cost_Rollup;
        l_wip_supply_type             := l_component_rec.Wip_Supply_Type;
        l_so_basis                    := l_component_rec.So_Basis;
        l_optional                    := l_component_rec.Optional;

        l_exclusive                   := l_component_rec.
Mutually_Exclusive_Options;
        l_check_atp                   := l_component_rec.Check_Atp;
        l_shipping_allowed            := l_component_rec.Shipping_Allowed;
        l_req_to_ship                 := l_component_rec.Required_To_Ship;
        l_req_for_revenue             := l_component_rec.
Required_For_Revenue;
        l_include_on_ship_docs        := l_component_rec.
Include_On_Ship_Docs;
        l_qty_related                 := l_component_rec.Quantity_Related;
        l_supply_subinv               := l_component_rec.Supply_Subinventory;
        l_low_qty                     := l_component_rec.Low_Quantity;

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```

l_high_qty                := l_component_rec.High_Quantity;
  l_attr_category         := l_component_rec.Attribute_category;
  l_attr1                 := l_component_rec.Attribute1;
  l_attr2                 := l_component_rec.Attribute2;
  l_attr3                 := l_component_rec.Attribute3;
  l_attr4                 := l_component_rec.Attribute4;
  l_attr5                 := l_component_rec.Attribute5;
  l_attr6                 := l_component_rec.Attribute6;
  l_attr7                 := l_component_rec.Attribute7;
  l_attr8                 := l_component_rec.Attribute8;
  l_attr9                 := l_component_rec.Attribute9;
  l_attr10                := l_component_rec.Attribute10;
  l_attr11                := l_component_rec.Attribute11;
  l_attr12                := l_component_rec.Attribute12;
  l_attr13                := l_component_rec.Attribute13;
  l_attr14                := l_component_rec.Attribute14;
  l_attr15                := l_component_rec.Attribute15;
  l_from_end_item_unit_number := l_component_rec.
From_End_Item_Unit_Number;
  l_to_end_item_unit_number := l_component_rec.
To_End_Item_Unit_Number;
  l_orig_sys_ref          := l_component_rec.
Original_System_Reference;
  l_enforce_int_req      := l_component_rec.
Enforce_Int_Requirements ;
  l_auto_req_material    := l_component_rec.
Auto_Request_Material;
  l_sugg_vendor_name     := l_component_rec.
Suggested_Vendor_Name;
  l_unit_price           := l_component_rec.Unit_Price;

END LOOP;
CLOSE get_component_details;

FOR each_record in get_child_orgs(org_id => l_org_id)
LOOP
  BEGIN
    l_child_org_id                := each_record.
child_org_id;
    l_bom_component_rec.Organization_Code := Get_Org_Code
(l_child_org_id);
    l_bom_component_rec.Assembly_Item_Name := Get_Item_Name
(l_assembly_item_id,l_org_id);
    l_bom_component_rec.Component_Item_Name := Get_Item_Name
(l_comp_item_id,l_org_id);
    l_bom_component_rec.Alternate_BOM_Code := l_struct_name;
    l_bom_component_rec.Disable_Date      := l_disable_date;
    l_bom_component_rec.Planning_Percent  :=
l_planning_percent;
    l_bom_component_rec.Project_Yield     := l_yield;
    l_bom_component_rec.Include_In_Cost_Rollup := l_cost_rollup;
    l_bom_component_rec.Wip_Supply_Type   := l_wip_supply_type;
    l_bom_component_rec.So_Basis          := l_so_basis;
    l_bom_component_rec.Optional          := l_optional;
    l_bom_component_rec.Mutually_Exclusive := l_exclusive;
    l_bom_component_rec.Check_Atp        := l_check_atp;
    l_bom_component_rec.Shipping_Allowed :=
l_shipping_allowed;
    l_bom_component_rec.Required_To_Ship  := l_req_to_ship;
    l_bom_component_rec.Required_For_Revenue := l_req_for_revenue;

    l_bom_component_rec.Include_On_Ship_Docs :=
l_include_on_ship_docs;
    l_bom_component_rec.Quantity_Related   := l_qty_related;
    l_bom_component_rec.Supply_Subinventory := l_supply_subinv;
    l_bom_component_rec.Minimum_Allowed_Quantity:= l_low_qty;

```

```

l_bom_component_rec.Maximum_Allowed_Quantity:= l_high_qty;
  l_bom_component_rec.Attribute_category      := l_attr_category;
  l_bom_component_rec.Attribute1             := l_attr1;
  l_bom_component_rec.Attribute2            := l_attr2;
  l_bom_component_rec.Attribute3            := l_attr3;
  l_bom_component_rec.Attribute4            := l_attr4;
  l_bom_component_rec.Attribute5            := l_attr5;
  l_bom_component_rec.Attribute6            := l_attr6;
  l_bom_component_rec.Attribute7            := l_attr7;
  l_bom_component_rec.Attribute8            := l_attr8;
  l_bom_component_rec.Attribute9            := l_attr9;
  l_bom_component_rec.Attribute10           := l_attr10;
  l_bom_component_rec.Attribute11           := l_attr11;
  l_bom_component_rec.Attribute12           := l_attr12;
  l_bom_component_rec.Attribute13           := l_attr13;
  l_bom_component_rec.Attribute14           := l_attr14;
  l_bom_component_rec.Attribute15           := l_attr15;
  l_bom_component_rec.From_End_Item_Unit_Number :=
l_from_end_item_unit_number;
  l_bom_component_rec.To_End_Item_Unit_Number :=
l_to_end_item_unit_number;
  l_bom_component_rec.Original_System_Reference := l_orig_sys_ref;
  l_bom_component_rec.Enforce_Int_Requirements:= l_enforce_int_req;

  l_bom_component_rec.Auto_Request_Material :=
l_auto_req_material;
  l_bom_component_rec.Suggested_Vendor_Name :=
l_sugg_vendor_name;
  l_bom_component_rec.Unit_Price             := l_unit_price;
  l_bom_component_rec.Transaction_Type       := 'SYNC';
  l_bom_component_rec.Return_Status          := NULL;
  l_bom_component_rec.Row_Identifier         := NULL;

  l_bom_component_tbl(1) := l_bom_component_rec;

Bom_Bo_Pub.Process_Bom
( p_bo_identifier      => 'BOM'
, p_api_version_number => 1.0
, p_init_msg_list      => TRUE
, p_bom_header_rec    => l_bom_header_rec

, p_bom_revision_tbl  => l_bom_revision_tbl
, p_bom_component_tbl => l_bom_component_tbl
, p_bom_ref_designator_tbl => l_bom_ref_designator_tbl
, p_bom_sub_component_tbl => l_bom_sub_component_tbl
, x_bom_header_rec    => l_bom_header_rec
, x_bom_revision_tbl  => l_bom_revision_tbl
, x_bom_component_tbl => l_bom_component_tbl
, x_bom_ref_designator_tbl => l_bom_ref_designator_tbl
, x_bom_sub_component_tbl => l_bom_sub_component_tbl

, x_return_status     => l_return_status
, x_msg_count         => l_msg_count
, p_debug             => 'N' -- Set this parameter to Y
for debugging
, p_output_dir        => l_debug_file_dir
, p_debug_filename    => l_log_file
, p_write_err_to_debugfile => 'Y'
);
EXCEPTION WHEN OTHERS THEN
  l_error := SQLERRM;

END;
END LOOP;
END IF;
END IF;

```

```

END;
    RETURN 'SUCCESS';
    EXCEPTION WHEN OTHERS THEN
        l_error := SQLERRM;
    RETURN 'ERROR';
END Sync_Components;

/*****
* Function      : Get_Item_Name
* Parameters    : Inventory item id
*               : Organization id
* Return        : Assembly Item name
* Purpose       : This function is used to get the assembly item name
*               : for a given item id and organization id.
*****/

FUNCTION Get_Item_Name(p_item_id IN NUMBER,p_org_id IN NUMBER)
RETURN VARCHAR2
IS
    l_item_name MTL_SYSTEM_ITEMS_KFV.concatenated_segments%TYPE;
BEGIN
    SELECT concatenated_segments
    INTO   l_item_name
    FROM   mtl_system_items_kfv
    WHERE  inventory_item_id = p_item_id
    AND    organization_id   = p_org_id;
    RETURN l_item_name;
EXCEPTION
    WHEN NO_DATA_FOUND THEN
        return null;
END Get_Item_Name;

/*****
* Function      : Get_Org_Code
* Parameters    : Organization id
* Return        : Organization Code
* Purpose       : This function is used to get the organization code
*               : for a organization id.
*****/

FUNCTION Get_Org_Code(p_org_id IN NUMBER)
RETURN VARCHAR2
IS
    l_org_code MTL_PARAMETERS.organization_code%TYPE;
BEGIN
    SELECT organization_code
    INTO   l_org_code
    FROM   MTL_PARAMETERS
    WHERE  organization_id   = p_org_id;
    RETURN l_org_code;
EXCEPTION
    WHEN NO_DATA_FOUND THEN
        return null;
END Get_Org_Code;

END Bom_Components_Sync_Sub;

```

**Note:** This example does not provide the code for the oracle.apps.bom.component.modified event, but you can extend the above sample code to accommodate this event. Use the oracle.apps.bom.component.modified event to add or delete reference designators, substitute

components or component operations.

**Example: Creating a Common Bill of Material Across Multiple Organizations**

You use the common bill of material feature to maintain bills in a master organization. You require that, for each bill created in the master organization, common bills (bills that reference the master organization bill) are created in the child organizations. To meet this requirement, use the `oracle.apps.bom.structure.created` event and the following function.



```

CREATE OR REPLACE PACKAGE Bom_Struct_Created_Sub AS

    FUNCTION create_common_structure(p_subscription_guid IN RAW,
                                    p_event            IN OUT NOCOPY wf_event_t)
    RETURN VARCHAR2;

END Bom_common_Struct_Create_Sub;

CREATE or REPLACE PACKAGE BODY Bom_common_Struct_Create_Sub AS

/*****
* Function      : create_common_structure
* Parameters    : Subscription guid
*               : Event
* Return        : Success/Error
* Purpose       : This function can be subscribed to oracle.apps.bom.
structure.
* crated event. When the event is raised this API as part of
* subscription. This API checks if the structure
* is created in the master org, if the structure is created in
* the master org then it creates common structure in all child orgs.
*****/

FUNCTION create_common_structure (p_subscription_guid IN RAW,
                                p_event            IN OUT NOCOPY wf_event_t)
RETURN VARCHAR2 IS

    /*
    * Cursor to get all child orgs for a given organization id.
    */
    CURSOR get_child_orgs(org_id NUMBER)
    IS
        SELECT organization_id child_org_id
           FROM mtl_parameters
          WHERE master_organization_id = org_id
             AND master_organization_id <> organization_id;

    /*
    * Cursor to get the structure details for a given item, org and
    * structure name.
    */
    CURSOR get_structure_details(item_id NUMBER, org_id NUMBER,
                                structure_name VARCHAR2)
    IS
        SELECT *
           FROM bom_structures_b
          WHERE assembly_item_id           = item_id
             AND organization_id           = org_id
             AND NVL(alternate_bom_designator, 'PRIMARY') =
structure_name;

    l_param_list          WF_PARAMETER_LIST_T ;
    l_param_name          VARCHAR2(240);
    l_param_value         VARCHAR2(2000);
    l_event_name          VARCHAR2(2000);
    l_event_key           VARCHAR2(2000);
    l_debug_file_dir      VARCHAR2(512);
    l_log_file            VARCHAR2(240);
    l_log_return_status   VARCHAR2(1);
    l_error               VARCHAR2(4000);

    l_structure_rec       get_structure_details%ROWTYPE;
    l_bom_header_rec      BOM_BO_PUB.Bom_Head_Rec_Type;
    l_bom_revision_tbl    Bom_Bo_Pub.Bom_Revision_Tbl_Type;
    l_bom_component_tbl   Bom_Bo_Pub.Bom_Comps_Tbl_Type;

```

```

l_bom_ref_designator_tbl Bom_Bo_Pub.Bom_Ref_Designator_Tbl_Type;
l_bom_sub_component_tbl Bom_Bo_Pub.Bom_Sub_Component_Tbl_Type;
l_bom_comp_ops_tbl      Bom_Bo_Pub.Bom_Comp_Ops_Tbl_Type;

l_ass_item_id          NUMBER;
l_struct_name          VARCHAR2(10);
l_org_id               NUMBER;
l_child_org_id         NUMBER;
is_MasterOrg           VARCHAR2(1);
l_return_status        VARCHAR2(1);
l_msg_count            NUMBER      := 0;
l_assembly_type        NUMBER;
l_assembly_comment     VARCHAR2(240);
l_attr_category        VARCHAR2(30);
l_attr1                VARCHAR2(150);
l_attr2                VARCHAR2(150);
l_attr3                VARCHAR2(150);
l_attr4                VARCHAR2(150);
l_attr5                VARCHAR2(150);
l_attr6                VARCHAR2(150);
l_attr7                VARCHAR2(150);
l_attr8                VARCHAR2(150);
l_attr9                VARCHAR2(150);
l_attr10               VARCHAR2(150);
l_attr11               VARCHAR2(150);
l_attr12               VARCHAR2(150);
l_attr13               VARCHAR2(150);
l_attr14               VARCHAR2(150);
l_attr15               VARCHAR2(150);
l_orig_sys_ref         VARCHAR2(50);
l_entity_type          VARCHAR2(100);
l_imp_date             DATE;

BEGIN
  /*
  * Select the debug directory to write the log file and create
  * the file name.
  *
  * These steps are required only for debugging and
  * troubleshooting.
  * The location of the debug file is based on the database
  directories defined for PL/SQL file I/O
  */
  SELECT VALUE
  INTO   l_debug_file_dir
  FROM   V$PARAMETER
  WHERE  NAME = 'utl_file_dir';

  IF INSTR(l_debug_file_dir,',') <> 0 THEN
    l_debug_file_dir      := SUBSTR(l_debug_file_dir, 1, INSTR
(l_debug_file_dir, ',') - 1);
  END IF;
  l_log_file := 'BOM_STR_SUBSCR'||'_'||TO_CHAR(SYSDATE,
'DDMONYYYY_HH24MISS')||'.err';

  l_param_list := p_event.getparameterlist;
  l_event_name := p_event.getEventName();
  l_event_key  := p_event.GetEventKey();

  /*
  * Loop through the payload for the business event raised and get
  * all the parameters.
  * This gives the information about the structure created.
  */

```

```

IF l_param_list IS NOT NULL THEN
  FOR i IN l_param_list.FIRST..l_param_list.LAST
  LOOP
    l_param_name := l_param_list(i).getname;
    l_param_value := l_param_list(i).getvalue;

    IF (l_param_name = 'PK1_VALUE')
    THEN
      l_ass_item_id := l_param_value;
    ELSIF (l_param_name = 'PK2_VALUE')
    THEN
      l_org_id := l_param_value;
    ELSIF (l_param_name = 'STRUCTURE_NAME')
    THEN
      l_struct_name := l_param_value;
    ELSIF (l_param_name = 'EVENT_TYPE')
    THEN
      l_entity_type := l_param_value;
    END IF;
  END LOOP;
END IF;

/*
* Check if it is a Master org.If it is a Master Org create structure
* in all the child orgs.
*/

BEGIN
  SELECT 'Y'
  INTO   is_MasterOrg
  FROM   DUAL
  WHERE  EXISTS
        (SELECT organization_id
         FROM   mtl_parameters
         WHERE  organization_id = l_org_id
              AND ( master_organization_id IS NULL
                   OR master_organization_id = l_org_id)
        );
  EXCEPTION
  WHEN NO_DATA_FOUND THEN
    is_MasterOrg := 'N';
END;

IF (is_MasterOrg = 'Y' AND l_entity_type = 'Single')
THEN
  l_bom_header_rec      := Bom_Bo_Pub.G_MISS_BOM_HEADER_REC;
  l_bom_revision_tbl   := Bom_Bo_Pub.G_MISS_BOM_REVISION_TBL;
  l_bom_component_tbl  := Bom_Bo_Pub.G_MISS_BOM_COMPONENT_TBL;
  l_bom_ref_designator_tbl := Bom_Bo_Pub.
G_MISS_BOM_REF_DESIGNATOR_TBL;
  l_bom_sub_component_tbl := Bom_Bo_Pub.
G_MISS_BOM_SUB_COMPONENT_TBL;
  l_bom_comp_ops_tbl   := Bom_Bo_Pub.G_MISS_BOM_COMP_OPS_TBL;

  OPEN get_structure_details(l_ass_item_id,l_org_id,l_struct_name);
  LOOP
  FETCH get_structure_details into l_structure_rec;
  EXIT WHEN get_structure_details%NOTFOUND;

  IF (l_struct_name = 'PRIMARY')
  THEN
    l_struct_name := '';
  END IF;

  l_assembly_type := l_structure_rec.Assembly_Type ;

```

```

l_assembly_comment      := l_structure_rec.Specific_Assembly_Comment;
  l_attr_category       := l_structure_rec.Attribute_category;
  l_attr1               := l_structure_rec.Attribute1;
  l_attr2               := l_structure_rec.Attribute2;
  l_attr3               := l_structure_rec.Attribute3;
  l_attr4               := l_structure_rec.Attribute4;
  l_attr5               := l_structure_rec.Attribute5;
  l_attr6               := l_structure_rec.Attribute6;
  l_attr7               := l_structure_rec.Attribute7;
  l_attr8               := l_structure_rec.Attribute8;
  l_attr9               := l_structure_rec.Attribute9;
  l_attr10              := l_structure_rec.Attribute10;
  l_attr11              := l_structure_rec.Attribute11;
  l_attr12              := l_structure_rec.Attribute12;
  l_attr13              := l_structure_rec.Attribute13;
  l_attr14              := l_structure_rec.Attribute14;
  l_attr15              := l_structure_rec.Attribute15;
  l_orig_sys_ref        := l_structure_rec.
Original_System_Reference;
  l_imp_date            := l_structure_rec.Implementation_Date;

END LOOP;
CLOSE get_structure_details;

FOR each_record in get_child_orgs(org_id => l_org_id)
LOOP
  BEGIN
    l_child_org_id      := each_record.
child_org_id;
    l_bom_header_rec.Assembly_item_name      := Get_Item_Name
(l_ass_item_id,l_org_id);
    l_bom_header_rec.Organization_Code       := Get_Org_Code
(l_child_org_id);
    l_bom_header_rec.common_Assembly_Item_Name := Get_Item_Name
(l_ass_item_id,l_org_id);
    l_bom_header_rec.common_Organization_Code := Get_Org_Code
(l_child_org_id);
    l_bom_header_rec.Alternate_Bom_Code      := l_struct_name;
    l_bom_header_rec.Assembly_Type           := nvl
(l_assembly_type,1);
    l_bom_header_rec.Transaction_Type        := 'CREATE';
    l_bom_header_rec.Return_Status           := NULL;
    l_bom_header_rec.Row_Identifier          := NULL;
    l_bom_header_rec.Assembly_Comment        :=
l_assembly_comment;
    l_bom_header_rec.Attribute_category      := l_attr_category;
    l_bom_header_rec.Attribute1              := l_attr1;
    l_bom_header_rec.Attribute2              := l_attr2;
    l_bom_header_rec.Attribute3              := l_attr3;
    l_bom_header_rec.Attribute4              := l_attr4;
    l_bom_header_rec.Attribute5              := l_attr5;
    l_bom_header_rec.Attribute6              := l_attr6;
    l_bom_header_rec.Attribute7              := l_attr7;
    l_bom_header_rec.Attribute8              := l_attr8;
    l_bom_header_rec.Attribute9              := l_attr9;
    l_bom_header_rec.Attribute10             := l_attr10;
    l_bom_header_rec.Attribute11             := l_attr11;
    l_bom_header_rec.Attribute12             := l_attr12;
    l_bom_header_rec.Attribute13             := l_attr13;
    l_bom_header_rec.Attribute14             := l_attr14;
    l_bom_header_rec.Attribute15             := l_attr15;
    l_bom_header_rec.Original_System_Reference := l_orig_sys_ref;
    l_bom_header_rec.BOM_Implementation_Date := l_imp_date;

  /*

```

```

* Assign the item to child org if it is not assigned. The
* item assignment code is not in here. So if the item is
* not assigned to the child org we need to do the item
* assignment first before trying to create structure in
* the child org.
*/

```

```

Bom_Bo_Pub.Process_Bom
(
  p_bo_identifier          => 'BOM'
  , p_api_version_number   => 1.0
  , p_init_msg_list        => TRUE
  , p_bom_header_rec       => l_bom_header_rec

  , p_bom_revision_tbl     => l_bom_revision_tbl
  , p_bom_component_tbl    => l_bom_component_tbl
  , p_bom_ref_designator_tbl => l_bom_ref_designator_tbl
  , p_bom_sub_component_tbl => l_bom_sub_component_tbl
  , x_bom_header_rec       => l_bom_header_rec
  , x_bom_revision_tbl     => l_bom_revision_tbl
  , x_bom_component_tbl    => l_bom_component_tbl
  , x_bom_ref_designator_tbl => l_bom_ref_designator_tbl
  , x_bom_sub_component_tbl => l_bom_sub_component_tbl

  , x_return_status        => l_return_status
  , x_msg_count            => l_msg_count
  , p_debug                => 'N'
  , p_output_dir           => l_debug_file_dir
  , p_debug_filename       => l_log_file
  , p_write_err_to_debugfile => 'Y'
);

```

```

EXCEPTION WHEN OTHERS THEN
  l_error := SQLERRM;
END;

```

```

END LOOP;
END IF;
RETURN 'SUCCESS';

```

```

EXCEPTION WHEN OTHERS THEN
  l_error := SQLERRM;
RETURN 'ERROR';

```

```

END create_common_structure;

```

```

/*****
* Function      : Get_Item_Name
* Parameters    : Inventory item id
*               : Organization id
* Return        : Assembly Item name
* Purpose       : This function is used to get the assembly item name
*               : for a given item id and organization id.
*****/

```

```

FUNCTION Get_Item_Name(p_item_id IN NUMBER,p_org_id IN NUMBER)
RETURN VARCHAR2
IS
  l_item_name MTL_SYSTEM_ITEMS_KFV.concatenated_segments%TYPE;
BEGIN
  SELECT concatenated_segments
  INTO   l_item_name
  FROM   mtl_system_items_kfv
  WHERE  inventory_item_id = p_item_id
  AND    organization_id   = p_org_id;
RETURN l_item_name;

```

```

EXCEPTION
  WHEN NO_DATA_FOUND THEN
    return null;
  END Get_Item_Name;

/*****
* Function      : Get_Org_Code
* Parameters    : Organization id
* Return        : Organization Code
* Purpose       : This function is used to get the organization code
*                for a organization id.
*****/

FUNCTION Get_Org_Code(p_org_id IN NUMBER)
RETURN VARCHAR2
IS
  l_org_code MTL_PARAMETERS.organization_code%TYPE;
BEGIN
  SELECT organization_code
  INTO   l_org_code
  FROM   MTL_PARAMETERS
  WHERE  organization_id = p_org_id;
  RETURN l_org_code;
EXCEPTION
  WHEN NO_DATA_FOUND THEN
    return null;
  END Get_Org_Code;

END Bom_common_Struct_Create_Sub;

```

**Additional Information:** For additional information, see My Oracle Support Knowledge Document 2525754.1, Using UTL\_FILE\_DIR or Database Directories for PL/SQL File I/O in Oracle E-Business Suite Releases 12.1 and 12.2.

## Related Topics

Using Business Events, page 1-55

Business Events, page C-1

Managing Business Events, *Oracle Workflow Developer's Guide*

Defining Procedures and Functions for Oracle Workflow, *Oracle Workflow Developer's Guide*

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# Glossary

**activity**

A business action or task which uses a resource or incurs a cost.

**alternate bill of material**

An alternate list of component items you can use to produce an assembly.

**alternate routing**

An alternate manufacturing process you can use to produce an assembly.

**assemble-to-order (ATO)**

An environment where you open a final assembly order to assemble items that customers order. Assemble-to-order is also an item attribute that you can apply to standard, model, and option class items.

**assembly**

An item that has a bill of material. You can purchase or manufacture an assembly item.

See also: assemble-to-order, bill of material

**assigned units**

The number of resource units assigned to work at an operation in a routing. For example, if you have 10 units of machine resource available at a department, you can assign up to 10 of these units to an operation in a routing. The more units you assign, the less elapsed time Work in Process schedules for the operation.

**autocharge**

A method of charging a discrete job or repetitive schedule for the resources consumed at an operation.

**backflush operation**

A routing operation where you backflush component items.

**base model**

The model item from which a configuration item was created.

**bill of material**

A list of component items associated with a parent item and information about how each item relates to the parent item. Oracle Manufacturing supports standard, model, option class, and planning bills. The item information on a bill depends on the item type and bill type. The most common type of bill is a standard bill of material. A standard bill of material lists the components associated with a product or subassembly. It specifies the required quantity for each component plus other information to control work in process, material planning, and other Oracle Manufacturing functions. Also known as **product structures**.

**bill revision**

A specific version of an item which specifies the components that are active for a date range.

**BOM item type**

An item classification that determines the items you can use as components in a bill of material. BOM Item types include standard, model, option class, and planning items.

**by-product**

Material produced as a residual of a production process. Represented by negative usage in the bill of material for an assembly.

**calendar type**

The period pattern used to define a manufacturing calendar.

**capacity modification**

Deviation to available resources for a specific department shift.

**capacity units**

The number of units of a resource available in a department. For example, the number of machines.

**charge type**

See: **autocharge**

**common bill of material**

An assembly that uses the bill of material of another assembly as its bill. This enables you to reduce your maintenance effort by sharing the same bill structure among two or more assemblies. For example, if you have identical bills of material that produce the



same product in two different organizations, you can define common bills of material for the identical structures.

**common routing**

A routing that uses the routing of another assembly as its routing. This enables you to reduce your maintenance effort by sharing the same routing and operations for two or more assemblies.

**component demand**

Demand passed down from a parent assembly to a component.

**component item**

An item associated with a parent item on a bill of material.

**component yield**

The percent of the amount of a component you want to issue to build an assembly that actually becomes part of that assembly. Or, the amount of a component you require to build plus the amount of the component you lose or waste while building an assembly. For example, a yield factor of 0.90 means that only 90% of the usage quantity of the component on a bill actually becomes part of the finished assembly.

**configuration**

A product a customer orders by choosing a base model and a list of options. It can be shipped as individual pieces as a set (kit) or as an assembly (configuration item).

**configuration bill of material**

The bill of material for a configuration item.

**configuration item**

The item that corresponds to a base model and a specific list of options. Bills of Material creates a configuration item for assemble-to-order models.

**configurator**

A form that allows you to choose options available for a particular model, thus defining a particular configuration for the model.

**configure-to-order**

An environment where you enter customer orders by choosing a base model and then selecting options from a list of choices.

**count point operation**

A default operation to move to and from where you record move and charge resource

transactions. Also known as **pay point**.

**cumulative manufacturing lead time**

The total time required to make an item if you had all raw materials in stock but had to make all subassemblies level by level. Bills of Material automatically calculates this value. Purchased items have no cumulative manufacturing lead time.

**cumulative total lead time**

The total time required to make an item if no inventory existed and you had to order all the raw materials and make all subassemblies level by level. Bills of Material automatically calculates this value.

**days off**

The number of consecutive days off a shift has before a day on.

**days on**

The number of consecutive days that a shift works before a day off.

**delete entity**

An item, bill of material or routing you choose to delete.

**delete group**

A set of items, bills, and routings you choose to delete.

**delete subentity**

A component or operation you choose to delete.

**deletion constraint**

A business rule that restricts the entities you can delete. A deletion constraint is a test that must succeed before an item, bill, or routing can be deleted.

**department**

An area within your organization that consists of one or more people, machines, or suppliers. You can also assign and update resources to a department.

**department class**

A group of departments.

**detailed scheduling**

A method of scheduling production that considers minute to minute resource availability information as well as exact resource requirements from routings.

**disable date**

A date when an Oracle Manufacturing function is no longer available for use. For example, this could be the date on which a bill of material component or routing operation is no longer active, or the date a forecast or master schedule is no longer valid.

**dynamic lead time offsetting**

A scheduling method that quickly estimates the start date of an order, operation, or resource. Dynamic lead time offsetting schedules using the organization workday calendar.

**effective date**

Date when an Oracle Manufacturing function is available for use. For example, this could be the date a bill of material component or routing operation becomes effective, or the date you anticipate revised item changes become part of a bill of material and can no longer be controlled by an ECO.

**elapsed time**

The clock time between start and completion. For example, if the build time of a resource is 10 hours, but you only schedule 5 hours of work a day, the elapsed time is 29 hours.

**engineer-to-order**

An environment where customers order unique configurations for which engineering must define and release custom bills for material and routings. Oracle Manufacturing does not provide special support for this environment beyond the support it provides for assemble-to-order manufacturing.

**engineering change order (ECO)**

A record of revisions to one or more items usually released by engineering.

**engineering item**

A prototype part, material, subassembly, assembly, or product you have not yet released to production. You can order, stock, and build engineering items.

**fixed lead time**

The portion of the time required to make an assembly independent of order quantity, such as time for setup or teardown.

**flow manufacturing**

Manufacturing philosophy utilizing production lines and schedules instead of work

orders to drive production. Mixed models are grouped into families and produced on lines balanced to the TAKT time.

**implementation date**

The date a component becomes part of a bill of material and is no longer controlled through an ECO. Implementation date does not necessarily equal the effective date.

**included item**

A standard mandatory component in a bill, indicating that it ships (if shippable) whenever its parent item is shipped. Included items are components of models, kits, and option classes.

**item**

Anything you make, purchase, or sell, including components, subassemblies, finished products, or supplies. Oracle Manufacturing also uses items to represent planning items that you can forecast, standard lines that you can include on invoices, and option classes you can use to group options in model and option class bills.

**item-based resource**

A resource whose usage quantity is the amount required per assembly unit you make.

**item sequence**

The sequence of the component item on the bill of material used to sort components on reports.

**kit**

An item that has a standard list of components (or included items) you ship when you process an order for that item. A kit is similar to a pick-to-order model because it has shippable components, but it has no options and you order it directly by its item number, not using the configuration selection screen.

**lead time lot size**

The item quantity used to compute the fixed and variable portions of manufacturing lead time. For manufactured items, the processing lead time represents the time required to build this quantity.

**lead time rollup**

A Bill of Material program that computes cumulative lead times for items.

**locator**

Physical area within a subinventory where you store material, such as a row, aisle, bin,

or shelf.

**lot based resource**

A resource whose usage quantity is the amount required per job or schedule.

**make-to-order**

An environment where customers order unique configurations that must be manufactured using multiple discrete jobs and/or final assembly orders where the product from one discrete job is required as a component on another discrete job. Oracle Manufacturing does not provide special support for this environment beyond the support it provides for assemble-to-order manufacturing.

**mandatory component**

A component in a bill that is not optional. Bills of Material distinguishes required components from options in model and option class bills of material. Mandatory components in pick-to-order model bills are often referred to as included items, especially if they are shippable.

**manufacturing lead time**

The total time required to manufacture an assembly.

**mass change order**

A record of a plan to replace, delete, or update one or more component items in many bills of material at the same time.

**minimum transfer quantity**

The minimum number of assemblies to move from your current operation to the next. Work in Process warns you when you move less than the minimum transfer quantity.

**model bill of material**

A bill of material for a model item. A model bill lists option classes and options available when you place an order for the model item.

**model item**

An item whose bill of material lists options and option classes available when you place an order for the model item.

**multi-department resource**

A resource whose capacity can be shared with other departments.

**occurrence**

An individual quality result. For example, a measurement that falls in or out of a

specified tolerance. Occurrences can be charted using Oracle Quality.

**offset percent**

An operation resource field that holds the percent of total manufacturing lead time required for previous operations. For example, if all operations require a total of ten hours to perform and the offset percent for a resource is 40%, then the resource is used four hours after the start of the first operation.

**operation**

A step in a manufacturing process where you perform work on, add value to, and consume department resources for an assembly.

**operation code**

A label that identifies a standard operation.

**operation instructions**

Directions that describe how to perform an operation.

**operation offset**

Elapsed days from the start of your first operation until the beginning of your current operation.

**operation sequence**

A number that orders operations in a routing relative to each other.

**option**

An optional item component in an option class or model bill of material.

**option class**

A group of related option items. An option class is orderable only within a model. An option class can also contain included items.

**option class bill of material**

A bill of material for an option class item that contains a list of related options.

**option class item**

An item whose bill of material contains a list of related options.

**option dependent operation**

An operation in a model or option class item's routing that appears in a configuration item routing only if the configuration contains an option that references that operation.

**option item**

A non-mandatory item component in an option class or model bill of material.

**outside operation**

An operation that contains outside resources and possibly internal resources as well.

**outside processing**

Performing work on a discrete job or repetitive schedule using resources provided by a supplier.

**outside processing operation**

Any operation that has an outside processing resource.

See also: outside processing

**outside processing item**

An item you include on a purchase order line to purchase supplier services as part of your assembly build process. This item can be the assembly itself or a non-stocked item which represents the service performed on the assembly.

**over-completions**

Completing an assembly quantity into inventory that is greater than the Discrete job or Repetitive schedule start quantity, whether or not the assemblies have a routing.

**over-completion quantity**

The transaction quantity minus the available quantity.

**over-moves**

Moving a quantity from one interoperation step to another that is greater than the quantity at the interoperation step, whether or not the assemblies have a routing.

**overhead**

The indirect expenses allocated in your budgeting process and assigned to your resources or departments. You charge overhead costs based on resource value, resource units, or operation completions. You typically include administration, facility, depreciation activity, and other costs you cannot directly charge to your manufactured items. Does not include material overhead.

**phantom assembly**

An assembly Work in Process explodes through when it creates the bill of material for a job or schedule. A particular assembly can be a phantom assembly on one bill and a subassembly on another.

**pick-to-order**

A configure-to-order environment where the options and included items in a model appear on pick slips and order pickers gather the options when they ship the order. Alternative to manufacturing the parent item on a work order and then shipping it. Pick-to-order is also an item attribute that you can apply to standard, model, and option class items.

**planning bill of material**

A bill of material for a planning item that contains a list of items and planning percentages. You can use a planning bill to facilitate master scheduling and/or material planning. The total output of a planning bill of material is not limited to 100% (it can exceed this number by any amount).

**planning item**

A type of item representing a product family or demand channel whose bill of material contains a list of items and planning percentages.

**planning percent**

A component usage percentage that facilitates planning for optional components on model and option class bills, and all components on planning bills.

**PO move resource**

An outside resource that is automatically charged upon receipt of a purchase order. PO move resources also automatically initiate shop floor move transactions upon receipt.

**PO receipt resource**

An outside resource that is automatically charged upon receipt of a purchase order.

**postprocessing lead time**

The time required to receive a purchased item into inventory from the initial supplier receipt, such as the time required to deliver an order from the receiving dock to its final destination.

**preprocessing lead time**

The time required to place a purchase order or create a discrete job or repetitive schedule that you must add to purchasing or manufacturing lead time to determine total lead time. If you define this time for a repetitive item, the planning process ignores it.

**primary bill of material**

A list of the components you most frequently use to build a product. The primary bill is the default bill for rolling up costs, defining a job, and calculating cumulative item lead



times. Master Scheduling/MRP uses this bill to plan your material.

**primary routing**

A list of the operations you most frequently perform to build a product. The primary routing is the default routing for defining a job and calculating manufacturing lead times.

**processing lead time**

The time required to procure or manufacture an item. For manufactured assemblies, processing lead time equals the manufacturing lead time.

**reference designator**

An optional identifier you can assign to a component on a bill. For example, when the bill requires four of a component, you can assign four reference designators to that component, one for each usage.

**related item**

An acceptable substitute you define for an item so that you may receive the item if your supplier cannot ship the original item on the purchase order.

**resource**

Anything of value, except material and cash, required to manufacture, cost, and schedule products. Resources include people, tools, machines, and labor purchased from a supplier.

**resource basis**

The basis for resource usage quantity that indicates whether that quantity is required per item or per lot.

**resource sequence**

The number that indicates the order of a resource in an operation relative to other resources.

**revision**

A particular version of an item, bill of material, or routing.

**routing**

A sequence of manufacturing operations that you perform to manufacture an assembly. A routing consists of an item, a series of operations, an operation sequence, and operation effective dates.

**routing revision**

A specific version of a routing that specifies the operations that are active for a date range.

**scheduled resource**

A resource on a routing that is scheduled by Work in Process.

**setup time**

The time required to for a machine or work center to convert from the production of one item to another.

**shift**

A scheduled period of work for a department within an organization.

**shrinkage rate**

The percentage on a parent assembly expected to be scrapped in work in process.

**simulation schedule**

Unofficial schedules for personal use that contain the most current scheduled item information. You can print Simulation schedules, but you cannot confirm or send them via EDI.

**simulation set**

A group of capacity modifications for resource shifts to simulate, plan, or schedule capacity.

**standard bill of material**

A bill of material for a standard item, such as a manufactured product or assembly.

**standard item**

Any item that can have a bill or be a component on a bill except planning items, option classes, or models. Standard items include purchased items, subassemblies, and finished products.

**standard operation**

A commonly used operation you can define as a template for use in defining future routing operations.

**standard rate**

The frozen standard unit cost for a resource.

**subinventory**

Subdivision of an organization, representing either a physical area or a logical grouping of items, such as a storeroom or receiving dock.

**substitute item**

An item that can be used in place of a component. Master Scheduling/MRP suggests substitutes items on some reports.

**supply**

A quantity of materials available for use. Supply is replenished in response to demand or anticipated demand.

**supply type**

A bill of material component field that controls issue transactions from inventory to work in process. Supply types supported by Work in Process include: **Push, Assembly pull, Operation pull, Bulk, Supplier, Phantom, and Based on bill.**

**teardown time**

The time required to clean up or restore a machine or work center after operation.

**total lead time**

An item's fixed lead time plus the variable lead time multiplied by the order quantity. For lead time calculations, Bills of Material sets the order quantity to the item's standard or lead time lot size. The planning process uses the total lead time for an item in its scheduling logic to calculate order start dates from order due dates.

**usage rate**

The amount of a resource consumed at an operation.

**variable lead time**

The time required to produce one additional unit of an assembly. To compute an item's total lead time multiply variable lead time by order quantity, and add an item's fixed lead time.

**workday calendar**

A calendar that identifies available workdays for one or more organizations. Master Scheduling/MRP, Inventory, Work in Process, and Capacity plan and schedule activities based on a calendar's available workdays.

**workday exception set**

An entity that defines mutually exclusive sets of workday exceptions. For each organization, you can specify a workday calendar and exception set.

**workday exceptions**

Dates that define plant or shift workday variations, including holidays, scheduled maintenance, or extended downtime.

**yield**

See: component yield

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# Index

## Symbols

- 21 CFR Part 11, 10-2
  - overview, 10-1
  - viewing e-records and e-signatures, 10-4

## A

---

- Absorption account, 1-15
  - for costed resources, 1-28
- Activity
  - for resource charges, 5-20
  - to group resources, 1-27
- Alternate, 1-6
  - bill of material, 2-4, 2-10
  - creating alternates, 1-10
  - deleting, 6-3
  - routings, 5-10
- Archive
  - deleted entities, 6-3
- Assemble-to-Order
  - ATP check, 7-15
  - autocreate configuration items, 7-24
  - catalog configurations, 7-22
  - deactivate configuration item, 7-43
  - hybrid, 7-3
  - item, 7-2
  - model bill, 7-7, 7-17
  - multi-level, 7-3
  - multi-organization, 7-3
  - operation sequence inheritance, 7-21
  - option class bill, 7-9
  - option dependent routing steps
    - discrete manufacturing, 7-18

- flow manufacturing, 7-20
  - option quantity ranges, 7-12
  - planning bill, 7-5
  - standard bills, 7-11
- Assigned units, 5-19
- Attachments
  - attaching files, 2-30, 2-30, 5-4
- Autocharge, 5-24, 5-30
- Autocreating configuration items, 7-25
- Available 24 hours
  - resource, 1-17
- Available-to-Promise
  - check, 7-15

## B

---

- Backflush, 5-24
  - transactions, 5-4, 5-11
- Base model, 2-34
- Basis, 2-16, 2-46
- Basis option class, 7-14
- Basis type, 1-26
- Batching
  - autocreate configuration items, 7-27
- Bill and Routing Interface, 1-46
- Bill components, 2-5
  - comparison, 2-39
  - modify, 2-31
  - validation rules, 2-48
- Bill Documents window
  - defining bill or routing operation documents, 2-30
- Bill loops

- checking for bill loops, 2-30
- Bill of Material Comparison report, 11-2
- Bill of Material Information report, 11-2
- Bill of Material Loop report, 11-4
- Bill of Material Structure report, 11-6
- Bill of material types, 2-2
- Bills of material, 2-2
  - access control, 2-7
  - comparing, 2-39
  - configuration item, 7-35
  - copying, 2-17
  - creating, 2-9
  - field reference, 2-42
  - importing, 1-46
  - item sequence, 2-42
  - mass change, 2-32
  - model
    - defining, 7-7, 7-17
  - model and option type, 7-4
  - modifying, 2-31
  - multi-level, 7-11
  - multi-organization, 7-11
  - operation sequence, 2-42
  - option class
    - defining, 7-9
  - parameters, 1-3
  - planning, 7-5
  - profile options, 2-7
  - referencing a common bill, 2-21
  - standard, 7-11
  - view differences only, 2-39
- Bills of Material Parameters report, 11-10
- Bills of Material window
  - attaching files to bills, components, and routing operations, 2-30
  - checking for bill loops, 2-31
  - creating a bill of material, 2-9
  - indented, 2-36
  - referencing common bills and routings, 2-22
- Business events, 1-55, C-1
  - example functions, C-9

## **C**

---

- Calculate Cumulative Yield for Network Routing process, 11-10
- Calculating manufacturing lead times, 9-14

- Capacity Changes window
  - assigning resources to a department, 1-21
- Catalog
  - configuration item, 7-22
- Category set
  - when calculating lead times, 9-16
- Change order type, 2-33
- Changeovers window, 1-4, 1-33
- Charge type, 1-26
- Check ATP, 2-16
- Class
  - department, 1-14
- Collection Elements window
  - defining collection elements, 10-3
- Common Bill window, 2-21
  - referencing common bills and routings, 2-22
- Competencies, 1-4
- competencies for routing operations, 5-15
- Completion
  - locator, 2-16, 5-14, 5-30
  - subinventory, 2-16, 5-14, 5-30
- Component
  - adding item components to bills, 2-11
  - computing requirement dates for ATP, 8-5
  - mutually exclusive field, 2-16, 2-45
  - on bills of material, 2-5
  - optional field, 2-16, 2-45
  - valid attributes and bill types, 2-6
  - valid relationships, 2-5
- Components
  - modifying, 2-31
- Components window, 2-38
  - deleting items, bills, routings, components, and operations, 6-4
- Computing
  - component requirement dates for ATP, 8-5
  - dynamic lead time, 8-5
  - fixed lead time, 9-5, 9-10
  - manufacturing lead time, 9-1
  - MRP material requirement dates, 8-4
  - operation lead time percents, 9-11
  - resource load for planned orders, 8-4
  - variable lead time, 9-5, 9-10
- Computing fixed lead time, 9-10
- Computing variable lead time, 9-10
- Configuration item
  - autocreate, 7-24

- bills of material, 7-35
- catalog, 7-22
- cost rollup, 7-39
- creating multi-level bill for options, 7-36
- creating single level bill for options, 7-35
- deactivating, 7-43
- lead time calculation, 7-28
- match and reserve, 7-31
- numbering method, 7-29
- preconfiguring items, 7-40
- progress order, 7-27
- routings, 7-38
- weight and volume calculation, 7-33
- Configure to Order
  - BOM support, 7-3
  - environments, 7-6
  - information sources, 7-2
  - overview, 7-1
- Consolidated Bill of Material report, 11-12
- Constraints
  - when deleting bills and routings, 6-6
- Copy options
  - for bills and routing operations, 2-19
- Copy window
  - Copying Bill and Routing Information, 2-18
  - copying calendar and shift information, 1-43
- Costed resource, 1-27
- Costing information, 2-37
- Cost rollup, 5-12, 5-21
  - configuration item, 7-39
  - include component, 2-15
- Cost type, 1-29
- Count point, 5-24, 5-30
- Cumulative
  - lead time computations, 9-12
  - manufacturing lead time, 9-12
  - manufacturing lead time calculation, 9-12, 9-13
  - rolling up cumulative lead times, 9-16
  - total lead time, 9-13
  - total lead time calculation, 9-13
- Cumulative manufacturing lead time
  - inactive on, 2-43
  - release dates, 7-28
- Delete entity, 1-12
  - archive, 6-3
  - type of entity to delete, 6-2
- Delete if, 1-13
- Delete Items report, 11-14
- Delete Operation window
  - delete operation, 6-5
- Delete processed rows
  - importing bills and routings, 1-47
- Deletion, 6-1
  - component, 6-4
  - components and operations, 6-5
  - constraints, 1-6
    - predefined, 6-6
  - deleting items, bills, routings, components, and operations, 6-2
  - deletion group, 6-2
  - operation, 6-4
  - statements
    - predefined, 6-6
- Deletion Constraints window
  - creating custom deletion constraints, 1-12
- Deletion Statements window
  - creating custom deletion constraints, 1-13
- Department, 1-15
  - classes, 1-3
  - for standard operations, 5-23
  - report, 11-16
- Department Classes window
  - creating a department class, 1-14
- Department Class report, 11-16
- Departments window
  - defining a department, 1-5
- Descriptive element, 2-27
  - assigning, 2-27
- Detailed scheduling, 8-2
- Discrete job scheduling, 8-2
- Dynamic lead time offsetting, 8-4, 8-5
- Dynamic routing, 5-3

## D

---

- Dates
  - effective from and effective date, 2-13, 2-43
  - effective to and inactive after, 2-43

## E

---

- Effectivity dates, 2-43
- Employees window
  - defining a resource, 1-31

- Engineering bills of material, 2-3
- Equipment Types window
  - defining a resource, 1-30
- E-records, 10-2
  - overview, 10-1
  - viewing, 10-4
- E-signatures, 10-2
  - overview, 10-1
  - viewing, 10-4
- Exceptions window
  - assigning workday or shift exceptions, 1-45
- Exception template name, 1-2, 1-41
- Exception Templates window
  - creating a workday exception template, 1-40
- Extended quantity, 2-45
  - calculation, 2-45

## **F**

---

- Failure message, 1-13
- Fixed lead time
  - calculation, 9-8
- Flow routing, 5-3
- Folders
  - Bills Summary window, 2-10
  - Routings Summary window, 5-9

## **G**

---

- General ledger account
  - absorption account, 1-28
- Group
  - deletion group, 6-2

## **I**

---

- Import bills of material, 1-47
- Import routings, 1-46
- Inactive status, 1-8
- Include on ship docs, 2-47
- Increment revision, 2-33
- Integer requirements, 2-15, 2-44
- Inverse rate or amount
  - usage rate or amount, 5-18
- Item
  - based resources, 5-6
  - creating a bill, 2-10
  - for routings, 5-10

- preconfiguring, 7-40
- revisions, 2-4, 2-17, 2-29
- scheduling, 5-6
- to delete, 6-3
- usage, 2-40

Item

- sequence on bills of material, 2-42

Item Revisions window

- defining item revisions, 2-29

Item selection

- to calculate lead times, 9-15

Item Where Used report, 11-17

Item WhereUsed window

- viewing item usage, 2-40

## **L**

---

- labor skill validation, 5-8
- Lead time, 2-37
  - computing manufacturing, 5-12
  - computing operation percents, 9-11
  - configuration item, 7-28
    - discrete manufacturing, 7-28
    - flow manufacturing, 7-29
  - cumulative manufacturing, 9-12
  - cumulative total, 9-13
  - dynamic offsetting, 8-4, 8-5
  - fixed, 9-5, 9-10
  - processing, 9-2
  - rollup, 5-12
  - variable, 9-5, 9-10
- Lead time percent, 5-11
- Location
  - department, 1-5
- Locator
  - completion locator, 5-30
  - supply locator, 2-45
- Lookup codes, 1-47
- Lookups, 1-7
- Loops in bills of material
  - checking for bill loops, 2-30
- Lot based
  - resources, 5-6
  - routing, 5-3
  - scheduling, 5-6

## **M**

---



Manufacturing lead times  
  calculating, 9-14  
Manufacturing Scheduling  
  overview, 8-1  
  repetitive line, 8-3  
Mass change bills of material, 2-32  
Mass change order number, 2-33  
Match and Reserve, 7-31  
  multi-level configurations, 7-32  
Material control, 2-37  
Material requirement dates, 8-4  
Maximum bill levels, 1-8  
Maximum quantity, 2-16, 2-46  
Minimum quantity, 2-16, 5-12  
  Minimum, 2-46  
Minimum transfer quantity, 5-4  
Model bills of material, 2-2  
MRP material requirement dates, 8-4

## **N**

---

Numbering method, 1-8  
Numbering segment, 1-8

## **O**

---

Offset percent, 5-19  
Operation  
  assigning operation resources, 5-18  
  defining, 5-3  
  lead time percents, 9-11  
  outside processing, 5-8  
  scheduling, 8-2  
  sequence, 2-42  
  sequence inheritance, 7-21  
  yield, 5-12  
Operation Documents window  
  defining bill or routing operation documents,  
  2-30  
Option class bills of material, 2-2  
Option dependent, 5-23  
Option dependent routing steps  
  discrete manufacturing, 7-18  
  flow manufacturing, 7-20  
Option quantity ranges, 7-12  
Order lead time  
  calculation, 7-28  
Organization

  importing bills and routings for all  
  organizations, 1-46  
  when autocreating configuration items, 7-26  
  when copying a bill, 2-19  
  when deactivating configuration items, 7-45  
Outside processing  
  enabling, 1-27  
  operation, 5-8  
Overhead, 1-5  
  to associate to resource, 1-30  
Owning department  
  for borrowed resources, 1-17

## **P**

---

Parameters window  
  defining bill of material parameters, 1-7  
Perform lead time calculation, 7-26  
Personal profile option  
  bill of material access, 2-7  
Phantoms, 1-9  
Pick-to-Order  
  ATP check, 7-15  
  basis option class, 7-14  
  catalog configurations, 7-22  
  deactivate configuration item, 7-43  
  hybrid, 7-3  
  Kit, 7-3  
  model, 7-2  
  model bill, 7-7, 7-17  
  option class bill, 7-9  
  option dependent routing steps  
    discrete manufacturing, 7-18  
    flow manufacturing, 7-20  
  planning bill, 7-5  
  standard bills, 7-11  
Plan, 2-36  
Planned order release date  
  calculation, 8-7  
Planning bills of material, 2-2  
Planning percent, 2-14, 2-44  
Pre-Explode Configurable Bills of Material, 11-20  
Primary and alternate bills, 2-4  
Primary and alternate routings, 5-1  
Primary bills of material, 2-4  
Processes  
  AutoCreate Configuration Items, 7-25

- Bill and Routing Interface, 1-46
- Calculate Cumulative Yield for Network Routing, 11-10
- Calculate Manufacturing Lead Times, 9-14
- Deactivating Configuration Items, 7-43
- Pre-Exploding Configurable Bills of Material, 11-20
- Processing lead time, 9-2
  - calculation, 9-10
- Product families, 2-50
  - assigning members, 2-52
  - create, 2-51
  - setting planning percentages, 2-52
- Product Hub
  - business events, 1-55, C-1, C-9
- Product Hub Data Librarian
  - business events, 1-55, C-1, C-9
- Profile options, 1-2, 1-50
- Purchase price variance account, 1-29

## Q

---

- Quantity
  - for bill components, 2-12
  - minimum and maximum, 2-46
  - of substitute item, 2-29
- Quantity related, 2-28
- Quarterly types
  - of workday calendar, 1-42
- Query-only
  - restricting form privileges, 1-48

## R

---

- Rate or amount
  - usage rate or amount, 5-18
- Receiving valuation account, 1-28
- Reference designator, 2-17, 2-28
  - creating, 2-27
- Reference Designators window
  - creating reference designators, 2-28
- Referencing common bills and routings, 2-17, 2-21
- Release offset days, 7-26
- Repetitive scheduling
  - assembly, 8-3, 8-3
  - line, 8-3
- Reports

- Bill of Material Comparison, 11-2
- Bill of Material Information, 11-2
- Bill of Material Loop, 11-4
- Bill of Material Structure, 11-6
- Bills of Material Parameters, 11-10
- Consolidated Bill of Material, 11-12
- Delete Items, 11-14
- Department, 11-16
- Department Class, 11-16
- Item Where Used, 11-17
- Resource, 11-21
- Resource Where Used, 11-22, 11-22
- Routing, 11-23
- Standard Operation, 11-25
- Workday Exception Sets, 11-26
- Required for revenue, 2-47
- Required to ship, 2-47
- Resource
  - amount, 5-7
  - assigning to a department, 1-17
  - batching, 1-25, 1-29
  - capacity modifications, 5-7
  - charging method, 5-7
  - collecting and assigning costs to, 1-27
  - defining, 1-24
  - load for planned orders, 8-4
  - name, 5-18
  - scheduling, 5-6
  - setup or changeover time, 1-4, 1-33
  - simultaneous, 5-7
  - standard costs, 5-8
  - substitute, 5-7
  - type, 1-26
  - unit cost, 1-30
  - usage, 5-5
  - usage rate, 5-7
  - viewing resource usage, 5-29
- Resource
  - name, 1-26
- Resource Costs window
  - defining a resource, 1-29
- Resource group, 1-4
- Resource Overhead Associations window
  - defining a resource, 1-30
- Resources window
  - assigning operation resources, 5-18
  - assigning resources to a department, 1-5, 1-16

- defining a resource, 1-4
- Resource Where Used report, 11-22, 11-22
- Revision
  - item, 2-4
  - routing, 2-4
  - when creating a bill, 2-10
- Rolling up cumulative lead times, 9-16
- Routing
  - assigning a completion subinventory and locator, 5-14
  - backflush transactions, 5-4
  - configuration item, 7-38
  - copying, 2-17
  - create, 5-9
  - dynamic routing, 5-3
  - engineering, 5-2
  - flow routing, 5-3
  - importing, 1-46
  - lot-based routing, 5-3
  - operations, 5-3
    - option dependent steps, 5-4
    - sequence, 5-3
    - setup standard, 5-4
    - standard, 5-4
  - operation sequence inheritance, 7-21
  - option dependent steps, 7-18
  - outside operations, 5-8
  - overview, 5-1
  - primary and alternate routings, 5-1
  - referencing a common routing, 2-21
  - report of routing information, 11-23
  - resource usage, 5-5
  - revisions, 2-4
  - switching between primary and alternate routings, 5-13
- Routings window
  - creating a routing, 5-9
  - referencing common bills and routings, 2-22

## **S**

---

- Sales order number, 7-26
- Schedule
  - when scheduling an operation, 5-32
- Scheduling
  - creating a workday calendar, 1-41
  - setting up calendar, 1-37

- detailed, 8-2
- discrete jobs, 8-2
- dynamic lead time, 8-4
- operations, 8-2
- operations based on resources, 5-5
- repetitive assembly, 8-3, 8-3
- repetitive line, 8-3
- Sequence number, 5-18
- Serial numbers
  - tracking at the operation level, 5-15
- Setup
  - Oracle Bills of Material steps, 1-2
  - related product steps, 1-1
- Setups window, 1-4, 1-33
- Setup Types window, 1-4, 1-33
- Share
  - resources across departments, 1-16
- Shift
  - number, 1-21
  - number, when creating shifts, 1-44
  - times, start and stop, 1-44
- Shifts window
  - assigning resources to a department, 1-21
  - creating shifts and shift times, 1-44
- Shippable, 2-16, 2-47
- Shipped number of days ago, 7-45
- Simulation set, 1-5
  - for capacity change, 1-21
- Simultaneous resources, 5-19
- Special menu, B-1
- Standard bills of material, 2-2
- Standard comments, 1-6, 2-30
- Standard instructions, 1-6, 2-30
- Standard operations
  - code, 5-23
  - creating a standard operation, 5-22
  - report, 11-25
- Standard rate, 5-20
  - for charging jobs and schedules, 1-28
- Starting value, 2-28
- Subinventory
  - completion subinventory, 5-30
  - supply subinventory, 2-45
- Substitute components
  - assigning, 2-17, 2-29
- Substitute item, 2-29
- Substitute resources, 5-20

Supply locator, 2-45  
Supply subinventory, 2-45

Yield, 2-15, 2-44  
calculation, 2-44

## **T**

---

Total lead time for discrete items  
calculation, 8-6  
Total lead time for repetitive items  
calculation, 8-6

## **U**

---

Unit effectivity, 2-13  
Unit Effectivity, 2-14  
Update WIP, 2-34  
Usage rate or amount, 5-18  
Use up, 2-36

## **V**

---

Validation rules  
bill and component, 2-48  
Variable lead time  
calculation, 9-5, 9-8, 9-9  
Variance account  
for costed resources, 1-29  
Viewing item usage, 2-40  
View-only  
restricting form privileges, 1-48

## **W**

---

Weight and volume, 7-33  
WIP  
update, 2-34  
Workday calendar  
assigning to organization, 1-3  
building, 1-3  
reviewing the calendar, 1-46  
select workday or shift exceptions, 1-45  
Workday Calendars window  
creating a workday calendar, 1-42  
Workday Exception Sets report, 11-26  
Workday Patterns window  
creating a workday pattern, 1-44  
Workflow  
business events, 1-55, C-1, C-9

## **Y**

---