

Oracle® Bills of Material

User's Guide

Release 11*i*

Part No. A75087-07

February 2005

The Programs (which include both the software and documentation) contain proprietary information; they are provided under a license agreement containing restrictions on use and disclosure and are also protected by copyright, patent, and other intellectual and industrial property laws. Reverse engineering, disassembly, or decompilation of the Programs, except to the extent required to obtain interoperability with other independently created software or as specified by law, is prohibited.

The information contained in this document is subject to change without notice. If you find any problems in the documentation, please report them to us in writing. This document is not warranted to be error-free. Except as may be expressly permitted in your license agreement for these Programs, no part of these Programs may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose.

If the Programs are delivered to the United States Government or anyone licensing or using the Programs on behalf of the United States Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS

Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the Programs, including documentation and technical data, shall be subject to the licensing restrictions set forth in the applicable Oracle license agreement, and, to the extent applicable, the additional rights set forth in FAR 52.227-19, Commercial Computer Software--Restricted Rights (June 1987). Oracle Corporation, 500 Oracle Parkway, Redwood City, CA 94065.

The Programs are not intended for use in any nuclear, aviation, mass transit, medical, or other inherently dangerous applications. It shall be the licensee's responsibility to take all appropriate fail-safe, backup, redundancy and other measures to ensure the safe use of such applications if the Programs are used for such purposes, and we disclaim liability for any damages caused by such use of the Programs.

The Programs may provide links to Web sites and access to content, products, and services from third parties. Oracle is not responsible for the availability of, or any content provided on, third-party Web sites. You bear all risks associated with the use of such content. If you choose to purchase any products or services from a third party, the relationship is directly between you and the third party. Oracle is not responsible for: (a) the quality of third-party products or services; or (b) fulfilling any of the terms of the agreement with the third party, including delivery of products or services and warranty obligations related to purchased products or services. Oracle is not responsible for any loss or damage of any sort that you may incur from dealing with any third party.

Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

Contents

Send Us Your Comments

Preface

1 Setting Up

Related Product Steps	1- 1
Setup Steps	1- 2
Defining Bills of Material Parameters	1- 5
Creating Alternates	1- 8
Creating Custom Deletion Constraints	1- 9
Creating a Department Class	1-10
Defining a Department	1-10
Assigning Resources to a Department	1-12
Defining a Resource	1-14
Defining Resource Setup Information	1-19
Using the Workday Calendar	1-21
Bills of Material Profile Options	1-29

2 Bills of Material

Overview of Bills of Material	2- 1
Bill of Material Types	2- 2
Phantoms	2- 3
Primary and Alternate Bills of Material	2- 4
Item and Routing Revisions	2- 4
Components	2- 5
Access Control by Item Type	2- 7
Creating a Bill of Material	2- 8
Copying Bill and Routing Information	2-13
Referencing Common Bills and Routings	2-15
Assigning Descriptive Elements	2-16
Creating Reference Designators	2-17
Assigning Substitute Components	2-18
Defining Item Revisions	2-18
Defining Bill or Routing Operation Documents	2-18
Attaching Files	2-19

Checking for Bill Loops	2-19
Modifying Components and Bills	2-19
Mass Changing Bills of Material	2-20
Viewing an Indented Bill of Material	2-23
Comparing Bills of Material	2-25
Viewing Item Usage	2-27
Bills of Material Field Reference	2-28
Item and Operation Sequence Fields	2-28
Effective Date Fields	2-29
Yield Field	2-30
Planning Percent Field	2-30
Enforce Integer Requirements	2-31
Extended Quantity Field	2-31
Supply Subinventory and Locator Fields	2-31
Mutually Exclusive and Optional Fields	2-32
Check ATP (Available To Promise) Field	2-32
Minimum and Maximum Quantity Fields	2-32
Basis Field	2-32
Shipping Details Fields	2-33
Bill / Component Validation Rules	2-33
Creating a Product Family	2-36

3 Routings

Overview of Routings	3- 1
Primary and Alternate Routings	3- 1
Dynamic Routings	3- 3
Operations	3- 3
Resource Usage	3- 4
Creating a Routing	3- 7
Creating a Standard Operation	3-14
Viewing Resource Usage	3-16
Routings Field Reference	3-17
Completion Subinventory and Locator Fields	3-17
Count Point and Autocharge Fields	3-18
Schedule Field	3-20
Charge Type Field	3-20

4 Deleting Information

Deleting Items, Bills, Routings, Components, and Operations	4- 1
Deletion Constraints	4- 5

5 Configure to Order

Overview of Configure To Order	5- 1
Information Sources	5- 1

Definitions	5- 2
BOM Support for CTO	5- 3
Overview of Model and Option Class Bills of Material	5- 3
Configure to Order Environments	5- 5
AutoCreate Configuration Items	5-20
Steps Taken to AutoCreate Configuration Items	5-20
Program Parameters Definition	5-21
Item Numbering Methods	5-22
Match and Reserve	5-24
Weight and Volume Calculation	5-25
Resulting Bills of Material	5-26
Resulting Routings	5-29
Cost Rollup	5-30
Preconfiguring Items	5-30
Configuration Item Catalog	5-31
Deactivating Configuration Items	5-33
 6 Manufacturing Scheduling	
Overview of Manufacturing Scheduling	6- 1
Detailed Scheduling	6- 2
Repetitive Line Scheduling	6- 3
Dynamic Lead Time Offsetting	6- 3
Uses of Dynamic Lead Time Offsetting	6- 3
Required Lead Time Information	6- 4
Lead Time Offsetting Computations	6- 5
 7 Manufacturing Lead Times	
Overview of Lead Time Management	7- 1
Computed vs. Assigned Lead Times	7- 1
Item Lead Time Attributes	7- 2
Manufacturing Lead Time Computations	7- 3
Cumulative Lead Time Computations	7-11
Calculating Lead Times	7-12
 8 Oracle E-Records	
21 CFR Part 11 Overview	8- 1
CFR Part 11 and Oracle Bills of Material	8- 2
E-records and E-signatures for Oracle Bills of Material	8- 2
 9 Reports	
Bill of Material Comparison Report	9- 1
Bill of Material Listing	9- 2
Bill of Material Loop Report	9- 3
Bill of Material Structure Report	9- 5

Bills of Material Parameters Report	9- 8
Consolidated Bill of Material Report	9- 8
Delete Items Report	9-10
Department Classes Report	9-11
Department Report	9-12
Item Where Used Report	9-12
Resource Report	9-14
Resource Where Used Report	9-15
Routing Report	9-15
Standard Operation Report	9-17
Workday Exception Sets Report	9-17
Oracle Configurator Concurrent Programs	9-18

A Oracle Bills of Material Windows and Navigator Paths

Bills of Material Windows and Navigator Paths	A- 1
---	------

B Oracle Bills of Material Special Menu

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

Index

Send Us Your Comments

Oracle Bills of Material User's Guide, Release 11i

Part No. A75087-07

Oracle welcomes your comments and suggestions on the quality and usefulness of this publication. Your input is an important part of the information used for revision.

- Did you find any errors?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
- What features did you like most about this manual?

If you find any errors or have any other suggestions for improvement, please indicate the title and part number of the documentation and the chapter, section, and page number (if available). You can send comments to us in the following ways:

- Electronic mail: appsdoc_us@oracle.com
- FAX: 650-506-7200 Attn: Oracle Supply Chain Management Documentation Manager
- Postal service:
Oracle Supply Chain Management Documentation Manager
Oracle Corporation
500 Oracle Parkway
Redwood Shores, CA 94065
USA

If you would like a reply, please give your name, address, telephone number, and electronic mail address (optional).

If you have problems with the software, please contact your local Oracle Support Services.

Preface

Intended Audience

Welcome to Release 11i of the *Oracle Bills of Material User's Guide*.

See Related Documents on page x for more Oracle Applications product information.

TTY Access to Oracle Support Services

Oracle provides dedicated Text Telephone (TTY) access to Oracle Support Services within the United States of America 24 hours a day, seven days a week. For TTY support, call 800.446.2398.

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Accessibility standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For more information, visit the Oracle Accessibility Program Web site at <http://www.oracle.com/accessibility/>.

Accessibility of Code Examples in Documentation

Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

Accessibility of Links to External Web Sites in Documentation

This documentation may contain links to Web sites of other companies or organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these Web sites.

Structure

1 Setting Up

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

2 Bills of Material

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

3 Routings

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

4 Deleting Information

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

5 Configure to Order

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

6 Manufacturing Scheduling

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

7 Manufacturing Lead Times

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

8 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.

9 Reports

This chapter describes Oracle Bills of Material reports 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 Special Menu

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

Related Documents

- Oracle Configurator Developer User's Guide
- Oracle Engineering User's Guide
- Oracle Flow Manufacturing User's Guide
- Oracle Inventory User's Guide
- Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide
- Oracle Order Management User's Guide
- Oracle Shop Floor Management User's Guide
- Oracle Work in Process User's Guide
- Oracle Quality User's Guide
- Oracle Warehouse Management User's Guide
- Oracle Cost Management User's Guide
- Oracle Capacity User's Guide

- Oracle Manufacturing Scheduling User's Guide
- Using Oracle HRMS—The Fundamentals
- Oracle Projects User's Guide
- Oracle Manufacturing APIs and Open Interfaces Manual
- Oracle E-Records Implementation Guide
- Oracle Workflow User's Guide
- Oracle Workflow Developer's Guide
- Oracle Applications User's Guide
- Oracle Applications Developer's Guide
- Oracle Applications Flexfields Guide
- Oracle Applications System Administrator's Guide

Do Not Use Database Tools to Modify Oracle Applications Data

Oracle **STRONGLY RECOMMENDS** that you never use SQL*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle Applications 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 Applications data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle Applications tables are interrelated, any change you make using an Oracle Applications form can update many tables at once. But when you modify Oracle Applications data using anything other than Oracle Applications, 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 Applications.

When you use Oracle Applications to modify your data, Oracle Applications automatically checks that your changes are valid. Oracle Applications 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.

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 Constraints
- Creating a Department Class
- Defining a Department
- Assigning Resources to a Department
- Defining a Resource
- Defining Resource Setup Information
- Using the Workday Calendar
- Bills of Material Profile Options

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 Update Personal Profile Options form to set profile options only at the user level. System administrators use the Update System Profile Options form to set profile options at the site, application, responsibility, and user levels. See: Oracle Bills of Material Profile Options, page 1-29

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 1-24.

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 1-24.

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 1-27.

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- 5 .

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 1-10.

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, labor purchased from a supplier, and physical space.

Context: Perform this step once per organization.

See: Defining a Resource, page 1-14.

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 1-19.

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 1-14.

10. 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 1-14

11. 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 1-14.

12. 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 1-10.

13. 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 1-12.

14. 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 1-14.

15. 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 1-10.

16. 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- 4 .

17. 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- 8 .

18. 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 3-14.

19. 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 2-20.

20. Define Delete Constraints (Optional)

Oracle Bills of Material provides a list of rules to determine if an item, bill of material or routing can be deleted. 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.

Default: If you skip this step, Oracle shipped delete constraints will be used as the default value.

Context: Perform this step once per organization.

See: Creating Custom Deletion Constraints, page 1- 9 .

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.

The screenshot shows the 'Parameters (M1)' window. At the top, there is a 'Max Bill Levels' field with a value of '10'. Below this is a 'Configuration Options' box. Inside this box, there are several fields: 'Inactive Status' set to 'Inactive', 'Numbering Segment' set to 'Item', 'Numbering Method' set to 'Append with sequence' (via a dropdown), and 'Create Lower Level Supply' set to 'No' (via a dropdown). Below the 'Configuration Options' box, there are two checkboxes: 'Config BOM Creation Allowed' which is checked, and 'Include Model/Option Class Items in Lead Time Rollup' which is unchecked. At the bottom of the window, there are two more checkboxes: 'Use Phantom Routings' which is checked, and 'Inherit Phantom Op Seq' which is checked.

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.

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 5- 1

Bills of Material Parameters Report, page 9- 8

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.



The screenshot shows the 'Alternates (M1)' window. It contains a table with the following columns: 'Alternate', 'Description', 'Inactive On', and a checkbox column. The table has 8 rows. The first row is highlighted. The window title bar shows 'Alternates (M1)' and standard window controls.

Alternate	Description	Inactive On	

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- 4

Primary and Alternate Routings, page 3- 1

Creating Custom Deletion Constraints

Use custom deletion constraints to enforce specific business rules. Custom deletion constraints prevent the deletion of bills or routings if your data meets the conditions set forth in the constraint.

To create a custom deletion constraint:

1. Navigate to the Deletion Constraints window.

The screenshot shows the 'Deletion Constraints (M1)' window. It has a title bar with standard window controls. The main area contains the following fields:

- Constraint:** A text input field.
- Description:** A text input field.
- Delete Entity:** A dropdown menu with 'Bill of Material' selected.
- SQL Select Statement:** A large text area for entering SQL code.
- Delete If:** A group box containing two radio buttons: 'Rows Found' (selected) and 'No Rows Found'.
- Failure Message:** A group box containing two text input fields: 'Name' and 'Text'.

There is also a small 'Enabled' checkbox in the top right corner, which is checked.

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 what kind of delete entity the constraint applies to: item, bill, routing, component, or operation.
5. Enter the SQL Select Statement that the delete concurrent program is to execute. You cannot update SQL statements for predefined deletion constraints.
6. Indicate whether to delete if there are rows found or no rows found by the SQL Select Statement.
7. Enter a failure message from Oracle Application Object Library's message dictionary to display if the delete fails.

Related Topics

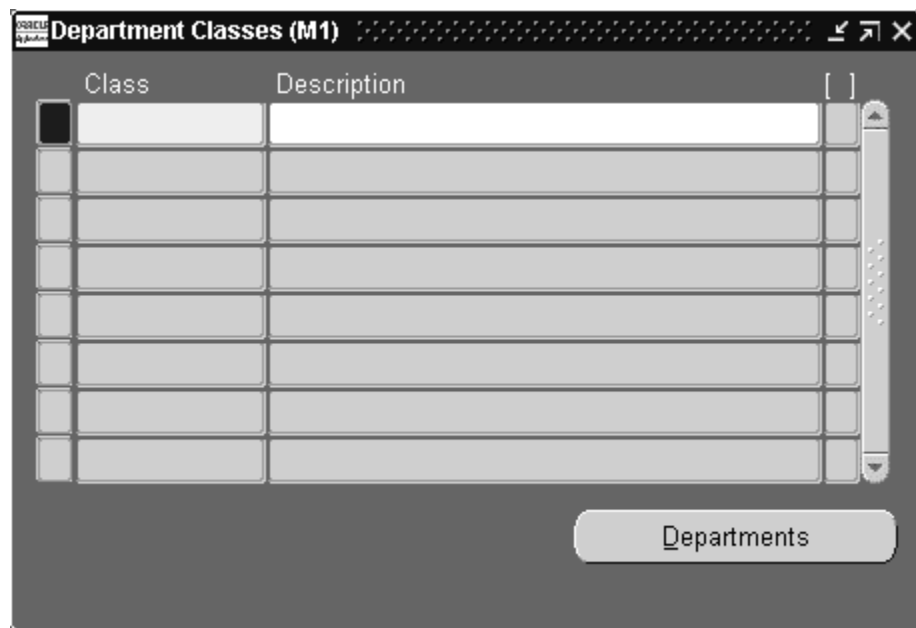
Creating Custom Deletion Constraints, page 1-9

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 1-10

Department Classes Report, page 9-11

Defining a Department

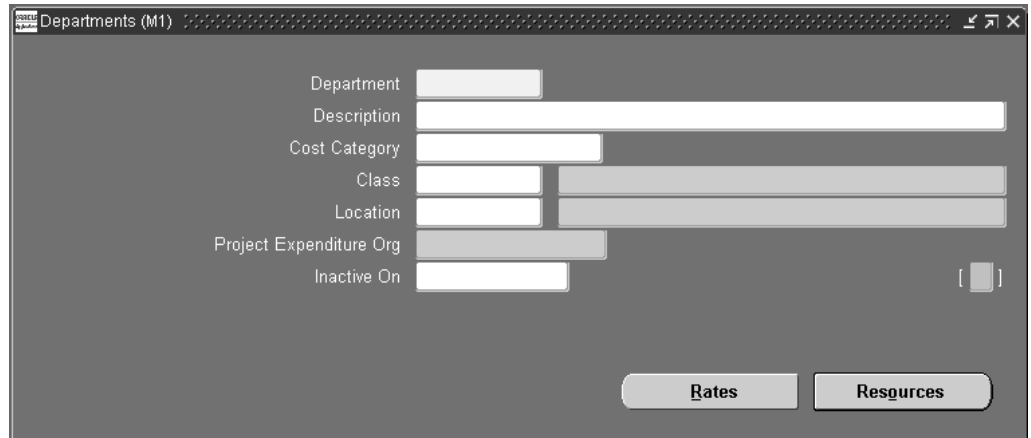
A department is an area within your organization that consists of one or more people, machines, or suppliers, where you want to collect costs, apply overhead, and

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)". Inside the window, there are several input fields arranged vertically: "Department", "Description", "Cost Category", "Class", "Location", "Project Expenditure Org", and "Inactive On". The "Class" and "Location" fields have a greyed-out area to their right. At the bottom right of the window, 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 1-10.
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 User's Guide*.

Related Topics

Assigning Resources to a Department, page 1-12

Department Report, page 9-12

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 screenshot shows the 'Resources (M1) - [New]' window. The 'Owned' section is active, showing a table with columns: Resource, Description, Available 24 Hours (checkbox), Share (checkbox), UOM, Units, Check CTP (checkbox), Group, and Schedule by Instance (checkbox). The 'Borrowed' section is also visible, showing a table with columns: Resource, Description, Owning Department, UOM, Units, Check CTP (checkbox), and Group. There are buttons for 'Instances', 'Tolerance Fences', and 'Shifts'.

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, enter a resource group for the resource in this department.
8. 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 Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.
9. Indicate if the department resource should be scheduled to the instance level.

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

10. Optionally, enter an exception set. The exception sets that you assign help identify capacity problems. See: *Creating Planning Exception Sets, Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.
11. Enter an expenditure type for the resource.
12. For owned resources that are not available 24 hours, choose the Shifts button to assign and update shift information for the resource.

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.

Related Topics

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

Overview of Capacity Planning, *Oracle Capacity 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, outside processing services, and physical space. 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: Resource Batching, *Oracle Manufacturing Scheduling 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 of measure and has no conversions defined to the hour unit of measure.

To define a resource:

1. Navigate to the Resources window.

The screenshot shows the 'Resources (M1)' window with the following fields and values:

- Resource: **ACID BATH**
- Description: **Acid Bath**
- Type: **Machine** (dropdown)
- Charge Type: **WIP Move** (dropdown)
- Basis: **Lot** (dropdown)
- UOM: **HR**
- Expenditure Type: (empty)
- Supply Subinventory: (empty)
- Supply Locator: (empty)
- ☐ Outside Processing
- Item: (empty)
- ☒ Costed
 - Activity: (empty)
 - ☒ Standard Rate
 - Absorption Account: **01-520-5810-0000-000**
 - Variance Account: **01-520-5380-0000-000**
 - Buttons: **Overheads**, **Rates**
- ☐ Batchable
 - Minimum Batch Capacity: **.5**
 - Maximum Batch Capacity: **100**
 - Batch Capacity UOM: **FT3**
 - Batching Window: **24**
 - UOM: **HR**
- Buttons at the bottom: **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, Person, or physical Space.
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 3-11.

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 3-20.
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. 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, *Oracle Cost Management User's Guide*.

13. 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.

14. 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.

15. 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.
16. 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: *Resource Batching, Oracle Manufacturing Scheduling User's Guide*.
17. Enter the maximum number units to be batched in the Maximum Batch Capacity field.
18. Enter the minimum number of units to be batched in the Minimum Batch Capacity field.
19. Select the unit of measure for the batch capacity from the list of values available in the Batch UOM window field.
20. Enter the time value for the batching process in the Batching window field.
21. Select the time unit of measure available in the Batching Window UOM field.

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 User's 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.

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. Enter an Employee to associate with the resource.
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 User's Guide*.

Related Topics

Defining a Department, page 1-10

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

Resource Report, page 9-14

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 Manufacturing 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.

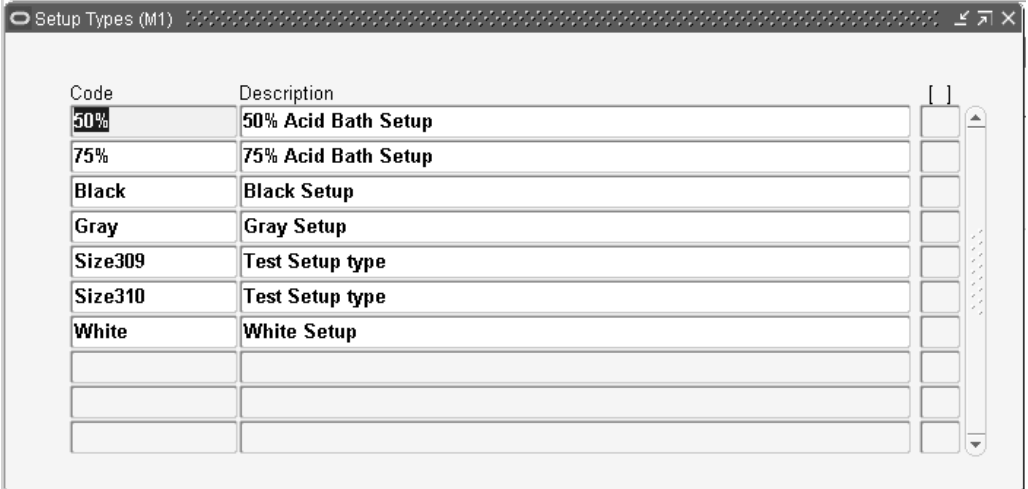
The setups for a resource are independent of the department that the resource belongs to.

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.



The screenshot shows a window titled "Setup Types (M1)". Inside, there is a table with two columns: "Code" and "Description". The table contains several rows of data, including "50%", "75%", "Black", "Gray", "Size309", "Size310", and "White". Each row has a corresponding description, such as "50% Acid Bath Setup", "75% Acid Bath Setup", "Black Setup", "Gray Setup", "Test Setup type", "Test Setup type", and "White Setup". There are also empty rows at the bottom of the table. To the right of the table, there is a vertical scrollbar and a small icon.

Code	Description
50%	50% Acid Bath Setup
75%	75% Acid Bath Setup
Black	Black Setup
Gray	Gray Setup
Size309	Test Setup type
Size310	Test Setup type
White	White Setup

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.

Setup Type	Description
50%	50% Acid Bath Setup
75%	75% Acid Bath Setup

Changeovers

4. In the Setup Type field, select a value. Enter all the setup types applicable to this resource.

The descriptions for each type displays in the Description field.

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

From	To	Duration	UOM	Penalty	Standard Operation
50%	50%	0	HR	0	
75%	50%	2	HR	10	

7. In the From field enter the setup type to change from.
8. The To field defaults in from the setup type you selected on the Setups window.
9. 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.
10. Assign a penalty to the changeover if there is one.
11. Select a Standard Operation (optional). See: Creating a Standard Operation, page 3-14.
12. 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

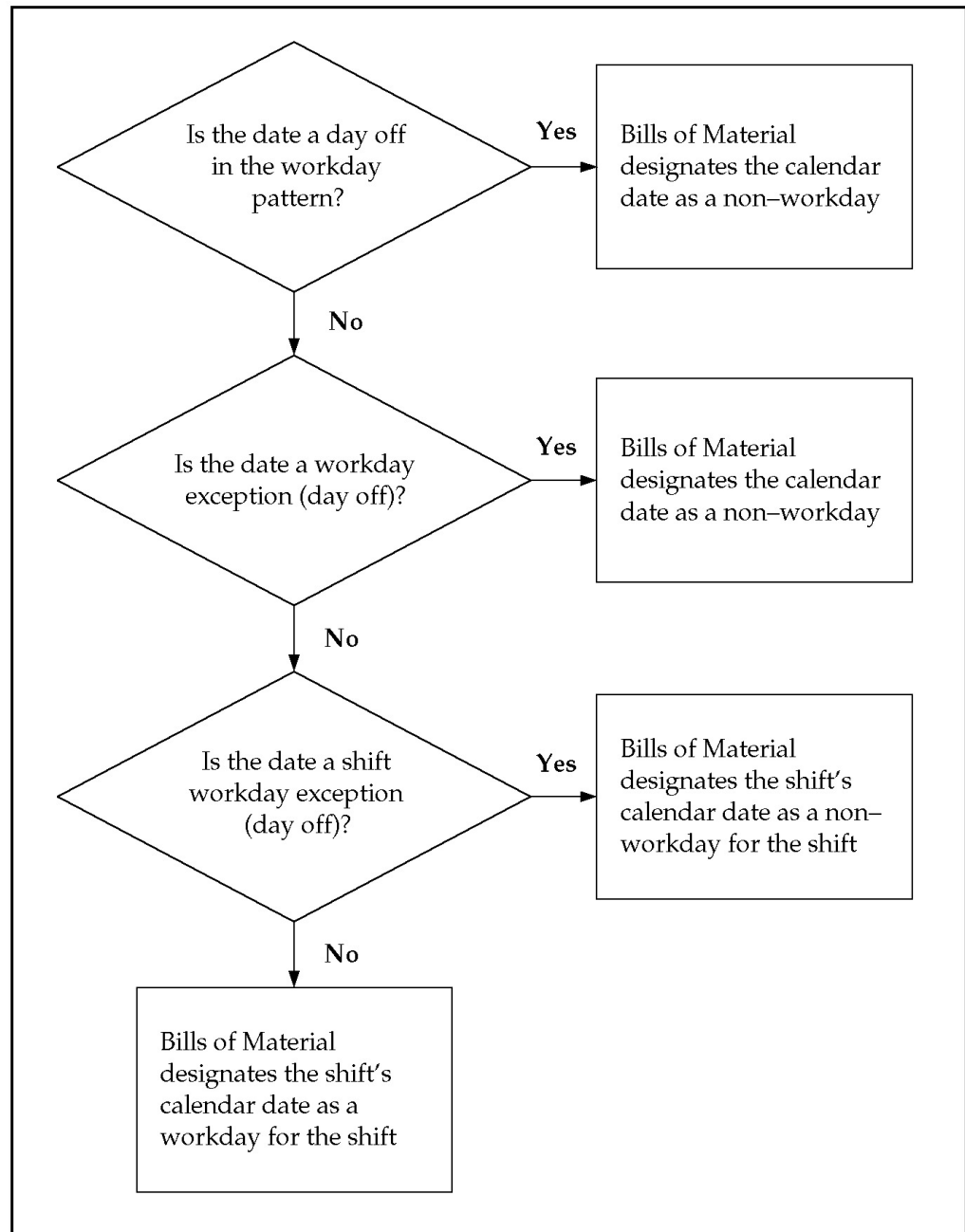
For a given workday calendar, you can specify any number of shifts. Each shift can have a different weekend schedule and a list of specific work interval start and end times. For both calendars and shifts, you can assign sets of workday exceptions and repeating workday patterns.

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.

Date	Days On	[]
<input type="text"/>	<input type="checkbox"/>	[]
<input type="text"/>	<input type="checkbox"/>	[]
<input type="text"/>	<input type="checkbox"/>	[]
<input type="text"/>	<input type="checkbox"/>	[]
<input type="text"/>	<input type="checkbox"/>	[]
<input type="text"/>	<input type="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.

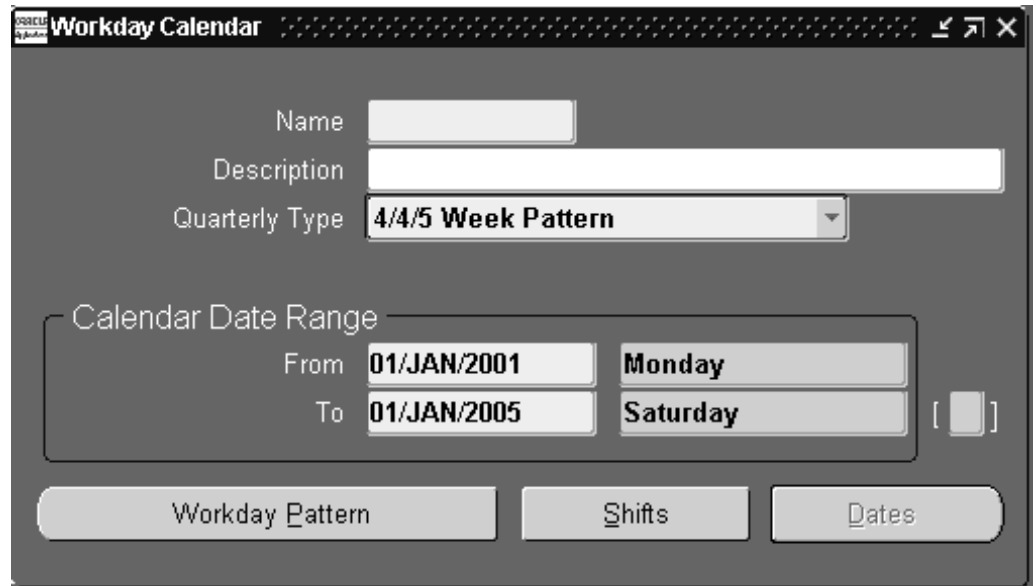
Use a workday calendar for forecasting and planning material requirements, use shift information for job scheduling, and capacity analysis.

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.



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 or Period Start Date, to determine the start date. This profile option works in conjunction with the Workday Calendar. See: Bills of Material Profile Options, page 1-29.

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.

Shift Calendar Dates - sbdates

Shift: 1 rave yard

Calendar: sbdates sdf asdf asdf

From: 01/JAN/2001 To: 01/JAN/2005

Show: March Show: 2001

Sun	Mon	Tue	Wed	Thr	Fri	Sat
25	26	27	28	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Day On Exception On Exception List

Day Off Exception Off

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.
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 Open Interface programs allow 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 Object Interface chapter and Integrating Your Systems, *Oracle Manufacturing APIs and Open Interfaces Manual*.

1. Navigate to the Import Item Information 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.

Related Topics

Organization Parameters Window, *Oracle Inventory User's 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

Profile Option	User	User	Resp	App	Site	Required?	Default Value
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: 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: 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: 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.

BOM: Planning Item Access

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

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 1-21.

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 Applications User's Guide*

Common User Profile Options, *Oracle Applications User's Guide*

Profile Options in Oracle Application Object Library, *Oracle Applications System Administrator's Guide*

Defining Items, *Oracle Inventory User's Guide*

Overview of Function Security, *Oracle Applications System Administrator's Guide*

Implementing Function Security, *Oracle Applications System Administrator's Guide*

Bills of Material

This chapter provides you 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.

Related Topics

Bill of Material Types, page 2- 2

Phantoms, page 2- 3

Primary and Alternate Bills of Material, page 2- 4

Item and Routing Revisions, page 2- 4

Components, page 2- 5

Access Control By Item Type, page 2- 7

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 Master Scheduling/MRP and Oracle Supply Chain Planning 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.

Related Topics

Overview of Configure to Order, page 5- 1

Item Attributes Listed in Alphabetical Order, *Oracle Inventory User's Guide*

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.

Related Topics

Creating Alternates, page 1- 8

Item and Operation Sequence Fields, page 2-28

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

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.

Related Topics

- Overview of Routings, page 3- 1
- Effective Date Fields, page 2-29
- Defining Item Revisions, *Oracle Inventory User’s Guide*

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.

<i>Valid Parent/Component Relationships</i>	
Parent BOM Item Type	Component BOM Item Type
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

Component Attributes	Standard Parent Item	Model Parent Item	Option Class Parent Item	Planning Parent Item
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
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

Component Attributes	Standard Parent Item	Model Parent Item	Option Class Parent Item	Planning Parent Item
Descriptive Flexfield	Yes	Yes	Yes	Yes
Comments	Yes	Yes	Yes	Yes

Related Topics

Item and Operation Sequence Fields, page 2-28

Effective Date Fields, page 2-29

Yield Field, page 2-30

Planning Percent Field, page 2-30

Enforce Integer Requirements, page 2-31

Supply Subinventory and Locator Fields, page 2-31

Mutually Exclusive and Optional Fields, page 2-32

Check ATP (Available to Promise) Field, page 2-32

Minimum and Maximum Quantity Fields, page 2-32

Basis Field, page 2-32

Shipping Details Fields, page 2-33

Bill / Component Validation Rules, page 2-33

Consolidated Bill of Material Report, page 9- 8

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

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

Bills of Material Profile Options, page 1-29

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.

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 2-13, and Referencing Common Bills and Routings, page 2-15.*

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	Item Description	Revision	UOM	Quantity
10	10	RW94043	Plastic Stock - Gray	A	Lbs	.1
20	10	SC94065	Resin	A	Lbs	.1
30	10	SC94077	Plastic Regrind- Gray	A	Lbs	.1
40	20	SC94077	Plastic Regrind- Gray	A	Lbs	.05

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 Statuses, *Oracle Engineering User's Guide*.

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

5. Enter the item sequence, operation sequence, and the component item. See: Item and Operation Sequence Fields, page 2-28.
6. In the Main tabbed region, enter the quantity used to make one unit of this assembly item at the current operation.

This 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.

7. Select Engineering Item, if the component item is a prototype item, and not a manufacturing item.
8. Select Auto Request Material to automatically create move orders or purchase orders for the component item.
9. Open the Date Effectivity tabbed region and enter the effective date range for each component. See: Effective Date Fields, page 2-29.

The screenshot shows the Oracle Bills of Material (S1) window. The title bar reads "Bills of Material (S1)". The window contains several input fields and a tabbed interface.

At the top, there are fields for "Item" (MCD8830), "Plastic Housing - Gray", "UOM" (Ea), "Alternate", "Revision" (A), and "Date" (08-MAY-2003 12:57:14). Below these is a "Display" dropdown set to "Future and Current" and a checked "Implemented Only" checkbox.

The main area has a tabbed interface with tabs: "Main", "Date Effectivity" (selected), "Unit Effectivity", "ECO", "Component Details", "Material Control", and "Order Management".

Under the "Date Effectivity" tab, there is a table with columns: "Item Seq", "Operation Seq", "Component", "From", and "To". The table contains four rows of data:

Item Seq	Operation Seq	Component	From	To
10	10	RW94043	01-MAY-1997 12:52:25	
20	10	SC94065	01-MAY-1997 12:52:25	
30	10	SC94077	13-AUG-1997 02:34:35	
40	20	SC94077	13-AUG-1997 02:34:44	

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

10. Open the ECO tabbed region and verify the following:
 The Implemented check box indicates whether the component is implemented.
Checked: Component is on a pending Engineering Change Order (ECO)
Unchecked: Component is on implemented ECO or was added directly to the bill

Bills of Material (S1)

Item **MCD8830** Plastic Housing - Gray UOM **Ea**

Alternate

Revision **A** Date **08-MAY-2003 12:57:14**

Display **Future and Current** ☒ Implemented Only

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

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"/>	

Substitutes Designators Operations Bill Details Revision

11. Open the Component Details tabbed region and enter the planning percent. See: Planning Percent Field, page 2-30.

Bills of Material (S1)

Item **MCD8830** 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 2-30.

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 2-31.

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.

12. 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 2-31.

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 1-29.

13. 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 2-32.

Indicate whether to check ATP. See: Check ATP (Available to Promise) Field, page 2-32.

Indicate whether the component is optional and mutually exclusive. See: Mutually Exclusive and Optional Fields, page 2-32.

Enter the basis. See: Basis Field, page 2-32.

14. 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 2-33.

15. Choose buttons to perform related tasks:

Substitutes: assign substitute components

Designators: create reference designators

Elements: assign descriptive elements

Bill Details: reference common bills

Revision: define item revisions

Related Topics

Copying Bill and Routing Information, page 2-13

Referencing Common Bills and Routings, page 2-15

Assigning Descriptive Elements, page 2-16

Creating Reference Designators, page 2-17

Assigning Substitute Components, page 2-18

Defining Item Revisions, page 2-18

Attaching Files, page 2-19

Checking for Bill Loops, page 2-19

Deleting Components and Operations, page 4- 4

Creating a Product Family, page 2-36

Bill / Component Validation Rules, page 2-33

Bill of Material Listing Report, page 9- 2

Bills of Material Profile Options, page 1-29

Customizing the Presentation of Data, *Oracle Applications 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 bill or routing information:

1. Navigate to the Copy Bill / Rtg From window. Do this by choosing the Tools menu item and then choosing Copy Bill / Rtg From.

The screenshot shows a dialog box titled "Copy Bill (M1)". It has a "Copy From" section with fields for Organization (M1), Item (Seattle Manufacturing), Alternate (empty), Revision (empty), and Date (08/MAR/2001 19:27:26). There is also a checkbox for "Engineering Bill" which is unchecked. Below this is a "Copy Option" section with two radio buttons: "Current" (selected) and "Future and Current" (unselected). At the bottom are "Cancel" and "Copy" buttons.

2. Enter the organization, item, alternate, revision, and revision date for the bill or routing that to copy.
3. Select a copy option:
Current: components or operations effective on the revision date.
Future and Current: same as current and all future components and operations.
Note: After you have copied information, you can update it as you see fit.
4. Choose the Copy and Save button. Doing so copies the appropriate components (or operations) and automatically saves the new bill or routing.

Related Topics

Bill / Component Validation Rules, page 2-33

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.

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 or routing:

1. Navigate to the Common Bill window from either the Bills of Material window or the Routings window. Do this by choosing Assign Common Bill from the Tools menu.
2. Enter the organization for the item to reference as a common bill.
3. Enter the bill or routing that to use as a common.
4. From the Special Menu, launch the Create Common Bills concurrent program. Enter the following parameters:
 - Single Organization/Organization Hierarchy/All Organizations
Select one of the above three options. If you select Single Organization, enter the organization and item names where the common bill needs to be created. If you select Organization Hierarchy, enter the required name of the organization hierarchy. In this case, the processing is done for all organizations below the current organization in the chosen organization hierarchy. If you select All Organizations, then processing is done for all organizations that have the same item master organization as the current organization.
 - Organization Hierarchy
 - Organization
 - Item
5. Choose OK.

Tip: In addition to navigating to the Define Bills form, you can also common bills by running the stand alone concurrent program.

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. Do this by choosing the Elements button from the Bills of Material 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 5- 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.

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

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- 4

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 2-19

Attaching Files

You can attach text and files, such as spreadsheets, graphics, and OLE objects to bills of material, engineering change orders, 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, or Routings 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 2-18

Attachments, *Oracle Applications 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 9- 3

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
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- 8 .
- ☐ 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: M1-1015
Type: Prod Chg Product Change
Description: II

Mass Change Details

☐ Increment Revision Unit Number:
☒ Update Jobs / Schedules

Parent Items

Category Set: Inv.Items
Categories: -
Items: SB10450 - SB10460
Alternate Selection: All
Base Model:
Item Type:

Actions

☐ Report ☐ Implement Submit Changes

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

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 2-28.
4. Open the Component Detail tabbed region and enter the planning percent. See: Planning Percent Field, page 2-30.

Enter the yield and indicate whether the component should be quantity related and included in cost rollups. See: Yield Field, page 2-30.
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 2-31.
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 2-32.

Indicate whether to check ATP. See: Check ATP (Available to Promise) Field, page 2-32.

Indicate whether the component is optional and mutually exclusive. See: Mutually Exclusive and Optional Fields, page 2-32.

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 2-33.

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.

See Also

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

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

Related Topics

Bill / Component Validation Rules, page 2-33

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 1-29.
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 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 2-28
Effective Date Fields, page 2-29
Yield Field, page 2-30
Planning Percent Field, page 2-30
Supply Subinventory and Locator Fields, page 2-31
Extended Quantity, page 2-31
Mutually Exclusive and Optional Fields, page 2-32
Check ATP (Available to Promise) Field, page 2-32
Minimum and Maximum Quantity Fields, page 2-32
Basis Field, page 2-32
Shipping Details Fields, page 2-33
Overview of Lead Time Management, page 7- 1
Viewing Item Usage, page 2-27
Overview of Routings, page 3- 1
Bill of Material Structure Report, page 9- 5
Supply Types, *Oracle Work in Process User's Guide*
Searching for Data (Using Query Find), *Oracle Applications User's Guide*
Searching for Data (Using Query Operators), *Oracle Applications User's Guide*
Searching For Data, *Oracle Applications User's Guide*
Searching For Data (Performing Query-by-Example and Query Count), *Oracle Applications 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"/>
<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

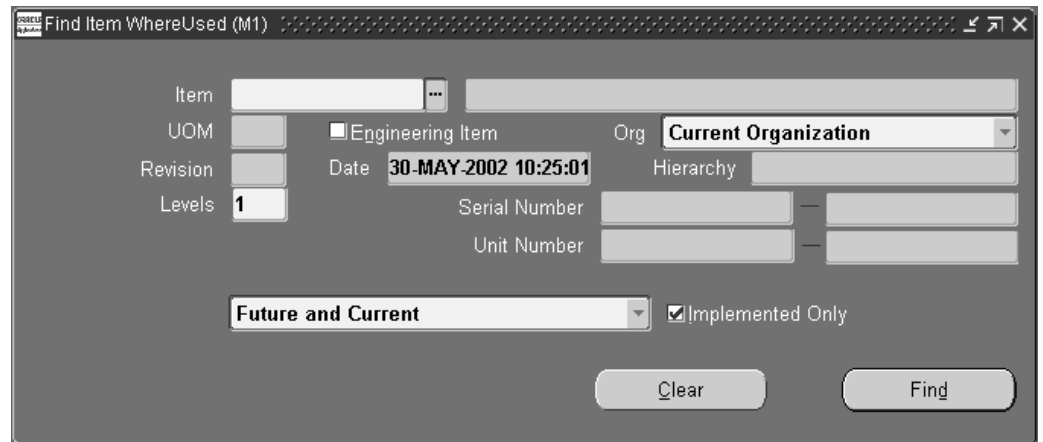
- Item and Operation Sequence Fields, page 2-28
- Planning Percent Field, page 2-30
- Yield Field, page 2-30
- Effective Date Fields, page 2-29
- Bill of Material Comparison Report, page 9- 1

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.



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.

Note: 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 2-29.

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

Related Topics

Viewing An Indented Bill of Material, page 2-23

Item Where Used Report, page 9-12

Consolidated Bill of Material Report, page 9- 8

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

Searching For Data (Using Query Find), *Oracle Applications User's Guide*

Searching For Data (Using Query Operators), *Oracle Applications User's Guide*

Searching For Data (Searching For Information), *Oracle Applications User's Guide*

Searching For Data (Performing Query-by-Example and Query Count), *Oracle Applications 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.

Related Topics

Bills of Material Profile Options, page 1-29

Creating a Routing, page 3-7

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

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

Effective Date Fields

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

- *Effective From / Effective 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 / Inactive After*: Last date and time the component or operation is effective. *After* this date, you can no longer assign the component to a bill or the operation to a routing.
- *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.

Related Topics

Item and Routing Revisions, page 2- 4

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).

Related Topics

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

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.

Related Topics

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

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

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.

Related Topics

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

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

Extended Quantity Field

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

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

Related Topics

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

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.

Related Topics

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

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	[] Mutually Exclusive(default)	[X] Mutually Exclusive
[X] Optional	Choose any number or no options on the option class bill	Choose one or no options on the option class bill
[] Optional (default)	Choose at least one option on the option class bill	Choose one, and only one, option on the option class bill

Check ATP (Available To Promise) Field

Check ATP indicates whether to perform an ATP check on the component. The default is enabled if both the parent's Check Component ATP item attribute is Yes *and* the component's Check ATP item attribute is set to Yes. You can update this check box only if *all* of the following are true:

- Selected the Check ATP attribute of the component item
- Selected the Check Component ATP item attribute of the assembly item
- Entered a component quantity greater than 0

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.

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 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 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 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), and is only effective if your OE: Reservations profile option is set to No. If OE: Reservations is set to Yes, then the Ship Model Complete inventory attribute and the Ship Set feature in Order Management control what is required to ship, and what prints on the pick slip.
- *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.

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

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

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 optional.
- **: 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- 8
- Copying Bill and Routing Information, page 2-13
- Referencing Common Bills and Routings, page 2-15
- Deleting Components and Operations, page 4- 4
- Mass Changing Bills of Material, page 2-20

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.

Note: 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.

Note: 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.

Note: 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.

Note: 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*

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.

Related Topics

Primary and Alternate Routings, page 3- 1

Item and Routing Revisions, page 2- 4

Creating a Routing, page 3- 7

Operations, page 3- 3

Resource Usage, page 3- 4

Defining a Department, page 1-10

Defining a Resource, page 1-14

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

Item	Alternate Name	Operation Sequence	Description
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

Item	Alternate Name	Operation Sequence	Description
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.

Related Topics

To switch between a primary and alternate routing, page 3-10

Creating Alternates, page 1- 8

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.

Related Topics

Creating a Routing, page 3- 7

Creating a Standard Operation, page 3-14

Creating a Network Routing, *Oracle Shop Floor Management User's Guide*

Setup Steps (Defining Parameters), *Oracle Shop Floor Management*

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- 8 .

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 3-14.

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 Shop Floor Transaction window 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 2-19.

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 5- 5 .

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 1-14. 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

Resource	Resource Seq	Substitute Group Number	Replacement Group
R1	10	10	n/a
R2	20	10	n/a
R3	10 or 20 (default)	10 (default)	10
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 Manufacturing Scheduling, though. See: *Creating a Routing*, page 3-7 and *Defining Simultaneous and Alternate Resources*, *Oracle Manufacturing 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 3-11.

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*, *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*, *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*.

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 2-19.

You can create a routing manually, copy an existing routing, or reference a common routing. See: Copying Bills and Routing Information, page 2-13. See: Referencing Common Bills and Routings, page 2-16.

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.

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 to create a routing for.
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 3- 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 3-11.

5. If you would like this routing to be capable to promise, then choose the Capable to Promise button. See: Capable to Promise (CTP), *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning 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 3-17.

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 2-28.
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 3-14.

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, Operation Yield, ECO, and Description.

9. Enter the department in which the operation is performed.
10. Enter an effective date range. See: Effective Date Fields, page 2-29.
11. 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 5- 1 .
12. Optionally, enter the item's manufacturing lead time percent required to complete all previous operations on the routing. See: Calculating Lead Times, page 7-12.

If the manufacturing lead time equals 10 days and all previous operations combined require 2 days, the lead time percent is 20%.

13. Open the WIP tabbed region and select Count Point and Autocharge options. See: Count Point and Autocharge, page 3-18. See: Charge Type, page 3-20.

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 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.

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 7-12

Defining a Department, page 1-10

Creating a Standard Operation, page 3-14

Defining Bill or Routing Operation Documents, page 2-18

Defining a Resource, page 1-14

Deleting Components and Operations, page 4- 4

Attaching Files, page 2-19

Creating a Bill of Material, page 2- 8

Routing Report, page 9-15

Customizing the Presentation of Data in a Folder, *Oracle Applications User's Guide*

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 Tools menu and select Switch to Primary.
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 3-17

To create or update a routing revision :

1. Navigate to the Routing Revisions window. You can do this by choosing the Revision 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- 4

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 Resources button from the Routings window.

Operation Resources (WSM) - 10

Item: DM-DIE Alternate: Sequence: 10 Effective Date: 13-JUN-2002

Resources

Main Scheduling Costing

Seq	Resource	UOM	Basis	Usage	Inverse
			Item		

Alternates

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 within the Resource Usage, page 3- 4 topic 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 3- 4 .
8. If the unit of measure of the resource is time-based, select a schedule value. See: Schedule, page 3-20 and Defining a Resource, page 1-14.

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. 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.
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, *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 3-20.
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 3- 4 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 3-16

Work in Process Standard Cost Transactions, *Oracle Cost Management User's Guide*

Resource Report, page 9-14

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

Rolling Up Assembly Costs, *Oracle Cost Management User's Guide*

Indented Bills of Material Cost Report, *Oracle Cost Management User's Guide*

Creating a Standard Operation

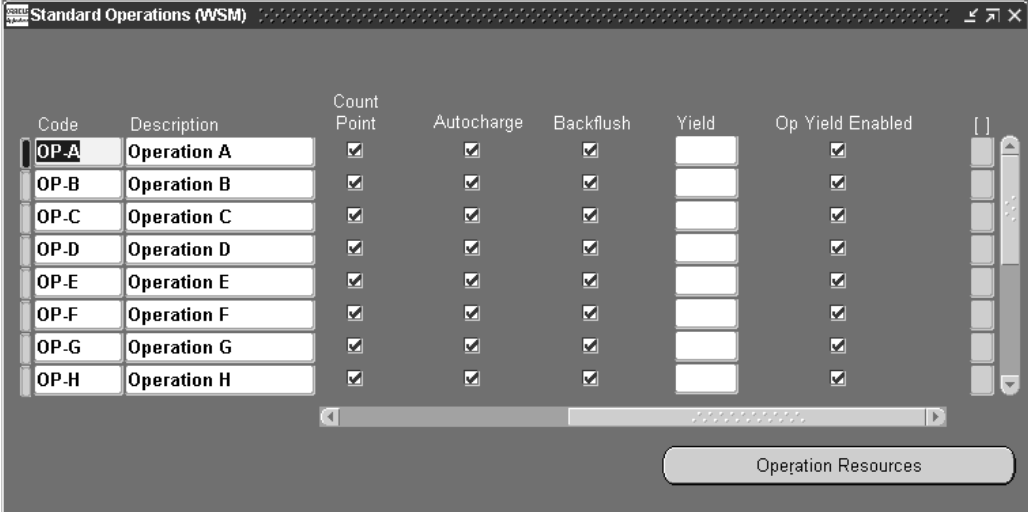
Standard operations are commonly used operations you can define as a template for use in defining future routing operations. If you assign the operation code of standard operation in a routing, the standard operation information is copied into the operation you are currently defining. You can then modify the operation information in your new operation.

Prerequisites

- ☐ You must define at least one department before you can define a standard operation. See: Defining a Department, page 1-10.

To create a standard operation:

1. Navigate to the Standard Operations window.



The screenshot shows the 'Standard Operations (WSM)' window. It contains a table with the following columns: Code, Description, Count Point, Autocharge, Backflush, Yield, and Op Yield Enabled. The table lists eight operations, OP-A through OP-H, each with a description and checkboxes for Count Point, Autocharge, and Backflush. The Yield column contains empty input boxes, and the Op Yield Enabled column contains checkboxes. A scroll bar is visible on the right side of the table. Below the table, there is a button labeled 'Operation Resources'.

Code	Description	Count Point	Autocharge	Backflush	Yield	Op Yield Enabled
OP-A	Operation A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input checked="" type="checkbox"/>
OP-B	Operation B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input checked="" type="checkbox"/>
OP-C	Operation C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input checked="" type="checkbox"/>
OP-D	Operation D	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input checked="" type="checkbox"/>
OP-E	Operation E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input checked="" type="checkbox"/>
OP-F	Operation F	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input checked="" type="checkbox"/>
OP-G	Operation G	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input checked="" type="checkbox"/>
OP-H	Operation H	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<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 User's 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 5- 1 .
6. Select your Count Point and Autocharge options. See: Count Point and Autocharge, page 3-18.

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. To enable operation yield in Shop Floor Management, enter the Operation Yield for each operation listed. The valid values range between zero and one. This field is displayed for Shop Floor Management enabled organizations.
9. 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.
10. Choose the Operation Resources button to assign resources to the standard operation. See: To assign a resource to a routing operation, page 3-11.

Related Topics

Defining a Department, page 1-10

Overview of Routings, page 3- 1

Overview of Bills of Material, page 2- 1

Defining Activities and Activity Costs, *Oracle Cost Management User's Guide*

Defining Bill or Routing Operation Documents, page 2-18

Manufacturing Standard Cost Transactions, *Oracle Cost Management User's Guide*

Standard Operation Report, page 9-17

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.

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 3-11

Resource Where Used Report, page 9-15

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.

Related Topics

Assembly Completions and Returns, *Oracle Work in Process User's Guide*

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 off count 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

Operation Sequence	Description	Count Point	Backflush	Instructions
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.

Related Topics

Overview of Routings, page 3- 1

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

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.

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

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 are installed with Bills of Material. However, you can define custom deletion constraints. 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.

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.

Note: 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 2-29.

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 2-29.

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 2-29.

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.

Note: 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 2-19.

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, page 4- 5

Creating Custom Deletion Constraints, page 1- 9

Deleting Components and Operations, page 4- 4

Delete Items Report, page 9-10

Creating Organization Hierarchies, *Oracle HRMS-The Fundamentals*

Item Deletion, *Oracle Inventory User's Guide*

Deletion Constraints

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

Related Topics

Deleting Items, Bills, Routings, Components, and Operations, page 4- 1

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 Master Scheduling/MRP and Oracle Supply Chain Planning 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

Level	Item	Item Type	Optional	Planning %	Qty
... 4	... VGA	ATO Option Class	Yes	70%	1
.... 5	.... VGA Manual	Purchased Item	No	100%	1
.... 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 =

$100 \times .60 \times .90 \times .80 = 44$ units

UNIX forecast =

$100 \times .60 \times .90 \times .20 = 11$ units

Related Topics

Overview of Bills of Material, page 2- 1

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

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

Item	Item Type	BOM Item Type	Assemble to Order	Pick Components
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

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
.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 2-32.

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
.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

Level	Item	Item Type	Optional	Planning %	Mutually Exclusive
. . . 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
. . 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 multi-level 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

Level	Item	Item Type	Optional	Supply Type	Qty
. 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

Level	Item	Item Type	Optional	Min Qty	Max Qty
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	.. Laser Printer	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
.. 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
. . 3	. . Laser Printer	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

Level	Item	Item Type	Check ATP	ATP Components
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

Organization	Alternate	Common Bill Details Organization	Common Bill Details Item	Common Bill Details Alternate
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

Level	Item	Item Type	Op Seq	Optional	Qty
. 2	. Laptop Computer	ATO Model	n/a	No	1
. . 3	. . Carrying Case	Product	10	No	1
. . 3	. . Keyboard	Product	20	No	1
. . 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

Op Seq	Option Dependent	Department	Operation Description
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

Level	Item	Item Type	Op Seq	Operation Sequence Inherited
. 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
. . 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
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
EGA	Option Class	Monitor
Operating System	Option Class	OS

Related Topics

Overview of Bills of Material, page 2- 1

Overview of Routings, page 3- 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. These model BOMs and routings are created in the manufacturing organization defined by your sourcing rules. 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.

Item attributes and sourcing rules for the configuration item are inherited from the base model items.

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. A cost rollup is performed for each new configuration to establish accurate standard costs that are posted to cost of goods sold. Lead time rollup is performed for configuration items with discrete routing, in order to calculate an accurate manufacturing lead time for the configuration.

Note: The function documented here is for use in ATO environments only.

To autocreate configuration items:

1. Navigate to the Submit Requests window. See: Submitting Requests, *Oracle Applications User's Guide*.
2. To autocreate a configuration item based on an order number, enter the order number. Otherwise skip the Sales Order Number field.

3. 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 5-21 for information on how the system calculates an expected work order release date.
4. If you chose not to enter an order number, enter the organization in which you want to autocreate configuration items.
5. 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.
6. 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.

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. By default, this mode does not give you the option to perform lead time calculation or flow routing calculations; it will always calculate both. However, you can remove the Lead Time calculation activity from the workflow, if you do not want to perform lead time calculations.

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 5-26 and Resulting Routings, page 5-29 sections, presenting what will be assigned to the new configuration item.

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 done in the manufacturing organization.

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.

Related Topics

Overview of Lead Time Management, page 7- 1

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, whichever 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*, <http://www.metalink.oracle.com>, MetaLink Note # 1020052.102.

Related Topics

Defining Bills of Material Parameters, page 1- 5

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 match profile is on, 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 the AutoCreate Configuration batch process, 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 profile, BOM: Use Custom Match Function, controls whether the match performed uses the standard match function or a custom match function. For more information, See: *Profiles, Oracle Configure To Order Implementation Manual*. To select a matching configuration the following criteria must be met:

- The order must be booked and the order line must be scheduled
- The order line cannot have an associated configuration item assigned
- The profile option BOM: Match to Existing Configurations must be set to Yes

- 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.

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.

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
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 respective manufacturing organization.

Assuming the same options were selected as in the single level example (See: Indented Bill of Material for Promotional Laptop, page 5- 7), but the setup has changed for a multi-level, multi-organization example, the following tables present the configuration bills of material in the respective manufacturing 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
. . 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

Related Topics

Overview of Bills of Material, page 2- 1

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
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.

Related Topics

Overview of Routings, page 3- 1

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 Configuration = Yes. 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 item in the model field on the BOM tab of the item master.
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

Catalog Group	Element Name	Include in Item Description
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

Item	Catalog Group	Element Name	Element Value
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

Item	Item Type	Element Name
CPU	Option Class	Processor Type
VGA	Option Class	Monitor
EGA	Option Class	Monitor
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

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, page 4- 5

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- 5 .

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. Navigate to the Submit Requests window. See: Submitting a Request, *Oracle Applications User's Guide*.
2. Select Report and 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.

Related Topics

Deletion Constraints, page 4- 5

Deleting Items, Bills, Routings, Components, and Operations, page 4- 1

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

Product	Scheduling Function	Scheduling Method
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 3- 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.

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

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.

Related Topics

Overview of Lead Time Management, page 7- 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.

Related Topics

Overview of Lead Time Management, page 7- 1

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 Material Requirements Planning, *Oracle Master Scheduling/MRP User's Guide*

Overview of Capacity Planning, *Oracle Capacity 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 7- 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.

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*

Material Requirements Planning, *Oracle Master Scheduling/MRP User's Guide*

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.

Related Topics

Overview of Manufacturing Scheduling, page 6- 1

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

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.

Related Topics

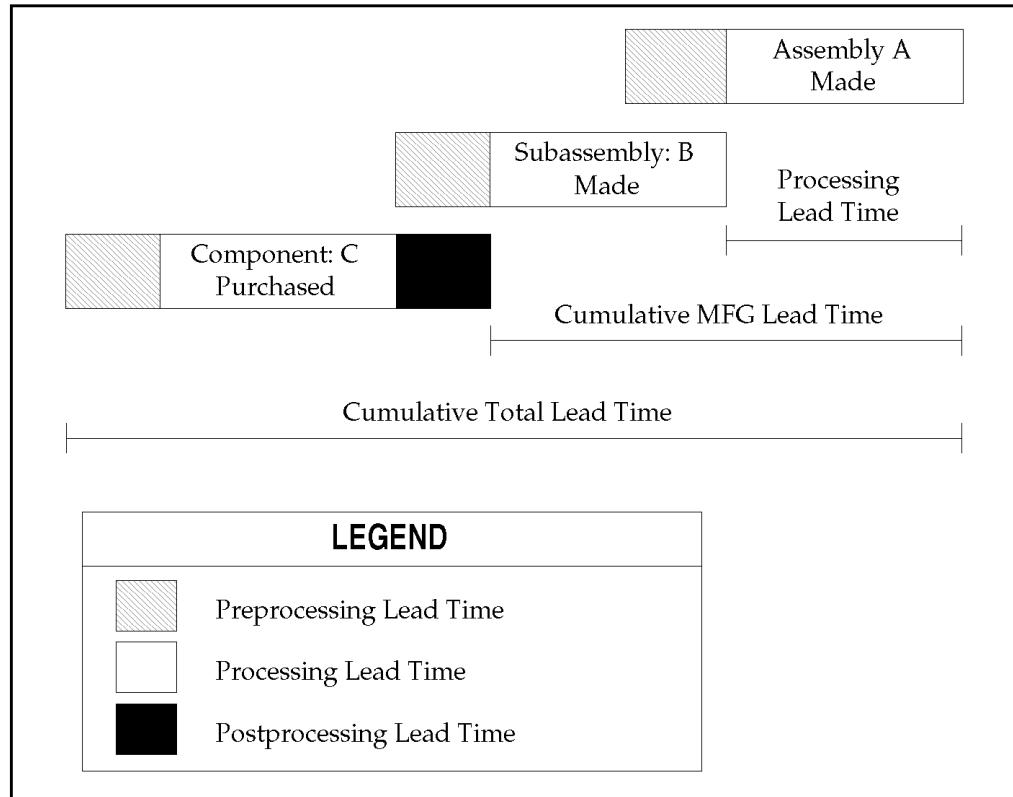
Overview of Manufacturing Scheduling, page 6- 1

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).



Related Topics

Manufacturing Lead Time Computations, page 7- 3

Defining Items, *Oracle Inventory User's Guide*

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.

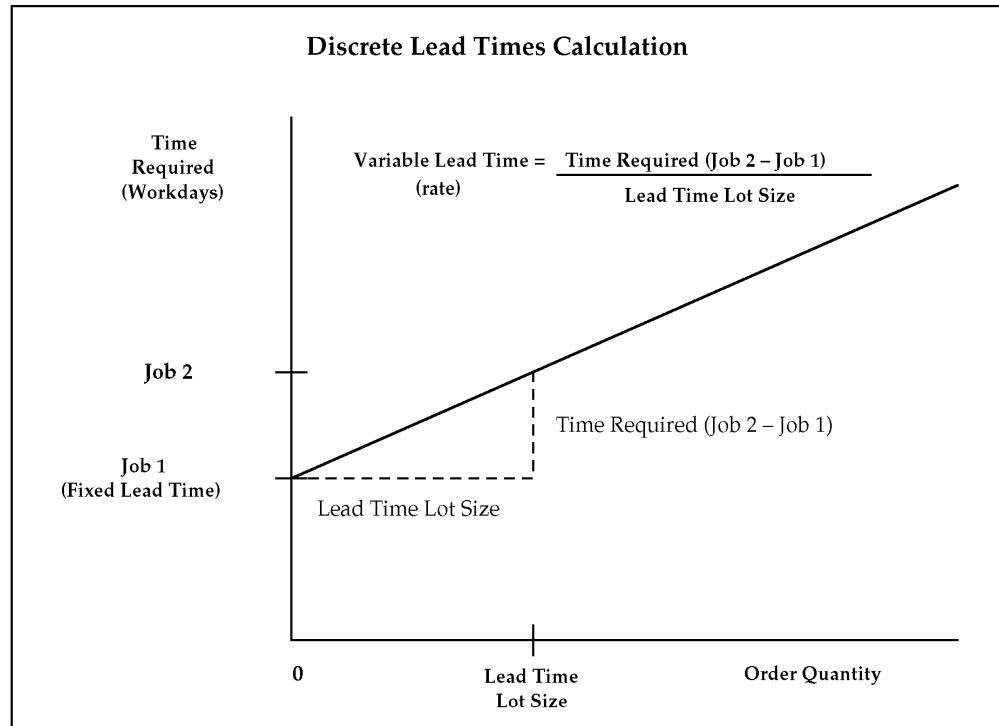
A value of zero is assigned to the fixed, variable, and processing lead times of a manufactured item that does not have a routing and is not assigned to a production line.

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.

Using detailed scheduling, fixed and variable lead times are computed as the difference between the total time required for two scheduled jobs. In other words, Bills of Material plots total time required for a work in process job as a function of order quantity for both order quantities and computes the slope of the line that the two points define.

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.

Note: 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 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.

Note: 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:

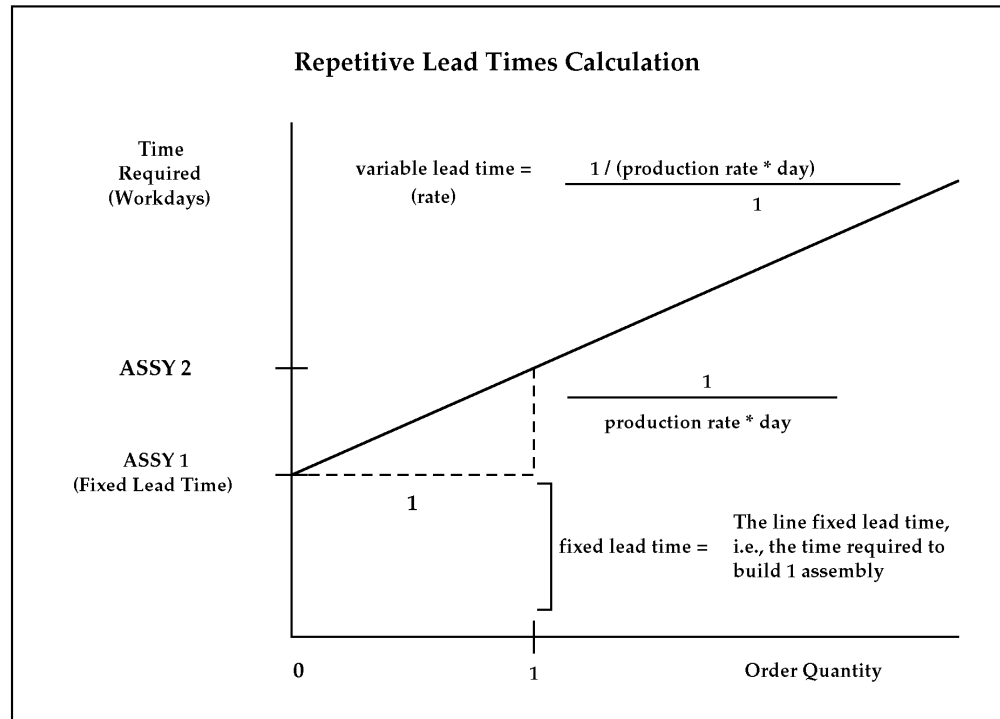
Assembly's Routing	Scheduling Basis	Quantity	Scheduling Lead Time
No routing	routing	0	0
No routing	routing	1	production interval
No routing	fixed	0	line fixed lead time
No routing	fixed	1	line fixed lead time + production interval
Assembly with item-based resources only	routing	0	fixed lead time - production 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:

fixed lead time =	completion date (of one item) - system date
fixed lead time =	= 10-JAN - 01-JAN
fixed lead time =	= 10 days

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

Processing lead time =	completion date - system date
Processing lead time =	13-JAN - 01-JAN
Processing lead time =	13 days

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

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 00 02-JAN - 00:00	01-JAN - 24:00 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 00 07-JAN - 00:00	06-JAN - 24:00 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%

Related Topics

Creating a Routing, page 3- 7

Calculating Lead Times, page 7-12

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

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

Component	Cum. Total Lead Time.	Op Seq.	Lead Time Percent	Offset Days	Cum Total Lead Time - Offset Days
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

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.

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- 8 .
- ☐ You must define a routing for each item that will be used in the lead time calculation. See: *Creating a Routing*, page 3- 7 .
- ☐ You must define a lead time lot size for the parent item whose lead time is to be calculated. See: *Creating a Routing*, page 3- 7 .

To calculate lead times:

1. Navigate to the Calculate Lead Times window. See: *Submitting Requests, Oracle Applications 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 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.

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.

To roll up cumulative lead times :

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.

1. Navigate to the Calculate Lead Times window. See: Submitting Requests, *Oracle Applications 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 3- 7 .

Related Topics

Manufacturing Lead Time Computations, page 7- 3

Bill of Material Structure Report, page 9- 5

Routing Report, page 9-15

Creating a Bill of Material, page 2- 8

Manufacturing Lead Time Computations, page 7- 3

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
- CFR Part 11 and Oracle Bills of Material
- E-records and E-signatures for Oracle Bills of Material

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 described in this chapter), 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 E-Records Implementation Guide* and the *Oracle E-Records Developer's 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 Discrete Manufacturing Applications, you must follow the steps listed in *Implementing E-Records, Oracle E-Records Implementation Guide*. Otherwise, no e-records or e-signatures are required. The Discrete Manufacturing Applications that are enabled (once you perform the implementation steps) to use electronic records and signatures include:

- Oracle Engineering
- Oracle Inventory
- Oracle Bills of Material
- Oracle Work in Process
- Oracle Quality
- Oracle Shipping
- Oracle Purchasing

CFR Part 11 and Oracle Bills of Material

This guide discusses only the Oracle Bills of Material events enabled to use electronic records and signatures. For information on the events enabled for all of the Discrete Manufacturing Applications, see: the 21 CFR Part 11 Compliance chapter, *Oracle Quality User's Guide*.

E-records and E-signatures for Oracle Bills of Material

The following table lists the events that are e-record and e-signature enabled for Oracle Bills of Material:

Event	Online or Deferred E-signature	E-Record Includes Attachment
Bill Creation	Online	Yes
Bill Update	Online	Yes
Routing Creation	Online	Yes
Routing Update	Online	Yes
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 Quality 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 Quality 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.

This chapter describes Oracle Bills of Material reports 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
- Consolidated Bill of Material Report
- Delete Items Report
- Department Classes Report
- Department Report
- Item Where Used Report
- Resource Report
- Resource Where Used Report
- 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 2-25
Submitting a Request, *Oracle Applications 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.
Yes	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 Applications 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 no loop exists, No Data Found is printed on 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 Applications 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:

<i>Item Seq, Op Seq</i>	For each bill level, order the components by item sequence, then by operation sequence.
<i>Op Seq, Item Seq</i>	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 Applications 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 Applications User's Guide*

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 Applications 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 Applications 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 Applications 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 Applications 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 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:

- All Organizations (Required, Default)
Choose one of the following options:

No	Report assemblies for the current organization.
Yes	Report assemblies for all organizations having the same item master organization as the current organization, and for those organizations accessible by the user responsibility.

- 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.
<i>Future and current</i>	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 Applications User's Guide*

Creating Organization Hierarchies, *Oracle HRMS-The Fundamentals*

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 Applications 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 Applications User's Guide*

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 Applications 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 Applications 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 Applications 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.

Use the following concurrent programs in the **Other > Configurator** menu to transfer, disable transfer, or refresh BOM Model data from the Bills of Material schema to the Oracle Configurator schema:

- Populate Configuration Models
- Refresh Configuration Models
- Disable Import of Configuration Model

When you run the Oracle Configurator concurrent programs from these submenus, you are prompted to enter the required parameters, if any. Once you complete the entry of these parameters, they are automatically added to the Submit Request form.

Note: If you are familiar with these concurrent programs and know the required parameters, you can also run these concurrent programs directly from the Submit Request window.

To submit the Oracle Configurator Reports:

1. In the Submit Requests window, select the Oracle Configurator report name from the Name list of values.

The Parameters window opens. Enter values for the following parameters, depending upon which report you select:

- Populate Configuration Models (Required, Default)

Transfers BOM Model tree structures and associated Item Master data from the BOM schema to Oracle Configurator schema. This data is then available in Oracle Configurator Developer for developing configuration models.

<i>Organization Code</i>	Enter (or choose from the drop-down list) the code defined for the applicable organization.
<i>Model Inventory Item From</i>	Enter (or choose from the drop-down list) the first Model Inventory Item in the range of items for which you want to transfer data.
<i>Model Inventory Item To</i>	Enter (or choose from the drop-down list) the last Model Inventory Item in the range of items for which you want to transfer data.

Note: All Model Inventory Items between and including the first and last specified, are in the data transfer. The range can include multiple Model Inventory Item Types. For example, from ATO800 to CNO500 is a valid range.

- Refresh Configuration Models (Required, Default)
Refreshes data between the BOM schema and the Oracle Configurator schema. Updates Model tree structures and associated Item Master data with new or revised BOM data in Oracle Configurator Developer.

Note: No parameters are required to run this concurrent program.

- Disable Import of Configuration Model (Required, Default)
Disables transfer of BOM model data to the Oracle Configurator schema for the specified Model Inventory Item.

<i>Organization Code</i>	Enter (or choose from the drop-down list) the code defined for the applicable organization.
<i>Model Inventory Item</i>	Enter (or choose from the drop-down list) the Model Inventory Item for which you want to disable data transfer to the Oracle Configurator schema.

- 2. Choose OK.
- 3. Choose Submit.

Related Topics

Submitting a Request, *Oracle Applications User's Guide*

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

For windows described in other manuals:

See...	Refer to this manual for a complete window description.
CAP	Oracle Capacity User's Guide
CST	Oracle Cost Management User's Guide
ENG	Oracle Engineering User's Guide
Flex	Oracle Applications Flexfields Manual
GL	Oracle General Ledger User's Guide
HR	Oracle Human Resources User's Guide
PO	Oracle Purchasing User's Guide
MRP	Oracle Master Scheduling/MRP User's Guide
SYS	Oracle System Administrator's Guide
User	Oracle Applications User's Guide

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.

Bill of Material Responsibility

Window Name	Navigation Path
Add Range, page 2-17	Bills > Bills > [Designators] > [Add Range]
Alternates, page 1- 8	Setup > Alternates
Bill Components Comparison, page 2-25	Bills > Comparison
Bill Details, page 2-15	Bills > Bills > [Bill Details]
Bill Documents, page 2-18	Bills > Documents
Bills of Material, page 2- 8	Bills > Bills
Calculate Lead Times, page 7-12	Routings > Lead Times
Calendar Dates, page 1-29	Setup > Calendars > [Dates] or Setup > Calendars > [Shifts] > [Dates]
Change Types, <i>Oracle Engineering User's Guide</i>	Setup > Change Types
Changeovers, page 1-19	Routings > Resources [Setups] > [Changeovers]
Component Changes, page 2-20	Bills > Mass Changes > [Changes]
Delete Range, page 2-17	Bills > Bills > [Designators] > [Delete Range]
Deletion Constraints, page 1- 9	Setup > Delete Constraints
Deletion Groups, page 4- 1	Delete Groups
Department Classes, page 1-10	Setup > Department Classes
Departments, page 1-10	Routings > Departments
Descriptive Elements, page 2-16	Bills > Bills > [Elements]
Exceptions, page 1-27	Setup > Calendars > [Dates] > [Exceptions]
Exception Templates, page 1-24	Setup > Exception Templates
Import Bills and Routings, page 1-29	Bills > Import or Routings > Import
Indented Bill of Material, page 2-23	Bills > Indented Bills
Item Revisions, page 2-18	Bills > Bills > [Revision]
Item Where Used, page 2-27	Bills > Item WhereUsed
Locations (See HR)	Setup > Locations
Mass Change Bills, page 2-20	Bills > Mass Changes
Operation Resources, page 1-14	Routings > Resources

Window Name	Navigation Path
Parameters, page 1- 5	Setup > Parameters
Reference Designators, page 2-17	Bills > Bills > [Designators]
Resource Groups (see Resource Groups, <i>Oracle Capacity User's Guide</i>)	Setup > Resource Groups
Resource WhereUsed, page 3-16	Routings > Resource WhereUsed
Routing Details, page 3- 7	Routings > Routings > [Routing Details]
Routing Documents, page 2-18	Routings > Documents
Routing Revisions, page 3-11	Routings > Routings > [Routing Revisions]
Routings, page 3- 7	Routings > Routings
Run Assemble to Order Processes, page 5-20	Routings > ATO
Setup Types, page 1-19	Routings > Setup Types or Setup > Setup Type
Setups, page 1-19	Routings > Resources > [Setups]
Simulation Sets (see: Creating Simulation Sets, <i>Oracle Capacity User's Guide</i>)	Setup > Simulation Sets
Shifts, page 1-27	Setup > Calendars > [Shifts]
Shift Times, page 1-27	Setup > Calendars > [Shifts] > [Times]
Standard Operations, page 3-14	Routings > Standard Operations
Substitute Components, page 2-18	Bills > Bills > [Substitutes]
Workday Calendar, page 1-24	Setup > Calendars
Workday Patterns, page 1-26	Setup > Calendars > [Workday Pattern]

Oracle Bills of Material Special 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.
- *Assign Common Bill / Rtg*: Navigate to the Common Bill / Rtg 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 7-14

Checking for Bill Loops, page 2-19

Copying Bill and Routing Information, page 2-13

Referencing Common Bills and Routings, page 2-15

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.

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
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
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

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
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
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

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Define Routing \Navigate Routing Define	Routing Details Navigator: Routings > Routings > [Routing Details] or Routing Revisions Navigator: Routings > Routings > [Routing Revisions] or Routings Navigator: Routings > Routings
Define Security Rule \Navigate Setup Flexfields Validation Security Define	Define Security Rules Navigator: Setup > Flexfields > Validation > Security > Define
Define Segment Values \Navigate Setup Flexfields Validation Values	Segment Values Navigator: Setup > Flexfields > Validation > Values
Define Shorthand Aliases \Navigate Setup Flexfields Key Aliases	Shorthand Aliases Navigator: Setup > Flexfields > Key > Aliases
Define Simulation Sets \Navigate Setup Organization SimulationSets	Simulation Sets Navigator: Setup > Simulation Sets
Define Standard Comments \Navigate Setup BOM Comments	Bill Documents Navigator: Bills > Documents
Define Standard Instructions \Navigate Setup BOM Instructions	Operation Documents Navigator: Routing > Documents
Define Standard Operation \Navigate Routing Define	Standard Operations Navigator: Routings > Standard Operations
Define Value Set \Navigate Setup Flexfields Validation Sets	Value Sets Navigator: Setup > Flexfields > Validation > Sets

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Define Workday Calendar \Navigate Setup Calendar Define	Calendar Dates 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 \Navigate Setup Calendar ExceptionSets	Exception Templates Navigator: Setup > Exception Templates
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

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
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
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

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
View Item Revisions \Navigate Inquiry Item Revision	Item Revisions Navigator: Bills > Bills > [Revision]
View Item Usage \Navigate Inquiry WhereUsed Item	Item WhereUsed Navigator: Bills > Item WhereUsed
View Resource Usage \Navigate Inquiry WhereUsed Resource	Resource WhereUsed Navigator: Routings > Resource WhereUsed
View Routing Details \Navigate Inquiry Routing	Routing Details Navigator: Routings > Routings > [Routing Details]

Related Topics

Oracle Applications Character Mode Forms and Corresponding GUI Windows, *Oracle Applications User's Guide*

Index

Symbols

- 21 CFR Part 11
- Oracle Bills of Material, 8- 2
- overview, 8- 1

A

- Absorption account, 1-11
 - for costed resources, 1-16
- Activity
 - for resource charges, 3-13
 - to group resources, 1-16
- All organizations
 - importing bills and routings, 1-29
- Alternate, 1- 4 , 1- 8
 - for bills
 - for a bill, 2- 9
 - for routings
 - for a routing, 3- 8
 - when deleting information, 4- 3
- Alternate bills of material, 2- 4
- Alternates window
 - Creating Alternates, 1- 8
- Archive
 - deleted entities, 4- 3
- Assemble-to-Order
 - ATP check, 5-12
 - autocreate configuration items, 5-20
 - catalog configurations, 5-18
 - deactivate configuration item, 5-33
 - hybrid, 5- 2
 - item, 5- 2
 - model bill, 5- 6 , 5-14
 - multi-level, 5- 2
 - multi-organization, 5- 3
 - operation sequence inheritance, 5-18
 - option class bill, 5- 7
 - option dependent routing steps
 - discrete manufacturing, 5-15
 - flow manufacturing, 5-17
 - option quantity ranges, 5-10
 - planning bill, 5- 4
 - standard bills, 5-10
- Assigned units, 3-13

- Assigning a completion subinventory and locator, 3-10
- Assigning Descriptive Elements
 - Assigning descriptive elements, 2-16
- Assigning Operation Resources, 3-11
- Assigning Substitute Components
 - Assigning substitute components, 2-18
- Assigning Workday or Shift Exceptions, 1-27
- Attaching Files, 2-19, 3- 4
- Attachments, 2-18
- Autocharge, 3-15, 3-18
- AutoCreating Configuration Items, 5-20
- Available 24 hours
 - resource, 1-12
- Available-to-Promise
 - check, 5-12

B

- Backflush, 3-16
 - Transactions, 3- 4 , 3- 9
- Base model, 2-22
- Basis, 2-12, 2-32
- Basis option class, 5-12
- Basis type, 1-15, 3-12, 3-14
- Batching
 - autocreate configuration items, 5-21
- Bill / component validation rules, 2-33
- Bill components, 2- 5
 - modify, 2-19
- Bill Components Comparison window
 - Bill Components Comparison, 2-25
- Bill Documents window
 - Defining Bill or Routing Operation Documents, 2-18
- Bill loops
 - Checking for Bill Loops, 2-19
- Bill of material
 - operation sequence, 2-28
- Bill of Material Comparison report, 9- 1
- Bill of Material Information report, 9- 2
- Bill of Material Loop report, 9- 3
- Bill of Material Structure report, 9- 5
- Bill of material types, 2- 2
- Bills of Material

- configuration item, 5-26
- e-records and e-signatures, 8- 2
- parameters, 1- 3
- Bills of material, 2- 1
 - access control, 2- 7
 - copying, 2-13
 - creating, 2- 8
 - field reference, 2-28
 - importing, 1-29
 - item sequence
 - item sequence, 2-28
 - mass change, 2-20, 2-21
 - model
 - defining, 5- 6 , 5-14
 - model and option type, 5- 3
 - modifying, 2-19
 - multi-level, 5- 9
 - multi-organization, 5- 9
 - option class
 - defining, 5- 7
 - planning, 5- 4
 - profile options, 2- 7
 - referencing, 2-15
 - standard, 5-10
- Bills of Material Parameters report, 9- 8
- Bills of Material window
 - Attaching Files to Bills, Components, and Routing Operations, 2-19
 - Checking for Bill Loops, 2-19, 2-19
 - Creating a Bill of Material
 - window, 2- 8
 - Referencing Common Bills and Routings
 - Referencing Common Bills or Routings, 2-16

C

- Calculating manufacturing lead times, 7-12
- Calendar Dates window
 - Assigning Workday or Shift Exceptions
 - Reviewing the Workday Calendar, 1-27
 - Reviewing the Workday Calendar, 1-29
- Capacity Changes window
 - Assigning Resources to a Department, 1-13
- Catalog
 - configuration item, 5-18, 5-31
- Category set
 - when calculating lead times
 - , 7-14
- Change order type, 2-21
- Changeovers window, 1- 3 , 1-19
- Charge type, 1-15, 3-20
- Check ATP, 2-12, 2-32
- Class
 - department, 1-10
- Collection Elements window
 - Defining Collection Elements, 8- 3
- Common Bill window, 2-15
 - Referencing Common Bills and Routings, 2-16

- Comparing bills of material, 2-25
- Completion
 - locator, 3-17
 - subinventory, 3-17
- Completion locator, 2-12
- Completion subinventory, 2-12
- Component
 - computing requirement dates for ATP, 6- 4
 - valid attributes and bill types, 2- 6
 - valid relationships, 2- 5
- Component item
 - for bills, 2- 9
- Components
 - modifying, 2-19
 - on bills of material, 2- 5
- Components window
 - Components, 2-24
 - Deleting Items, Bills, Routings, Components, and Operations
 - Deleting Items, Bills, Components, Routings, and Operations, 4- 3
- Computing
 - component requirement dates for ATP, 6- 4
 - dynamic lead time, 6- 4 , 6- 5 , 6- 5
 - fixed lead time, 7- 4 , 7- 9
 - manufacturing lead time, 7- 1 , 7- 2 , 7- 3
 - MRP material requirement dates, 6- 4
 - operation lead time percents, 7-10
 - resource load for planned orders, 6- 4
 - variable lead time, 7- 4 , 7- 9
- Computing fixed lead time, 7- 9
- Computing variable lead time, 7- 9
- Configuration item
 - autocreate, 5-20
 - bills of material, 5-26
 - catalog, 5-18, 5-31
 - cost rollup, 5-30
 - creating multi-level bill for options, 5-28
 - creating single level bill for options, 5-26
 - deactivating, 5-33
 - lead time calculation, 5-22
 - match and reserve, 5-24
 - numbering method, 5-22
 - preconfiguring items, 5-30
 - routings, 5-29
 - weight and volume calculation, 5-25
- Configuration Items
 - progress order, 5-21
- Configure to Order
 - BOM support, 5- 3
 - information sources, 5- 1
 - overview, 5- 1
- Configure-to-Order
 - environments, 5- 5
- Consolidated Bill of Material report, 9- 8
- Constraints
 - when deleting bills and routings, 4- 5
- Copy options

- for bills and routing operations, 2-14
- Copy window
 - Copying Bill and Routing Information, 2-14
 - Copying Calendar and Shift Information, 1-26
- Cost rollup, 3- 9 , 3-14
 - configuration item, 5-30
- Cost type
 - Cost types, 1-17, 1-17
- Costed resource, 1-16, 3- 6
- Costing information, 2-24
- Count point, 3-15, 3-18
- Cumulative
 - lead time computations, 7-11
 - manufacturing lead time, 7-11
 - total lead time, 7-11
- Cumulative lead times
 - rolling up
 - , 7-14
- Cumulative manufacturing lead time
 - calculation, 7-11, 7-12
- Cumulative total lead time
 - calculation, 7-11

D

- Dates
 - effective from and effective date, 2-10, 2-29
 - effective to and inactive after, 2-29
 - inactive on, 2-29
 - release dates, 5-21
- Delete entity
 - delete entity, 1- 9
- Delete if
 - delete if, 1- 9
- Delete Items report, 9-10
- Delete Operation window
 - Delete Operation, 4- 4
- Delete processed rows
 - importing bills and routings, 1-29
- Deletion, 4- 1
 - component, 4- 3
 - components and operations, 4- 4
 - constraints
 - predefined, 4- 5
 - Deleting Items, Bills, Routings, Components, and Operations, 4- 2
 - operation, 4- 3
- Deletion constraint, 1- 5
- Deletion Constraints window
 - Creating Custom Deletion Constraints, 1- 9
- Deletion group, 4- 2
- Department, 1-10, 1-11
 - for standard operations
 - for standard operation, 3-15
- Department Class report, 9-11
- Department classes, 1- 3 , 1-10
- Department Classes window

- Creating a Department Class, 1-10
- Department report, 9-12
- Departments window
 - Defining a Department, 1- 4 , 1-11
- Descriptive element, 2-17
- Descriptive Elements window
 - Assigning Descriptive Elements, 2-13, 2-16
- Detailed scheduling, 6- 2
- Dictionary = nl
 - Reports
 - Resource, 9-14
 - Resource report, 9-14
- Differences only, 2-26
- Discrete job scheduling, 6- 2
- Display option, 2-24
- Dynamic lead time offsetting, 6- 3 , 6- 4 , 6- 5 , 6- 5
- Dynamic Routing
 - Routing, Dynamic, 3- 3

E

- E-records
 - Oracle Bills of Material, 8- 2
 - overview, 8- 1
- E-signatures
 - Oracle Bills of Material, 8- 2
 - overview, 8- 1
- Effectivity dates
 - Dates, 2-29
- Employees window
 - Defining a Resource, 1-18
- Enable outside processing, 1-16
- Engineering bills of material, 2- 2
- Equipment Types window
 - Defining a Resource, 1-18
- Exception template name, 1- 2
- Exception template, 1-24
- Exception Templates window
 - Creating a Workday Exception Template, 1-24, 1-24
- Exceptions window
 - Assigning Workday or Shift Exceptions, 1-28
- Extended quantity, 2-31
 - calculation, 2-31, 2-31

F

- Failure message
 - failure message, 1- 9
- Fixed lead time
 - calculation, 7- 7
- Flow Routing
 - Routing, Flow Routing, 3- 3
- Folders
 - Bills Summary window, 2- 9
 - Routings Summary window, 3- 8

G

General ledger account
Absorption account, 1-16
Group, 4- 2

I

Implemented only, 2-24
Import bills of material, 1-29
Import Item Information window
Importing Bills and Routings, 1-29
Import routings, 1-29
Importing Bills and Routings
Importing, 1-29
Inactive status
inactive status, 1- 6
Include on ship docs, 2-33
Included in cost rollups, 2-12
Increment revision
Increment revisions, 2-21
Indented Bills of Material Window
Viewing an Indented Bill of Material, 2-23
Indented Bills of Material window
Viewing an Indented Bill of Material, 2-23
Integer Requirements, 2-12, 2-31
Inverse rate or amount
Usage rate or amount, 3-12, 3-14
Item
based resources, 3- 5
creating a bill
creating a bill for, 2- 9
for routings, 3- 8
preconfiguring, 5-30
scheduling, 3- 5
to delete, 4- 3
usage, 2-27, 2-27
Item revisions, 2- 4
defining, 2-13, 2-18
Item Revisions window
Defining Item Revisions, 2-18
Item selection
to calculate lead times
, 7-13
Item sequence
on bills of material, 2-28
Item Where Used report, 9-12
Item WhereUsed window
Viewing Item Usage, 2-27

L

Lead time, 2-24
computing manufacturing, 3-10, 7- 1 , 7- 2 ,
7- 3
computing operation percents, 7-10
configuration item, 5-22
discrete manufacturing, 5-22
flow manufacturing, 5-22

cumulative manufacturing, 7-11
cumulative total, 7-11
dynamic offsetting, 6- 3 , 6- 4 , 6- 5 , 6- 5
fixed, 7- 4 , 7- 9 , 7- 9
processing, 7- 2
rollup, 3-10
variable, 7- 4 , 7- 9 , 7- 9
Lead time percent, 3- 9
Location
department, 1- 4 , 1-11
Locator
Completion locator, 3-17
Supply locator, 2-31
Loops in bills of material
Checking for Bill Loops, 2-19
Lot Based
Routing
Routing, Lot-Based, 3- 3
Lot based
resources, 3- 5
scheduling, 3- 5

M

Manufacturing Lead Times
calculating, 7-12
Manufacturing Scheduling
overview, 6- 1
repetitive line, 6- 3
Mass change bill of material
Bills of material, mass change, 2-20
Mass change order number, 2-21
Match and Reserve, 5-24
multi-level configurations, 5-25
Material control, 2-24
Material requirement dates, 6- 4
Maximum bill levels, 1- 6
Maximum quantity, 2-12, 2-32
Minimum quantity, 2-12, 3- 9 , 3-15
Minimum, 2-32
Minimum transfer quantity, 3- 4
Model bills of material, 2- 2
MRP material requirement dates, 6- 4
Mutually exclusive, 2-12, 2-32

N

Numbering method
numbering method, 1- 6
Numbering segment
numbering segment, 1- 6

O

Offset percent, 3-13
Operation
defining, 3- 3
lead time percents, 7-10

- outside processing, 3- 7
- scheduling, 6- 2
- Operation Documents window
 - Defining Bill or Routing Operation Documents, 2-18
- Operation sequence
 - Operation, 2-28
- Operation sequence inheritance, 5-18
- Operation Yield, 3- 9
- Option class bills of material, 2- 2
- Option dependent, 3-15
- Option dependent routing steps
 - discrete manufacturing, 5-15
 - flow manufacturing, 5-17
- Option quantity ranges, 5-10
- Optional, 2-32
- Order lead time
 - calculation, 5-21
- Organization, 2-16
 - when autocreating configuration items, 5-21
 - when copying a bill, 2-14
 - when deactivating configuration items, 5-34
- Outside processing enabled
 - outside processing enabled, 1-16
- Outside processing operation, 3- 7
- Overhead, 1- 4
 - to associate to resource, 1-18
- Owning department
 - for borrowed resources, 1-12

P

- Parameters window
 - Defining Bill of Material Parameters, 1- 6
- Perform lead time calculation, 5-21
- Personal profile option
 - bill of material access, 2- 7
- Phantoms, 1- 7 , 2- 3
- Pick-to-Order
 - ATP check, 5-12
 - basis option class, 5-12
 - catalog configurations, 5-18
 - deactivate configuration item, 5-33
 - hybrid, 5- 2
 - Kit, 5- 2
 - model, 5- 2
 - model bill, 5- 6 , 5-14
 - option class bill, 5- 7
 - option dependent routing steps
 - discrete manufacturing, 5-15
 - flow manufacturing, 5-17
 - planning bill, 5- 4
 - standard bills, 5-10
- Plan, 2-23
- Planned order release date
 - calculation, 6- 6
- Planning bills of material, 2- 2
- Planning percent, 2-11, 2-30

- Primary and alternate bills, 2- 4
- Primary and Alternate Routings, 3- 1
- Primary bills of material, 2- 4
- Processes
 - Autocreating configuration items, 5-20
 - Calculating Manufacturing Lead Times, 7-12
 - Deactivating Configuration Items, 5-33
 - Importing Bills and Routings, 1-29
 - Rolling Up Cumulative Lead Times , 7-14
- Processing lead time, 7- 2
 - calculation, 7- 9
- Product Families, 2-36
 - assigning members, 2-37
 - Create, 2-36
 - Setting Planning Percentages, 2-37
- Profile options, 1- 2
 - Profile Options, 1-29
- Purchase price variance account, 1-17

Q

- Quantity
 - for bill components, 2- 9
 - minimum and maximum, 2-32
 - of substitute item, 2-18
- Quantity related, 2-17
- Quarterly types
 - of workday calendar, 1-25

R

- Rate or amount
 - Usage rate or amount, 3-12, 3-14
- Receiving valuation account, 1-16
- Reference designator, 2-13, 2-17
- Reference designators
 - creating, 2-17
- Reference Designators window
 - Creating Reference Designators, 2-17
- Referencing Common Bills and Routings, 2-13, 2-15
- Release offset days, 5-21
- Repetitive assembly scheduling, 6- 3
- Repetitive scheduling
 - line, 6- 3
- Reports
 - Bill of Material Comparison, 9- 1
 - Bill of Material Information, 9- 2
 - Bill of Material Loop, 9- 3
 - Bill of Material Structure, 9- 5
 - Bills of Material Parameters, 9- 8
 - Consolidated Bill of Material, 9- 8
 - Delete Items, 9-10
 - Department, 9-12
 - Department Class, 9-11
 - Item Where Used, 9-12
 - Resource Where Used, 9-15, 9-15

- Routing, 9-15
 - Standard Operation, 9-17
 - Workday Exception Sets, 9-17
- Required for revenue, 2-33
- Required to ship, 2-33
- Resource
 - amount, 3- 6
 - assigning to a department, 1-12
 - batching, 1-14, 1-17
 - capacity modifications, 3- 6
 - charging method, 3- 6
 - Defining a Resource, 1-14
 - scheduling, 3- 5
 - setup or changeover time, 1- 3 , 1-19
 - Simultaneous, 3- 6
 - standard costs, 3- 6
 - substitute, 3- 6
 - usage rate, 3- 6
- Resource Costs window
 - Defining a Resource, 1-17
- Resource group, 1- 3
 - Resource Group, 1-13
- Resource load for planned orders, 6- 4
- Resource name, 3-12
 - Resource, 1-15
- Resource Overhead Associations window
 - Defining a Resource, 1-17
- Resource type
 - Resource, 1-15
- Resource unit cost, 1-17
- Resource usage, 3- 4
- Resource Where Used report, 9-15, 9-15
- Resources
 - collecting and assigning costs to, 1-16
 - Viewing Resource Usage, 3-16
- Resources Window
 - Assigning Resources to a Department, 1- 4
- Resources window
 - Assigning Operation Resources, 3-11
 - Assigning Resources to a Department, 1-12, 1-12
 - Defining a Resource, 1- 3 , 1-14
- Revision
 - item
 - for items, 2-18
 - when creating a bill
 - of a bill, 2- 9
- Revisions
 - item, 2- 4
 - routing, 2- 4
- Rolling Up Cumulative Lead Times
 - , 7-14
- Routing
 - Assigning a Completion Subinventory and Locator, 3-10
 - backflush transactions, 3- 4
 - configuration item, 5-29
 - create, 3- 7

- Creating a Routing Revision, 3-11
- Dynamic Routing, 3- 3
- engineering, 3- 2
- Lot-Based Routing
 - Flow Routing, 3- 3
- operation sequence inheritance, 5-18
- operations, 3- 3
 - option dependent steps, 3- 4
 - sequence, 3- 3
 - standard, 3- 3
- option dependent steps, 5-15, 5-17
- outside operations, 3- 7
- Overview, 3- 1
- Primary Routings
 - Alternate Routings, 3- 1
- resource usage, 3- 4
- switching between Primary and Alternate, 3-10
- Routing report, 9-15
- Routing revision, 3- 8
- Routing revisions, 2- 4
- Routings
 - copying, 2-13
 - importing
 - Importing bills and routings, 1-29
 - referencing, 2-15
- Routings window
 - Creating a Routing, 3- 7
 - Referencing Common Bills and Routings, 2-16, 2-16

S

- Sales order number, 5-20
- Schedule
 - when scheduling an operation, 3-20
- Scheduling
 - creating a workday calendar
 - setting up calendar, 1-21, 1-24
 - detailed, 6- 2
 - discrete jobs, 6- 2
 - dynamic lead time, 6- 3
 - operations, 6- 2
 - operations based on resources, 3- 4
 - repetitive assembly, 6- 3
 - repetitive line, 6- 3
- Sequence number, 3-12
- Setup, 1- 1
 - steps, 1- 2
- Setup Types window, 1- 3 , 1-19
- Setups window, 1- 3 , 1-19
- Share
 - resources across departments, 1-12
- Shift Calendar Dates window
 - Assigning Workday or Shift Exceptions, 1-27
 - Reviewing the Workday Calendar, 1-29
- Shift number
 - shift number, 1-13
 - when creating shifts, 1-27

- Shift times
 - start and stop, 1-27
- Shifts window
 - Assigning Resources to a Department, 1-13
 - Creating Shifts and Shift Times, 1-27, 1-27
- Shippable, 2-12, 2-33
- Shipped number of days ago, 5-34
- Simulation set, 1- 3
 - for capacity change, 1-13
- Simultaneous Resources, 3-12
- Sort option, 2-24
- Special menu
 - Special Menu, B- 1
- Standard bills of material, 2- 2
- Standard comments, 1- 5
 - Standard Comments, 2-18
- Standard instructions, 1- 5
 - Standard Instructions, 2-18
- Standard Operation report, 9-17
- Standard Operations
 - Creating a Standard Operation, 3-15
- Standard operations
 - code, 3-15
- Standard rate, 3-13
 - for charging jobs and schedules, 1-16
- Starting value, 2-18
- Subinventory
 - Completion subinventory, 3-17
 - Supply subinventory, 2-31
- Substitute components
 - assigning, 2-18
- Substitute Components window
 - Assigning Substitute Components, 2-13, 2-18
- Substitute item, 2-18
- Substitute Resources, 3-13
- Supply locator, 2-31
- Supply subinventory, 2-31

T

- Total lead time for discrete items
 - calculation, 6- 5

- Total lead time for repetitive items
 - calculation, 6- 5
- Type of delete entity, 4- 2

U

- Unit Effectivity, 2-10
- Update WIP, 2-21
- Usage rate or amount, 3-12, 3-14
- Use up, 2-23
- Use-up item, 2-23

V

- Validation rules
 - bill and component, 2-33
- Variable lead time
 - calculation, 7- 5 , 7- 8
- Variable lead time rate
 - calculation, 7- 7
- Variance account
 - for costed resources, 1-17
- Viewing Item Usage, 2-27
- Viewing Resource Usage
 - Viewing resource usage, 3-16

W

- Weight and Volume, 5-25
- Workday calendar
 - assigning to organization, 1- 3
 - building, 1- 2 , 1-29
- Workday Calendars window
 - Creating a Workday Calendar, 1-25
- Workday Exception Sets report, 9-17
- Workday Patterns window
 - Creating a Workday Pattern, 1-26

Y

- Yield, 2-11, 2-30, 3- 9 , 3-16
 - calculation, 2-30

