# Oracle® Advanced Supply Chain Planning

Implementation and User's Guide

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## Glossary

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**Oracle Advanced Supply Chain Planning Implementation and User's Guide, Release 12.2**

**Part No. E48756-16**

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# Preface

## Intended Audience

Welcome to Release 12.2 of the *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

Casual User and Implementer

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

## Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

### Access to Oracle Support

Oracle customer access to and use of Oracle support services will be pursuant to the terms and conditions specified in their Oracle order for the applicable services.

## Structure

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# Related Information Sources

## Integration Repository

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

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

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

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

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

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

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

# 1

# Overview

This chapter covers the following topics:

- Oracle Value Chain Planning Suite
- Oracle Advanced Supply Chain Planning
- Distribution Planning
- Simulating Plans in Oracle Rapid Planning

## Oracle Value Chain Planning Suite

See *Oracle Value Chain Planning Collections Implementation Guide*, Overview of Value Chain Planning Suite.

## Oracle Advanced Supply Chain Planning

Oracle Advanced Supply Chain Planning (ASCP) is a comprehensive, Internet-based planning solution that decides when and where supplies (for example, inventory, purchase orders and work orders) should be deployed within an extended supply chain. This is the supply planning function. Oracle ASCP addresses the following key supply planning issues:

- How do I plan my supply chain in the least amount of time possible?
  - How do I minimize the number of plans and iterations?
  - How do I plan my entire supply chain?
- How do I involve my trading partners?
- How can I access my plan from anywhere?
- How do I keep improving my plans?

- How can I plan all manufacturing methods?

The key capabilities of Oracle ASCP are:

- Holistic Optimization, Planning, and Scheduling. Oracle ASCP can plan all supply chain facilities simultaneously. Short-term detailed scheduling and long-term aggregate planning are supported within a single plan. This single plan also supports multiple manufacturing methods, including discrete, flow, project, and process manufacturing.

- Finite Capacity Planning and Scheduling. Oracle ASCP generates feasible supply chain plans that consider both resource and material constraints.

- Optimization. Users can easily configure Oracle ASCP to optimize specific business criteria. No programming is necessary to access Oracle ASCP's powerful mathematical optimization capabilities.

- Backward Compatibility. Oracle ASCP's component architecture allow it to be deployed against any version of Oracle transaction systems.

- Workflow-Driven Exception Messaging. Oracle ASCP's exception messages alert planners to critical issues across the extended supply chain. Workflows that drive these exceptions route data to and feedback from trading partners as required, thus effectively involving them in the supply chain planning process.

- Global Accessibility. Oracle ASCP's database-centric architecture stores plan data in a central planning server database. These data are accessible from anywhere via a simple browser. It is possible for multiple planners to simultaneously access data from a single plan.

- Integrated Planning and Execution. Oracle ASCP's Advanced Planner Workbench user interface not only displays plan results, but also allows planners to execute planning recommendations. Planners do not have to move to the transaction system to perform plan execution.

- Simulation Capability. Oracle ASCP allows many types of changes to supply, demand, plan options, and resource profiles to simulate changing business conditions. You can generate a plan considering all the changes that have been entered via the Planner's Workbench. Unlimited numbers of scenarios can be simulated and compared using online planning, copy plans, and exceptions. Examples of the types of changes are firming, changing sources, modifying quantities and dates, modifying priorities, modifying resource availability, modifying supplier capacity, and modifying objective weights.

## Distribution Planning

Businesses with multi-level supply chains need to fulfill demands from downstream

distribution locations and customers from supply plans for their manufacturing and stocking locations. The rules that govern this distribution are different depending on whether the supply is unconstrained or constrained. The distribution planning process is independent of the supply planning process at each source locations.

This process includes generating a:

- Detailed short term (daily) plan: A movement plan for each lane of the distribution network
- Longer term, higher level material distribution plan

The constraints impacting these two plans are the same but the level of detail modeled is quite different.

- In both the short and long term, you must have global visibility to inventory positions in each location in your distribution network (external and internal), fulfill demand requirements arising at these locations, and be able to react to specific consumption patterns
- In the short term, you must maintain target and maximum inventory levels at each destination location and safety stock levels at each source location to react to demand uncertainties. In all cases, make sure that target and safety stock levels respect maximum levels.

Distribution planning answers the question about where you should deploy inventory when there is excess at your central locations. As needed, the excess inventory is pushed outwards to locations closer to the customer.

In addition, you need fair share rules for supply-constrained items. These fair share rules specify how to cover part of the needs at each of the receiving locations when all of the needs cannot be covered. This process can also be tightly integrated with customers via business agreements such as vendor managed inventory and customer managed inventory and you may model customers and supplier organizations

Some of the key constraints that influence distribution planning decisions are :

- Distribution rules and fair share allocation rules
- Supplier capacity constraints
- Inventory investments
- Maximum and target inventory levels
- Safety stock levels and service level requirements
- Intransit lead times
- Shipment limits

- Shipping, receiving, and transportation calendars

Distribution planning meets these constraints by:

- Providing fair share allocation of scarce supplies to competing demands
- Modeling multiple inventory levels including maximum, target and safety stock inventory levels
- Rebalancing inventories at regional distribution centers before transferring supplies from a central distribution center
- Consolidating shipments between organizations to improve the utilization of shipment capacities
- Accepting global forecasts and selecting the best facility to meet each demand
- Creating the documents for inter-organization transfers
- Integrating with Oracle Transportation Management to provide detailed transportation planning

Key benefits from using distribution planning can be:

- Increased ability to react to tight supply situations, for example, delay of supply arrival from a supplier or production shortfalls in manufacturing plants with allocation strategies
- Improved customer service levels and reduced overall cost of inventory through proactive inventory rebalancing
- Reduced cost of material movement (shipping cost) through load balancing
- Replenishments that dynamically follow consumption patterns
- Minimized inventory write off (wastage and spoilage)
- Improved service levels through fair share allocation
- Improved global visibility and enforcement of inventory and distribution policies
- Improved distribution planner productivity by using the Distribution Planner Workbench and by simultaneous release and reschedule of internal sales orders and internal requisitions

Distribution planning focuses on the end items in distribution environments. As such, it does not suggest production of more supply nor consider manufacturing capacity and components. It does consider additional purchased supplies and supplier capacity models. While it considers kits (light assembly) using Oracle Bills of Material for the

component list, it does not consider assemble-to-order, pick-to-order, and configure-to-order.

Distribution planning works with other Oracle Advanced Planning suite products that can be used upstream and downstream of it:

- Oracle Demand Planning drives independent demands into distribution plans.
- Oracle Advanced Supply Chain Planning manufacturing plans drive supplies into distribution plans
- Oracle Inventory Optimization plans drive time-phased safety-stock information into distribution plans.
- Distribution plans drive Oracle Transportation Management through the release of internal purchase requisitions and internal sales orders.
- Distribution plans provide a statement of product availability to Oracle Global Order Promising.
- Distribution planning interacts with the Oracle Collaborative Planning flows Publish order forecast (both for external suppliers and for suppliers modeled as organizations), Publish supply commits, Receive supplier capacity, and Publish safety stock levels

### Distribution and Manufacturing Plan Relationships

If you are a distribution company, you can plan your business using distribution planning only.

If you are a manufacturing and distribution company, you can combine manufacturing plans and distribution plans to plan your enterprise. The manufacturing and distribution plan types are:

- Master Production Plans (MPP): They typically include your distribution facilities and not your manufacturing facilities. Use the master production plan to summarize all of the demands for production in your manufacturing plants. Typically, independent demand drives this plan and this plan drives the manufacturing planning and scheduling process.
- Master Production Schedules (MPS) and Material Requirements Plans (MRP): They typically include your manufacturing facilities and not your distribution facilities. Use the master production schedule and material requirements plan to plan the full production schedule. Typically, the master production plan drives this plan and this plan drives the manufacturing execution and the distribution planning. For manufacturing planning, you can use either a two-level or a single plan planning approach. The two-level approach uses both the master production schedule and material requirements plan; the single plan approach uses the material requirements plan only

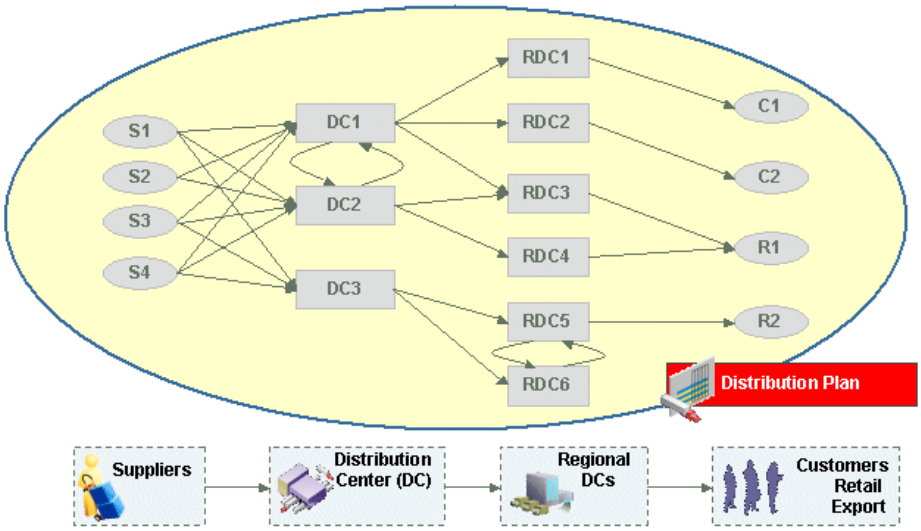
- Distribution Plans (DRP): They typically include your distribution facilities and not your manufacturing facilities. Use the distribution plan to schedule transfers with carrier recommendations that move finished goods across the warehouse network, outwards from the manufacturing plants through the supply chain. Typically, a supply schedule drives this plan and this plan drives the distribution execution. A supply schedule is a master production plan, a master production schedule, or a material requirements plan.

## Planning Process Flows for Business Types

Different businesses use different distribution and manufacturing process flows. Here are some sample process flows for different business types.

### Distributor and Retailer

Buys product for resale through a distribution network. No manufacturing capabilities, although light kitting may be done. Vendor managed inventories may be located at customer sites. Oracle recommends a single distribution plan.




### Manufacturer

Manufacturer owning a network of distribution centers. The network may also include vendor managed inventories located at customer sites. Oracle recommends:

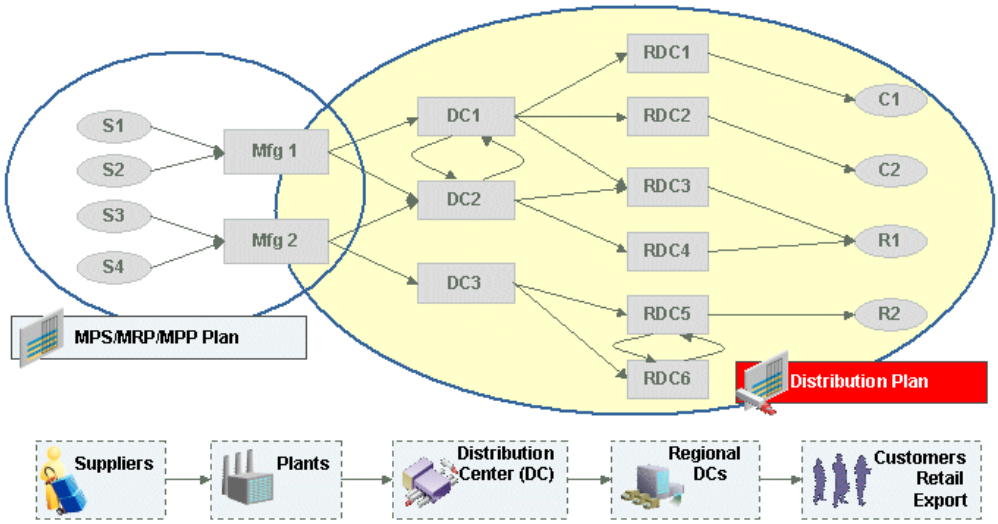
- A constrained master production plan that includes all manufacturing facilities and all planned items. Drive this plan with global and local forecasts. If you need to capture both sales orders and forecasts, you may need to include distribution facilities; however, the master production plan does not plan these facilities. At your option, you could use a material requirements plan for C-level items

- A distribution plan that includes all distribution facilities and that uses the master production plan as a demand schedule. The supplies in the master production plan

constrain the distribution plan. The distribution plan does not create new supplies in the organizations planned by the master production plan. Only list the master production plan as a supply schedule for organizations that have incoming supplies.

- Use the distribution plan to provide a statement of unconstrained demand to the constrained master production plan.

Multi-Plant or Complex Product Manufacturer: Manufacturer owning a network of distribution centers. The network may also include vendor managed inventories located at customer sites. Manufacturer using two-level scheduling planning approach. This diagram shows a planning business flow for this business type.




# Simulating Plans in Oracle Rapid Planning

## Overview

You use Oracle Advanced Supply Chain Planning and Oracle Rapid Planning together to respond to unanticipated events between Advanced Supply Chain Planning runs. Use Rapid Planning to simulate prospective changes that address these unanticipated issues. Choose a solution, then release it to the execution system and feed it back to Advanced Supply Chain Planning.

## Process

This table describes the simulation process.

| Oracle Advanced Supply Chain Planning | Oracle Rapid Planning |
|---|---|
| Run plan | - |
| Edit and firm order dates | -- |
| Release orders to execution | -- |
| There are unanticipated events that cause production issues before the next plan run. . . | -- |
| Copy Advanced Supply Chain Planning plan as Rapid Planning baseline plan (once, either from Advanced Supply Chain Planning or Rapid Planning) | Copy Advanced Supply Chain Planning plan as Rapid Planning baseline plan (once, either from Advanced Supply Chain Planning or Rapid Planning) |
| -- | Do this as many times as you need to simulate potential solutions and select a solution: |
| -- | - Copy the baseline plan to a simulation plan |
| -- | - Make potential changes to the simulation plan |
| -- | - Firm a portion of the simulation plan |
| -- | - Run the simulation plan |
| -- | - Compare the baseline and the simulation results |
| -- | Release orders to execution |
| -- | In the simulation plan that you use to solve the issue, firm the planned orders that you released. These become firm planned orders when you pass them to the next Advanced Supply Chain Planning run. |
| Run the plan and specify the Rapid Planning simulation plan that you used to solve the issue and released orders from. | -- |

## Enable Simulations

Navigate to window Preferences, tab Other. Select Enable Rapid Planning Simulations.

## Create Baseline Plan

You can create the baseline Rapid Planning plan from an Advanced Supply Chain Planning plan using these methods:

- In Advanced Supply Chain Planning: Menu, Open Simulation
- In Rapid Planning: Process, Copy Plan

For a description of the process, see *Oracle Rapid Planning Implementation and User's Guide*.

## Open Simulation

Navigate (M) Plan > Open Simulation.

If you want to create a Rapid Planning baseline plan, click Create New Rapid Planning Simulation Plan and enter Plan Name, Description and Simulation Horizon (Days).

If you want to open a Rapid Planning baseline plan, click Open Existing Rapid Planning Simulation Plan and select a plan.

The Open Simulation – Status window shows the status of the process. If you click Close, the window closes but the process still runs. You see an error message if the process fails.

Rapid Planning opens to the plan.

## Copy Plan

See *Oracle Rapid Planning Implementation and User's Guide*.

## Feeding Back from Rapid Planning

Feed back the results of your Rapid Planning simulation decision to the next Advanced Supply Chain Planning plan run.

Set plan option Main tab > Rapid Planning Simulation Set. This brings the changes that you made in the Rapid Planning plan's simulation set to the plan.

Navigate to Concurrent Processes, select Launch Supply Chain Planning Process Request Set, and navigate to window Parameters.

Navigate to field Launch Snapshot, select Full Snapshot.

Navigate to field Snapshot Source for Firm Planned Orders. Its list of values has itself

and the Rapid Planning baseline and simulation plans. Select the Rapid Planning plan that you decided to use to solve the unanticipated event and release orders from.

Everything else snapshots from the usual sources, only the firm planned orders come from the Rapid Planning plan. In these situations, firm planned orders do not snapshot:

- Partially released firm planned orders snapshot their unreleased quantity
- If the plan has other Advanced Supply Chain Planning plans driving it as supply or demand schedules. The process does not snapshot Rapid Planning firm planned orders for item-org's that are in those supply and demand schedules

# 2

# Advanced Supply Chain Planning Setup and Business Flows

This chapter covers the following topics:

- Setup
- Business Flows
- Planning Cycle
- Specify Sources of Demand
- Run Collections
- Create a Plan
- Launch the Plan
- Review Key Performance Indicators (KPIs)
- Review Exceptions
- Review Workflow Notifications
- View Pegged Supply and Demand
- Modify the Plan Environment
- Run Net Change
- Release or Firm Orders

## Setup

To set up Oracle Advanced Supply Chain Planning, see *Oracle Value Chain Planning Collections Implementation Guide*.

The online help keys for Oracle Advanced Supply Chain Planning are:

- Node Application: MSC

- Node Key: GATPTOP_ASCP
- Parent Application: SUPPLY
- Parent Key: SUPPLY

# Business Flows

This section describes the flows of information between the components of the Oracle Advanced Planning Suite and provides an overview of how these components are to be used together in order to accomplish several key business flows.

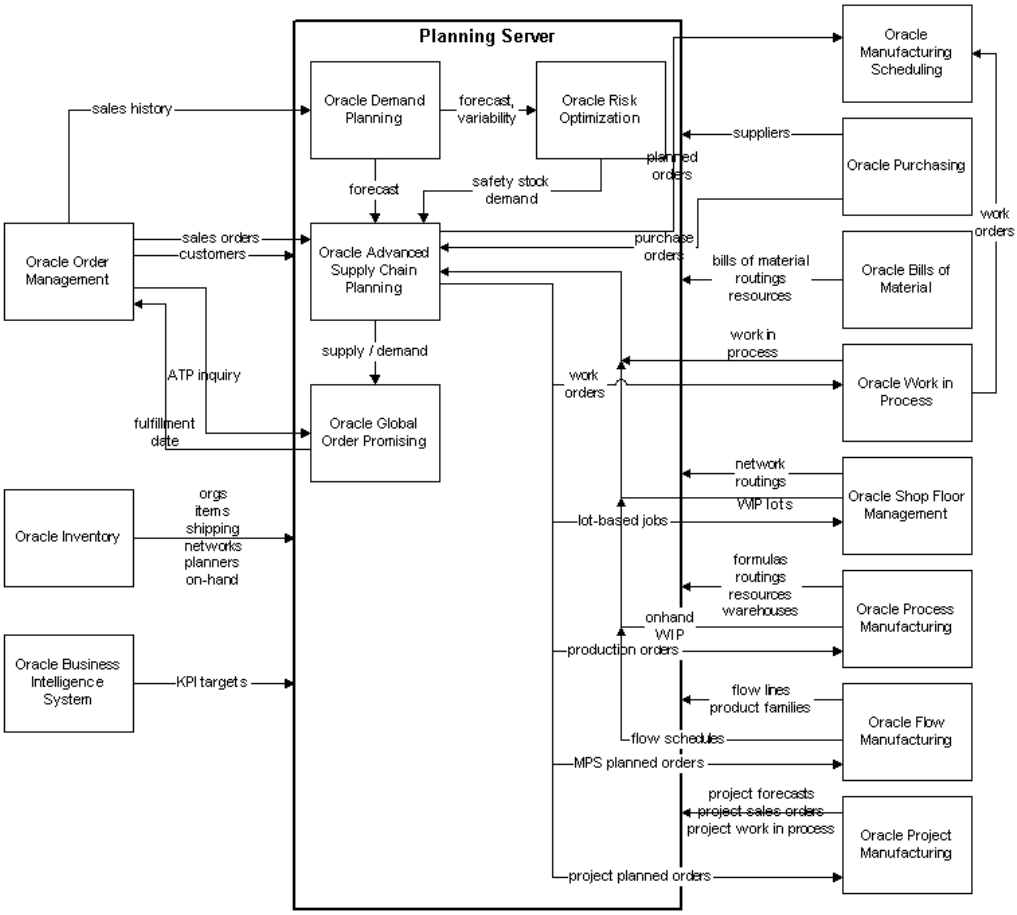
Topics covered in this section include the following:

- APS Information Flows
- The Demand-to-Make / Demand-to-Buy Business Flow
- The Inquiry-to-Order Business Flow

## APS Information Flows

The major information flows between the components of the Oracle Advanced Planning Suite and the rest of Oracle Applications are shown in the figure below.

*APS Information Flow*




## The Demand-to-Make / Demand-to-Buy Business Flow

The demand-to-make /demand-to-buy business flow begins with the establishment of independent demands that will drive the activities of the supply chain.

On the basis of sales history from Oracle Order Management, Oracle Demand Planning generates statistical demand forecasts. After adjustment by planners, these forecasts and their variability as estimated by Oracle Demand Planning are then input into Oracle Inventory Optimization.

Using user-supplied information about the variability of this forecast demand and the variability of supplier lead-times, Oracle Inventory Optimization generates an optimal time-phased safety stock plan.

Oracle Advanced Supply Chain Planning (hereafter, Oracle ASCP) considers three streams of independent demand: the safety stock planned demand from Oracle Inventory Optimization, forecasts from Oracle Demand Planning, and sales order

demand from Oracle Order Management. Oracle ASCP outputs a time-phased supply plan (planned orders) that can then be released directly to the appropriate execution systems: Oracle Purchasing, Oracle Work in Process (for discrete manufacturing), Oracle Process Manufacturing, Oracle Flow Manufacturing, Oracle Project Manufacturing, or Oracle Shop Floor Management (for semiconductor manufacturing).

### The Inquiry-to-Order Business Flow

The demand/supply picture output by Oracle ASCP serves as the basis for the order promising results calculated by Oracle Global Order Promising. Oracle Global Order Promising can be called either from a customer-facing order capture application such as a web store or from Oracle Order Management.

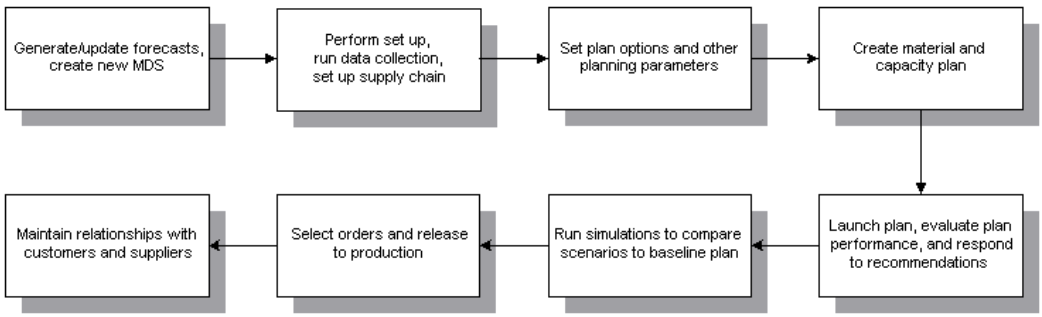
In the inquiry-to-order business flow, an inquiry for a potential order is sent from Oracle Order Management to Oracle Global Order Promising. The fulfillment date returned by Global Order Promising, if later than the original request date, is populated as the new request date of the order. This request date validation process is called scheduling. Once an order is successfully scheduled, then it can be booked and made visible to Oracle ASCP for supply planning purposes.

## Planning Cycle

This section describes an end-to-end planning flow that a planner might perform during the course of a planning cycle. The flow demonstrates the key features of Oracle ASCP that a typical planner would use in the course of their work.

The general flow that occurs during a planning cycle is shown in the figure below.

***A Day in the Life of a Planner***




## Specify Sources of Demand

You can drive the plan with:

- Sales order demand

- Forecast demand
- A combination: In this case, the sales order demand reduces (consumes) the forecast demand to avoid over-demanding.

The forecast demand comes from:

- Oracle MRP on the source instances.
- Oracle Demand Planning
- Oracle Demantra
- Your own system

**Demand from Oracle MRP**

Create a new or use an existing master demand schedule

Use the master demand schedule source list to associate individual forecasts with your MDS

Load the adjusted (unconstrained) forecasts into a master demand schedule. You can load individual forecasts, for example, for customers and sales regions, into a single master demand schedule and plan them all at once.

See *Oracle MRP User's Guide* .

Run collections.

**Demand from Oracle Demand Planning**

You do not have to run collections.

See *Oracle Demand Planning Implementation and User's Guide*

**Forecast Demand from Oracle Demantra**

You use an interface process to move the forecasts to Oracle Advanced Supply Chain Planning

See *Oracle Demantra Demand Management User's Guide*.

**Demand from Your Own System**

See Overview of Running Collections, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*. You may use the legacy collections process

## Run Collections

Run collections to bring planning data from the source instance to the planning server, where the data will be accessible to Oracle ASCP. See Running Collections, *Oracle Advanced Supply Chain Planning Implementation and User's Guide* for more information.

## Create a Plan

After an MDS has been defined, a Production, Manufacturing, or Distribution plan/schedule can be created.

### To create a plan

1. Choose Supply Chain Plan > Names to create a new plan/schedule or modify an existing plan/schedule.
2. Select Plan Options to specify plan options.
3. Save your work.

   See Defining Plans, page 3-1 for more information.

## Launch the Plan

After you have created your MRP, MPS, or MPP plan/schedule and saved it, choose the plan from [Production, Manufacturing, or Distribution Plan] > Names and select Launch Plan.

You can view the run status of your plan by choosing Other > Requests.

## Review Key Performance Indicators (KPIs)

Once your new plan has completed running, you can evaluate the performance of the plan by comparing it to Key Performance Indicators (KPIs). Evaluating a plan based on its impact to KPIs is a good way to see the high level impact of the plan without doing offline analysis and looking at plan details to see which demand is fulfilled on time and which is not.

The Key Indicators compare actual plan values to target values defined in the Target Repository. Evaluating plans against KPIs lets you select the plan which best meets organizational objectives that you have defined.

You can drill down to the trend over time using the right-mouse menu.

### To review KPIs for a plan

1. Navigate to the Planner Workbench.
2. Choose either the Organizations tab or the Items tab in the left pane.
3. Select the Key Performance Indicators tab in the right pane.

4. In the left panel, select the plan to evaluate or the plans to compare.

5. View the results on the graphs in the right panel.

   SeePlanner Workbench , page 16-1 and Key Performance Indicators , page 10-69 for more information.

## Review Exceptions

After you have evaluated your plan(s) based on KPIs, you can evaluate a plan based on the number and types of exceptions it generates. Reviewing the exceptions generated by a plan lets you evaluate a plan's performance in more detail than a KPI comparison provides. For each exception type displayed in the Planner Workbench, you can click and drill down on an exception to get more detailed information about the nature of the exception.

Oracle ASCP provides a range of exception messages for all plans. You can easily manage your plan by displaying only those items and orders that require your attention, and you can further narrow your search using other criteria such as by buyer or by line. By saving the exception messages each time you replan simulations, you can compare different versions of the same plan or analyze the strengths and weaknesses of a single plan.

For guidelines on evaluating and interpreting the exceptions generated by your plan, see Exception Messages., page 15-1

### To review exceptions for a plan

1. Navigate to the Planner Workbench.

2. Choose the Organizations or Items tab in the Navigator and select the plan(s) for which you want to view exceptions.

3. Select [right-click] > Exceptions > Details. Exceptions are displayed by exception type on the top portion of the window. Exception counts can be viewed graphically at the bottom of the window.

4. Double click on an exception to drill down to detail.

   Refer to Exception Messages, page 15-1 for more information.

## Review Workflow Notifications

Oracle ASCP's powerful collaboration features enable you to automate and streamline your interactions with customers and suppliers.

You can automate the processing of exceptions which lets you take corrective action

more quickly and efficiently, driving overhead costs out of your process.

You can define the process that a Workflow Notification should follow which includes the routing for the exception notifications, actions available to the recipient of the notifications, and the approval steps. The messages can be viewed either in Applications (see Review Exceptions, page 2-7) or via E-mail. Certain response actions may be required.

This table shows the standard workflow processes which generate various types of exceptions.

| Process | Exception Types |
|---|---|
| Item Workflow | • Item is over committed<br>• Item has a shortage<br>• Item has excess inventory<br>• Items with expired lots<br>• Past due forecast<br>• Late supply pegged to a forecast<br>• Items below safety stock |
| Rescheduling Workflow | • Item has orders to be rescheduled in<br>• Item has orders to be rescheduled out<br>• Item has orders to be cancelled<br>• Item has orders with compression days<br>• Item has past due orders |
| Sales Order Workflow | • Past due sales orders<br>• Late supply pegged to a sales order |

| Process | Exception Types |
| --- | --- |
| Project Workflow | • Items with shortage in a project<br>• Items with excess in a project<br>• Items allocated across projects |
| Material Workflow | • Material constraint (supplier capacity constraint) |

See the *Oracle Workflow Guide* for more information on creating notifications and building new workflows.

## View Pegged Supply and Demand

You can easily analyze the impact of changing a supply or demand order at any level of your bill of material using the powerful graphical pegging feature. Full pegging traces supply information for an item to its corresponding end demand details. Full pegging can also link a demand order to all corresponding supply. You can trace a purchased item or subassembly shortage to the sales order that would be affected. You can use this information to prioritize critical material and capacity resources.

To use graphical pegging you must select Pegging in the Plan Options window. You must also have the Pegging item attribute (in Oracle Inventory) set to one of the pegging options.

For more information on pegging, see Supply/Demand Window, page 16-64. Also, please refer to Item Attribute Controls in the *Oracle Inventory User's Guide* for more information.

## Modify the Plan Environment

### Modify Objectives

If you are unsatisfied with the results of your plan, you may wish to change your optimization objectives to improve the plan's performance against KPIs or reduce the number of exceptions.

Available Supply Chain Optimization objectives are:

- Maximize Inventory Turns
- Maximize Plan Profit

- Maximize On-time Delivery

## To run an optimized plan

Choose Supply Chain Plan > Options > Optimization tab to check the Optimization check box and adjust optimization objectives or associated penalty costs.

Once you have changed objectives, you can run a new, separate plan, or you can run a simulation in net change mode to view only the differences between the baseline plan and the simulated plan.

See Overview of Optimization, page 6-1 and Overview of Simulations, page 5-1 for additional information.

Alternatively, you may evaluate your plan or check feasibility based on available material and resources by running an unconstrained plan.

## To run an unconstrained plan

1. Choose Supply Chain Plan > Options.
2. Choose the Constraints tab and check Constrained Plan and Enforce Demand Due Dates.
3. Select No for the material and resource constraint settings.
4. In the Optimization tab, uncheck Optimize.

   Once you have made the change you can run a new, separate plan, or you can run a simulation in net change model to view only the differences between the baseline plan and the simulated plan.

   See Overview of Optimization, page 6-1 and Overview of Simulations, page 5-1 for additional information.

## Modify Supply/Demand

After you have run additional plans or simulations based on changes to your optimization objectives, you may still be unsatisfied with the results of your plans.

At this point, you may wish to consider the impact to changing demand and supply levels. You can quickly and easily simulate the impact of changes in inventory, purchase order schedules, and product demand. Changes to demand can be performed directly in your MDS or to individual forecasts associated with your MDS. Changes to supply may consist of changes to material availability (for example, supplier capacity) or to resource availability. You can make changes to either capacity or materials and see the effects of these changes on your plan.

### To modify demand/supply

1. Navigate to the Planner Workbench.
2. Choose Tools > Supply/Demand.
3. Select the Supply/Demand you want to change from the list of values.
4. Make the desired changes and close the window.

### Modify Resources

To increase available supply, you may wish to modify resource availability.

There are a number of ways in which to modify resources:

- Add additional production resources (for example, add shifts).
- Define alternate resources available for producing particular items.
- Change the resource consumption for an item (for example, change the amount of an item that can be produced in a given amount of time).

### To modify resources

1. Navigate to the Planner Workbench.
2. Choose Tools > Resources.
3. Make the desired changes and close the window.

### Modify Supplier Parameters

At this point you might choose to modify supply parameters such as Supplier Capacity, Supplier Order Modifier, and Supplier Tolerance Fence. For more information see Supply Chain Modeling., page 4-1

## Run Net Change

After you have changed optimization objectives, demand, supply or resources, you can run simulated plans in net change mode to view only the differences of the simulated plan compared to a baseline plan.

Net change is used for changes to:

- Item supply and demand, resource availability

- Your objectives
- Demand priority rules
- Sourcing
- BOM/Routing effectivity

See Running Net Change Replan Simulations , page 5-4for more information.

### Review a Constrained Forecast that Results from Net Change Planning

The forecast or MDS that is loaded into a Supply Chain Plan is generally a prediction of total customer demand, regardless of your company's ability to produce the demand.

After a Supply Chain Plan has been run based on an unconstrained forecast/MDS as an input, the resulting plan that has been constrained by material and resource availability is a demand plan constrained by production capabilities.

The easiest way to view the differences between an unconstrained demand plan and a constrained demand plan is to view the exceptions that occur after the Supply Chain Plan is run with material and resource constraints set to Yes in plan options.

The exception message Late forecast for customer demand will show all demand that could not be met due to material and resource limitations.

An alternate way to compare an unconstrained demand plan to a constrained plan is to run your Supply Chain Plan once with material and resource constraints set to No in plan options and run a second plan with material and resource constraints set to Yes. The two plans can then be compared side by side via KPI comparisons or exception comparisons.

## Release or Firm Orders

### To release or firm orders

1. From the Planner Workbench, choose Tools > Supply/Demand.
2. In the Order tab, choose an organization and an item then choose to release or firm orders for that organization or item.

   You can also redefine release properties for the organization or item.

   .

# 3

# Defining Supply Chain Plans

This chapter covers the following topics:

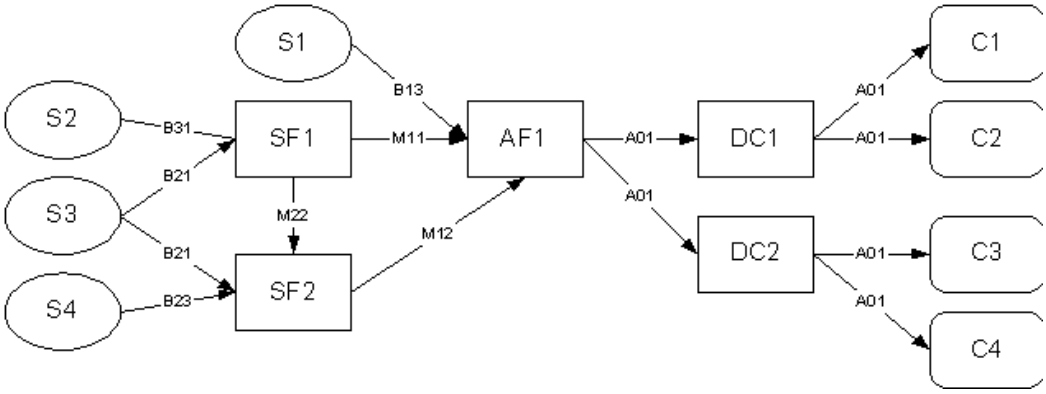
- Overview of Defining Plans
- Global Supply Chain Planning
- Subset Plans
- Master Production Scheduling for Aggregate Production Planning
- Master Production Scheduling Using Rough-Cut Simulations
- Choosing a Plan Type
- Choosing Plan Classes
- Choosing Planning Modes
- Setting Plan Options
- Forecasts
- Choosing Aggregation Levels
- Choosing an Objective Function
- Controlling Planned Items

## Overview of Defining Plans

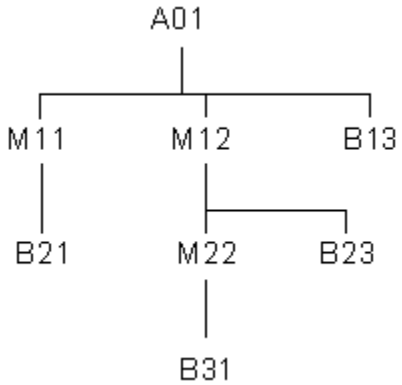
This section describes features that help you select a plan type that best satisfies your business requirements. You can choose to run a global supply chain plan or a subset plan to suit your supply chain environment or single organization environment, respectively. You can also select constrained, unconstrained, or optimized plan class based on business objectives such as maximizing inventory turns, on time delivery, and plan profit. Lastly, you can specify aggregation levels to view plans at varying levels of detail.

## Global Supply Chain Planning

Oracle ASCP can generate planned orders for an entire supply chain within a single multi-organization supply chain plan. This is illustrated below with a sample supply chain; see alsoSample Supply Chain, page 3-2) andSample Bill of Material, page 3-2:




***Sample Bill of Material***




In this sample supply chain, SF1 and SF2 are subassembly facilities, AF1 is a final assembly facility, DC1 and DC2 are distribution centers, C1, C2, C3 and C4 are customers and S1, S2, S3 and S4 are suppliers.

A single plan of the entire supply chain has the following inputs:

- Demand quantity (forecast + actual sales orders) for A01 at DC1 for each of the time buckets in the planning horizon. This is captured in a Master Demand Schedule (MDS) for DC1.

- Demand quantity for A01 at DC2 for each of the time buckets in the planning horizon. This is captured in an MDS for DC2.

The plan output contains planned order quantities, start dates, and completion dates for

A01 and all of its components and subcomponents.

## Prerequisites for Running a Global Supply Chain Plan

To run a global supply chain plan, the following prerequisites are required:

- Each planned organization must be set up on the source instance.
- Collection programs must be directed to collect data from the transactional instance of each planned organization.
- Items to be planned must be enabled in each organization that can produce (or distribute) the item. During item setup, items can be enabled in all organizations or only in specific organizations.
- Routings and/or Bills of Resource for each planned item must exist or be enabled in each organization that is planned centrally.
- Suppliers and sourcing rules must be enabled in all relevant organizations.

## Advantages of the Single Plan

The single-plan approach is advantageous for the following reasons:

- Least planning effort. Fewer plans need to be generated; fewer planning servers need to be deployed and maintained.
- Data consistency. Without the single-plan ability, requirements must be repeatedly transferred upstream within the supply chain to each successive supplier facility. Each transfer presents an opportunity for miscommunication or data loss.
- Global optimization. Intelligent trade-offs between the performance of individual facilities (as measured by, for example, plan profit) can be made because Oracle ASCP optimizes the supply chain planned orders as a whole.
- Minimum communication lag:

  The effects of decisions made at the highest level of the supply chain are immediately visible at the lowest level of the supply chain. If individual facility plans are used, there is at least a one planning-run duration lag between the receipt of requirements at a facility and the passing of the dependent requirements to the facility's suppliers. Moreover, this lag is often much greater due to differences in working hours between upstream and downstream facilities (for example, if the facilities are in different time zones). Also, the planning cycles of upstream and downstream facilities may not be synchronized (for example, customer facility AF1 runs its plan on Monday, while supplier facility SF1 runs its plan on Sunday). This results in even longer communication lags.

The overall effect of plan communication lag is to make the supply chain less responsive to meeting changes in customer demand.

## Creating Supply Chain Plans

You can have multiple supply chain plans. Before you launch a plan for the first time you must name it.

In addition to creating a plans by creation, you can create a new plan by copying information from one plan to it. Do this if you want to:

- Save the results of a particular plan run before you re-run the plan
- Begin using a new plan name with the results of the latest run of another plan.
- Create a new plan with the same plan options as an existing plan

### To create a global supply chain plan

1. From the Navigator, choose Supply Chain Plan > Names.

   The Supply Chain Names window appears.

   This table describes the fields and options.

| Object | Description |
|---|---|
| Name | Define a plan name. |
| Description | Define a plan description. |
| ATP | If this is selected, this plan will be used for availability check. If the plan is used as a 24 x 7 ATP plan, the planning process may never switch to a new version of the plan from the copied plan after the original plan has completed successfully ; consider setting profile options MSC: Action Allowed on ATP 24 x 7 Plan While Running and MSC: ATP Synchronization Downtime (minutes). |
| Production | If this is selected, this is a product plan. Planned orders will be automatically released within their release time fence. |

| Object | Description |
| --- | --- |
| Notifications | If this is selected, exception message notifications for the plan are enabled. |
| Plan Type | Valid values are Manufacturing Plan, Production Plan, and Master Plan. This setting interacts with the Planning Method item attribute to determine which subset of the items that pass the condition imposed by the Planned Items parameter are planned. Please see Choosing a Plan Type, page 3-36 for further details. |

2. Save your work.

3. Select Plan Options for the Plan Options window.

   Continue setting plan options and parameters.

## Copying Supply Chain Plans

Use the copy plan function to make a copy of an existing plan.

If memory bases planner flat files do not exist, Copy Plan process completes with the warning - WARNING: The copy plan operation completed successfully. However, some auxiliary data files could not be copied. Therefore, you will not be able to run online planner. You can re-launch the plan from the Navigator.

### To copy a plan

1. From the Supply Chain Names window, select a plan, then click Copy Plan for the Copy Plan window.

2. In Plan Name and Plan Description, enter information for the new plan.

3. Select or clear ATP, Production, and Notification as you would if you are creating a new plan om the Plan Names form.

4. Plan Type defaults to the plan type of the source plan and you cannot change it if you want to copy all plan information.

   You can copy only the plan options from one plan to another of a different plan type. To do so, select Copy Plan Options Only and select Plan Type for the new plan.

5. Enter an Inactive Date for the new plan.

6. Click OK.

7. Save your work.

## Subset Plans

There are some situations in which it makes sense to plan a portion of the supply chain separately, outside of the overall supply chain MPP plan.

### Scenario 1: Unique Local Objectives Must be Respected Along with Global Objectives

Suppose that subassembly plant SF1 (Figure: Sample Supply Chain, page 3-2), which makes M12 (Figure: Sample Bill of Material, page 3-2), contains very expensive capital equipment. SF1 is the overall supply chain constraint, so every minute that its resources are utilized brings extra profits to the enterprise. Resource utilization is the most important objective for SF1. For the supply chain as a whole, however, due to rapid product life cycles and a fickle market, inventory turns might be the most important objective. In this situation you could run a two-stage planning process.

- An MRP for organization SF1 with resource utilization as the objective to generate planned orders for M11, M22, B31, and B21 (the portion required at SF1).

- A MPP for organizations DC1, DC2, AF1, SF1, and SF2 with the above MRP as a supply schedule with inventory turns as the objective to generate planned orders for A01, M12, B13, B23, and B21 (the portion required at SF2).

### Scenario 2: Local Restrictions Not Captured in Global Planning Inputs

Suppose that item B21, a subcomponent of item M11 (Figure: Sample Bill of Material, page 3-2), has volatile pricing. In lieu of implementing the default planned orders in facility SF1 that a global MPP would generate for M11 and its subcomponents (B21), one could plan the supply chain as follows:

1. MPP plan for organizations DC1, DC2, AF1, and SF2 to generate planned orders for A01, M12, B13, M22, and M11.

2. Load the MPP as a demand schedule into a Master Production Schedule (MPS) for organization SF1. Dependent demand for M11 is derived from the planned orders for A01.

3. Run the MPS.

4. Manually adjust the planned orders for M11 in the MPS (for example, to pull ahead the orders for M11 in order to take advantage of a time-sensitive special promotion on B21).

5. Run an MRP for organization SF1 with the adjusted MPS as input to create planned orders for M11 components and subcomponents (B21 in this case).

### Situation 3: Single Global Data Model Not Available

The one-step supply chain planning capability of Oracle ASCP presumes either the installation of ASCP as part of an enterprise-wide implementation of Oracle Applications, or the existence of collection programs to pull cross-supply chain transaction data from various Oracle Applications instances or from legacy systems. Cross-supply chain data must be accessible to build the net change snapshot used by Oracle ASCP to generate planned orders.

This may not be the case. For example, one or more facilities in the supply chain perform planning and/or transaction processing on legacy systems not yet integrated to Oracle ASCP via some sort of collection program. In this situation, the renegade facilities must be scheduled outside the global MPP plan according to the same steps as used in Scenario 2 above.

## Pitfalls of Subset Planning

The two principal pitfalls of subset planning (as opposed to global, single-plan supply chain planning) are:

- Local optimization as opposed to global optimization
- Plan infeasibility due to supply chain interdependencies

The first pitfall is the fact that plans that optimize individual facilities may not be compatible with the optimum global supply chain plan. Take the case of the two distribution centers DC1 and DC2 in Figure 5-1: Sample Supply Chain The way to maximize on-time delivery for DC1 is to allocate all production from AF1 to DC1. The same logic holds for DC2. The global optimum solution, which would be missed via subset planning, comes from some allocation of AF1 output to both DC1 and DC2.

A simple example of supply chain interdependency is Supplier S3 in Figure 5-1: Sample Supply Chain. This supplier supplies item B21 to both subassembly facilities SF1 and SF2. Individual plans run for SF1 and SF2 could not recognize the shared capacity at supplier S3 and could not evaluate, if the combined SF1 and SF2 demands for B21 are too high, how best to allocate the B21 to SF1 and SF2. In such a situation the SF1 and SF2 individual plans would be infeasible, but would not even generate any exception notices to alert the planners.

## Choosing Between Global Supply Chain and Subset Plans

In general, resource and material capacity are most efficiently utilized in a global supply chain planning environment where planning distributes production requirements across multiple organizations. However, the choice of global supply chain versus subset planning should depend on a number of factors including:

- **Physical proximity of the organizations being planned:** If planned organizations are geographically dispersed, it is generally more difficult to fulfill demand in one region from a plant or distribution center far away because of transportation costs and longer lead-times. Note, however, that the costs associated with fulfilling demand from remote plants can be modeled in planning. Planning can then optimize production allocation across plants to meet the objectives that have been set. For example, if balancing resource loads is the primary objective of a multi-organization plan, planning will distribute production across plants to meet that objective.

- **Commonality of the items produced:** If you have multiple organizations that produce similar products, global supply chain planning is beneficial because planning can consider factors like material and resource availability, material costs, and resource costs to create an optimal supply chain plan.

- **Commonality of the supply base:** Similar to producing common items, organizations sharing suppliers are good candidates for global supply chain planning because supply can be optimally distributed across plants depending on each plan's production requirements. Global supply chain planning will ensure that supplier capacity is most effectively used to meet end customer demand and to minimize inventory.

- **Linkage among plants:** If production at one plant must be coordinated with production at other plants, global supply chain planning should be used. For example, if Plant A provides subassemblies to Plant B (Plant A is a feeder plant), both plants should be planned together.

- **Corporate structure:**The internal organizational structure of a corporation is also a major determinate of the planning method used. If there are clear organizational boundaries between divisions, global supply chain planning is difficult to implement.

The table below summarizes the factors to consider when deciding whether to run a global supply chain or subset plan.

| Factor | Global Supply Chain Planning | Subset Planning |
|---|---|---|
| Physical proximity | Close Physical Proximity | Distant Physical Proximity |
| Commonality of items produced | High Commonality | Low Commonality |
| Commonality of supply base | High Commonality | Low Commonality |

| Factor | Global Supply Chain Planning | Subset Planning |
|---|---|---|
| Linkage among plants | Tight Linkage Among Plants | Loose Linkage Among Plants |
| Corporate structure | Centralized Corporate Structure | Decentralized Corporate Structure |

## Hub and Spoke Planning

Oracle Advanced Supply Chain Planning provides you with the option of using demands from all planned orders during hub and spoke planning. When you use your plans as demand schedules to other plans, the planning engine considers all planned orders in the source plan as demands and explodes down the bills of material creating demands for the lower level components.

Hub and spoke planning uses a multi-plan approach where you can plan across the supply chain at the top level and then release planned orders to a lower level manufacturing plan for all MRP planned items. The top level plan includes only end items or end items with critical sub-assemblies, and typically only the final assembly plants. The lower level plan (MRP) is at the component level and includes the final assembly plants and the component manufacturing plants. Hub and spoke planning is a commonly used term for this type of subset planning.

Hub and spoke planning allows you to plan and release the top level plans for a small subset of items. It also provides easier recognition of critical components based on bottleneck resources.

### Using the two plan process with MPS/MPP and MRP

In a multi-planning setup with a two plan process, the top level plans are always either MPS or MPP, and the lower level plan is the MRP.

MRP is the best choice for the lower level plan, as the MRP plans all items for any planning method except Not Planned. This reduces the risk of missing an item due to an incorrect planning method selection.

> **Note:** Avoid setting item attributes to one of the joint planning methods (MRP/MPP Planned or MPS/MPP Planned) as this can lead to unintended results. For example, if an item is marked MRP/MPP and the item is in the MPP, then the MRP does not replan it. If you use the joint planning method settings, you need to take extra care during testing to insure that you get the intended results.

You can use the two plan process when you need to segment the planned items into two groups to support multiple planning groups. For example, the production planners

of your company want to plan the top level items and sub-assemblies. The buyers and MRP planners want to see the demands for their MRP planned items based on an approved production schedule from the production planners. In addition, there is a difference in frequency that each plan is run. The production is run once or twice a week while the MRP is run every night. In such a scenario, you can employ a two plan process.

The top level plan, an MPP for example:

- Has independent demands including MDS, forecasts, and sales orders.
- Plans all MPP, MPS/MPP, MRP/MPP planned items.
- Plans critical components that are MRP planned items marked as critical components
- Releases orders as required, either manually or auto-release, for MPP, MPS/MPP or MRP/MPP items.
- Planners manually review, adjust, and release orders as needed by the shop floor.
- The planned orders and reschedules are visible to the MRP after the MRP is launched. Therefore, the planners do not have to release them until needed by the shop floor.

The lower level plan, the MRP:

- Has independent demands for MRP planned items, including MDS's, forecasts and sales orders.

  **Note:** Avoid adding independent demands for MPP or MPS planned items to the MRP. MRP does not re-plan these demands.

- Has the MPP or MPS as a demand schedule and the Interplant check box is not selected.
  - This brings into the MRP, the independent demands and supplies for all MPP or MPS planned items with components that are MRP planned items.
  - The MRP explodes downwards from the MPP or MPS supplies including planned orders, creating demands for MRP planned items.
- Plans all MRP items and any other planned items that are not planned by the MPP or MPS plans.

  Items that are sandwiched between two MPP or two MPS items are designated as MRP planned by MRP and are re-planned by MRP.

  You may encounter a number of inconsistencies with sandwich items. It is

recommended that you avoid sandwiched items as this condition can lead to unintended results. For example, if a sandwiched item has a primary and alternate bills of material, the MPP might select the alternate bills of material and the MRP might select the primary bill of material. The two plans may then plan different components of the sandwiched item. You can face a similar situation with respect to primary and substitute components of the sandwich item.

If you add demands for the sandwich item to the MRP, some planned orders in the MRP are pushed out of the planning horizon because of insufficient supply for the MPS part in the MRP. Therefore, if an item is sandwiched, you need to include all demands in the MPS.

For MRP constraint options, if you select:

- Enforce Capacity Constraints (ECC), the planned orders in the MRP can be late for the demands from the MPP or MPS.
- Enforce Demand Due Dates (EDD), the planned orders in the MRP are not late for demands from the MPP or MPS.

If the MPP arrives at planned supplies and reschedules based on objectives, constraints, pegging, and demand priorities visible in the MPP, the MRP does not change these planned supplies and reschedules. The MRP has different objectives, constraints, pegging and priorities and does not have adequate data to accurately replan MPP planned supplies.

The MRP considers resource capacity consumed by planned orders in the MPP or MPS. If resources are shared by items in both the MPP and MRP or in the MPS and the MRP, then the resource capacity consumed by the MPP or MPS items is considered by the MRP and only the remaining resource capacity is available to the MRP planned items. The MPP or MPS resource usages are not rescheduled by the MRP.

> **Note:** Oracle Advanced Supply Chain Planning uses the date of the resource requirements. Therefore, orders that come in the middle of a weekly or period bucket in the demand or supply schedule are available in the destination plan on the actual schedule date and not at the beginning of the bucket.

#### Hub and spoke planning using critical components

When you run an MPS plan with the critical components option selected, the planning engine plans for:

- MPS and MPS/MPP planned items
- MRP and MPP planned Items that are critical components of MPS and MPS/MPP Planned items.

- The plan is constrained by resource requirements for critical components if resource requirements are selected as a constraint.
- The plan is also constrained by the supplier capacities for critical components if supplier capacity is selected as a constraint.
- The plan may also be constrained by the purchasing lead-times of the critical components if you select the Enforce Purchasing Lead-times option.
- If the plan options items selection is set to Demand Schedule items, then the MRP planned items that are not a critical component of an item in the Demand Schedule are not included. For example, item C is MRP planned and is only a critical component of Item X. If Item X is not a planned item for the MPS, then neither is Item C.
- All components in the paths of critical components or between the critical components and end items.

  This means that other MPS or MPP items are pulled into the MPS and planned because they have common critical components with the MPS planned items selected.

  For example, item C is MRP planned and is a critical component of item X and item Y. Item X is on the demand schedule of the MPS. The planning engine plans item Y in the MPS because it is on the path of the critical component Item C.

  In this case, item Y is treated as a critical component and not as an MPS planned item. For example, work orders for Item Y cannot be released from the MPS.

#### Critical components and bottleneck resource group

In case of a MPP or MPS plan with Include critical components option selected and bottleneck resource group:

- Any item with a bottleneck resource on the routing is planned as a critical component
- All MRP planned items that use any resource in the bottleneck resource group are planned as critical components

If you select the plan options Include critical components and bottleneck resources, then the plan itself determines what the critical components are based on the resources in the bottleneck resource group. You do not need to individually mark items as critical components.

The planning engine calculates the requirements in the following manner:

- The plan is constrained only by the capacity of bottleneck resources when planning resource requirements.

- The resource durations for non-constraining resources are calculated for the proper offsetting of requirements. The resource loads for non-constraining resources are calculated and resource overloads exceptions are generated.
- MPP or MPS item supplies planned in a production or master plan with respect to bottleneck resources can be released.

#### To define critical components

1. Select the Inventory responsibility.
2. Navigate to Items > Organization Items > MPS/MRP Planning tab.
3. Select the Critical Component check box.

   Set the critical component item attribute at the organization level or globally for all organizations depending on whether the item attribute is set to the organization level or the global level.

   The planning engine can also infer from the bottleneck resource group whether or not an item is a critical component. You can opt to not mark any item as a critical component as critical components are selected based on the resources in your bottleneck resource group.
4. Navigate to Plan Options > Main tab.
5. Select the Include Critical Components check box.

#### MPS/MPP planning with critical components used as a demand schedule for an MRP

When a MPP or MPS plan with critical components is used as a demand schedule for an MRP:

- The critical components are planned in the MRP.
- The supply due dates for critical components in the MRP plan can be different from the ones in the MPP plan because:
  - The MRP plan constraint options are different
  - Additional constraints at the lower levels cause the critical components to be late or early.
- Changes in delivery dates of the critical components do not change dates on planned orders from the MPS for all MPS items. The planning engine always treats these orders as firm.
- The planned orders for critical components in the MPS are ignored by the MRP.

- The planned orders for critical components in the MRP can be released.

**To perform hub and spoke planning**

1. Set up the following profile options:
   - MSC: Allow Release of Planned Orders from Demand Schedule Plan
   - MSO: Use Collections Start Time

     For more details, see Appendix A: Profile Options.
2. Define critical components.

   For more details, see: To define critical components, page 3-13.
3. Define a MPP or MPS as the top level plan.
4. Launch the MPP or MPS plan.
5. If you make any changes to the results of the hub plan that impact resources, run online or batch replan against the hub plan before feeding it to the spoke plan.
6. In the spoke plan, navigate to Plan Options > Organizations tab.
7. Select the top level plan as a demand schedule for the lower level plan, the MRP.
8. Clear the Interplant check box.
9. Launch the MRP plan.
10. Navigate to Workbench > Supply/Demand window.
11. View the supply or demand that is fed from the MPP/MPS plan demand schedule.

The Item From Source Plan check box is selected for all supplies or demands that arrive from an MPS or MPP.

## Examples

This section provides a few examples to illustrate the relation between the Interplant plan option and hub and spoke planning:

- Single organization MPP as a demand schedule to an MRP with Interplant not Checked, page 3-15
- Single organization MPP with critical components as a demand schedule to an MRP, page 3-16
- Multi organization MPP with critical components as a demand schedule to an MRP,

page 3-20

In all the examples provided in this section, you can change MPP to MPS everywhere to receive identical results.

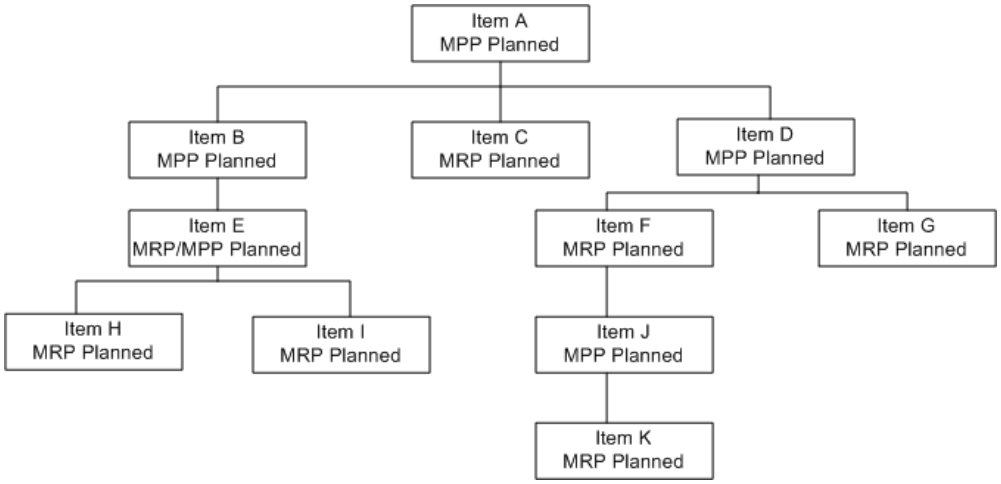
**Example 1: Single organization MPP as a demand schedule to an MRP with Interplant not Checked**

Assume that a single organization uses a MPP and an MRP. The MPP is a demand schedule to the MRP and the Interplant option is not selected. The MRP does not plan the MPP or MPS planned supplies:

Figure Single organization MPP, page 3-15 illustrates the following:

- Sandwiched items: Item F is sandwiched between items D and J.
- Item E is MRP/MPP planned or uses a joint planning method.

***Single organization MPP***




The MPP constrained planning rules are:

- Items A, B, E, D, F, and J are planned by the MPP
- Items C, H, I, G and K are not planned by the MPP and are not visible in the MPP.

When the MPP is a demand schedule to the MRP, the MRP constrained planning rules are:

- Items A, B, E, D, and J are not planned again by the MRP but the planned orders for items A, E, D, J are visible in the MRP.
- Item F, which is the sandwiched MRP planned item, is re-planned by the MRP.
- The planned order demand for items C, F, H, I G, and K is visible in the MRP. These items are planned in the MRP.

Explanation:

- Item E, which is MRP/MPP planned, is treated like MPP planned items. If Item B is MRP/MPP and Item E is MPP, there is no difference in the plan results as both are still planned like any other MPP planned item.

- If independent demands are fed to the MRP for any MPP planned item, then these are displayed in the MRP as Unmet Demand. The MRP does not create new supplies for any items planned by the MPP.

- If new demands are fed to the MRP for the sandwiched item F, the total demand for item F in the MRP will exceed the total demand for item F in the MPP. Therefore, the supply of its component item J will be insufficient for the total demand found in the MRP. The MRP cannot plan additional supplies of Item J. Therefore, some item F supplies will be pushed to the end of the planning horizon.

**Example 2: Single organization MPP with critical components as a demand schedule to an MRP**

Assume that a single organization uses a MPP and an MRP. The MPP is fed as a demand schedule to the MRP and the Interplant option is not selected.

***Single organization MPP with critical components***

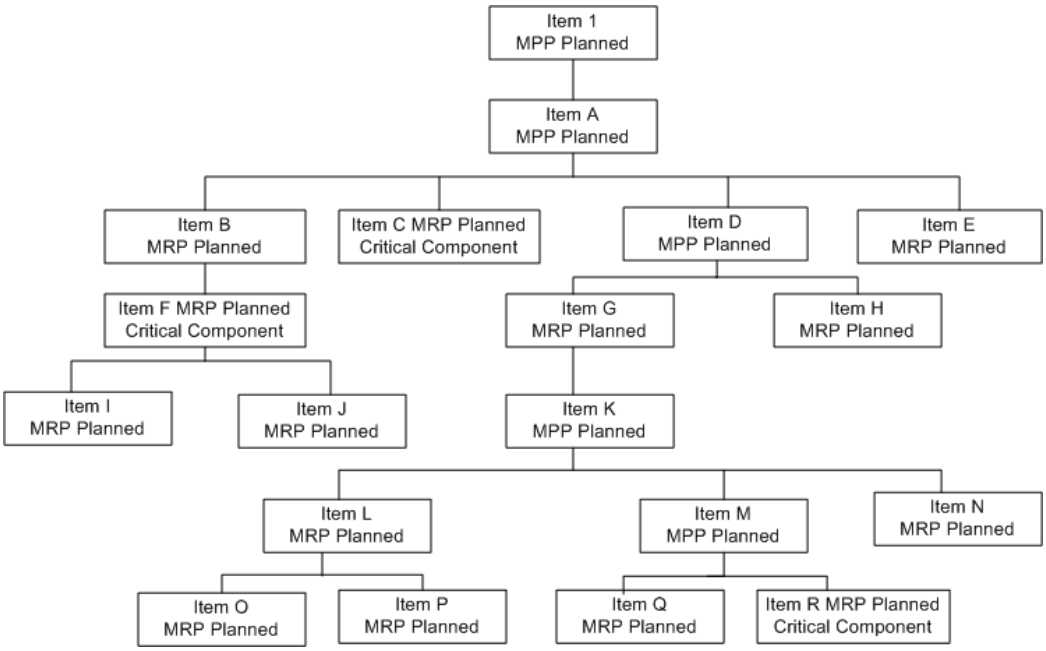



Figure Single organization MPP with critical components, page 3-16 illustrates the following:

- MPP planned items include 1, A, D, K, and M.

- Item G is MRP planned but it is treated as MPP planned by the MPP because it is

sandwiched between MPP planned Items. It is re-planned by the MRP.

- MRP planned items include B, C, E, F, G, H, I, J, L, N, O, P, Q, and R.
- Three MRP planned items C, F, and R are marked as critical components. These are constraints to the MPP plan. Planned orders from the MPP are not passed to the MRP for these three items.
- Item B is MRP planned and not a critical component but is treated as a critical component because it is above another critical component. Planned orders from the MPP are not passed to the MRP for Item B.

  The MPP has both released supplies and planned order supplies for all MPP planned items. These are passed to the MRP as independent demands and supplies whenever they have an MRP planned item below them.

In the MRP Supply Demand view, the following information is displayed:

| Plan Method | Item | Firm | From Source Plan | Order Type | Days Late | Qty / Rate | Sugg Start Date | Sugg Due Date | Demand Satisfied Date | Need By Date | Action |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MPP | 1 | | Yes | Sales Order | 1 | -1 | | 3-Jan-03 | 4-Jan-03 | | |
| MPP | 1 | Firm | Yes | MPP Planned Order | | | 4-Jan-03 | 4-Jan-03 | | 3-Jan-03 | Always None |
| MPP | A | | Yes | Planned Order Demand | -1 | -1 | | 3-Jan-03 | 4-Jan-03 | | None |
| MPP | A | Firm | Yes | MPP Planned Order | -3 | 1 | 2-Jan-03 | 4-Jan-03 | | 3-Jan-03 | Always None |
| MRP | E | | | Planned Order Demand | -3 | -1 | | 2-Jan-03 | 5-Jan-03 | | None |
| MRP | E | | | Planned Order | | 1 | 4-Jan-03 | 5-Jan-03 | | 2-Jan-03 | Release |

| Plan Method | Item | Firm | From Source Plan | Order Type | Days Late | Qty / Rate | Sugg Start Date | Sugg Due Date | Demand Satisfied Date | Need By Date | Action |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MRP | C | | | Planned Order Demand | 1 | -1 | | 2-Jan-03 | 1-Jan-03 | | None |
| MRP | C | | | Planned Order | | 1 | 1-Jan-03 | 1-Jan-03 | | 2-Jan-03 | Release |
| MPP | D | | Yes | Planned Order Demand | -1 | -1 | | 1-Jan-03 | 2-Jan-03 | | None |
| MPP | D | Firm | Yes | MPP Planned Order | 0 | 1 | 1-Jan-03 | 2-Jan-03 | | 1-Jan-03 | Always None |
| MRP | H | | | Planned Order Demand | 0 | -1 | | 1-Jan-03 | 1-Jan-03 | | None |
| | H | | | Planned Order | | 1 | 1-Jan-03 | 1-Jan-03 | | 1-Jan-03 | Release |
| MPP | K | Firm | Yes | Planned Order Demand | 0 | -1 | | 20-Dec-02 | 20-Dec-02 | | None |
| MPP | K | Firm | Yes | Discrete Job | -36 | 1 | 15-Dec-02 | 20-Dec-02 | | 20-Dec-02 | Always None |
| MRP | L | | | Discrete Job Demand | -36 | -1 | | 15-Dec-02 | 21-Jan-03 | | None |
| MRP | L | | | Planned Order | | 1 | 21-Jan-03 | 21-Jan-03 | | 15-Dec-02 | Release |

| Plan Method | Item | Firm | From Source Plan | Order Type | Days Late | Qty / Rate | Sugg Start Date | Sugg Due Date | Demand Satisfied Date | Need By Date | Action |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MRP | N | | | Discrete Job Demand | -1 | -1 | | 18-Dec-02 | 19-Dec-02 | | None |
| MRP | N | | | Planned Order | | 1 | 19-Dec-02 | 19-Dec-02 | | 18-Dec-02 | Release |
| MPP | M | | Yes | Planned Order Demand | 0 | -1 | | 17-Dec-02 | 17-Dec-02 | | None |
| MPP | M | Firm | Yes | Planned Order | 0 | 1 | 15-Dec-02 | 17-Dec-02 | | 17-Dec-02 | Always None |
| MRP | Q | | | Planned Order Demand | 0 | -1 | | 15-Dec-02 | 15-Dec-02 | | None |
| MRP | Q | | | Planned Order | | 1 | 10-Dec-02 | 15-Dec-02 | | 15-Dec-02 | Release |

Explanation:

- MPP planned orders can or cannot be released from the MRP, depending on the value of the profile option MSC: Allow MRP Release of Planned Orders from Demand Schedule Plan.
- Item 1 also appears in the MRP Supply/Demand form but the pegging ends with the Item A supply.
- Days Late information is brought over from the MPP. This is the calculated value found in the MPP for the demand.
- Order number is either the MPP Plan Name or, if this is the end item demand in the MPP, the planning engine displays the order number found in the MPP for the end item demand. If the customer and customer site for the end item demand is available in the MPP, this is also passed to the MRP for the end item demand.

- The planning engine provides the order start date and all operation start dates from the MPP to MRP. This drives the due date for MRP components if the Operation Start Date scheduling method is selected.
- The Need By Date for a planned order from the MPP is always the suggested due date of the MPP Schedule Demand.
- Item C is MRP planned and is a critical component. The MRP creates the planned orders and these can be released from the MRP. The planned orders created for item C in the MPP are not visible in the MRP.
- The example displays a planned order scheduled early because of capacity constraints.
- A supply for item K is 36 days late. From the supply chain bills of material, it is clear that the item A supply will also late. However, the MPP Planned Order Demand for item A is not changed to reflect this. In the MRP, the days late is noted for the next higher level MPP planned items but the days late is not pushed up the supply chain bills of material to higher levels of MPP Planned Items.
- The MPP planned order dates for item M are not changed even though item M is not needed at these dates because the supplies for Item K are 36 days late.
- The days late information for the MPP supply are based on the lower level supplies that are pegged to it.
- The rows marked as Yes in the From Source Plan column indicate that the demand and supply rows are from the demand schedule plan, either an MPS or a MPP.

**Multi organization MPP with critical components as a demand schedule to an MRP**

Assume that the MPP plans for four organizations D2, M2, S1, and M1.

***Multi organization MPP***

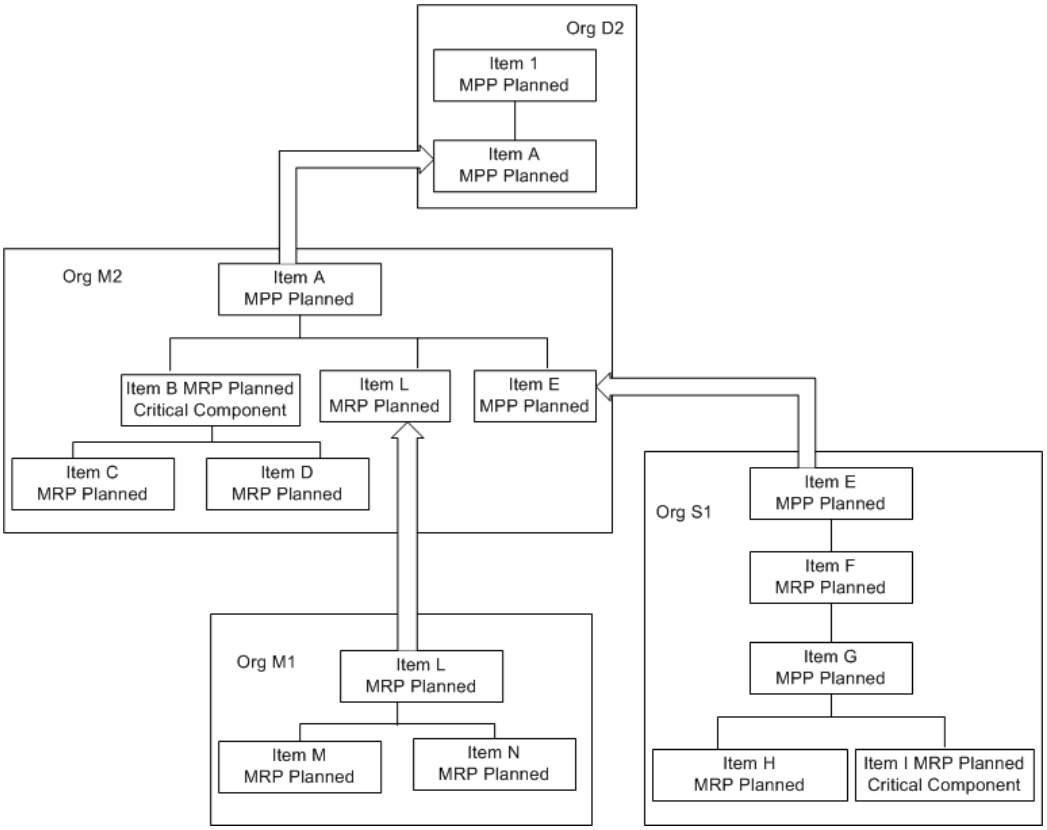



Figure Multi organization MPP, page 3-21 illustrates that the interorganization transfers, which are possible between the four organizations are:

- Org D2 item A is transferred from M2
- Org M2 item L is transferred from M1
- Org M2 item E is transferred from M2

The MPP has a demand schedule for item 1. The MPP is fed to an MRP as a demand schedule four times, once for each org D2, M1, M2, and S2.

The MPP plans the following items:

- Org D2: Items 1 and A
- Org M2: Items A,B, E. B is only planned as a critical component.
- Org M1: No items
- Org S1: Items E, F, G and I. I is only planned as a critical component.

MPP supply pegs to all lower levels of supply for all MRP planned items.

The MPP is fed as a demand schedule to the MRP. You can arrive at two results based on the Interplant check box selection:

- Interplant option is not selected, page 3-22
- Interplant option is selected, page 3-22

#### Interplant option is not selected

The MRP shows MPP planned supplies for all MPP planned items. In the MRP, you can see:

- Org D2: Nothing
- Org M2:
  - MPP planned make orders for item A
  - MPP planned transfer orders for item E from S1
  - MRP planned orders for Items B, C, and D
  - MRP planned transfer orders for item L from M1
- Org M1:
  - Nothing from the MPP
  - MRP planned orders for items L, M, and N
- Org S1:
  - MPP planned orders items E, F, and G
  - MRP planned orders for items H and I

#### Interplant option is selected

In the MRP, the interplant check box is selected for the MPS or MPP demand schedule. The only planned orders from the MPP or MPS that appear in the MRP are interplant transfers. The purpose of feeding the demand schedule with Interplant option selected is to pick up the interplant demands and then let the MRP plan all supplies within an organization. The supplies are all pegged to the interplant transfer demands, which are again seen as firm with respect to the MRP. No dates and times are changed for the interplant transfer demands.

## Master Production Scheduling for Aggregate Production Planning

Oracle Advanced Supply Chain Planning provides you with master scheduling

capabilities to perform aggregate production planning using product family items.

Forecasting and planning at the product family level allows you to anticipate and resolve resource loading issues and subsequently helps you to recommend appropriate levels of procurement at the right times.

You can also perform aggregate production planning using product family items if you want to segregate production planning (for level loading against resource constraints) and materials planning (for driving procurement) into separate job functions.

Oracle does not recommend placing an assemble-to-order model as a member of a product family.

Oracle Advanced Supply Chain Planning provides you the following features for master scheduling:

- Reduce MPS, page 3-23
- Production Forecast, page 3-24
- Product Family Item Sourcing, page 3-25
- Constrained Master Scheduling, page 3-26
- Product Family and Member Item Drill Down, page 3-27
- Forecast and Production Forecast Pegging, page 3-27

## Reduce MPS

Planned orders for product family items in an MPS plan are usually firm due to the following reasons:

- The orders are firmed during level loading
- The profile option MSC: MPS Auto-Firm Planned Orders is set to Yes

Oracle Advanced Supply Chain Planning allows you to eliminate the firmed planned orders within a defined time fence from subsequent batch replans. When you set the Reduce MPS option, firm planned orders that fall within the Reduce MPS time fence are automatically dropped at the time of the next plan run. This helps you in avoiding overstatement of material and resource requirements.

> **Note:** In case of standard items, the demand time fence, the process of releasing a planned order, and collecting the Work In Process job reduces and relieves the planned orders. However, product family items are only reference items with respect to execution and are never released. Therefore, these items do not follow the mechanism used by standard items.

#### To set the Reduce MPS option

1. Define the product family item.
2. For more details, see section: Creating a Product Family in *Oracle Bills of Material User's Guide.*
3. Select the Inventory responsibility.
4. Navigate to Items > Organization Items > MPS/MRP Planning tab.
5. Set the Reduce MPS option to one of the following:
   - None - The order quantities of the MPS item supply are not reduced.
   - Past Due - When the supply due date is past due, the order quantities on the MPS supply entries are reduced to zero
   - Demand Time Fence - When the supply is within the demand time fence, the order quantities on the MPS supply entries are reduced to zero
   - Planning Time Fence - When the supply is within the planning time fence, the order quantities on the MPS supply entries are reduced to zero

     It is recommended that you use the Past Due option for reducing MPS and enable Demand Time Fence for items that are exploded and derived in planning.

#### To use the Reduce MPS option

1. Set the Reduce MPS option.
2. Run a production plan for the MPS item.
3. Level load and firm the planned orders.
4. Re-run production plan at a later date.
5. Verify that firmed planned orders are dropped based on the Reduce MPS time fence.

### Production Forecast

During planning, Oracle Advanced Supply Chain Planning considers the following derived dependent demands as production forecasts:

- Member items that are part of a product family item
- Option class and option items that are part of a model item

The planning engine applies demand time fence control to the production forecast. This ensures a correct demand picture for the member items, option class and option items.

#### To set dependant demands as production forecast

1. Select the Inventory responsibility.
2. Navigate to Items > Organization Items > MPS/MRP Planning tab.
3. Set the Forecast Control as None for the member items, option class, or option items.

   The planning engine explodes the requirements for these items based on the parent forecast or demand.
4. Optionally, define the Demand Time Fence for member items to enable demand time fence control.

   For more details, see section: MPS/MRP Planning Attribute Group in *Oracle Inventory User's Guide*.
5. Verify that the derived demand is available as production forecast.

   If Demand Time Fence is enabled, the planning engine uses the member item demand time fence.
6. Navigate to the Horizontal Plan window to view the dependent demand.

### Product Family Item Sourcing

When you need to ship product family member items from multiple shipping locations, Oracle Advanced Supply Chain Planning generates recommendations for shipping locations based on capacity and current supply conditions and allows you to distribute forecasts to the specific shipping locations. Using this option, you can decide, which internal organizations to source from at the product family level in the production plan.

#### To set up product family items sourcing

1. Select Advanced Supply Chain Planner responsibility.
2. Navigate to Sourcing > Assignment set.

   The Sourcing Rule / Bill of Distribution Assignments window appears.
3. Assign sourcing rules to product family items.

   For more details on assigning sourcing rules, see Setting Up the Supply Chain, page 4-2,

Oracle Advanced Supply Chain Planning uses the global sourcing rules from the assignment set defined in Step 3 to distribute forecast using global forecasting rules.

For more details on global forecasting, see Chapter 6: Supply Chain Modeling, section: Global Forecasting.

## Constrained Master Scheduling

It is often desirable to master schedule only end items, taking into consideration material availability of critical components and the capacity of key bottleneck resources. You can specify certain components as critical components, and resources as bottleneck resources to constrain an MPS or MPP plan even though the components are actually planned in MRP.

### To define critical components:

1. Select the Inventory responsibility.
2. Navigate to Items > Organization Items > MPS/MRP Planning tab.
3. Select the critical component check box.

The planning engine can infer from the bottleneck resource group whether or not an item is a critical component.

For more details, see section: MPS/MRP Planning Attribute Group in *Oracle Inventory User's Guide*.

### To define bottleneck resources:

1. Select the Inventory responsibility.
2. Define the Bottleneck Resource Group in the Resource Groups Lookups form.
3. Assign the Bottleneck Resource Group to the appropriate department resources in the Department Resources form.

   For more details, see *Oracle Bills of Material User's Guide*.
4. Specify the Bottleneck Resource Group in Plan Options > Constraint tab.

### Bottleneck Resource Group Scheduling

If you plan using a bottleneck resource group, the planning engine schedules all resources but schedules resources in the bottleneck resource group differently than it schedules resources not in the bottleneck resource group.

For resources in the bottleneck resource group, it performs the usual detailed scheduling referring to the constraint planning options that you selected.

For resources not in the bottleneck resource group, it schedules activities and operations:

- When needed

- Based on the required duration (Resource usage / Assigned units)
- Without regard to resource capacity. If its actions overload resource capacity, it issues Resource overloaded exception messages.
- Without regard to the plan option Resource Constraints.

If the plan is:

- Enforce capacity constraints, the planning engine may schedule the supply late because of the duration and issue Resource constraint exception messages.
- Enforce demand due dates, the planning engine may compress the duration so that the supply completes on time, when it reaches the planning horizon start time, and when it reaches the planning time fence. As it compresses duration, it increases assigned units.

### Product Family and Member Item Drill Down

Oracle Advanced Supply Chain Planning allows you to view the product family item details that include member item rolled up information in the Horizontal Plan window.

For more details, see Chapter 10: Planner Workbench, section: Product Family and Member Item Drill Down.

### Forecast and Production Forecast Pegging

Pegging traces supply information for an item to its corresponding end demand details.

For more details, see Chapter 10: Planner Workbench, section: Forecast and Production Forecast Pegging.

## Master Production Scheduling Using Rough-Cut Simulations

You can use ASCP to create a master production schedule perform simulations and rough-cut master planning. In the master production schedule you define critical component constraints and resource bottlenecks. You can also define and maintain a Bill of Resources (BOR).

Master production scheduling supports inline component and resource recalculation. The schedule is editable in either the pivot table or Gantt Chart.

### Bills of Resources

A Bill of Resources (BOR) defines resources and critical components during master scheduling, in multiple organizations. When you plan at the Bill of Resource level, ASCP does not use a Bills of Materials or Routings.

The BOR is a summary view of detailed routings, with only the key resources and

components listed, along with their specific attributes like usage, quantity per assembly, and so on. This flat list is designed to be multi-organisational, and displays the resource or component detail from various levels as needed.

Later, the Master Production Schedule can be fed into an ASCP plan (MRP) as a demand schedule to perform detailed planning with Routings and Bills of Materials.

> **Note:** There is a distinction between the detailed plan output from the MRP plan and the high level feasibility check of key entities in an MPS.

The Bill of Resources is either manually created on the VCP server, or loaded via legacy collections. The MPS Plan reads the BOR to get inputs on the resources and components needed to complete the end assembly. BORs are tied to multiple finished goods, and these can be placed on a specific MPS plan.

#### Multi Organization Bills of Resources

When defining the Bills of Resources, users are able to use items and resources from any Organization in the supply chain. Users should indicate both the source and destination organization when entering BOR details. The source organization displays on the component BOR, while the destination organization displays at the top of the bill of resources.

In cases where the demand and end assembly build are in different organizations, users must define a transfer sourcing rule to ensure that the assembly is transferred to the organization where the end demand exists.

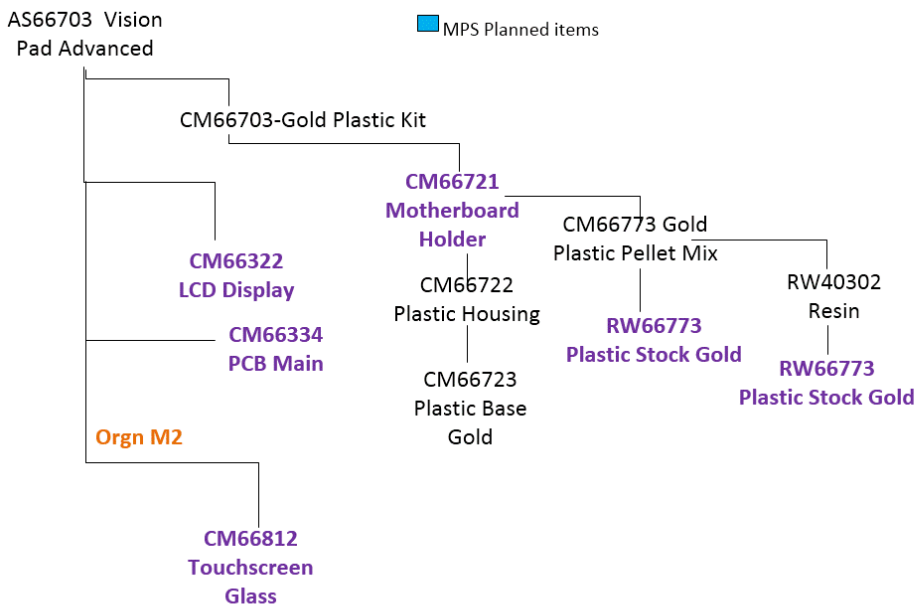
#### Multi-level sourcing of MPS items

In some cases, key items are sourced from various organizations. These organizations may contain critical buy items. In this case, both these items appear on the BOR, along with a transfer lead time and source organization for the transferred item. The leaf level buy item displays the procurement lead time.

When users define a BOR, they should indicate both the source and destination organization. If the demand and end assembly builds are in different organization, users must define a transfer sourcing rule to ensure that the assembly transfers to the correct organization when end demand exists. ASCP uses the appropriate sourcing rule for the buy item, and considers the specified assignment set.

#### Using Assignment Set Sourcing Rules for component sourcing

You can use the Assignment Set attached to the plan to source critical components to track as part of the MPS Plan.




From the Bill of Material shown above, the components in blue are included on the Bill of Resources, while sourcing rules must be created for the components in black. For example: Component CM66723 (Plastic Base Gold) could be made in M3 – 50 % and transferred to M1 and the remaining 50 % bought from supplier ACME Engineering.

Similarly other components RW40302 (Resin) could be 100 % buy item bought from supplier AM Resins Consolidated company.

These sourcing rules are defined and attached to the MPS Plan.

### Items without a Bill of Resources Entry

All items planned in the MPS plan that contain a BOR need a BOR entry. If items have a demand but not a BOR entry (for example because of data errors), then the MPS plan uses item level lead times by default. The plan behaves similarly to when times do not have a routing or BOM.

### Bill of Resources for CTO Models and CTO Items

BORs for CTO items are the same as any other end assembly. They contain critical resources and components. Users are able to model BORs for models and option classes using fractional quantities for the assembly and component usage quantities. Users do not need to model Option Classes on the BOR.

Demantra attach rates are not referenced when the 'MPS Inline Re-schedule' is checked. The plan takes the demand quantity and ignores the attach rates. Planners model attach rates using the BOR.

#### Buy Items

BORs include buy items at the assembly level. The MPS Plan uses sourcing rules to determine the planned order's appropriate supplier or supplier site. Buy items should include defined sourcing rules. If no sourcing rules exist, ASCP uses item lead times instead.

#### Planning for Sub-Assemblies

The BOR lists all sub-assemblies as well as assembly items. When there are independent demands for sub-assemblies, ASCP requires a separate BOR. Planners must define a separate BOR for these sub-assemblies, and make sure that it appears on the End Assembly BOR.

#### Resources on the Bill of Resources

ASCP validates resources that are listed on the BOR. When the Master Production Schedule is fed into an MRP plan, ASCP uses the detailed routing.

#### Using Slots with a Bill of Resources

Typically on a BOR, users assign the time that a resource is available. For example, assigning a resource to a single shift makes the resource available for eight hours. Assigning the resource to two shifts makes it available for 16 hours, and so on.

By designating a resource as a slot, users assign a production rate over time. For example, 3000 television sets per week. The time period used is either weeks or months, and comes from the plan options' plan bucket. If a resource is flagged as a slot, users do not have to define the resource hours.

There is a limit of one slot per BOR. In cases where more than one slot exists, all slot resources are considered alternates to each other. These slot resources may be loaded in any order, and have different production rates. One of the slot resources is flagged as the primary slot.

#### Calendars and Lead Times

The BOR contains lead times and lead time offsets, which are used by the MPS Plan. All lead times adhere to the specific organization's manufacturing calendar. MPS Plan bucketing also uses the same manufacturing calendar.

#### Planned Order Releases

ASCP does not allow a release from the MPS Plan using a BOR that is flagged as MPS Inline Recalculation. To be able to release planned orders, users must feed the MPS Plan into an MRP Plan using detailed routings and a BOM.

#### To Create a Bill of Resources

1. Navigate to Supply Planning Work area > Plan Inputs tab.

2. Expand Plan Input Links and then click Manage Bill of Resources.
3. Click the Add icon (Plus sign).
4. Indicate the organization (source organization) as well as the destination organization while entering the BOR details.
5. Click the Edit button.
6. Enter the desired information.
7. Click the Save button.

#### To Edit a Bill of Resources

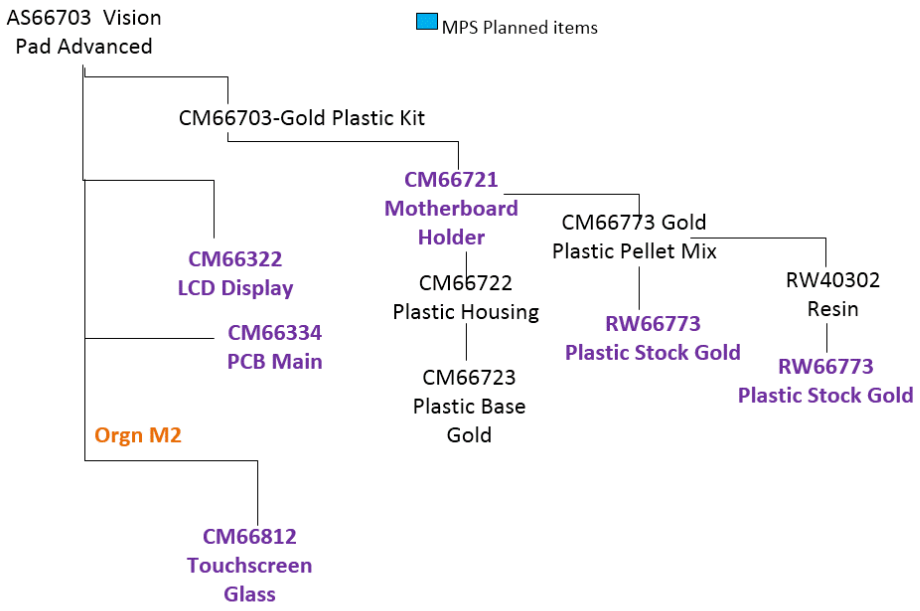
1. Navigate to Supply Planning Work area > Plan Inputs tab.
2. In the Bill of Resource field, type the name of the Bill of Resources that you want to edit.
3. Click the Search button.
4. Select the BOR that you want to edit and click the Edit button.
5. Make the desired changes.
6. Click the Save button.

#### To upload a Bill of Resources

1. Navigate to the Legacy Collections window.
2. Click Collect File data.
3. Ensure that the flat file permits loading of substitute components and alternate resources.
4. The Bill of Resources has a flat view of both the critical resources and key components required. The BOR Microsoft Excel / flat file template is available for download from the BOR definition screen.

## Planning for MPS Assemblies

MPS components on the BOR may exist at lower levels in the supply chain. In the example below RW66773 is four levels down in the BOM. These components may exist on the MPS Plan's BOM.




To indicate that buy or make components are needed well in advance, Planners are able to use offsets (in days). This offset representing how long in advance these components are required before the slot is loaded. ASCP creates planned orders with a due date that is the specified number of days before the start of the slot load.

The table below shows a sample BOM and its BOR representing critical components, along with their offsets (in days).

| **Item or Resource** | **Source Origin** | **Component Item** | **Component Description** | **Component UOM** | **Component Usage Quantity** | Offset (Days) |
|---|---|---|---|---|---|---|
| Item | SLC: M1 | CM66721 | Motherboard Holder | EA | 1 | 2 |
| Item | SLC: M1 | RW66773 | Plastic Stock Gold | EA | 2 | 30 |
| Item | SLC: M1 | CM66322 | LCD Display | EA | 1 | 0 |
| Item | SLC: M1 | CM66334 | PCB Main | EA | 1 | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Item | SLC: M2 | CM66812 | Touchscreen Grey | EA | 1 | 20 |

#### Order Modifiers

If necessary, planners should order modifiers that are smaller than or equal to the slot rate. Using order modifiers for the MPS assembly items is not recommended.

## MPS Plan Options

The following functionalities are not available for non-MPS plans (those that do not have MPS inline recalculation enabled in the Plan Options window):

1. Inline recalculation
2. Gantt Chart to display slot-enabled resources
3. Build Plan
4. Bill of Resources definition

#### To configure MPS Plan Options

1. Confirm that the profile option **MSC: Enable Advanced Constraints** is set to **Yes** (required). The **Plan Type** in the Constraints tab is hard coded to **Constrained Without Detailed Scheduling** and cannot be changed.

   **Note:** If you set this profile option to No, then the option to select the box in the Aggregation tab for MPS inline recalculation is greyed out and unavailable.

2. Navigate to the **Plan Options** window and choose the **Aggregation** tab.
3. Select the **MPS In-line Recalulation** check box. When you select the MPS Inline Recalculation check box, the following **Plan Options** areas become greyed out (unavailable):
   - **Routing** (Aggregation tab)

     Combinations of Routings are not permitted in the MPS where in-line recalculation is required to be performed.

   - **Constrained without Detailed Scheduling** (Constraints tab)

     The MPS inline recalculation is permitted only in plans that are enabled with the Day Level plan option.

- Project Planning is not supported for MPS inline recalculation, therefore, Reservation Level and Hard Pegging Level are set to None.
- **Days**
- **Legacy Bill of Resources** name from the source instance (Organizations tab)

4. In the **Bill of Resources** field, enter the name of the BOR that you want to use.

   **Note:** The Plan Option window's Optimization and Decision Rules tabs are also greyed out when the MPS online recalcualtion check box is checked.

5. Click **Save**.

## MPS Planning Process

The planning process for MPS Plans that use inline calculations is different from typical MRP planning in the following ways:

1. Lead time for the assembly built on the slot resources is equal to the plan bucket. The slot load on the Gantt chart indicates the output quantity from a planned order or work order, and is shown per bucket. One planned order per bucket on the MPS plan is fed into the MRP plan.

2. Lead time for the assembly built on the slot resources is equal to the plan bucket. The slot load on the Gantt chart indicates the output quantity from a planned order or work order, and is shown per bucket. One planned order per bucket on the MPS plan is fed into the MRP plan.

   **Note:** Item attributes supply component (from BOR) lead times, and planned orders are bucketed according to the plan options.

3. The end assembly is exploded only using BOR details. Item lead times are set to the plan bucket (either week or period). The BOR also defines the slot resource's maximum capacity, unless there is firming.

4. The MPS plan uses buckets from the plan options. To size the planned order correctly, the bucket size determines the period when the slot resource capacity is defined, and the internal lead time for end assemblies.

### Work Orders Engine and Snapshot behavior

ASCP does not reference a Work Order's detailed BOM and routings in the MPS plan. Work Orders are treated like expected receipts (firm), and the total quantity on the

Work Order is available on the due date.

Work Orders will not be re-scheduled by the inline recalculation, they will be treated as firm. The user will need to move the work orders manually by changing the dates on the Planner Workbench as needed.

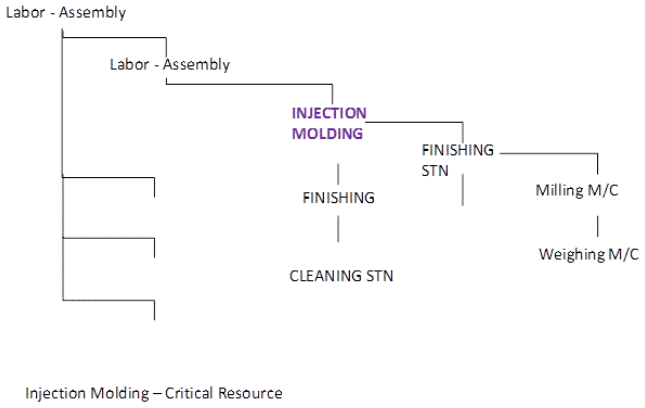
> **Note:** The Work Order start and end dates remain the same as are the BOR resources (slot and non-slot) and components scheduled within these dates. This is a critical difference since the work order has the detailed routing / resources which are not being considered by the MPS Plan.

### Work Order component and resource consumption

Collected firm Work Orders are exploded using the BOR. This enables accurate representation of the available resources for new planned orders that are generated by the system.

This is required because the slot resource and other resources on the BOR need to be consumed by the work order(s), and consumption needs to happen for the critical components from the BOR as well.

Resource consumption must happen within the Work Order start and end dates.




### Purchase Orders and On-hand

Purchase Orders and on-hand are considered as valid supplies by the MPS Plan. The items planned in the MPS are netted against purchase orders when available.

## Analyzing MPS Plans

To analyze the MPS Plan, you use these pages:

- Build Plan
- Gantt Chart

See Supply Planing Work Area > Analyzing Master Production Scheduling Plans.

# Choosing a Plan Type

In Oracle ASCP you can launch three type of plans:

- Production Plan
- Manufacturing Plan
- Master Plan

Each creates time-phased planned orders that satisfy independent and dependent demand while seeking to respect material and resource constraints.

A choice of plan types lets you tailor the degree of subset planning that is performed for the supply chain: from a single, global supply chain plan down to manually adjusted plans for each item in each organization of the supply chain.

MPS plans support the following functionality:

- You can select routings for a production plan while scheduling resources.
- For production plans that have routings, you can view the Gantt chart in the Planner Workbench.

To do this, the three types of plans need to be used in conjunction with the MRP Planning Type item attribute that is set for each item. Possible values for this attribute are:

- MRP Planning
- MPS Planning
- MRP/MPP Planned
- MPS/MPP Planned
- MPP Planned

In addition, plan option Main tab, Planned Items specifies the types of items that the planning engine should plan in a particular plan run. Choices are:

- All Planned Items
- Demand Schedule Items and all sales orders: Plan all items that have demands as well as all items that have sales orders against them.
- Supply Schedule Items only
- Demand and supply schedule Items
- Demand Schedule and WIP components
- Demand Schedule items only: Only plan items that have demands If plan option Include Sales Orders is selected (Organizations tab), include only sales orders against those items.
- Demand Schedule Items, WIP components and all sales orders

## To set the MRP Planning Type item attribute at the item level

1. Sign on with the Manufacturing and Distribution Manager responsibility.
2. From the Navigator window, choose Inventory > Items > Master Items.

## To set the MRP Planning Type item attribute at the more detailed item-organization level

1. Sign on with the Manufacturing and Distribution Manager responsibility.
2. From the Navigator window, choose Inventory > Items > Organization Items.

Each type of plan includes or ignores an item for planning depending on the setting of its MRP Planning Type attribute. The discussion below focuses on the principal ways in which plan type (Master, Production, or Manufacturing) can be used in conjunction with MRP Planning Type item attribute values (MRP Planning, MPS Planning, MPP Planned, MRP/MPP Planned, MPS/MPP Planned).

There is a logical equivalence between the different planning types as shown by the fact that the following plans, applied to the sample supply chain (Sample Supply Chain, page 3-2) and BOM (Sample Bill of Material, page 3-2), yield identical planned orders across the supply chain. In the BOMs illustrated in these figures, the values in parentheses indicate the setting of the MRP Planning Type item attribute.

The usefulness of the different types of plans comes in when subset planning is used. Suppose, for example, that subset plan M12 and all its components and subcomponents are used. Some reasons for needing to do so are discussed above.

1. Run a Master plan to generate planned orders for all items except for the components and subcomponents of M12 (Sample Bill of Material, page 3-2):

Plan Name: MPP-1
Plan Type: Master
Planning Organizations: SF1, SF2, AF1, DC1, DC2

This combination of plan type and MRP Planning Type item attribute values creates cross-supply chain planned orders for A01, M11, B13, B21, and M12 and omits M22, B23, B31.

2. Use the Master plan as a demand schedule for a Production plan run. This generates planned orders M12.

Plan Name: MPS-1
Plan Type: Production
Planning Organizations: SF2

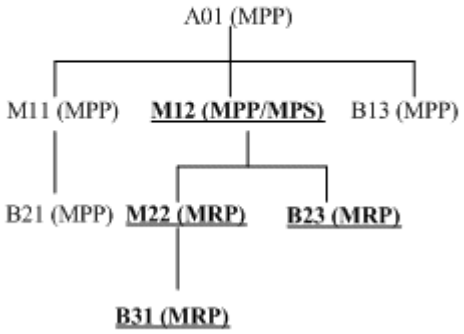
3. Manually modify the MPS for M12 as necessary.

   **Note:** With Oracle ASCP, this step is less frequently necessary than before. This is because the finite-capacity planning performed by Oracle ASCP takes resource and material availability into account,

and therefore eliminates much of the need to manually smooth production via an MPS.

4. Run a Manufacturing plan, using the Production plan as an input demand schedule. This generates planned orders for M12, M22, B23 and B31 (Sample Bill of Material, page 3-2).

Plan Name: MRP-1
Plan Type: Manufacturing
Planning Organizations: SF1, SF2




## Choosing Plan Classes

Oracle ASCP allows for the following options for generating plans.

- Unconstrained
- Resource Constrained
- Material Constrained
- Material and Resource Constrained
- Optimized

Before discussing these options in the table below, please take note of the following key concepts.

### Constraints

Oracle ASCP lets you prioritize how you enforce Capacity Constraints or Demand Due Dates. Whichever constraint takes precedence over the other is the hard constraint; the other is the soft constraint. You must choose one and only one type of constraint.

### Enforce Demand Due Dates

If you choose to enforce Demand Due Dates (setting Demand Due Dates as a hard constraint), then primary resources are used and loaded to capacity to satisfy demand due dates. The system also evaluates alternate resources if additional capacity is required. If there is insufficient capacity to meet demand due dates, the primary resource is overloaded. The choice of whether to use an alternate resource or overload capacity depends on cost considerations if optimization is selected. Oracle ASCP returns exception messages if capacity is overloaded.

### Enforce Capacity Constraints

If you choose to enforce Capacity Constraints (setting Capacity Constraints as a hard constraint), then resources are loaded to their limit to satisfy demand (if required). Unsatisfied demand is pushed into the future. In this case, Oracle ASCP returns late replenishment exception messages.

### Optimization

Oracle ASCP allows for multiple levels of optimization in generating plans. These are described in the table below along with the situations under which each would be most useful.

| Optimization Level | Planning Horizon | Question/Goals | Scenario |
|---|---|---|---|
| Unconstrained Plan | Long Term Future | How much resource capacity and material availability do I need to arrange in order to satisfy all anticipated demand in a timely manner? | Decisions can be made on resource acquisition/dispositio n and supplier sourcing to address the exceptions. |
| Resource Constrained Plan | Long Term Future | How much material availability do I need to arrange in order to satisfy all anticipated demand in a timely manner? | Difficult to change resource capacity, but increased outsourcing is an option.<br>Decisions can be made on supplier sourcing to address the exceptions. |

| Optimization Level | Planning Horizon | Question/Goals | Scenario |
|---|---|---|---|
| Material Constrained Plan | Long Term Future | How much resource capacity do I need to arrange in order to satisfy all anticipated demand in a timely manner? | Difficult to change material availability but internal resource acquisition/dispositio n is an option.<br>Decisions can be made on resource acquisition/dispositio n to address the exceptions. |
| Material and Resource Constrained Plan | Near Term Future | Generate a feasible plan that respects material, resource, distribution, and transportation constraints. | Impossible to overcome material and resource constraints and therefore must respect them in order to generate a feasible supply chain plan. |
| Optimized Plan | Near Term Future | Generate an optimized and executable plan based on plan objectives and material, resource, and transportation constraints. | Impossible to overcome material and resource constraints and therefore must respect them in order to generate a feasible supply chain plan. |

The scope of optimization levels is summarized in the table below:

| Optimization Level | Scope |
| --- | --- |
| Non-optimized (unconstrained, resource constrained, material constrained, material and resource constrained)<br><br>(Optimized option unchecked which applies to the entire planning horizon) | Local settings that can be applied to temporal subsets of an overall supply chain plan. These simply dictate which types of constraints (material and resource) are obeyed in which portions of the plan.<br><br>The planned orders for the Resource Constrained, Material Constrained and Material and Resource Constrained time portions of the plan are generated via a fast heuristic.<br><br>The planned orders for the Unconstrained time portion of the supply chain plan are always generated using traditional MRP type logic. |
| Optimized<br><br>(Optimized option checked which applies to the entire planning horizon) | Global setting that applies to the entire supply chain plan.<br><br>The planned orders for the resource constrained, material constrained and material and resource constrained time portions of the plan are generated via a linear programming planning algorithm which explicitly optimizes objectives that are important to the user. |

## Choosing Planning Modes

The planning engine operates in phases. Each phase performs different planning tasks.

You can choose a planning mode to guide the planning engine in the planning process. Each planning mode executes a different set of planning phases.

**Planning Engine Phases**

This table explains the planning engine phases.

| Planning Engine Phase | Description |
| --- | --- |
| Optimization phase | - Linear-programming based<br><br>- Selects alternate sources, processes bills of material and routings, substitute items and components, and alternate resources |

| Planning Engine Phase | Description |
|---|---|
| Order modifier phase | - Modifies output of optimization phase so that order modifiers are respected<br>- Calculates pegging |
| Planning phase | - Nets available supply and scheduled receipts against demand to calculate planned orders<br>- Applies order modifiers<br>- Calculates pegging<br>- Enforces date effectivities: Bills of material and routings, sourcing rules, process validity rules, and end item substitution rules) |
| Scheduling phase | - Reschedules supplies to respect material, resource, lead-time, and calendar constraints<br>- Refines alternate resource selection if necessary<br>- Schedules supplies to the minute |

### Planning Modes

You select the planning mode for a plan as you specify the instructions for the planning engine (plan options). This table explains the planning phases that the planning engine performs each planning mode.

| Planning Mode | Planning Engine Phases |
|---|---|
| Unconstrained: Planning phase | Planning phase |
| Constrained (Classic): | - Planning phase<br>- Scheduling phase |
| Constrained (Classic) with Decision Rules: | - Optimization phase<br>- Planning phase<br>- Scheduling phase |

| Planning Mode | Planning Engine Phases |
|---|---|
| Constrained (Without Detailed Scheduling): | - Optimization phase<br>- Order modifier phase |
| Constrained (With Detailed Scheduling): | - Planning phase<br>- Optimization phase<br>- Order modifier phase<br>- Scheduling phase |
| Optimized: | - Optimization phase<br>- Planning phase<br>- Scheduling phase |

The planning modes Constrained (Without Detailed Scheduling) and Constrained (With Detailed Scheduling) are available only when the value of profile option MSC: Enable Advanced Constraints is Yes

**Evaluation of Planning Modes**

If you want to plan to infinite capacity, choose Unconstrained planning mode.

If you want to constrain the plan according to capacity constraints or due dates, choose from:

- A constrained planning mode—Constrained (Classic), Constrained (Classic) with Decision Rules, Constrained (Without Detailed Scheduling), and Constrained (With Detailed Scheduling) planning mode
- Optimized planning mode

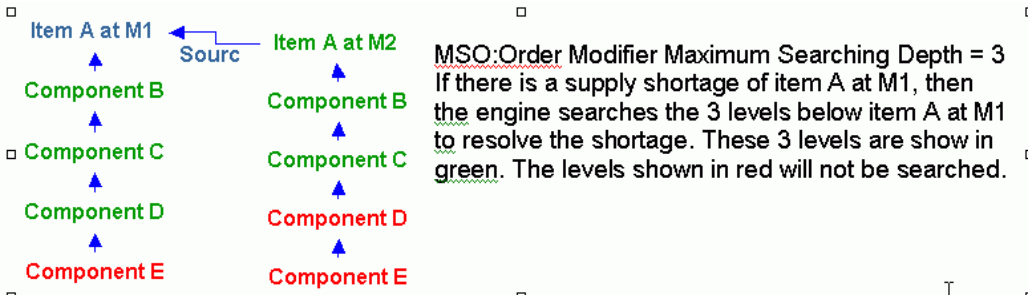
If you want the planning process automatically to select alternates considering full relative cost data, choose Optimized planning mode.

If you want the planning process automatically to select alternates considering only the rankings of alternates (sources, bills of material/routings, resources, substitute components, end item substitutes) and not relative cost data for alternates, choose from

- Constrained (Classic) with Decision Rules planning mode
- Constrained (Without Detailed Scheduling) planning mode
- Constrained (With Detailed Scheduling) planning mode

Before you use these alternate options, set profile options:

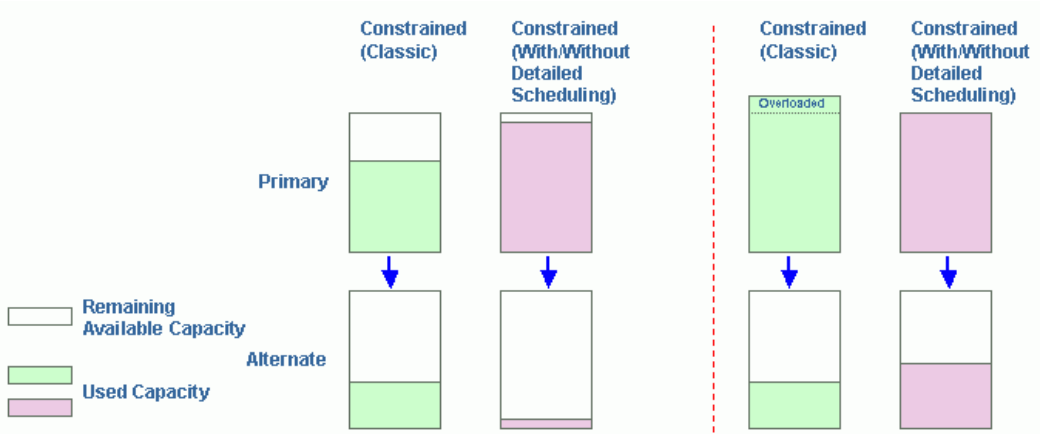
- MSC: Enable Advanced Constraints
- MSO: Order Modifier Maximum Searching Depth

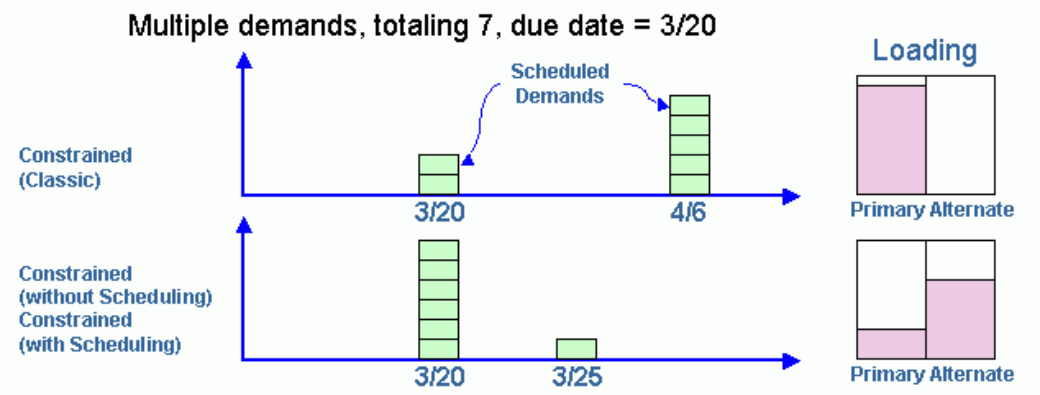



Oracle suggests that the Constrained (Without Detailed Scheduling) and Constrained (With Detailed Scheduling) planning modes provide superior solution quality to the Constrained (Classic) with Decision Rules planning mode. The superior quality results from planned order generation with respect to order modifiers, capacity, and lead-time constraints at the same time. This results in more accurate offloading from primary to:

- Alternate resources when order modifiers are present
- Alternate sources to minimize demand lateness
- Substitute components to minimize demand lateness

These diagrams show some solution differences between the Constrained (Classic) mode and the Constrained (With/Without Detailed Scheduling) modes.






If day-level planning information is acceptable and you prefer to have the planning results as quickly as possible, choose Constrained (Without Detailed Scheduling) planning mode. Oracle suggests that this planning mode generally takes less time to process than the detailed scheduling planning modes—Constrained (Classic) with Decision Rules and Constrained (With Detailed Scheduling).

If you need detailed scheduling to the minute and can wait for longer processing times than Constrained (Without Detailed Scheduling) planning mode, choose from:

- Constrained (Classic) with Decision Rules planning mode: Oracle suggests that this planning mode generally takes less time to process than the Constrained (With Detailed Scheduling) planning mode.
- Constrained (With Detailed Scheduling) planning mode: Oracle suggests that this planning mode takes longer to process than the Constrained (Classic) with Decision Rules planning mode but provides superior solution quality.

## Setting Plan Options

This section describes how to set plan options. The plan options appear in the following tabbed regions:

- Main
- Aggregation
- Organizations
- Constraints
- Optimization
- Decision Rules
- Reporting

To access the plan options do either of the following:

- Go directly from the Navigator
- Access the Plan Names form, select a plan, and click Plan Options.

## The Main Tabbed Region

This table describes the fields and options.

| Object | Description |
|---|---|
| Planned Items | This parameter and the Plan Type field in the Supply Chain Names window, control the items that are planned in the supply chain plan. An item must satisfy conditions imposed by both parameters before being included in the supply chain plan. Please see Choosing a Plan Type, page 3-36 for further details. |
| Assignment Set | The assignment set that holds the sourcing rules and bills of distribution that define the rules for material flow within your supply chain. |
| Material Scheduling Method | Choose from Operation Start Date or Order Start Date scheduling methods. If you choose Operation Start Date, material is scheduled to arrive at the start of the operation for which it is required. If you choose Order Start Date, material is scheduled to arrive at the start of the order for which it is required. Order State Date is usually an earlier date than the Operation Start Date and therefore this selection represents the more conservative planning logic of the two options. |
| Rapid Planning Simulation Set | Set this if you are using an Oracle Rapid Planning simulation plan to feed back changes to this plan. Enter the name of the simulation set from the Oracle Rapid Planning plan. |

| Object | Description |
| --- | --- |
| Demand Priority Rule | When ASCP does detailed scheduling, it schedules demands one by one. The rule specified here dictates the order in which demands will be considered during detailed scheduling, and thus which demands will get the first opportunities to take up available materials and resource capacities. Please see the section Demand Priority Rules, page 3-78. |
| End Item Substitution Set | If Decision Rules tabbed region > Use End Item Substitution is selected, select a substitution set. These are defined in the Planning Details - Substitute window discussed End-Item-Level Substitution, page 10-1. You can use a set of substitution relationships to be effective for a given plan by selecting the substitution set as an option for the plan. This allows you to run simulations of possible substitutions and evaluate performance indicators given possible future substitutions. |
| Exception Group | If you want to filter exception messages using an exception group that you have created, select it. The planning engine issues only the exception messages that you want and only issue them for the organizations, item categories, and time periods that you want. |
| Overwrite | Overwrite planned orders. For further details, please see Overwrite Options, page 3-72. |

| Object | Description |
| --- | --- |
| Schedule By | Set this option to instruct the planning engine to:<br><br>- Plan supplies based on sales order line request, promise, or schedule dates for either ship or arrival<br><br>- Consume forecasts based on sales order line request, promise, or schedule dates. You must provide forecast dates that match your choice of this plan option; for example, if you select Promise Ship date for this plan option, make sure your forecast dates are in terms of promise ship dates.<br><br>Select one of the following sales order line dates:<br><br>- Schedule Ship Date<br><br>- Schedule Arrival Date<br><br>- Request Ship Date<br><br>- Request Arrival Date<br><br>- Promise Ship Date<br><br>- Promise Arrival Date<br><br>The default is Schedule Ship Date.<br><br>For forecast consumption, the planning engine uses:<br><br>• Schedule Date: If you select Schedule Ship Date or Schedule Arrival Date<br><br>• Request Date: If you select Request Ship Date or Request Arrival Date<br><br>• Promise Date: If you select Promise Ship Date or Promise Arrival Date<br><br>If you do not specify plan option Demand Priority Rule and have not specified a default demand priority rule (in the Define Priority Ruled form), the planning engine uses the value of this plan option as the demand priority rule. |

| Object | Description |
| --- | --- |
| Demand Class | If you want to limit a production plan to a demand class, enter it. This field is active only for a Production Plan/MPS schedule. |
| Planning Time Fence Control | Check this option to enforce item attribute planning time fence control. |
| Maintenance Work Orders | For asset intensive planning, select the collected entities that you want to drive the plan<br>- EAM forecasts<br>- cMRO simulation sets |
| Demand Time Fence Control | Check this option to enforce demand time fence control. |
| Append Planned Orders | Appends new planned orders to current plan. For further details, please see Overwrite Options, page 3-72. |
| Move Work Orders to PIP | Check this option if you want to generate planned order supply even in the absence of demand in order to ensure that inventory is held on the manufacturing floor only for items designated as Planned Inventory Points. |
| Display Key Performance Indicators | Check this option to calculate key performance indicators for the plan. |
| Lot for Lot | Check this option to force the creation of a separate supply for each demand. This prevents creation of aggregate supplies that satisfy multiple demands. |

| Object | Description |
| --- | --- |
| Include Critical Components | Select this plan option to instruct the planning engine to plan considering critical components.<br><br>Depending on the plan type and the planning item types, the planning engine may plan critical components and not plan other components or components of those components.<br><br>To mark an item as a critical component, select its item attribute Critical Component. |
| Derive Returns Forecast from Work Orders | In asset intensive planning, select this plan option to instruct the planning engine to use cMRO defective component requirements as a removals forecast. |
| Do Not Spread Forecast | The planning engine should use forecast entries as they exist for planning. |
| Spread Forecast Evenly | The planning engine should spread aggregate forecast demand evenly across the daily buckets from the workday calendar.<br><br>A value in the corresponding field in the Organizations tabbed region for a demand schedule or global demand schedule overrides this value for that schedule. |
| Consume by Forecast Bucket | The forecast consumption process does not search outside of the consumption bucket for forecasts and sales orders except in daily buckets.<br><br>A value in the corresponding field in the Organizations tabbed region for a demand schedule or global demand schedule overrides this value for that schedule. |

| Object | Description |
| --- | --- |
| Explode Forecast | Select this plan option to instruct the planning engine to explode forecasts as follows during the consumption process:<br><br>- Product family forecasts to product family member item forecasts<br><br>- Model forecasts to other model, option class, and item forecasts.<br><br>This option applies to forecasts with forecast control Consume and derive.<br><br>If you clear this plan option, you have arranged for this explosion to occur either in the source instance, in Oracle Demand Planning, or in Oracle Demantra Demand Management before the planning run.<br><br>A value in the corresponding field in the Organizations tabbed region for a demand schedule or global demand schedule overrides this value for that schedule. |
| Backward Days | This parameter allows a sales order demand to consume forecast demand even if the forecast demand is up to the specified number of days earlier than the sales order demand. It applies only to the supply chain planning forecast and not to Oracle Demand Planning forecast scenarios. Please see the section Forecast Consumption Days, page 3-86 for more details.<br><br>A value in the corresponding field in the Organizations tabbed region for a demand schedule or global demand schedule overrides this value for that schedule |

| Object | Description |
| --- | --- |
| Forward Days | This parameter allows a sales order demand to consume forecast demand even if the forecast demand is up to the specified number of days later than the sales order demand. It applies only to the supply chain planning forecast and not to Oracle Demand Planning forecast scenarios Please see the section Forecast Consumption Days, page 3-86 for more details.<br><br>A value in the corresponding field in the Organizations tabbed region for a demand schedule or global demand schedule overrides this value for that schedule. |
| Enable Pegging | Select this option (the default) to calculate pegging information. Oracle ASCP traces supply information for an item to its corresponding end demand details, which you can then view in a graphical display. This field is checked by default. |
| Peg Supplies by Demand Priority | If Enable Pegging is selected, select to instruct the planning engine to peg in demand priority order from Demand Priority Rule. |
| Reservation Level | If Enable Pegging is selected, choose a reservation level: Planning Group, Project, Project-Task, or None. |
| Hard Pegging Level | If Enable Pegging is selected, choose a hard pegging level: Project, Project-Task, or None. |

| Object | Description |
| --- | --- |
| Apply Order Modifiers | Valid values are:<br>- At Hard Pegging Level (default): Excess inventory created because of order modifiers at the hard pegging level does not carry over to other tasks within the project (Reservation level set to Project) or project group (Reservation Level set to Planning Group)<br>- At Reservation Level: First use excess due to order modifiers from a previous task netting, then create planned orders for this project/task.<br>- For soft pegged items only: Ignore order modifiers for hard pegged items. |
| Use Common Supplies for Project Demands | Set this plan option if Reservation Level has a value other than None.<br>Valid values are:<br>- Selected: Peg common supplies to demands associated with projects/tasks.<br>- Clear (default): Peg common supplies only to common demands and common safety stock. |

## The Aggregation Tabbed Region

This table describes the fields and options.

| Object | Description |
| --- | --- |
| MPS In-line Recalculation | Enable this check box to perform In-line recalculation. When you select the MPS Inline Recalculation check box, the following Plan Options areas become greyed out (unavailable):<br>• Routing (Aggregation tab)<br>• Constrained without Detailed Scheduling (Constraints tab)<br>• Days<br>• Legacy Bill of Resources name from the source instance (Organizations tab) |
| Bill of Resources | Specify the Bill of Resources that you want to use. |
| Bucket Type | Specify the time bucket that you want to use. Either Weekly or Monthly.<br>**Note:** This bucket is also used by the slot resource for the rate of production. |
| Number of Buckets | Indicates the number of planning buckets you want to include in the plan. |
| Plan Start Date | If you have never run the plan, this field displays today's date. If you have run the plan, this field displays the planning horizon start date of the last run. |
| Plan End Date | Calculated planning horizon end date based on your entries in Buckets and the owning organization calendar. |
| Start Date | Calculated start date for each bucket based on your entries in Buckets and the owning organization calendar. The value for the Days column is the Plan Start Date. |

| Object | Description |
| --- | --- |
| Buckets | Number of buckets of this bucket type.<br><br>Weekly buckets can only start on the week beginning day from the manufacturing calendar. If the daily horizon does not end on the day before a week beginning day, the planning engine extends it to the next day before a week beginning day. It plans the extended days in daily buckets, never minute or hourly buckets, regardless of any other settings. |
| Items | Choose to plan at either the Item level or Product Family level. If you select Items in the first bucket, the other buckets can be set to either Items or Product Family. However, if you select Product Family in the first bucket, the remaining buckets are set to Product Family by default. |
| Resources | Choose to plan at either the Individual level or Aggregate level. If you select Individual in the first bucket, the other buckets can be set to either Individual or Aggregate. If you select Aggregate in the first bucket, the remaining buckets are set to Aggregate by default. |
| Routings | Choose to plan at either the routings or bill of resources level. Whatever level you select in any of the buckets, all the rest of the buckets are assigned that level by default. |

## Resource Utilization Calculation

The planning run generates planned orders, recommendations, and resource requirements.

The planning horizon is synchronized with time of the plan run. As a result, planned orders, recommendations, and resource requirements are generated starting at the time of plan run.

This diagram shows how resource utilization is calculated. The resource requirements are calculated as of Time t2 and the resource availability as of Time t1. There is a disparity between the times of resource requirement calculation (t2) and resource availability calculation (t1).

## The Organizations Tabbed Region

This table describes the fields and options.

| Object | Description |
|---|---|
| Global Demand Schedules | Select the names of Oracle Demand Planning scenarios that drive this plan. You can select demand planning scenarios that do not reference an organization (organization dimension set to All Organization). |
| Ship To Consumption Level | Select a forecast consumption level for the Oracle Demand Planning scenario. The global forecasting process consumes forecast entries that have Ship To value the same as this plan option.<br>You can select:<br>- Customer<br>- Customer Site<br>- Zone<br>- Customer Zone<br>- Demand Class<br>- Item<br>The choices in the list of values changes depending on the published level of the scenario. |
| Backward Days | This field has the same meaning as the corresponding field in the Main tabbed region. A value here for a global demand schedule overrides the Main tabbed region value for this schedule. |
| Forward Days | This field has the same meaning as the corresponding field in the Main tabbed region. A value here for a global demand schedule overrides the Main tabbed region value for this schedule. |

| Object | Description |
| --- | --- |
| Spread Forecast Evenly | This field has the same meaning as the corresponding field in the Main tabbed region. A value here for a global demand schedule overrides the Main tabbed region value for this schedule. |
| Consume by Forecast Bucket | This field has the same meaning as the corresponding field in the Main tabbed region. A value here for a global demand schedule overrides the Main tabbed region value for this schedule. |
| Explode Forecast | |
| Org | An organization which this plan should plan. |
| Description | The name of the organization. |
| Net WIP | Select to consider discrete jobs and other production orders as supply in the planning demand/supply netting process. |
| Net Reservations | If checked, ASCP generates pegging of on-hand supply to sales orders that matches the reservations recorded in the source transaction system. |
| Net Purchases | Select to consider purchase orders, purchase requisitions, in-transit shipments and other nonproduction order scheduled receipts as supply in the planning demand/supply netting process. This option covers all scheduled receipts not covered by the Net WIP option. |
| Plan Safety Stock | Select to consider plan safety stock demand and supply in the planning demand/supply netting process. See Safety Stock, page 4-129. |

| Object | Description |
| --- | --- |
| Include Sales Order | Select to invoke forecast consumption within ASCP for the selected organization. Check this if the demand schedules for the organization are unconsumed forecasts. Uncheck this if the demand schedules for the organization are consumed forecasts plus sales orders in the form of master demand schedules. |
| Firm Planned Orders From Production Schedule | Select this check box to indicate that the organization can receive data from Production Scheduling to the schedule specified in the Schedule Name field.<br><br>See Feeding a Production Schedule Back into ASCP. |
| Schedule Name | Enter the name of the production schedule. Note that this production schedule should be referencing this ASCP plan within its schedule options. In other words, the schedule name that is entered should reference the ASCP plan on the Schedule Options page, Scope tab.<br><br>See Feeding a Production Schedule Back into ASCP. |
| Firm Horizon (Days) | Enter the number of days for which the planned orders from the feeding production schedule are considered by the ASCP plan.<br><br>See Feeding a Production Schedule Back into ASCP. |
| Bill of Resource | Select Bill of Resources from the list of values. |

| Object | Description |
| --- | --- |
| Simulation Set | Select a Simulation Set from the list of values. A simulation set is a set of adjustments to the base availability calendar of a resource, and is defined via the Oracle Bills of Material Department Resources form. You can define different simulation sets to model different availability scenarios (for example, the base availability calendar reflects 5 day operations; simulation set 1 reflects working 6 day operations; simulation set 2 reflects 7 day operations). The planning engine applies the simulation set to all resources in the organization.<br><br>Oracle Enterprise Asset Management plans maintenance activity and creates maintenance work orders which may specify shutdown of equipment resources. If you are using Oracle Enterprise Asset Management, you can pass your maintenance downtimes to the planning engine. To plan for these shutdowns in Oracle Advanced Supply Chain Planning, run the Oracle Enterprise Asset Management Load Equipment Maintenance Downtime concurrent process.<br><br>The process creates a simulation set with the downtimes recorded as capacity changes for reduced hours. You can specify the simulation set in the Organizations tabbed region of the Plan Options window. When the plan is run, the planning engine uses this simulation set to calculate the reduction in the available capacity of resources due to maintenance downtime. The planning engine plans production activities for these resources after considering the reduction in available capacity. You can view the impact of this change on the resource availability and usage profiles in the Planner Workbench. |
| Demand Schedules | Select the names of demand schedules, forecasts, and plans that drive this plan. |

| Object | Description |
| --- | --- |
| Include Targets | You can select this option for a distribution plan that you are using as a demand schedule. Distribution plans may use target inventory levels and attempt to plan to meet the target inventory demands. However, when smoothing their production schedules and resolving constraints, they may choose to produce some amount less than required by the target inventory levels. In this case, distribution planning distributes according to safety stock inventory levels first and then allocates the remainder using the target inventory levels. |
| Ship To Consumption Level | Select a forecast consumption level for the local forecasts in the demand schedule. The forecast consumption process consumes forecast entries that have Ship To value the same as this plan option.<br>You can select:<br>- Customer<br>- Customer Site<br>- Demand Class<br>- Item-org |
| Interplant | If selected, the planning engine uses only interorganization orders and demands from interorganization planned orders. If cleared, the planning engine uses demands from all planned orders. |
| Backward Days | This field has the same meaning as the corresponding field in the Main tabbed region. A value here for a demand schedule overrides the Main tabbed region value for this schedule. |
| Forward Days | This field has the same meaning as the corresponding field in the Main tabbed region. A value here for a demand schedule overrides the Main tabbed region value for this schedule. |

| Object | Description |
| --- | --- |
| Spread Forecast Evenly | This field has the same meaning as the corresponding field in the Main tabbed region. A value here for a demand schedule overrides the Main tabbed region value for this schedule. |
| Consume by Forecast Bucket | This field has the same meaning as the corresponding field in the Main tabbed region. A value here for a demand schedule overrides the Main tabbed region value for this schedule |
| Explode Forecast | This field has the same meaning as the corresponding field in the Main tabbed region. A value here for a demand schedule overrides the Main tabbed region value for this schedule. |
| Supply Schedules | Select the name of supply schedules that participate in this plan. |
| Subinventory Netting | Opens the Subinventory Netting window. |
| Forecast Spreading Calendar | The calendar that the planning engine uses to spread this organization's forecasts. If you don't specify a calendar here, the planning engine spreads this organization's forecasts according to the calendar in profile option MSC: Forecast Spreading Calendar. |

## The Constraints Tabbed Region

This table describes the fields and options.

| Object | Description |
| --- | --- |
| Constraints Mode | Specify the constrained planning mode for this plan; see Choosing Planning Modes. Valid values are:<br><br>Unconstrained: This is the default value. The options in the Scheduling region are grayed out.<br><br>Constrained (Classic): The options in the Scheduling region are enabled.<br><br>Constrained (Without Detailed Scheduling): The options in the Scheduling region are grayed out. You cannot use lot-for-lot planning in this planning mode.<br><br>Constrained (With Detailed Scheduling): The options in the Scheduling region are enabled.<br><br>You cannot set all Resource Constraints and Material Constraints to No. If you set any Resource Constraints to Yes, you cannot clear Calculate Resource Requirements.<br><br>To enable pegging, select plan option Enable Pegging. |
| Enforce Demand Due Dates | Select if you want demand due dates to be your hard constraint (that is, respected in lieu of material and resource capacity constraints if there is conflict). For more information, see Setting Constraints for Different Plan Types, page 7-28. |
| Enforce Capacity Constraints | Select if you want material and resource capacity constraints to be respected in lieu of demand due date constraints if there is a conflict. For more information, see Setting Constraints for Different Plan Types, page 7-28. |
| Start Date | Displays the start date for each bucket type. |
| Buckets | Displays the number of buckets of this bucket type. |

| Object | Description |
| --- | --- |
| Resource Constraints | Select Yes to consider resource constraints. If you select No, the planning engine assumes that resource capacity is infinite regardless of any simulation sets. |
| Supplier Capacity Constraints | Select Yes to consider supplier capacity constraints. |
| Enforce Purchasing Lead-time Constraints | Select this plan option to instruct the planning engine to constrain the plan by purchased item lead-times (item attributes or approved supplier list).<br><br>Clear it to instruct the planning engine never to miss a demand due date because of a purchased item lead-time.<br><br>For more details, see Enforce Purchasing Lead-time, page 7-30. |
| Maximize Resource utilization | When you select it, ASCP maximizes resource utilization by front loading the supplies on the resources. When you clear it, ASCP plans supplies just in time to meet demand dates.<br><br>It operates only in plan mode Constrained without detailed scheduling.<br><br>It does not apply to buy and transfer orders. |
| Minutes Bucket Size (in Days) | Specify the number of minute buckets in the Days bucket type. If the plan start time is not 00:00, the planning engine schedules the remainder of the first day in minutes even if the value for plan option Minutes is 0. For example if you start the plan on 01-Jan 14:00, the planning engine schedules in minutes from 01-Jan 14:00 to 02-Jan 00:00. |
| Hours Bucket Size (in Days) | Specify the number of hours buckets in the Days bucket type. |
| Days Bucket Size (in Days) | Specify the number of days buckets in the Days bucket type. |

| Object | Description |
| --- | --- |
| Calculate Resource Requirements | If selected, the program will calculate resource capacity utilization. Select in unconstrained plans to enable release of lot-based planned orders. |
| Planned Resources | Select All Resources or Bottleneck Resources. If you have defined bottleneck resource groups in Oracle Bills of Material and you want to detail schedule only the bottleneck resources, select Bottleneck Resources and enter a Bottleneck Resource Group. |
| Bottleneck Resource Group | If you have defined bottleneck resource groups in Oracle Bills of Material and you want to detail schedule only the bottleneck resources, select its name. |

#### Bottleneck Resource Group Scheduling

If you plan using a bottleneck resource group, the planning engine schedules all resources but schedules resources in the bottleneck resource group differently than it schedules resources not in the bottleneck resource group.

For resources in the bottleneck resource group, it performs the usual detailed scheduling referring to the constraint planning options that you selected.

For resources not in the bottleneck resource group, it schedules activities and operations:

- When needed
- Based on the required duration (Resource usage / Assigned units)
- Without regard to resource capacity. If its actions overload resource capacity, it issues Resource overloaded exception messages.
- Without regard to the plan option Resource Constraints.

If the plan is:

- Enforce capacity constraints, the planning engine may schedule the supply late because of the duration and issue Resource constraint exception messages.
- Enforce demand due dates, the planning engine may compress the duration so that the supply completes on time, when it reaches the planning horizon start time, and when it reaches the planning time fence. As it compresses duration, it increases

assigned units.

## The Optimization Tabbed Region

This table describes the fields and options.

Penalty factors are plan level values that:

- You can override by setting values for organizations and items in the source instance
- Override those set in profile options

| Object | Description |
|---|---|
| Optimize | Select if you are running an optimized plan. Before selecting, verify that you selected Constraints tabbed region, Constrained Plan field. If you clear, you cannot enter any other information in this tabbed region. |
| Enforce Sourcing Constraints | Select if you want to enforce the sourcing splits in the item sourcing rules. For an optimized plan, the planning engine may override these sourcing splits if it results in less cost. For unconstrained and constrained plans, the planning engine respects these sourcing splits without regard to this option. |
| Maximize inventory turns | Specify a weighting percentage from 0 to 1. |
| Maximize plan profit | Specify a weighting percentage from 0 to 1. |
| Maximize on-time delivery | Specify a weighting percentage from 0 to 1. |
| Exceeding material capacity % | Enter a numerical value to quantify the impact of exceeding material capacity. For example, if you enter 50, the penalty factor is 50%. |
| Exceeding resource capacity % | Enter a numerical value to quantify the impact of exceeding resource capacity. For example, if you enter 50, the penalty factor is 50%. |

| Object | Description |
| --- | --- |
| Exceeding transportation capacity % | Enter a numerical value to quantify the impact of exceeding transportation capacity. For example, if you enter 50, the penalty factor is 50%. |
| Demand lateness % | Enter a numerical value to quantify the impact of late demand. For example, if you enter 50, the penalty factor is 50%. |

## The Decision Rules Tabbed Region

This tabbed region is available as follows:

- Unconstrained plans: It is never available.
- Constrained plans: It is available only if profile option MSO: Enable Decision Rules is Yes.
- Optimized plans (Optimization tabbed region, Optimize is selected): It is always available.

This table describes the fields and options.

| Object | Description |
| --- | --- |
| Use End Item Substitution | If selected, use end item substitute prior to creating new planned orders. If cleared, use only the demanded item. Enter the End Item Substitution Set in the Main tabbed region. |
| Use Alternate Resources | If selected, use primary resource and use alternate resource only if necessary. If cleared, use only primary resources. |
| Use Substitute Components | If selected, use primary components and use substitute components only if necessary. If cleared, use only primary components only. |
| Use Alternate BOM/Routing | If selected, use primary routings and use alternates only if necessary. If cleared, use only primary bills of material and routings. |

| Object | Description |
| --- | --- |
| Use Alternate Sources | If selected, use primary sources and use alternate sources only if necessary. If cleared, use primary sources only. The planning engine does not use alternate sources (rank 2 or higher) as a sources of supply. |

## The Reporting Tabbed Region

This table describes the fields and options.

| Object | Description |
| --- | --- |
| Available Worksheets | Worksheet definitions available for this plan. |
| <arrows> | Move worksheet definitions between Available Worksheets and Selected Worksheets. |
| Selected Worksheets | Worksheet definitions that the planning engine completes if you select launch parameter Build Worksheets; you can export them when the planning engine finishes. |

## Using an Existing Plan as a Demand Schedule For New Plan

The plan for one organization can be used as a demand (or demand schedule) for the plan of another organization.

> **Note:** Users can collect forecasts into the APS planning server. Optionally, they can choose to consume forecasts by sales orders when they run ASCP plans. Forecasts are consumed if the Include Sales Order check box in the Organizations tab of the Plan Options window is checked. For multilevel assemble-to-order items, forecasts are consumed at all levels if the forecast explosion has occurred in the source instance prior to the collection.

#### To use an existing plan as a demand schedule for new plan

1. Choose Supply Chain Plan > Names to create a new plan for the organization that

will use an existing plan as a source.

The Supply Chain Plan Names window appears.

2. Select Plan Options.

   The Plan Options window appears.

3. Choose the Organizations tab.

4. Specify the plan name to be used as a source for the new plan in the Demand Schedule portion of the window.

5. Click Subinventory Netting.

   The Subinventory Netting window appears.

   This table describes the fields and options.

| Object | Description |
|---|---|
| Name | Shows all active subinventories for your organization. |
| Description | Subinventory description. |
| Net | Select to net the subinventory in the planning run. |

## Up-Sell Cross-Sell Substitution Item Relationships

Oracle Advanced Supply Chain Planning collects the following information on a demand that represents a sales order line:

- Original ordered item: The item that the customer asked for
- Ordered item: The item that the customer ordered (the booked item)

The relationship between the ordered item and original ordered item is classified as:

- Up-sell: The process of offering customers products superior in capability to the ones that they intend to buy
- Cross-sell: The process of offering customers related products or accessories in addition to the ones that they intend to buy
- Substitution: The process of offering customers similar products to the ones that

they intend to buy. This is usually when the requested product is not available to ship.

During forecast consumption, Oracle Advanced Supply Chain Planning checks to see if the booked item in the sales order is one that has been offered to the customer as a substitute to what the customer originally requested. If so, Oracle Advanced Supply Chain Planning consumes the forecast of the original item. If the booked item in the sales order is an up-sell or a cross-sell item, Oracle Advanced Supply Chain Planning consumes the forecast of the booked item.

This feature helps you in offering equivalent substitute products when requested product is in short supply. It also makes the forecast consumption process sensitive to the relationship type between the original and the ordered items as recorded on the sales order. This provides you with accurate records of order booking history, which improves forecast accuracy.

The following table shows the relationship type on the sales order line. The planning engine considers this for identifying the forecast against which this sales order line should be consumed.

| Relationship type on the sales order | Forecast consumption performed on forecast of ordered item? | Forecast consumption performed on forecast of original ordered item? |
|---|---|---|
| Up-Sell | Yes | No |
| Cross-Sell | Yes | No |
| Substitution | No | Yes |

**To setup up-sell cross-sell substitution item relationships**

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Order Management > Orders, Returns > Sales Orders.
3. Highlight any sales order line, and select Related Items to see all the potential up-sell, cross-sell, and substitution possibilities. You can select one of the displayed options.
4. Once you select a related item, Oracle Order Management copies the item that the customer had originally requested for, into the original item column on the sales order line.

#### To use up-sell cross-sell substitution item relationships

1. Enter related items in the sales order lines.
2. Collect data into the planning instance.
3. Change to the Demand Planner responsibility.
4. Select the data stream inputs for demand planning.

   For more details, see Creating Data Streams for Demand Plans, page 3-71.
5. Create a demand plan.

   For more details, see *Oracle Demand Planning Implementation and User's Guide*.

   Oracle Demand Planning has options of recording history against either the original item or the ordered item through the choice of input data stream. This will influence the forecasting process for these items.
6. Change to the Advanced Supply Chain Planner responsibility.
7. Navigate to Plan Options > Organization tab.
8. In the Global Demand Schedules region or the Organization specific Demand Scheduled Region, select the demand planning scenarios that drive the plan.
9. Run the plan.
10. Navigate to the Supply/Demand window to view the information on the original item and the ordered item.

    7
11. The forecast consumption process of Oracle Advanced Supply Chain Planning is sensitive to the presence of orders that have undergone item substitution.
12. Right-click on a sales order line and select Consumption Details.

Both the Original Item and the End Item are displayed in the Consumption Details window.

You can also view the forecast consumption details in the Horizontal Plan window if the forecast is a global forecast.

#### Creating Data Streams for Demand Plans

When creating demand plans, you can specify any one of the following data streams:

- Booking History

- Booking History - Booked Items
- Shipment History
- Shipment History - Shipped Items

The following table shows whether the planning engine records the history on the original item or the ordered item based on the relationship on the sales order.

| Input data stream | Relationship type on the sales order | History recorded on ordered item? | History recorded on original item? |
|---|---|---|---|
| Booking History or Shipment History | Up-Sell | Yes | No |
| | Cross-Sell | Yes | No |
| | Substitution | No | Yes |
| Booking History - Booked Item or Shipment History - Shipped Item | Up-Sell | Yes | No |
| | Cross-Sell | Yes | No |
| | Substitution | Yes | No |

If the relationship type on the sales order is other than up-sell, cross-sell, or, substitution, the planning engine records the history against the ordered item in all the four input data streams.

If the relationship type is blank and the original item is specified, these are orders that have undergone item substitution in the planning process. The planning engine treats such orders as the substitution relationship type.

> **Note:** In case of model items, the Calculate Planning Percentages feature works only with two input data streams: Booking History - Booked Items and Shipment History - Shipped Items. Using this feature in conjunction with the other two data streams may produce inconsistent results.

## Overwrite Options

When you launch the planning process, you generate new planned orders and suggested repetitive schedules to meet your net requirements. Since you can firm a MPP, MPS, or MRP planned order, you may not want the planning process to overwrite any firm planned orders. You can use the Overwrite and Append plan level options to

limit how the planning process reacts to firm planned orders and to stabilize the short term material plan.

#### Overwrite

When you enter All in the Overwrite field in the Main tab of the Plan Options form, the planning process overwrites all entries, planned and firm planned, from the current material plan. When you enter None in the Overwrite field, the planning process does not overwrite any firm planned orders. It does, however, overwrite any suggested planned orders that are not firm. When you enter Outside planning time fence in the Overwrite field, the planning process overwrites all entries from the current plan, planned and firm planned, outside the planning time fence, and overwrites only planned orders inside the planning time fence. It does not overwrite any firm planned orders within the planning time fence. The planning time fence can be different for each item, so the planning process looks at the planning time fence for each item when choosing what to delete.

#### Append Planned Orders

When you uncheck the Append Planned Orders field in the Main tab of the Plan Options window, the planning process does not append any planned orders to the current plan. Additional demand does not cause planned order recommendations. Instead, the projected quantity on hand may go negative in response to demand that was not met by a suggested planned order.

When you check the Append Planned Orders field, the planning process appends additional planned orders after the last entry on the current material plan to meet any additional demand. The overwrite and append options work in combinations, as described below.

#### Overwrite All, Append Planned Orders

This option allows you to create a new material requirements plan for the plan name you specify, deleting all previous planned and firm planned entries while regenerating new planned orders. You can use this combination the first time you run your plan or if you want your plan to reflect all sources of new demand. For example, if an existing material plan has the following orders for an item:

| Schedule Date | Quantity | Order Status |
|---|---|---|
| 01-FEB | 100 | Planned |
| 08-FEB | 200 | MRP firm planned |
| 15-FEB | 300 | Planned |

And the following MDS is used to plan the material plan using All in the Overwrite

field and Yes in the Append Planned Orders field:

| Schedule Date | Quantity |
|---|---|
| 02-FEB | 110 |
| 09-FEB | 220 |
| 16-FEB | 330 |

Then the resulting material plan would have the following suggestions for planned orders:

| Schedule Date | Quantity | Order Status |
|---|---|---|
| 02-FEB | 110 | Planned |
| 09-FEB | 220 | Planned |
| 16-FEB | 330 | Planned |

The planning process always suggests planned orders. You can change planned orders to a firm status using the Items window in the Planner Workbench.

#### Overwrite Outside Planning Time Fence, Append Planned Orders

This option allows you to create an extension to the material requirements plan for the plan name you specify, deleting planned and firm planned orders outside the planning time fence and deleting all planned entries inside the planning time fence for each item. The planning process creates (appends) new planned orders after the planning time fence date. In this case, since you are overwriting after the planning time fence, you are also appending new planned orders after that date. You can use this combination to stabilize the short-term plan and allow the long-term plan to react to new sources of demand.

> **Note:** If an item has no time fence specified and this option is chosen, all planned and firm planned orders are overwritten.

For example, if an existing MRP has the following orders for an item:

| Schedule Date | Quantity | Order Status |
|---|---|---|
| 01-FEB | 100 | Planned |
| 08-FEB | 200 | MRP firm planned |
| 15-FEB | 300 | Planned |

And the following MDS is used to plan the MRP using Outside Planning Time Fence in the Overwrite field and Yes in the Append Planned Orders field

:

| Schedule Date | Quantity |
|---|---|
| 02-FEB | 110 |
| 09-FEB | 220 |
| 16-FEB | 330 |

Then the resulting material plan would have the following suggestions for planned orders, assuming the planning time fence is 05-FEB.

| Schedule Date | Quantity | Order Status |
|---|---|---|
| 05-FEB | 110 | Planned |
| 09-FEB | 220 | Planned |
| 16-FEB | 330 | Planned |

Since the entry on 01-FEB is not firmed, the MRP planning process overwrites this entry. If it was firmed, the process would not overwrite the entry. The additional demand from the MDS of 110 on 02-FEB was appended on the planning time fence date of 05-FEB. The MRP firm planned order on 08-FEB was deleted because it falls outside the planning time fence of 05-FEB. The planning process always suggests planned orders. You can change planned orders to a MRP firm status using the Items window in the Planner Workbench.

### Overwrite None, Append Planned Orders

When you choose not to overwrite an existing plan, the planning process does not overwrite existing firm planned orders, but deletes any suggested planned orders. The planning process then creates (appends) new planned orders after the planning time fence date. This is analogous to firming sections of your short-term material requirements plan. You can extend the plan horizon without altering existing firm planned orders. For example, if an existing MRP has the following suggested planned orders for an item:

| Schedule Date | Quantity | Order Status |
|---|---|---|
| 01-FEB | 100 | Planned |
| 08-FEB | 200 | MRP firm planned |
| 15-FEB | 300 | Planned |

And the following MDS is used to plan the MRP using None in the Overwrite field and Yes in the Append Planned Orders field:

| Schedule Date | Quantity |
|---|---|
| 02-FEB | 110 |
| 09-FEB | 220 |
| 16-FEB | 330 |

The resulting material plan would have the following suggestions for planned orders assuming the planning time fence is 05-FEB:

| Schedule Date | Quantity | Order Status |
|---|---|---|
| 05-FEB | 110 | Planned |
| 08-FEB | 200 | MRP firm planned |
| 09-FEB | 20 | Planned |
| 16-FEB | 330 | Planned |

The firm order on 08-FEB remains on the MRP since the overwrite is None. However, the planned entries are deleted. Although additional demand exists on the MDS, no planned orders are suggested until the planning time fence (on 05-FEB). The MDS demand of 110 on 02-FEB was satisfied by a new planned order for 110 on 05-FEB. The demand for 220 on 09-FEB was partially met by the firm MRP planned order on 08-FEB. Thus an additional planned order was suggested on 09-FEB for 20 to meet the MDS demand of 220. A suggested planned order was created on 16-FEB for 330 to meet the demand from the MDS on 16-FEB.

#### Overwrite None, Do Not Append Planned Orders

In this case, the planning process does not overwrite existing firm planned entries, but deletes any suggested planned orders. In addition, it does not append additional demand to the end of the plan. Instead, it reports the instances where the material requirements plan is out of balance with the master demand schedule, and allows you to solve these problems by manipulating the plan manually. This gives maximum control to the material planner. For example, if an existing material plan has the following orders:

| Schedule Date | Quantity | Order Status |
|---|---|---|
| 01-FEB | 100 | Planned |
| 08-FEB | 200 | MRP firm planned |
| 15-FEB | 300 | Planned |

And the following MDS is used to plan the MRP using None in the Overwrite field and No in the Append Planned Orders field:

| Schedule Date | Quantity |
|---|---|
| 02-FEB | 110 |
| 09-FEB | 220 |
| 16-FEB | 330 |

The resulting MRP would have the following suggestions for planned orders:

| Schedule Date | Quantity | Order Status |
|---|---|---|
| 08-FEB | 200 | MRP firm planned |

The reason the additional demand from 02-FEB, 09-FEB, and 16-FEB was not planned for is because with the Overwrite None and Do Not Append Planned Orders, you choose not to overwrite firm planned orders nor create new planned orders to meet additional demand. In this case, the projected quantity on hand would go negative since no planned orders were suggested to meet the additional demand. The material planner can use online inquiries and reports with exception messages to identify material shortages.

## Demand Priority Rules

In ASCP, planning decision-making occurs sequentially in the following phases:

- Selection of alternates (routings, substitute components, internal source organizations, suppliers).

  **Note:** Intelligent selection of alternates occurs in constrained plans with decision rules enabled or in optimized plans only. Constrained without decision rules enabled and unconstrained plans choose only the primary alternative (for example, the primary routing) and always respect the sourcing rank and percentages specified in sourcing rules.

- Pegging of supplies (on-hands, scheduled receipts, and planned order supplies) to demands

- Detailed scheduling of individual operation steps on resources

  **Note:** This phase is enabled only if the Constrained Plan checkbox in the Constraints tab of the Plan Options form is checked

In the detailed scheduling phase, demand quantities that are pegged to planned order supplies are considered in internal priority order. Demands with higher internal priority get the first opportunities to take up available resource and material capacities; demands with lower internal priorities can only use remaining resource and material capacities and are therefore more likely to be satisfied late.

Oracle does not recommend driving a plan using both a master demand schedule and forecasts and sales orders directly. In such plans, the planning engine does not maintain demand priorities across these entities.

The internal priorities described above are different than the external priorities that can be attached to sales orders and master demand schedule entries. Internal priorities are generated for a plan on the basis of a priority rule that you attach to the plan in the Main tab of the Plan Options form.

### To define a priority rule

1. Sign on using the Advanced Supply Chain Planner responsibility.
2. From the Navigator, select Setup > Priority Rules.

   The Define Priority Rules window appears.

   Use the information in the following table to fill in the fields in this form.

| Field | Description |
|---|---|
| Name | Enter a name for your priority rule. You will refer to this name when defining plan options for a supply chain plan. |
| Description | Enter a description for your priority rule. The description is for your personal reference only, and is not used elsewhere in ASCP. |
| Enabled | Check this box to allow this priority rule to be attached to an ASCP plan. |
| Default | Check this box to make this priority rule the default priority rule on the ASCP planning server. |

| Field | Description |
| --- | --- |
| Criteria Name | Valid values are: Gross Margin, Promise Date, Request Date, Sales Orders and MDS Entries Priority, and Schedule Date. Select the criteria that you wish to evaluate each demand by when ASCP generates the internal priority for the demand. For example, if you select Sales Orders and MDS Entries Priority, then the demand entry that has the most urgent external priority (as specified on the sales order line or on the MDS entry) will receive an internal priority of 1, the demand with the next most urgent external priority will receive an internal priority of 2, and so forth. If you choose multiple criteria, each criterion will be used to break ties in the criteria that preceded it. In the screenshot example, if two sales order demands both have a priority of 1, the most urgent internal priority will be assigned to the sales order with the earliest Schedule Date (due date). If multiple demands tie on all criteria specified in the priority rule, then the tie is broken arbitrarily and the demands are assigned consecutive internal priority values. |
| Criteria Order | This field is populated automatically. It numbers the criteria that you choose above sequentially, starting with 1, 2, ... |

**To attach a priority rule to a supply chain plan**

Enter the priority rule name in the Demand Priority Rule field in the Main tab of the Plan Options form. Please see the section The Main Tabbed Region, page 3-47 for further details.

By using the priority rule shown in the screenshot above, you ensure that the demands with the most urgent external priority will have the best chance of being satisfied on time, since they will have the first opportunity to utilize available resource and material capacities.

The planning engine uses this hierarchy to determine the priority rule:

- Plan priority rule: Plan options form > Main tabbed region

- Default priority rule: Priority rules form
- Schedule Date: Prioritizes the demands in due date order

## Peg Supplies by Demand Priority

The planning engine allocates firm and nonfirm supplies to demands during the pegging process.

The planning engine pegs in different ways depending on settings that you choose, see the Pegging Overview section in Supply/Demand Window, page 16-64.

## Plan to Request, Promise, or Schedule Dates

Oracle Advanced Supply Chain Planning allows you to plan supplies or consume forecasts based on the sales order line request dates, promise dates, or schedule dates. This helps you to honor as well as improve your delivery commitments.

Depending on the condition that your organization needs to meet, you can plan based on one of the following dates:

- Plan to request date - If you want to meet a more aggressive set of dates compared to the ones initially scheduled by Oracle Global Order Promising. You can use this option when you have many alternate bills of materials (BOMs) / routings or alternate facilities. Since, Oracle Global Order Promising does not take into account these alternates, it often provides conservative schedule dates in these situations. In this scenario, you can use Oracle Advanced Supply Chain Planning's constrained, decision rule-based, or cost-optimized plans to arrive at better schedule dates.
- Plan to promise date - If you want to meet dates communicated to customers and ignore any schedule date overrides. By comparing the resulting demand satisfied dates with the demand schedule dates, you can validate manual schedule date overrides made since the previous customer communication.
- Plan to schedule date - If you want to meet demand dates as suggested by Oracle Global Order Promising and adhere to manually overridden dates.

### To Set the Plan Option to Request, Promise, or Schedule dates

1. From the Navigator, choose Supply Chain Plans > Plan Options.

   The Plan Options window appears. The Main tab is displayed by default.

2. In the Schedule By box, select the type of sales order line date that you want to consider for your planning:
   - Schedule Ship Date (default)

- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

For more details on the Plan Options window, see Setting Plan Options.

> **Note:** If no priority rule is specified in the Define Priority Rules form, then the planning engine considers a demand priority rule based on the option specified (or defaulted) in the Schedule By box of the Plan Options window.

### Calculation of Ship and Arrival Dates

You can consider either the arrival or the ship date of the demand to be the due date. The planning engine calculates the ship and arrival dates as following:

#### For Schedule Dates

The planning engine calculates the schedule ship date or arrival date based on the date specified on the sales order line. If the schedule arrival date is specified on the sales order line, then the planning engine calculates the schedule ship date by offsetting the schedule arrival date by the intransit time.

For example:

If the Schedule Arrival Date is specified as Day 11 and the intransit time is 2 days, then the planning engine calculates the Schedule Ship Date as Day 9.

#### For Request or Promise Dates

The planning engine calculates the corresponding ship dates or the arrival dates for the order request dates or the order promise dates with respect to the customer level attribute Request Date Type specified in Customers > Order Management tab.

If the Request Date Type is:

- Arrival - The ship dates are calculated by offsetting the arrival dates by the intransit time

  For example:

  If the Request Arrival Date is Day 12 and the intransit time is 2 days, then the planning engine calculates the Request Ship date as Day 10.

- Ship - The arrival dates are calculated by adding the intransit time to the ship dates

  For example:

If the Request Ship Date is Day 12 and the intransit time is 2 days, the planning engine calculates the Request Arrival Date as Day 14.

> **Note:** The planing engine also takes into account the shipping, receiving and, carrier calendar for calculating the ship and arrival dates. For more details on calendars, see Setting Shipping, Receiving, Carrier, and Supplier Capacity Calendars

## Exporting Plan Results

You can export the supply, demand, and item information that you want, and in the format you want, from a supply chain plan to Microsoft Excel. The planning engine:

- Collects the data that you want during the planning run
- Saves it as a worksheet with the other plan information for you to export

To accomplish the export, do this:

- Define worksheets, Plan Worksheets window
- Tell the planning process which worksheets to complete for this plan: Plan Options window > tab Reporting
- Tell the planning process to complete the worksheets for this plan that you select: Concurrent Processes > Launch Supply Chain Planning Process Request Set
- Export the completed worksheets: Planner Workbench, (M) Tools > Export Plan Worksheets to Excel

**Plan Worksheets Window**

Use this window to define worksheets to export to Microsoft Excel.

In the header, name and describe your worksheet, and select if it is public or private.

**Plan Worksheets Window – Filters Tab**

Select the information that you want to see in each column. Criteria is the field name from the supply chain plan.

Enable the criteria for the plan to use.

The planning engine selects data for the worksheet.

**Plan Worksheets Window – Results Layout Tab**

Lay out the Excel spreadsheet.

Select a value for Entity and you can see its attributes in Available Attributes. The entities are:

- Item
- Order
- End Item
- End Demand

There are some derived attributes in entity Order, see Derived Attributes

Move the attributes that you want to see on the spreadsheet from Available Attributes to Selected Attributes

**Derived Attributes**

Find these attributes in entity Order.

Where Used Category 1, Where Used Category 2, and Where Used Category 3: The item category of up to three next level where-used items.

Inter-Org: This reduces duplicate information in the spreadsheet about transfers. If you select organizations with destination (transfer supplies) / source (transfer dependent demands) pairs, the spreadsheet shows information for the transfer supplies only.

**Plan Worksheets Window – Other Tab, Item Category Sets**

Select up to three item category sets. If you do, the spreadsheet shows the order quantities of each item for all valid combinations of the item categories.

These are example bills of materials.

```
ASSY-11
 - SUB-ASSY-21
   - ITEM-31
   - ITEM-32
 - SUB-ASSY-22
   - ITEM-32
ASSY-12
 - SUB-ASSY-23
   - ITEM-32
```

These are example category sets.

```
Category Set A          Category Set B
 - Category A1            - Category B1
   - SUB-ASSY-21           - ASSY-11
 - Category A2            - Category B2
   - SUB-ASSY-22           - ASSY-12
   - SUB-ASSY-23
```

This is how the example spreadsheet looks if you select:

- Item Category Set 1: Category Set A
- Item Category Set 2: Category Set B
- Item Category Set 3: <blank>

```
          Where Used     Where Used    Where Used
Item      Category 1     Category 2    Category 3
- - - -   - - - - - -    - - - - - -   - - - - - -
ITEM-31   Category A1    Category B1   <blank>
ITEM-32   Category A1    Category B1   <blank>
ITEM-32   Category A2    Category B1   <blank>
ITEM-32   Category A2    Category B2   <blank>
```

**Plan Worksheets Window – Other Tab, Where Used Item Category Sets**

Select up to three where used item category sets. If you do, the spreadsheet shows the order quantities of each item for all valid combinations of the where-used item categories.

These are example category sets.

- Category sets:
  - CatSet_Country
    - Cat_US
      - FIN1
    - Cat_CANADA
      - FIN2
  - CatSet_PackageType
    - Cat_Tablet
      - TABLET1
    - Cat_Gelcap
      - GELCAP2

Tablets transfer to distribution center FIN1.

Gelcaps transfer to distribution center FIN2.

This is how the example spreadsheet looks if you select:

- Where Used Item Category Set 1: Package Type
- Where Used Item Category Set 2: Country
- Where Used Item Category Set 3: <blank>

| Item | Order Type | Pegged Qty | Due Date | Package_Type | Country |
|---|---|---|---|---|---|
| BULK | Work Order | 10000 | 20-Feb | Tablet | US |
| BULK | Work Order | 20000 | 23-Feb | Gelcap | CANADA |

# Forecasts

## Forecasts Overview

Use forecasts to estimate future demand for items using historical, statistical, and intuitive techniques.

**Including Past Due Forecasts in a Plan**

- Clear plan option Demand Time Fence Control.
- Set the value of profile option MSC: Consume Forecast Inside Demand Time Fence to Yes.
- Navigate Setup > Parameters and set the number of days of past due forecast to include in the plan.

## Multi-organization Forecasts

The types of multi-organization forecasts are:

- Local: Forecasts with a ship from organization associated to them. You create and manage them in an organization in the source instance and that organization is their ship from organization or in Oracle Demand Planning where you specify an organization.
- Global: Forecasts with no pre-specified ship from organization associated to them. You create and manage them in Oracle Demand Planning or in Oracle Demantra. See Global Forecasting, page 3-119.

## Forecast Consumption

### Overview of Forecast Consumption

Forecast consumption replaces forecasted demand with actual sales order demand.

Each time you create a sales order line, you create actual demand. If the actual demand is already forecasted, the forecast demand must be decremented by the sales order quantity to avoid counting the same demand twice.

For example, this table shows the forecast and sales orders for item 1.

| Order Type | Quantity | Date |
|---|---|---|
| Forecast | 50 | June 1 |
| SO1 (sales order 1) | 10 | June 1 |
| SO2 | 25 | June 1 |

This table shows the forecast and sales orders for item 1 after forecast consumption.

| Order Type | Quantity | Date |
|---|---|---|
| Forecast | 15 (50 - (10 + 25)) | June 1 |
| SO1 | 10 | June 1 |
| SO 2 | 25 | June 1 |

Forecast consumption relieves forecast items based on the sales order line schedule date. When an exact date match is found, consumption decrements the forecast entry by the sales order quantity. Other factors that may affect the forecast consumption process are backward and forward consumption days and forecast bucket type.

When you create a new forecast, especially from an external source, you can also apply consumption that has already occurred for other forecasts to the new one.

### Forecast Control

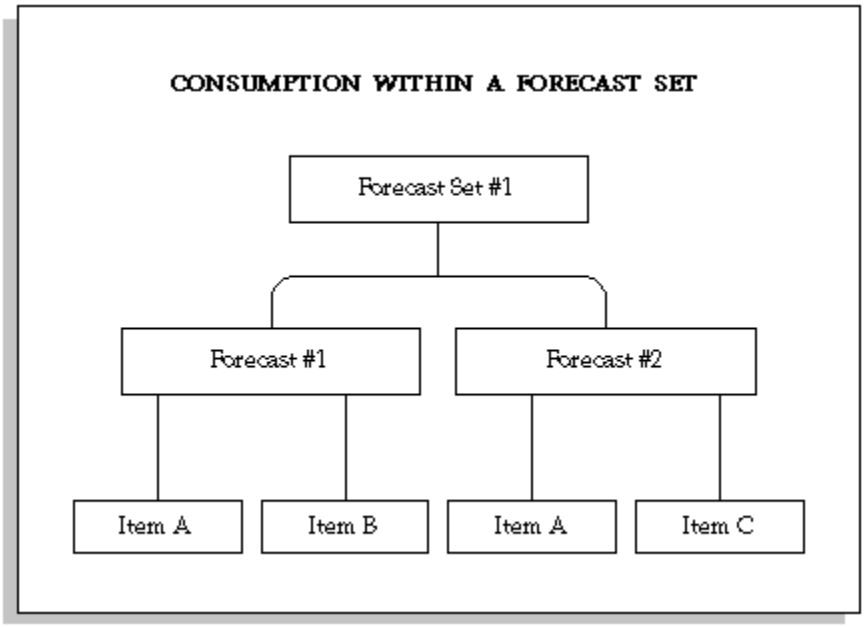
You control forecast consumption against each component of product families, assemble-to-order models, and assemble-to-order configured items by setting its organization item attribute Forecast control:

- Consume: Sales orders for this item consume forecasts for this item in the same organization.
- Consume and derive: Sales orders for this item consume forecasts for this item in the same organization. Select this option if you will also do forecast explosion against the item; see Forecast Explosion, page 3-115.
- None: Sales orders for this item do not consume forecasts for this item.

### Consumption within a Forecast Set

Consumption for an item and its corresponding sales order demand only occurs once

within a forecast set. For example:




Forecast Set #1 contains Forecast #1 and Forecast #2. The same item, Item A, belongs to both forecasts within the set. Some possible scenarios and how consumption would work are:

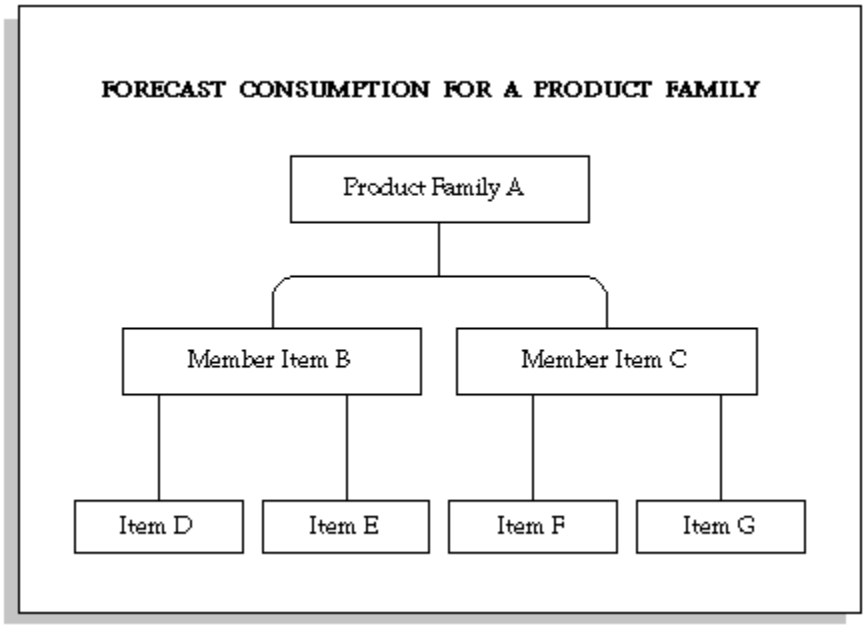
- If the sales order quantity is less than the forecast quantity of each forecast, only one of the forecasts for Item A is consumed.
- If one of the two forecasts for Item A were on the same day as the sales order line schedule date, that forecast would be consumed first.
- If the forecast for Item A is for the same day in both forecasts, the forecasts are not consumed in any particular order.

For example, if each forecast for Item A is for a quantity of 100 and you place sales order demand for 20, the consumption process would decrement only Forecast #1 to 80. However, if the sales order quantity is for 120, Forecast #1 is decremented from

100 to zero and Forecast #2 is decremented from 100 to 80.

## Consumption for a Product Family

Forecasts can be created and maintained at the product family level, and exploded down to the members of the family based on the planning percentages and effectivity dates in the bill of materials. Forecast consumption depends on the Forecast Control item attribute: if Forecast Control for the product family item is set to *Consume* and at all levels below that to *Consume and Derive*, a sales order added for member items consumes its own forecast and the forecast for the product family. For example:




Suppose that the planning percentages for the member items are:

- 60% for B
- 40% for C

Also assume a product-family forecast for A of 100.

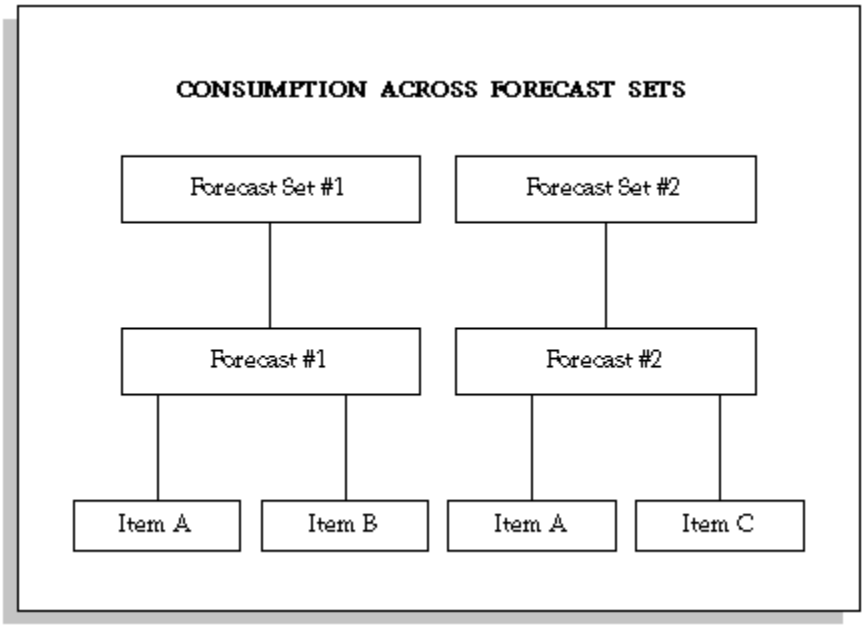
After forecast explosion, a sales order of 20 for item B consumes the forecast, leaving the following forecast:

- 100 - 20 = 80 for A
- 60 - 20 = 40 for B
- 40 - 0 = 40 for C

Similarly, if item B is a model and if Forecast Control for both D and E is set to *Consume and Derive*, then the forecast for item D gets consumed by 20 and the forecast for item E gets consumed by 20. The forecasts for items F and G remain the same.

### Consumption Across Forecast Sets

Consumption can occur multiple times if an item appears in more than one forecast set. For example:




Forecast Set #1 contains Forecast #1 and Forecast Set #2 contains Forecast #2. The same item, Item A, belongs to both forecasts within each set.

When you create a sales order, both forecasts for Item A in Forecast Set #1 and Forecast Set #2 are consumed. This is because consumption occurs against each forecast set, and Item A exists in both forecast sets.

For example, if each forecast for Item A is quantity 100 and you place sales order demand for 20, the consumption process would decrement each forecast in each set from 100 to 80.

> **Note:** In this example, Forecast Set #1 and Forecast Set #2 are most likely alternative scenarios two different sets for comparison purposes, so that consumption occurs for the same item in both sets. If you want to consume an item only once, define all forecasts for an item within a single set.

## Consumption Level

You can specify consumption levels in the forecast set:

- Item level: Consumption occurs when item numbers match between the forecast entry and the sales order line.
- Customer Level: Consumption occurs when item numbers and customer numbers match between the forecast entry and the sales order line.
- Ship-to level: Consumption occurs when item numbers, customer numbers, and

customer ship-to addresses match between the forecast entry and the sales order line

- Bill-to level: Consumption occurs when item numbers, customer numbers, and customer bill-to addresses match between the forecast entry and the sales order line

### Backward and Forward Consumption Days

Use consumption days if:

- You do not always have an exact match between the sales order line schedule dates and forecast entry dates.
- Your forecast entry quantity is not always sufficient to cover the sales order quantities.

Forecast consumption works as follows:

- It searches backward from the sales order line schedule date, workday by workday, for forecast quantities to consume.
- If that search is not successful in consuming the entire sales order line quantity, it searches forward from the sales order line schedule date, workday by workday, for forecast quantities to consume.
- If that search is not successful in consuming the entire sales order line quantity, it creates an overconsumption (negative demand) entry on the sales order line schedule date.

### Consumption and Demand Classes

You can assign a demand class to a forecast. When you create a sales order with a demand class, consumption searches for forecasts that have the same demand class. Consumption attempts to consume these forecasts first. If it does not find matching entries, it tries to consume forecasts that do not have a demand class.

For sales orders without an associated demand class, consumption attempts to consume forecasts that match the default demand class for the organization first, and then consumes forecast entries that have no demand class defined.

There is no switch to turn off forecast consumption of end items. To accomplish this, make forecasts by demand classes. You can create forecasts for demand classes or customers. Sales orders that don't match the customer or demand class do not consume the forecast. Therefore, if there are sales orders that neither match a forecast's customer nor its demand class, the consumption process does not consume the forecast. Set the ship to consumption level to demand class or customer; if you set it to item, the consumption process consumes the forecast.

## Overconsumption

When consumption cannot find an appropriate forecast entry to consume, it creates, for information purposes only, a new forecast entry at the forecast set level. This entry has a zero original quantity and a negative current quantity equal to the unconsumed demand.

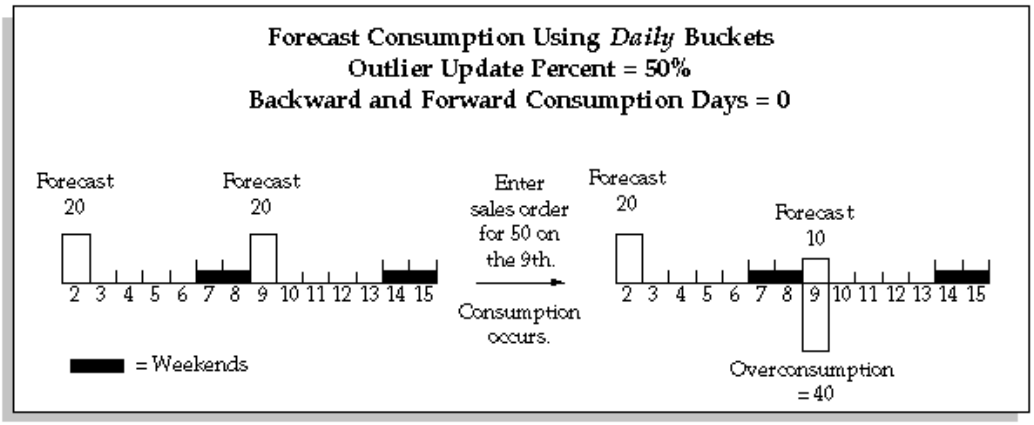
The entry is marked with an origination of overconsumption.

## Outlier Update Percent

This controls the effects of abnormal demand with a maximum percent of the *original* quantity forecast that a single sales order can consume.

**Example**

You have several customers. Each typically orders 100 units in a given period. One of the customers is having a special promotion that could increase demand significantly. Use the outlier update percentage to ensure that these "one time" sales orders do not overconsume the forecast.



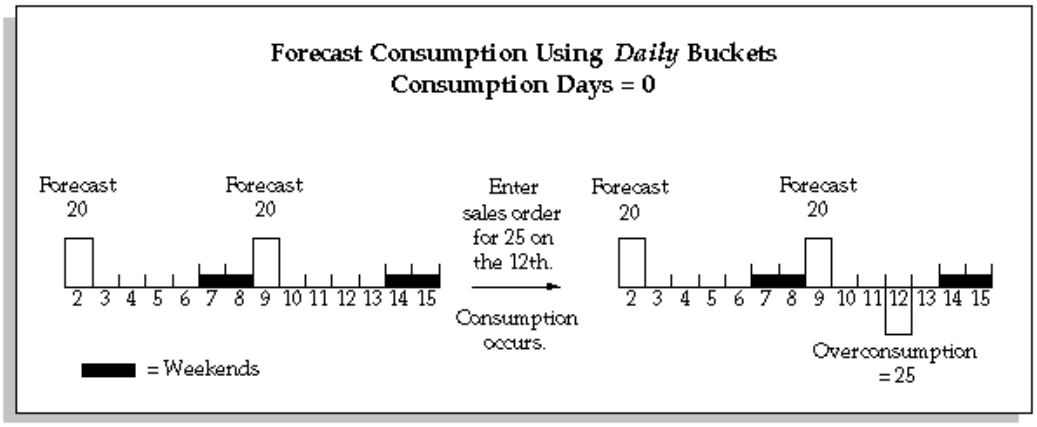

In the above example, daily forecast exists for 20 on the 2nd and the 9th with an outlier update percent of 50 on each forecast. When you place sales order demand for 50 on the 9th, the forecast consumption process attempts to consume on the sales order line schedule date only, since the forecast is stated in daily buckets and no backward consumption days exist. Because an outlier update percent of 50 exists on the forecast, the consumption process consumes only 50% of the forecast. The outlier update percent applies to how much of the original forecast quantity, not the sales order, the consumption process can consume. In this example, the consumption process consumes 50% of the forecast (10) and the rest of the sales order quantity (40) is overconsumed. If there were a backward consumption days of 5, 50% of the forecast on the 2nd would also be consumed, and the overconsumed quantity would be 30.

Using the same example, if another sales order for 50 is placed on the 9th, it consumes 50% of the original forecast quantity (10) and the current forecast quantity on the 9th becomes zero. Overconsumption is increased by an additional 40 to a new total on the

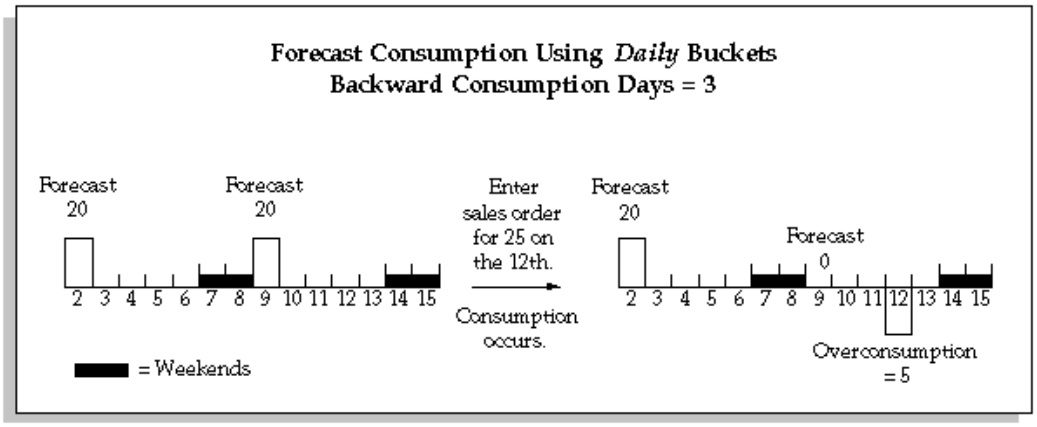
9th (80).

## Time Buckets in Forecast Consumption

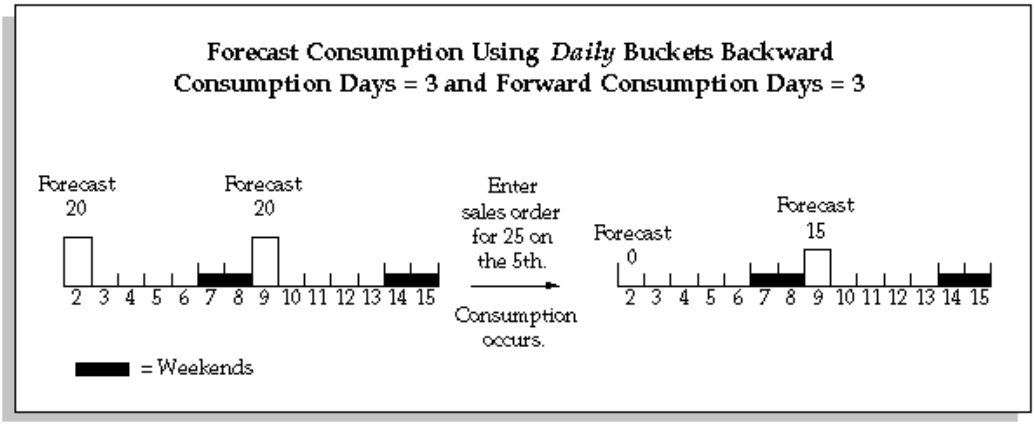
### Consumption with Daily Buckets




The process tries to consume a forecast entry on the 12th (the sales order date) because the forecast is stated in daily buckets and no backward consumption days exist. Since there are no forecasts on the 12th, an overconsumption entry is created on the 12th and the forecasts remain the same.

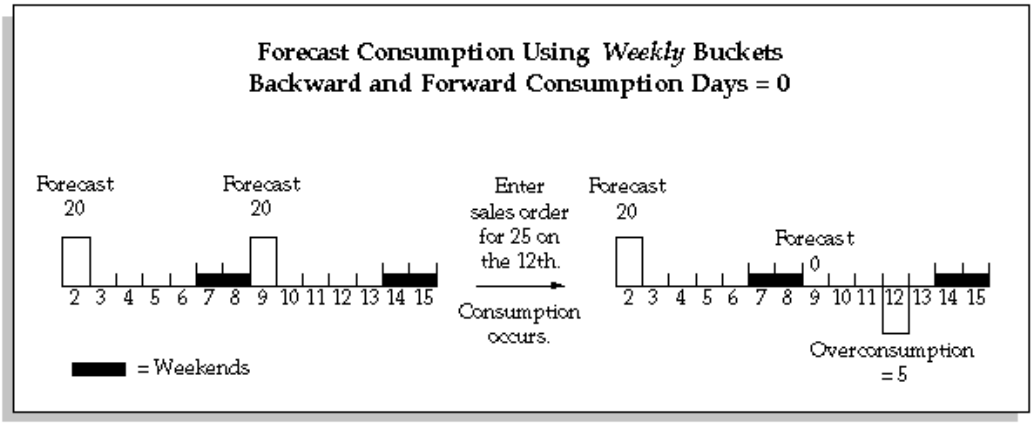



Here, the process tries to consume a forecast entry between the 12th (the sales order date) and the 9th (backward 3 days). The forecast entry of 20 each on the 9th is consumed. The remaining sales order quantity of 5 creates an overconsumption entry.



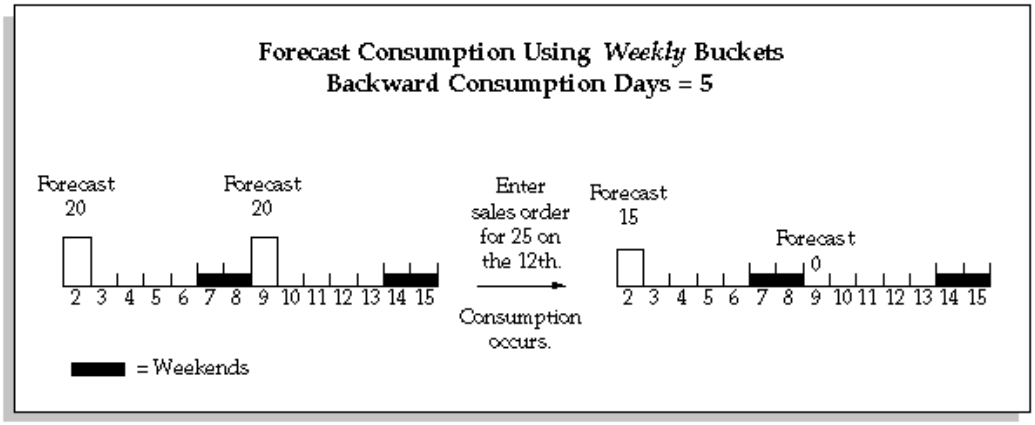

In this example, the process tries to consume a forecast entry between the 2nd (back 3 days from the sales order date of the 5th) and the 10th (forward 3 workdays, skipping the weekend). Going backward, the forecast entry of 20 each on the 2nd is consumed. Going forward, the forecast entry of 20 on the 9th is reduced to 15 each.

### Consumption with Weekly Buckets




In the above example, weekly forecasts exists for 20 on the 2nd and the 9th. When you place sales order demand for 25 on the 12th, the forecast consumption process attempts to consume in the week of the sales order only, since the forecast is stated in weekly buckets and no backward consumption days exist. Since there *is* a forecast in the week of the 12th, the entire forecast of 20 is consumed by the sales order for

25 and the remainder of the sales order becomes an overconsumption of 5 on the sales order line schedule date.




In the above example, weekly forecasts exists for 20 on the 2nd and the 9th. When you place sales order demand for 25 on the 12th, the forecast consumption process attempts to consume in the week of the sales order first and then backwards for the number of backward consumption days.

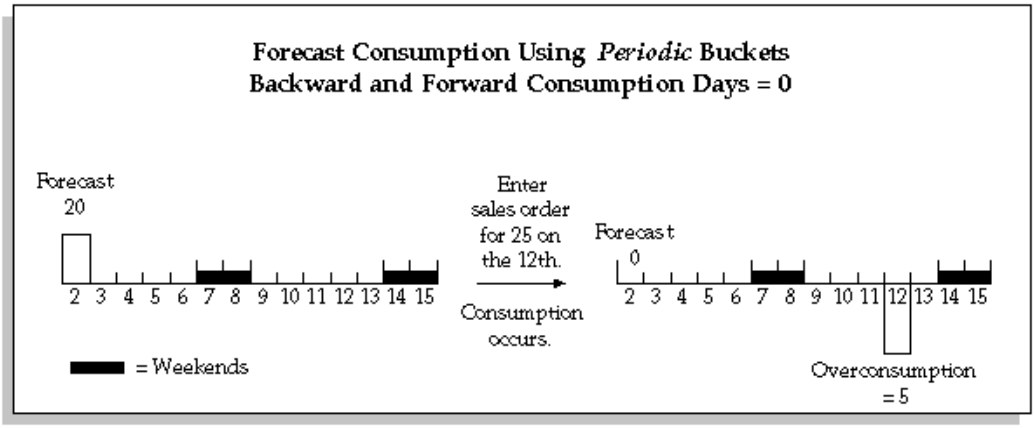
In this example, the backward consumption days of 5 causes the consumption process to go into another weekly bucket where it also consumes anything from that week. Since there is a forecast in the week of the 12th, the sales order for 25 consumes the entire forecast of 20 and then consumes the remainder of the sales order quantity (5) from the forecast on the 2nd.

> **Note:** When you use weekly or periodic buckets and the consumption days carry the consumption process into a different week or period, the consumption process consumes from anywhere in the week or period, regardless of whether the consumption days span the entire week or period.

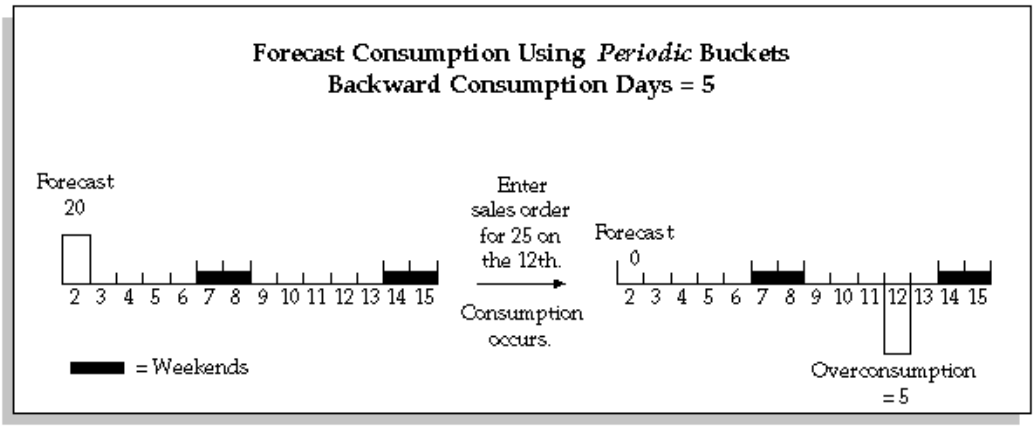
In this example, the process subtracts the backward consumption days from the 12th (excluding non-workdays) to day 5. Since day 5 is in the previous week, it consumes forecasts anywhere within the bucket; in this case, on the 2nd.

The consumption process consumes any forecasts that are included in the time fence created by the backward or forward consumption days, and then any other forecasts that are in the week or period. However, it does not consume a daily forecast that exists in the week or period if it is not covered by the time fence. In the above example, a daily forecast for the same item on the 4th would not have been consumed by the sales order; however, a daily forecast on the 5th would have since it is in the period included in the backward consumption days.

## Consumption with Periodic Buckets




In the above example, a periodic forecast exists for 20 on the 2nd, the first day of the period. When you place sales order demand for 25 on the 12th (assuming it is in the same period), the forecast consumption process attempts to consume in the period of the sales order only, since the forecast is stated in periodic buckets and no backward consumption days exist. Since there is a forecast in the period starting on the 2nd, the entire forecast of 20 is consumed by the sales order for 25 and the remainder of the sales order becomes an overconsumption of 5.




In the above example, a periodic forecast exists for 20 on the 2nd, the first day of the period. When you place sales order demand for 25 on the 12th (assuming it is in the same period), the forecast consumption process attempts to consume in the period of the sales order line schedule date first and then backwards for the number of backward consumption days.

In this example, the backward consumption days does not cause the consumption process to go into another periodic bucket. It behaves the same as if there were no backward consumption days. Since there is a forecast in the period of the 2nd, the sales order for 25 consumes, and the remainder of the sales order becomes an

overconsumption of 5 on the 12th. However, if the backward consumption days are large enough to carry forecast consumption into the previous period, forecast consumption can consume any forecasts in that period also.

> **Note:** When you have a mix of daily, weekly, and periodic forecast entries, forecast consumption first consumes the daily entries, then the weekly entries, and lastly the periodic forecast entries that are included in the time fence created by the backward and/or forward consumption days.

## Multi-organization Forecast Consumption

### Consumption Options

Consume forecasts either:

- In the source instance (local only): Use this option if you want to view the forecast consumption results in the source instance independent of their use in a plan run.

  You consume the forecasts during the MDS Load concurrent process. To use the consumed forecasts in an Oracle Advanced Planning and Scheduling plan, collect them.

- During the Oracle Advanced Supply Chain Planning plan run (local and global): Use this option if you want to view the forecast consumption results in the destination instance as an output of the planning run.

  Collect unconsumed forecasts and use them to drive a plan.

In both cases, the method of forecast consumption is the same.

The planning engine can perform inline forecast consumption for source instance forecasts, Oracle Demand Planning forecasts and Oracle Demantra forecasts in the same plan run.

If you drive a supply chain plan by an Oracle Demand Planning or Oracle Demantra, or a source instance forecast instead of a source instance master demand schedule, the planning process consumes the forecast.

Among the forecast modification methods, the planning engine performs them in this order:

- Forecast spreading
- Demand time fence control if profile option MSC: Consume Forecast Inside Demand Time Fence is No. The planning engine neither considers forecast entries within the demand time fence as demand nor uses them for forecast consumption
- Forecast consumption

- Demand time fence control if profile option MSC: Consume Forecast Inside Demand Time Fence is Yes. The planning engine does not consider forecast entries within the demand time fence as demand but it uses them for forecast consumption
- Forecast bucket consumption

#### Forecast Consumption Features

Since you cannot specify these features in Oracle Demand Planning, you cannot use them if you collect forecast sets and forecasts from Oracle Demand Planning to the destination instance. However, you can use a variation of forecast consumption days.

To use these features with forecast sets and forecasts from Oracle Demand Planning:

- Specify these features in the source instance forecast sets and forecasts
- Publish the Oracle Demand Planning scenario to the source as a forecast set/forecast
- Collect the source instance forecast sets and forecasts to the destination instance and run the plan

#### Forward Consumption Days

If all the forecast sets that you want to use in an Oracle Advanced Supply Chain Planning plan run have the same backward and forward consumption days, you can collect forecast sets and forecasts from Oracle Demand Planning to the destination instance and apply this feature when you run the Oracle Advanced Supply Chain Planning plan.

If the forecast sets that you want to use in an Oracle Advanced Supply Chain Planning plan run need different backward and forward consumption days, set them in the source instance forecast sets.

#### Demand Class

You can specify demand class in the forecast entry; if there is no forecast entry demand class the forecast consumption process uses the forecast entry's organization demand class.

You can specify demand class in the sales order line; if there is no sales order line demand class the forecast consumption process uses the sales order line's organization warehouse demand class.

If you consume by demand class and have forecasts without demand classes, set profile option MSC: Consume forecast with No demand class.

#### Collection Processing

Since the sales orders that you collect affect the results of inline forecast consumption, consider the sales orders that you collect.

To collect past due sales order demand, set the profile option MSC: Sales Orders Offset

Days. It specifies the number of days before the day that you run the collection engine that it is to collect shipped sales order lines. For example, if you set this option to 5 and collect today, the collection engine collects shipped sales order lines starting from 5 days before today. The default for this option is 99999.

The collection engine collects partially- or non-shipped sales orders regardless of this profile option.

### Plan Options Setup

You control forecast consumption against each component of product families, assemble-to-order models, and assemble-to-order configured items by setting its organization item attribute Forecast control:

- Consume: Sales orders for this item consume forecasts for this item in the same organization.
- Consume and derive: Sales orders for this item consume forecasts for this item in the same organization. Select this option if you will also do forecast explosion against the item; see Forecast Explosion, page 3-115.
- None: Sales orders for this item do not consume forecasts for this item.

Set up the following in the Plan Options window:

- In the Demand Schedule region of the Organization tab, specify the appropriate forecast sets.
- In the Organizations region of the Organization tab, select Include Sales Order.
- If you are using forecasts collected directly from Oracle Demand Planning, specify Forecast Consumption Backward Days and Forecast Consumption Forward Days. The planning engine applies this window to all Oracle Demand Planning forecasts driving the plan

  If you want to specify this window for each Oracle Demand Planning forecast set, use the process in Forecast Consumption Features, page 3-98.

The forecast consumption process occurs in the snapshot phase. When you launch a plan, select Launch Snapshot (the default).

### Plan Processing

If an item does not have a demand time fence, the planning engine performs consumption across the planning horizon and uses the consumed forecast entries across the planning horizon in the gross-to net-explosion.

If an item has a demand time fence, the planning engine checks the profile option MSC: Consume forecast within demand time fence and does the following depending on its value:

- If the value is No, the planning engine applies the demand time fence to the item, drops forecast entries within the demand time fence, and performs consumption outside the demand time fence if the forward consumption days value represents more days than the demand time fence. It uses the consumed forecast entries outside the demand time fence in the gross-to net explosion.

- If the value is Yes, the planning engine performs consumption across the planning horizon and then applies the demand time fence to the item. It drops the forecast entries inside the demand time fence and uses the forecast entries outside the demand time fence in the gross-to net explosion.

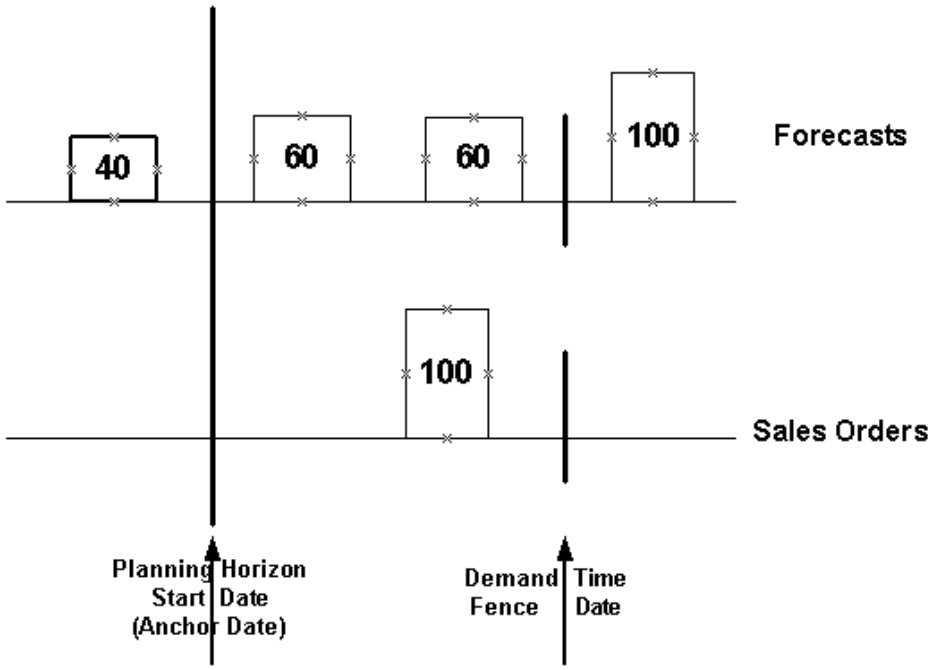
Per the above process, the planning engine attends to the actual past-due forecast entries. However, to view their consumption, check the Day 0 forecast bucket.

The following diagram shows a consumption scenario for item A which has a demand time fence:

- There is a sales order line for 100 units due between the anchor date and the demand time fence date.

- There is a forecast entry for 40 units past due, two forecast entries for 60 units between the anchor date and the demand time fence date, and a forecast entry for 100 outside the demand time fence. The forward consumption days represents more days than the demand time fence.

***Consumption scenario***



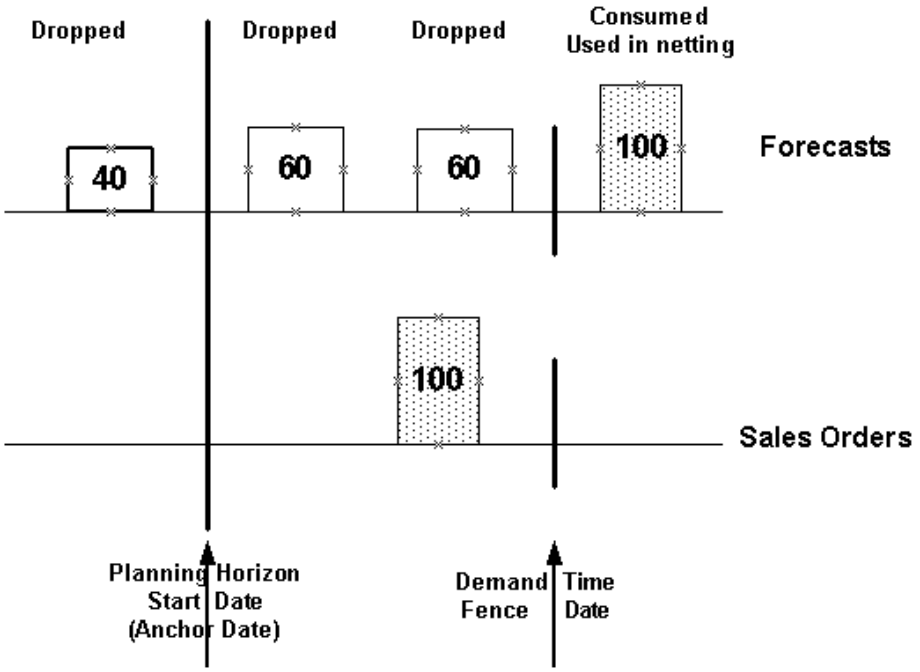

The planning engine checks the profile option MSC: Consume forecast within demand time fence and does the following depending on its value:

- If the value is No, the planning engine drops the past due forecast and the two forecast entries between the anchor date and the demand time fence date and uses the sales order for 100 to consume the forecast entry for 100 which is outside the demand time fence.

  It uses that consumed forecast entry in the gross-to-net explosion.

  This diagram shows the results of the No profile option using the previous example:

***Profile option setting***

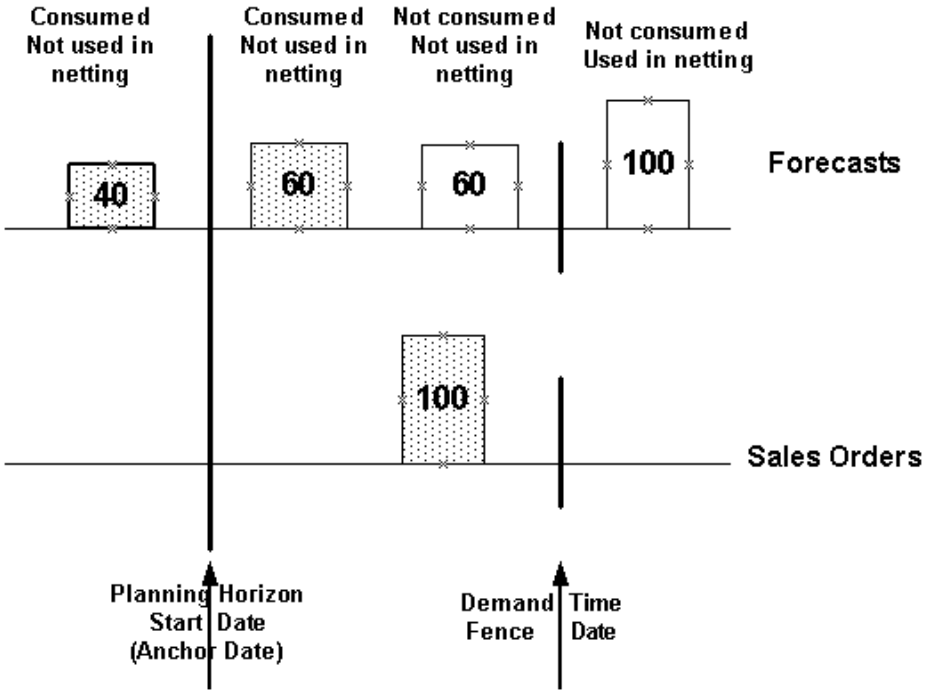



- If the value is Yes, the planning engine uses the sales order for 100 to consume the forecast entry for 40 which is past due and to consume one forecast entry for 60 between the anchor date and the demand time fence date.

  It does not use the two consumed forecast entries in the gross-to-net explosion. The other forecast between the anchor date and the demand time fence date is not consumed and not used in the gross-to-net explosion. The forecast entry outside the demand time fence is not consumed but used in the gross-to-net explosion.

  This diagram shows the results of the Yes profile option using the previous example:

***Profile Option setting***




### Viewing Forecast Consumption

View forecast consumption in the Planner Workbench.

### To view consumption results

1. Navigate to the Planner Workbench.
2. Select the plan name, organization, and item.
3. Right click on the item and select either Demand or Supply/Demand.
4. If you want to see which sales order lines consumed a forecast entry, select any entry with Forecast order type, right click the forecast name, and select Consumption Details.
5. If you want to see which forecast entries a sales order line consumed, select any entry with order type Sales Order, right click the sales order name, and select Consumption Details.

   For example, to see the consumption details for the forecast from a previous example, select the forecast and right-click. Choose Consumption Details from the list that appears. This table illustrates the information that displays:

| Forecast Qty | Forecast Date | Consumed Qty | Sales Order Date | Sales Order Number |
|---|---|---|---|---|
| 50 | June 1 | 10 | June 1 | SO1 |
| 50 | June 1 | 25 | June 1 | SO2 |

To see how sales order 1 (SO1) from the previous example is consuming forecasts, select sales order 1 and right-click. Choose Consumption Details from the list that appears. This table illustrates the information that displays:

| Forecast Qty | Forecast Date | Consumed Qty | Sales Order Date | Sales Order Number |
|---|---|---|---|---|
| 50 | June 1 | 10 | June 1 | SO1 |

### Setting Timestamps and Tolerance for Sales Orders and Forecasts Due Dates

Use the following profile options to instruct the planning engine how to use shipment date, timestamp, and forecast due date to plan supplies:

- You can set the profile option MSO: Use Default for Sales Orders to specify the timestamp for sales orders. For example, if you specify the value Beginning of Day, all sales orders have the timestamp 00:00. If you specify End of Day, the planning engine considers all sales orders due by 23:59. For more information about the profile option, see MSO Profile Options, page A-84.

- Set the profile option MSO: Default Timestamp Forecasts to specify the time when the planning engine should consider a forecast due. For more information about the profile option, see MSO Profile Options, page A-84.

- You can set the profile option MSO: Late Demands Exceptions Tolerance Minutes to specify the tolerance limit for late replenishments. The planning engine raises exceptions only after the tolerance limit is overstepped. For example, if you specify 1440 minutes as the tolerance for a demand due at 12:00 on Tuesday, the planning engine does not raise an exception until 12:00 on Wednesday. For more information about the profile option, see MSO Profile Options, page A-84.

This timestamp behavior is not applicable to Availability to Promise (ATP) or Global Order Processing (GOP). As unconstrained plans use the smallest planning bucket (daily bucket), this profile option does not affect the scheduling behavior for supplies that are scheduled at 00:00.

## Forecast Bucket Consumption

You can instruct the planning engine to consume forecasts with sales orders only within the same time bucket (within the consumption bucket).

For each forecast, the consumption bucket is the same length as the forecast bucket. The consumption process consumes inside the consumption buckets going backward and then forward. It ends when either there are no more:

- Unconsumed forecasts in the consumption bucket
- Sales orders within the consumption bucket to consume forecasts

The consumption process does not search outside of the consumption bucket for forecasts and sales orders except in daily buckets. If you do not want the planning engine to use backward and forward consumption in daily buckets:

- For Oracle Demand Planning forecasts, navigate to the Plan Options form, Main tabbed region; set Backward Days and Forward Days to zero.
- For Oracle Advanced Supply Chain Planning and Oracle Demantra forecasts, navigate to the Forecasts form; set Backward Days and Forward Days to zero.

To use this feature, navigate to the Plan Options form, Main tabbed region; select Consume by Forecast Bucket. If you do not want to use this feature, select Consume Using Backward/Forward Days.

For example, you:

- Enter forecast 1 with five forecast entries of quantity 100 to cover weeks 25 May - 31 May, 1 June - 7 June, 8 June - 14 June, 15 June - 21 June, and 22 June - 28 June
- Enter forecast 2 with one forecast entry for quantity 200 to cover week 25 May - 31 May and one forecast for quantity 1500 to cover 1 June - 28 June.
- Receive a sales order for quantity 150 due on 10 June.
- Select plan option Consume by Forecast Bucket.

This table shows the results of the forecast consumption against forecast 1. The sales order consumes only the forecast entry in week 8 June - 14 June and does not consume from any other weekly entries. Since the planning engine cannot consume the entire sales order quantity from forecast 1, it looks for other forecasts with entries that cover 10 June.

| Data or Calculation | 25 May - 31 May | 1 June - 7 June | 8 June - 14 June | 15 June - 21 June | 22 June - 28 June |
|---|---|---|---|---|---|
| Forecast 1 original quantity | 100 | 100 | 100 | 100 | 100 |
| Sales order quantity | 0 | 0 | 150 | 0 | 0 |
| Forecast 1 consumed quantity | 0 | 0 | 100 | 0 | 0 |

The planning engine finds forecast 2 with entries that cover 10 June. This table shows the results of the forecast consumption against forecast 2. The sales order consumes only the forecast entry in period 1 June - 28 June. If it could not consume the entire quantity fro the period, it would not consume from the forecast entry in week 25 May - 31 May.

| Data or Calculation | 25 May - 31 May | 1 June - 28 June |
|---|---|---|
| Forecast 2 original quantity | 200 | 1500 |
| Sales order remaining quantity | 0 | 50 |
| Forecast 1 quantity | 0 | 50 |

You can see the backward and forward consumption days that apply to a forecast in the Planner Workbench, Demand window. See fields Consumption Backward Days and Consumption Forward Days.

Among the forecast modification methods, the planning engine performs them in this order:

- Forecast spreading
- Demand time fence control if profile option MSC: Consume Forecast Inside Demand Time Fence is No. The planning engine neither considers forecast entries within the demand time fence as demand nor uses them for forecast consumption
- Forecast consumption

- Demand time fence control if profile option MSC: Consume Forecast Inside Demand Time Fence is Yes. The planning engine does not consider forecast entries within the demand time fence as demand but it uses them for forecast consumption

- Forecast bucket consumption

## Forecast Spreading

If you develop and maintain your Oracle Demand Planning forecasts in aggregate (week, month, or quarter), you can:

- Use those forecasts in Oracle Advanced Supply Chain Planning

- Instruct the planning engine to spread this aggregate forecast demand evenly across the daily buckets. It spreads according to the calendar in plan option Forecast Spreading Calendar for an organization. If there is no value for the plan option, it spreads according to the calendar in profile option MSC: Forecast Spreading Calendar.MSC: Forecast Spreading Calendar.

Planning forecast demand in daily buckets may provide a more realistic estimate of the future supply but forecasting in aggregate may lead to more accurate forecasts.

Bucketing behaves as follows:

- If you select plan option Spread Forecasts Evenly , the planning engine first allocates forecasts from the forecasting buckets down to the planning buckets

- The consumption of these forecasts is dependent on the setting of flag Consume by Forecast Bucket

- If you select Consume by Forecast Bucket, sales orders that fall within a forecast bucket can only consume the forecasts in that bucket. They cannot consume forecasts in the previous or the next forecast buckets

- If you clear Consume by Forecast Bucket, sales orders consume forecasts based on the setting of plan options Backward Days and Forward Days. Sales orders within a forecast bucket can consume forecasts in the previous or the next forecast buckets

Among the forecast modification methods, the planning engine performs them in this order:

- Forecast spreading

- Demand time fence control if profile option MSC: Consume Forecast Inside Demand Time Fence is No. The planning engine neither considers forecast entries within the demand time fence as demand nor uses them for forecast consumption

- Forecast consumption

- Demand time fence control if profile option MSC: Consume Forecast Inside Demand Time Fence is Yes. The planning engine does not consider forecast entries within the demand time fence as demand but it uses them for forecast consumption.

- Forecast bucketing consumption: Aggregates consumed forecasts and sales orders to planning buckets.

The forecast spreading process interacts with profile option MSC: Consume Forecast Inside Demand Time Fence as follows:

- If it is No, the planning engine neither considers forecast entries within the demand time fence as demand nor uses them for forecast consumption. It drops them as demand before forecast consumption

- If it is Yes, the planning engine does forecast consumption before it does demand time fence control. It does not consider forecast entries within the demand time fence as demand but it uses them for forecast consumption.

- For a periodic forecast entry that falls in weekly planning buckets within the demand time fence, the process spreads the entries into daily entries.

- If a daily entry is within the demand time fence, the process ignores the actual profile option value and proceeds as if the value is Yes.

- If the daily entry is outside the demand time fence, the process ignores the profile option and consumes against the entry

#### Forecast Spreading Setup

To use this feature, set the following information:

- Use only week or period forecast buckets in Oracle Demantra or Oracle Demand Planning.

- Set planning parameter Include Past Due Forecast. Enter the number of days of past due forecasts to include in plans. No value indicates include all past due forecasts; zero indicates include no past due forecasts. This value does not apply to independent demands derived from assemble-to-order models. Use navigation Setup > Parameters.

- If you are publishing master demand schedules and sales orders from Oracle Demantra or Oracle Demand Planning, set Oracle Advanced Supply Chain Planning profile option Include MDS Days.

- Navigate to the Plan Options form, Main tabbed region; select Spread Forecast Evenly.

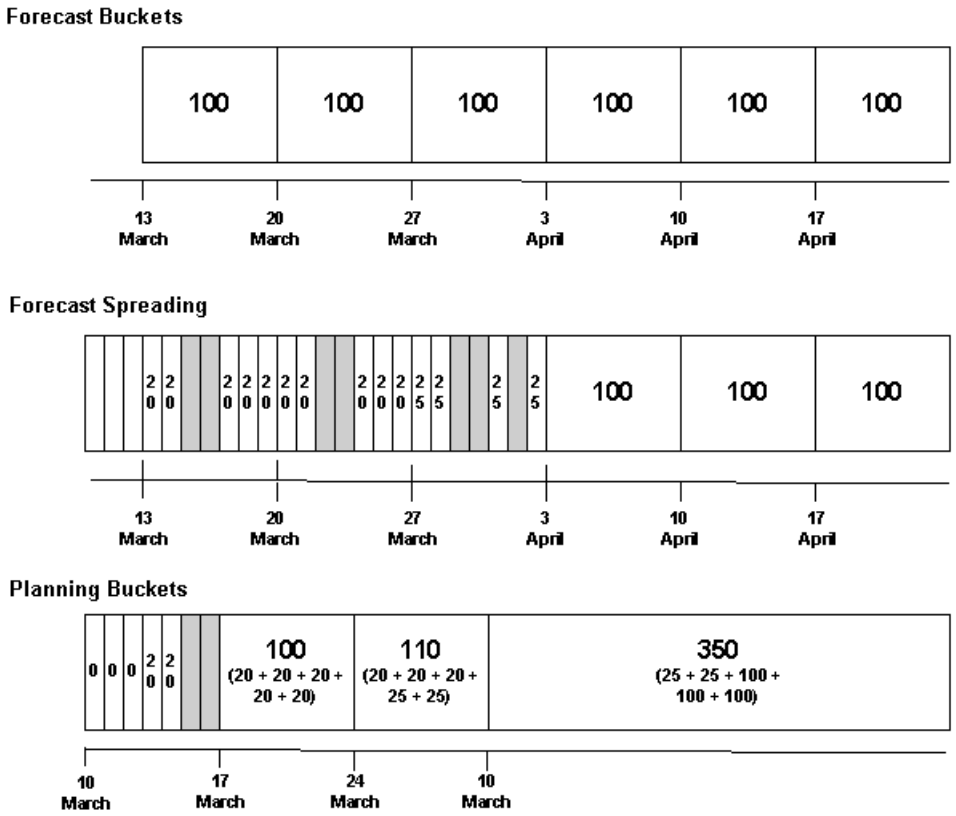
Oracle Inventory Optimization always spreads forecasts into planning buckets.

### Forecast Spreading Example

This diagram shows a forecast spreading example:

- You entered forecasts of quantity 100 for the weeks of 13 March, 20 March, 27 March, 3 April, 10 April, and 17 April. Each week begins on Thursday.
- The planning buckets are five days, two weeks, and one period.
- The workdays are Monday through Friday and there is a holiday on Tuesday 1 April.
- You set plan parameter Include Past Due Forecast to 0 and selected plan option Spread Forecast Evenly.
- The planning engine spreads each weekly forecast of quantity 100 for the weeks beginning 13 March and 20 March to five daily forecasts of quantity 20.
- The planning engine spreads the weekly forecast of quantity 100 for the week beginning 27 March to four daily forecasts of quantity 25.
- The planning engine does not spread forecasts that map to planning horizon periods.
- The planning engine plans to no forecast demand on planning daily buckets 10 March, 11 March, and 12 March. It plans to forecast demand of 20 on daily buckets 13 March and 14 March.
- The planning engine plans for forecast demand of 100 on planning weekly bucket 17 March to 23 March (20 + 20 + 20 + 20 + 20).
- The planning engine plans for forecast demand of 110 on planning weekly bucket 24 March to 30 March (20 + 20 + 20 + 25 + 25).
- The planning engine plans for forecast demand of 350 on planning monthly bucket 31 March to 4 May (25 + 25 +100 + 100 + 100).

*Forecast Spreading Example*




## Forecast Spreading Considerations

If you set outlier percentage for a forecast set, the planning engine applies it to the forecasts after it spreads them.

If a forecast entry from Oracle Demand Planning falls on a non-workday in Oracle Advanced Supply Chain Planning, the planning engine places the forecast entry on the previous working day.

This table shows an example of workday forecast recalculation. . Oracle Advanced Supply Planning manufacturing calendar workdays are Monday to Friday, the planning horizon is ten workdays in daily buckets, and the plan run date is 10 June.

- The shipping calendar that Oracle Demand Planning uses has all working days.
- It has daily forecasts for seven days beginning on Monday 10 June.
- The manufacturing calendar that the production organization uses has non-workdays on Saturday and Sunday.

- The forecast spreading process places the forecasts for Saturday and Sunday on Friday

| Date | Oracle Demand Planning Forecast Quantity | Oracle Advanced Supply Chain Planning Forecast Quantity |
|---|---|---|
| Monday 10 June | 9 | 9 |
| Tuesday 11 June | 13 | 13 |
| Wednesday 12 June | 10 | 10 |
| Thursday 13 June | 7 | 7 |
| Friday 14 June | 10 | 30 (10 + 10 + 10) |
| Saturday 15 June (non-workday in manufacturing calendar) | 10 | - |
| Sunday 16 June (non-workday in manufacturing calendar) | 10 | - |

For items under rounding control, the planning engine rounds a spread forecast quantity up and applies its cumulative remainder to the next bucket. It uses the item-organization item attribute. This table shows how the planning engine spreads a weekly forecast of quantity 36 for an item with item attribute Rounding Control selected.

This table shows an example of forecast spreading with rounding control:

- The planning engine rounds the Monday forecast of 7.2 up to 8.
- It calculates the Monday cumulative remainder as the difference between the two quantities which is - 0.8 (7.2 - 8).
- It applies the cumulative remainder of the Monday forecast to the Tuesday daily forecast quantity to adjust it to 6.4. (7.2 - 0.8).
- It rounds the Tuesday Forecast of 6.4 up to 7.

| Data or Calculation | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| Daily forecast before rounding | 7.2 (36 / 5) | 7.2 (36 / 5) | 7.2 (36 / 5) | 7.2 (36 / 5) | 7.2 (36 / 5) |
| Daily forecast before rounding + Cumulative remainder | 7.2 (7.2 + 0) | 6.4 (7.2 - 0.8) | 6.6 (7.2 - 0.6) | 6.8 (7.2 - 0.4) | 7 (7.2 - 0.2) |
| Daily forecast after rounding | 8 | 7 | 7 | 7 | 7 |
| Cumulative remainder | -0.8 (7.2 - 8) | -0.6 (6.4 - 7) | -0.4 (6.6 - 7) | -0.2 (6.8 - 7) | 0 |

If the Oracle Demand Planning Forecast has decimal quantities, the rounded Oracle Advanced Supply Chain Planning forecasts may have decimal quantities.

### Advanced Forecast Spreading Examples

This diagram shows an example of forecast spreading with backward and forward consumption days. In this example:

- The forecast for this item is in weekly buckets.
- The planning buckets are ten days and two weeks.
- Both Backward Days and Forward Days are 3.

The forecast spreading process spreads the weekly forecast quantities for weeks 1 and 2 in to daily buckets to match the planning buckets.

The forecast consumption consumes these forecast quantities with these sales orders:

- D1 and D2 with S1
- D3 and D4 with S2
- D5, D6, D7, D8 with S3
- D8 and D9 with S4

- D8, D9, and D10 with S5
- Week 2 with S6
- Week 2 with S7

Total Demand (after bucketing) for D5 is zero for consumption method using the Consume Using Backward/Forward Days method and 20 using the Consume by Forecast Bucket method.

***Forecast Spreading with Backward and Forward Consumption Days***

| Forecast Buckets | Week 1 | | | | | Week 2 | | | | | Week 3 | | | | | Week 4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Forecast Quantity | 100 | | | | | 120 | | | | | 80 | | | | | 100 | | | | |
| Planning Buckets | D 1 | D 2 | D 3 | D 4 | D 5 | D 6 | D 7 | D 8 | D 9 | D 10 | Week 1 | | | | | Week 2 | | | | |
| Spread Forecast | 20 | 20 | 20 | 20 | 20 | 24 | 24 | 24 | 24 | 24 | 80 | | | | | 100 | | | | |
| Sales Orders | | S1: 30 | | S2: 30 | | | S3: 70 | S4: 20 | S5: 50 | | | | | | | | S6: 80 | S7: 20 | | |
| Consumed Forecast with S1 | 10 | 0 | 20 | 20 | 20 | 24 | 24 | 24 | 24 | 24 | 80 | | | | | 100 | | | | |
| Consumed Forecast with S1 - S2 | 10 | 0 | 10 | 0 | 20 | 24 | 24 | 24 | 24 | 24 | 24 | | | | | 100 | | | | |
| Consumed Forecast with S1 - S3 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 22 | 24 | 24 | 80 | | | | | 100 | | | | |
| Consumed Forecast with S1 - S4 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 2 | 24 | 24 | 80 | | | | | 100 | | | | |
| Consumed Forecast with S1 - S5 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | | | | | 100 | | | | |
| Consumed Forecast with S1 - S6 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | | | | | 20 | | | | |
| Consumed Forecast with S1 - S7 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | | | | | 0 | | | | |
| Total Demand (after bucketing | 10 | 30 | 10 | 30 | 0 | 0 | 70 | 20 | 50 | 0 | 80 | | | | | 100 | | | | |

This diagram shows forecast spreading demand calculations in the order of their processing:

- Forecast spreading
- Forecast consumption
- Forecast bucketing

- Demand time fence

The parameters are:

- Forecast Allocation: Spread Forecast Evenly
- Forecast Consumption: Consume by Forecast Bucket
- Demand Time Fence: 2 days
- Include Past Due Forecast Days: 6 days
- Planning Buckets: 5 days, 2 weeks

The process buckets past due:

- Sales orders on days D -5, D -4, and D -1 into bucket D0
- Forecasts on days D -3 and D -5 into bucket D0

*Forecast Spreading Demand Calculations*

| Planning Buckets | D -6 | D -5 | D -4 | D -3 | D -2 | D -1 | D 0 | D 1 | D 2 | D 3 | D 4 | D 5 | D 6 | D 7 | D 8 | Week 1 | Week 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Forecast 1 Quantity | | | | | | 100 | | | | | 150 | | | | | 100 | 120 |
| Forecast 1 After Spreading | | | | | | 20 | 20 | 20 | 20 | 20 | 30 | 30 | 30 | 30 | 30 | 100 | 120 |
| Forecast 2 Quantity | | | | 35 | | 10 | | | | | | | | | | | |
| Sales Orders | | 20 | 10 | | | 5 | | | | | 50 | 60 | 80 | | | 40 | 140 |
| Consumed Forecast | | | | 5 | | 25 | 20 | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 60 | 0 |
| Sales Orders After Bucketing | | | | | | | 35 | | | | 50 | 60 | 80 | | | 40 | 140 |
| Consumed Forecast After Bucketing | | | | | | | 50 | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 60 | 0 |
| Consumed Forecast After Demand Time Fence | | | | | | | 50 | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 60 | 0 |
| Total Demand | | | | | | | 35 | 0 | 0 | 20 | 50 | 60 | 80 | 0 | 0 | 100 | 140 |

Plan Run Date

Planning Time Fence

## Forecast Explosion

You can define and maintain forecasts for any item, at any level on your bills of material. Forecast explosion is a process that creates forecasts for components from the forecasts of their parents. It occurs in the following situations:

- Product family forecasts to product family member item forecasts. The planning engine considers these exploded forecasts as independent demand and uses pegging to link then to their product family forecast.

- Model forecasts to other model, option class, option item, and included item forecasts. See Configure to Order Forecast Explosion, page 8-9.

### Forecasting Planning Bills of Material

In Oracle Bills of Material, you can define multilevel planning bills, with multiple levels of planning items, to represent groups of related products that you want to forecast by family.

Typically, you can order components of a planning bill, but not the planning item itself. The planning item is an artificial grouping of products that helps you to improve the

accuracy of your forecasting since, generally, the higher the level of aggregation, the more accurate the forecast.

Before you can perform forecast explosion, set up planning percentages in the product family and model bills of material. Planning percentage is the percent of the parent forecast that is attributable to the component. For example:

- In a product family bill of material, product family member item A has planning percentage 30%, product family member item B has planning percentage 50%, and 5-56 product family member item C has planning percentage 20%.
- A product family forecast entry has quantity 1000
- After forecast explosion, the forecast quantity for product family member item A is 300, for product family member item B is 500, and for product family member item C is 200.

See Creating a Bill of Material, Oracle Bills of Material User's Guide and attend to tab Component Details, field Planning %.

The following table illustrates a planning bill for Training Computer, a planning item that represents a planning bill for three types of computers: laptop, desktop, and server. The planning percent assigned to each member of the planning bill represents anticipated future demand for each product.

| Level | Item | BOM Item Type | Planning % |
|---|---|---|---|
| 1 | Training Computer | Planning | - |
| . 2 | . Laptop Computer | Model | 60% |
| . 2 | . Desktop Computer | Model | 20% |
| . 2 | . Server Computer | Model | 20% |

The following table illustrates forecast explosion, via the planning bill described in the previous table, for a forecast of 100 Training Computers. The table also illustrates forecast consumption after you place sales order demand for 20 Laptop Computers. Original forecast shows forecast quantities before forecast consumption. Current forecast shows forecast quantities after consumption by sales order demand.

| Level | Item | Original Forecast | Current Forecast |
|---|---|---|---|
| 1 | Training Computer | 100 | 100 |

| Level | Item | Original Forecast | Current Forecast |
|---|---|---|---|
| . 2 | . Laptop Computer | 60 | 40 |
| . 2 | . Desktop Computer | 20 | 20 |
| . 2 | . Server Computer | 20 | 20 |

The planning percentages of all of the components of a parent can add to more than 100%.

You control forecast explosion to each component by setting its organization item attribute Forecast control:

- Consume: There is no planning engine forecast explosion to this component.
- Consume and derive: There can be planning engine forecast explosion for models depending on plan option Explode Forecast. The planning engine does not explode multi-organization models.
- None: There can be planning engine forecast explosion for product families depending on plan option Explode Forecast.

For information about forecast explosion for model forecasts, see Configure to Order Forecast Explosion, page 8-7.

## Multi-organization Forecast Explosion

The forecast explosion process can round the member item forecasts after explosion of the product family forecast. Use this rounding if you find that, because of fractional member item forecasts, you:

- Are creating excess inventory
- Experience an increase in pegging records

To use this rounding, set item attribute Round Order Quantity for each member item of a product family.

To perform this rounding, the forecast explosion process:

- Selects any member item
- Rounds its forecast down to the nearest integer and saves the remainder
- Applies (adds to or subtracts from) the remainder to the forecast of the next member item that it selects

- Rounds its forecast to the nearest integer and saves the remainder
- Continues until it has rounded all member item forecasts

You can explode forecasts in:

- The source instance (local only): Then collect the exploded forecasts to the planning server. See Forecast Explosion in *Oracle MRP User's Guide*.
- Oracle Demand Planning (local and global): Then use the forecasts as demand schedules to a plan run.
- Oracle Advanced Supply Chain Planning (local only): During the plan run.

If you have exploded forecasts in the source instance or in Oracle Demand Planning, do not explode them in Oracle Advanced Supply Chain Planning.

### To use Oracle Demand Planning for Forecast Explosion

Select the Demand Planning System Administrator responsibility.

1. Navigate to Demand Plans.
2. Select Calculate dependent demand to explode the forecast at a plan level.
3. Select the Scenarios tab.
4. Select Consume in Supply Plan to specify the Demand Planning scenario that needs to be consumed in by Oracle Advanced Supply Chain Planning.
5. Set Explode Demand Using to:
   - Global Bill of Material: To select a generic bills of material specified in item validation organization for forecast explosion purposes
   - Organization specific Bill of Materials: To use the bills of material of a specific organization for forecast explosion purposes
6. Select Scenarios > Output Levels.
7. Publish demand plans with organization dimension set to All Organizations

### To use Oracle Advanced Supply Chain Planning for Forecast Explosion

You can pre-explode the forecast using plan option Explode Forecast. This process occurs both for configure to order items and for product family items when the members have item attribute Forecast Control Consume and derive.

If you are using Oracle Demand Planning to explode the forecast, it publishes product

family forecasts to Oracle Advanced Supply Chain Panning for the product family and the product family member items. Do not instruct the planning engine to explode forecasts; it will double count the demand for the product family member items.

If Forecast Control is None, Oracle Demand Planning publishes the product family forecast to Oracle Advanced Supply Chain Panning for the product family only. The planning engine disregards plan option Explode Forecast and always performs inline forecast explosion to the product family items based on planning percentages and forecast consumption.

Select the Advanced Supply Chain Planner responsibility.

- Navigate to Supply Chain Plan > Plan Options > Main tab.
- Select the Explode Forecast check box.

### To use Oracle Demantra for Forecast Explosion

See *Oracle Demantra Demand Management User's Guide*.

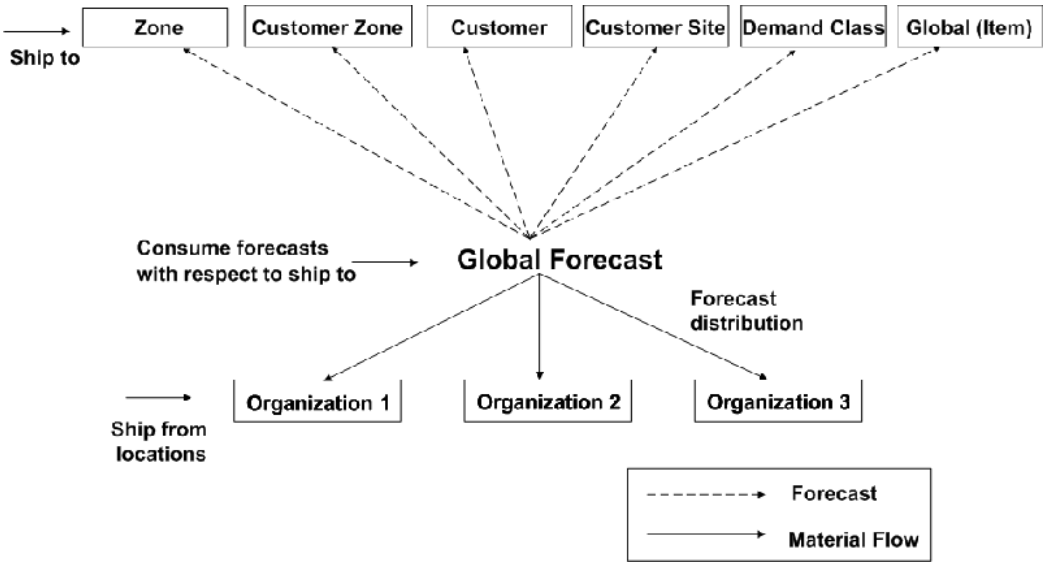
## Global Forecasting

Global forecasts a re forecasts with no pre-specified ship from Organization associated to forecasts. Oracle Advanced Supply Chain Planning supports global forecasting by using Oracle Demand Planning scenarios as global forecasts. The forecasts from Oracle Demand Planning are fed into the planning engine as demand schedules, which can be consumed without any reference to a ship from organization. You can then use sourcing rules to distribute the consumed forecasts and sales orders to appropriate shipping facilities.

Use global forecasting if your business has multiple shipping facilities and you would like to use multiple sources for end items without pre-determining the shipping organizations as you prepare and analyze your forecasts. Local forecasts apply to a shipping facility (inventory organization) while global forecasts apply to your entire business. Since, demand fulfillment is a dynamic process, you should be able to evaluate the current availability of supplies/resources and then come up with a fulfillment organization for the demand.

You can therefore select the demand fulfillment organization to take advantage of current supply conditions and constraints. This helps you in using existing supplies across multiple shipping organizations effectively and making more accurate forecast consumption.

Refer the following figure to understand the global forecasting process supported by Oracle Advanced Supply Chain Planning:




You can consume global forecasts at any of the Ship To entities displayed in the above figure. If you do not specify the consumption level, Oracle Advanced Supply Chain Planning consumes forecasts at the item level. You can then distribute the consumed forecast to multiple organizations using the forecast distribution process.

### Global Forecast Demand Schedules

You can maintain global forecasts with Oracle Demand Planning.

An Oracle Demand Planning scenario is available to Oracle Advanced Supply Chain Planning only if output levels are set as follows:

- Mandatory Dimensions
  - Time: Day, Manufacturing Week, or Manufacturing Period
  - Organization: Organization
  - Product: Item or Product Family
- Optional Dimension Geography: Ship-to-location or Customer

**Note:** You cannot create global forecasts in Oracle MRP or Oracle Advanced Supply Chain Planning.

### Global Forecast Explosion

You can explode global forecasts either in Oracle Demand Planning or in Oracle Advanced Supply Chain Planning. You cannot explode them in the source instance.

See Forecast Explosion, page 3-115.

### Global Forecast Consumption

Consumption of local forecasts always occurs within a shipping facility.

Consumption of global forecasts occurs without any reference to a shipping facility. In global forecast consumption, sales orders in inventory organizations consume global forecasts with reference to a ship to entity like zone, customer site, demand class. It ignores the source organization on the sales order line and redetermines the source.

The planning engine can consume a global forecast with sales orders having the same ship to entities.

> **Note:** If you have a scenario where a part of the forecast must be met by a specific source, then you need to remove such a source from the sourcing rule of the global forecast distribution. For such items, the planning engine assumes that you will provide an organization specific forecast or a local forecast. Global forecasts are then distributed to the sources that do not include the specific source and the local forecasts are distributed to the specific source.
>
> If you provide a local forecast and global forecasts for the same item, Oracle Advanced Supply Chain Planning consumes both the forecasts.

### To set up global forecast consumption

You need to complete setup steps in the following Oracle products to use global forecasting:

- Oracle Inventory
- Oracle Bills of Material
- Oracle Flow Manufacturing
- Oracle Order Management
- Oracle Shipping
- Oracle Demand Planning
- Oracle Advanced Supply Chain Planning

#### Setup Steps in Oracle Inventory

Select the Manufacturing and Distribution Manager responsibility.

1. Navigate to Inventory > Items > Organization Items > MPS/MRP Planning tab.
2. Set the Forecast Control item attribute of components of product families, assemble-to-order models, and assemble-to-order configured items to decide the method for

consuming and exploding forecasts:

- Consume or None: If you select this option, the planning engine:
  - Aggregates sales orders based on consumption level
  - Consumes the top level assembly
  - Distributes the remaining forecast
  - Explodes the remaining forecast as part of the bills of material explosion
- Consume and Derive - If you select this option, the planning engine:
  - Aggregates sales orders based on consumption level
  - Explodes the forecast using Oracle Demand Planning or Oracle Advanced Supply Chain Planning
  - Consumes the model, option class, and optional items
  - Distributes the remaining forecast

3. If you have multi-level/multi-organization assemble-to-order assemblies, identify an organization where you intend to set up generic bills of material for forecast explosion purposes.
4. Set the profile option MSC: Organization containing generic BOM for forecast explosion based on your selection in step 4.
5. Specify a generic bills of material for forecast explosion in this organization.

#### Setup Steps in Oracle Bills of Material

1. Navigate to Bills of Materials > Bill > Bill.
2. If you have multi-level/multi-organization assemble-to-order assemblies, define a generic bills of material in the organization, which is specified by the profile MSC: Organization containing generic BOM for forecast explosion.

#### Setup Steps in Oracle Flow Manufacturing

1. Navigate to Flow Manufacturing > Products and Parts > Product Family Members.
2. Define the product family member relationship in the item validation organization.

#### Setup Steps in Oracle Order Management

1. Navigate to Order Management > Customers > Trading Community > Trading Community > Customers > Standard.

2. Define Customer site addresses.

#### Setup Steps in Oracle Shipping

1. Navigate to Shipping > Setup > Regions and Zones > Regions and Zones.
2. Define Region, Zone or, Customer Zone to cover selected customer site addresses.
3. Navigate to Shipping > Setup > Regions and Zones > Transit Times.
4. Set up intransit lead-times between the zone and the shipping organizations.
5. Navigate to Regions and Zones > Zone tab.
6. Use the Zone Usage flex field to set the zone usage as Forecast Analysis.

   When a sales order maps to multiple zones, then irrespective of the type of zone usage, Oracle Advanced Supply Chain Planning:

   - Figures out which region within the zone it maps to (if applicable)
   - Compares the levels of the regions within each of the zones and selects the more specific of the region and the corresponding zone
   - Checks if the levels of the regions are the same across zones, and retains only 1, which is selected at random

Oracle Advanced Supply Chain Planning applies the methods mentioned above to forecasts as well. When you define a Zone in Oracle Shipping, you have the choice of specifying how the zone will be used in Oracle Advanced Supply Chain Planning. You can specify that either the zone will be used for forecast analysis or for deriving intransit lead-time. There are two possible values for usage: Null and forecast analysis.

When the planning engine tries to distribute the forecasts to internal orgs, it uses Zones with usage set to forecast analysis.

In the process of distributing sales orders to different internal orgs, the distribution process can use Zones with usages set to forecast analysis or, Zones with no usage set or set to Null.

When a sales order maps to a region and a zone, the planning engine selects the intransit lead-time between the region and the customer or global organization.

#### Setup Steps in Oracle Demand Planning

1. Change to Demand Planning System Administrator responsibility.
2. Navigate to Demand plans > Scenarios > Output levels.
3. Define a demand plan and set the Organization dimension as All Organizations.
4. Enable the Consume in Supply Plan option.

5. Select Customer or, Demand Class as the hierarchy in the Geography dimension.

6. If you want to explode forecasts, select Calculate Dependent Demand.

7. If you have multi-level/multi-organization assemble-to-order assemblies, select Global Bills of Material to explode forecasts.

8. Set profile option MSD: Master organization. Set it either to:

- The same organization as that in profile option MSC: Organization containing generic BOM for forecast explosion

- An organization whose items are a subset of the items in the organization in profile option MSC: Organization containing generic BOM for forecast explosion

**Setup Steps in Oracle Advanced Supply Chain Planning**

1. Update your sourcing assignment set to include transfer from rules that specify the organization where you want each forecast distributed.

   . You also need a sourcing assignment that specifies where the item should be sourced within the organization. For example:

   - An item-instance rule that specifies all forecasts should be transferred from organizations M1 and M2 with a given planning percentage.

   - You also need to have make, buy, or transfer rules at the organization-item level that specify where to source these items.

2. You need to assign sourcing rules at zone level for global forecasting. For more details, see section Sourcing Rules at Region or Zone Level in *Oracle Global Order Promising Implementation and User's Guide*.

   Oracle Advanced Supply Chain Planning supports global forecasting based at zone level and not at customer site level. This also implies that when you use global forecasting at the zone level for example, zone A, it also covers all the customer sites that fall under zone A.

3. Navigate to Supply Chain Plan > Plan Options > Organizations tab.

4. In the Global Demand Schedules region, select the names of either global or local (organization specific) demand planning scenarios to drive the plan.

5. Select one of the following forecast consumption level for the Oracle Demand Planning scenario in Ship to Consumption Level:

   - Zone: To represent demand from a number of customers who belong to a zone, which is a user specified definition of geography. Zone can be defined using city, postal code, state, and country. You do not get customer specific forecasts

when you select this entity.

- Customer Zone: To represent user specified definition of geography where multiple customers can be grouped. You can use this option if forecast for a few customers from a zone are known. You can choose to provide forecast at customer zone in addition to zone level forecast.
- Customer
- Customer Site
- Demand Class - To group a demand segment. For example: internet sales, catalog sales
- Global (Item)

  Your selection depends on the dimension on which the demand planning scenario is published.

  > **Note:** The list of values displayed for Ship to Consumption Level changes depending on the published level of the demand planning scenario.

  The global forecasting process consumes forecast entries that match the Ship To plan option value.

#### To consume global forecasts

Publish demand plans with the organization dimension set to All Organizations.

- Oracle Demand Planning allows you to publish the forecasts without the context of a ship from location. Oracle Advanced Supply Chain Planning picks up these forecasts without the context of an organization and uses these forecasts for forecast consumption and planning purposes.
- Set the Schedule By plan option to determine the date by which Oracle Advanced Supply Chain Planning needs to consume the forecasts.
- If you ship early, run Oracle Order Management concurrent process Re-schedule Ship Sets. Shipped sales orders consume forecasts only by schedule date. This concurrent process updates the schedule date of shipped sales orders to the ship date.
- Run a supply chain plan with the appropriate explosion and consumption controls.

  The forecast consumption occurs on forecast entries that have references to both Ship From (a generic reference) and Ship To (specific references) entities.

### Internal Sales Order Forecast Consumption

Forecasts in general are consumed by regular sales orders. Internal sales orders do not consume forecasts. The assumption here is that the forecast maintained at an org level or even globally is meant for demands that is destined to a specific customer. If you consume forecasts using internal sales orders, you may be consuming forecasts that was from a customer using a sales order that originated from an internal source (from another org) and therefore, understate the demand.

You can control how internal sales orders should consume forecasts by setting profile option MSC: Consume forecasts using Internal Sales Orders as follows:

- Yes: The planning engine consumes forecasts with internal sales orders
- No: The planning engine does not consume forecasts with internal sales orders
- Only if Destination Organization on ISO is not part of Plan: The planning engine consumes forecasts with internal sales order that meet either of these conditions:
  - Its destination organization is not planned in this plan
  - Its destination organization is planned in a source plan (MRP/MPS/MPP). This applies only one level down from the internal sales order source organization.

### Lower Level Pre-configuration Consumption

You can forecast and stock a lower level configured item and then consume its forecast with sales orders for the parent assembly. Any remaining demand then consumes the forecast for the associated assemble-to-order model.

If you need to stock at the end item level or at lower level subassemblies to reduce delivery time, you can forecast a demand for the configuration item directly, release a planned order for that item, and build and stock that item.

The planning engine consumes the forecast for this specific configuration first, within the backward and forward consumption days. If there is remaining sales order demand after consuming the configuration's forecast, the planning engine then consumes forecasts for the base assemble-to-order model. For the part of the forecast that consumed the assemble-to-order model's forecast, the planning engine explodes the bills of material to consume any forecast for the lower level configured item. After consuming the forecast for the lower level configured item, the planning engine then consumes the base model forecast in the same manner. When demand consumes a model, the consumption process also consumes its option classes and option forecasts at that level.

To avoid double counting the forecast, reduce your exploded forecast or planning percentages to account for the separate forecast for the configured item.

### Option Dependent Resources

For forecasted demands of assemble-to-order models, the planning engine reduces planned order resource requirements for optional resources. These planned orders are only generated for forecasted demands. Certain operations are utilized only when specific optional components are utilized.

When the planning engine reduces the resource usage for optional resources, it uses the component planned percentage for the optional component used at that operation to estimate the amount of time that resources are required.

If several options require the same operation, the planning engine sums the planned percentage for these options up to a total of 100% and then applies the formula Operation schedule quantity = Planned order quantity * planning percentage

To set up an option dependent resource, select Option Dependent for the operation on the routing, then assign the optional components to the operation on the bill of material.

The Auto-create Configuration concurrent process creates the configured item's bills of material with only the specified options. In the same way, it creates the configured item's routing with only those operations that are mandatory and the option dependent operations linked to the options that you select.

### Common Routings for Option Classes

You can reference an assemble-to-order model routing as a common routing for option class items. The model routing includes the steps that all configurations require. The planning engine recognizes the common routing between the assemble-to-order model and its option class and ignores the repeated resources in the option class routing.

This only applies to an option class that shares a common routing with its immediate parent. If the option class shares a common routing with any other item, the option class's routing is planned as a separate routing. The planning engine does not ignore common routings for lower level assemble-to-order models that are tied directly to an assemble-to-order parent model.

## Global Forecasts Distribution

The planning engine distributes forecasts in the following manner:

- Unconstrained - Distributes based on ranks and planning percentage.
- Constrained - Distributes based on ranks and planning percentage.
- Constrained with decision rules - Distributes forecasts based on capacity and resource availability. The planning engine considers rank as well as material, resource, and transportation constraints.
- Cost based optimized plans - In addition to supplies and constraints, the planning engine also considers the cost of production and transportation for distributing

forecasts.

> **Note:** Select the Round Order Quantity item attribute in Inventory > Items > Organization Items > MPS/MRP Planning tab to avoid the planning engine from sourcing forecast entries with fractional demand.

#### Sales Order Distribution

The planning engine only sources sales order lines that:

- Have global forecasts against their item
- Are present in constrained plans with decision rules and optimized plans
- Are scheduled
- Are not firmed
- Are not marked ship model complete

You can manually select a shipping facility on a sales order line at the order entry time. However, the facility that you select may not be the best one at the shipment time due to the evolving global supply and demand picture. The planning engine selects a facility for sourcing the sales order based on the global supply availability, supply chain constraints, procurement costs, and production costs.

You can opt to enforce the global sourcing rule split. If the organization with the higher sourcing percentage has enough capacity, the planning engine places the entire sales order line there. If it does not find any capacity in any of the sources, it distributes based on the highest planned split percentage of the highest rank in the source. It uses the entire capacity of the organization with the higher sourcing percentage and sources the remaining supplies from other organizations.

The planning engine may distribute components of a configured item to multiple inventory organizations. In other words, it may source one line from one inventory organization and another line from another inventory organization regardless of whether you prefer to source all supplies for a sales order from a single source, the sales order has ship sets, or the sales order has arrival sets.

During demand allocation, the planning engine splits a sales order:

- If capacity constraints are present
- To use existing supplies

The planning engine does not split the sales order if:

- You have partial demand quantity reserved. In this case, the planning engine does

not change the source. The entire sales order will be sourced to the Org where you have partial reservation.

- There are sourcing constraints because the planning engine does not include sales orders into enforce sourcing constraints calculations.

The planning engine evaluates alternate ship methods specified in the sourcing rules/BOD form and recommends the appropriate option. It can also release a ship method to the sales order, which is different from the one specified in the Transit Times form.

If a sales order is already firmed in Oracle Order Management, the planning engine provides recommendations only for ship method and schedule ship date and does not provide any suggestions for changing the shipping facility.

#### To view Global Forecasting Results

To review the forecast distribution from the global forecast to individual organizations' forecasts

- Navigate to Supply Chain Plan > Workbench
- Select View by Organization.
- Select a plan name
- Select an organization
- Select an item
- Select Horizontal Plan
- The Horizontal Plan window presents the forecast consumption and distribution details in two parts.

  The first part displays the global forecast plan with following rows:

  - Original forecast quantity
  - Consumed quantity
  - Current quantity
  - Cumulative original quantity
  - Cumulative original quantity
  - Expired forecast: The amount of unmet forecasts

    The second part is the horizontal material plan, which is specific to the

organization from where you navigated to the horizontal plan. The forecast row in this part of the horizontal plan displays the amount of forecasts distributed to the organization.

If you select View by Item, Planner Workbench displays the same global organization information with the supply and demand aggregated for all organizations instead of for a specific organization.

- Right-click on the Horizontal Plan window and select Global Forecasting and select the level values available to analyze the consumption plan with respect to specific consumption levels.

- You can use this option to bring up the forecast and consumption information specific to different zones. For example: you can right-click and select Global Forecasting > Zone 1 to display information that is specific to Zone 1.

- In the Horizontal Plan window, double-click on the Current field to open the Supply/Demand window with all the distributed forecasts for a global forecast.

- In the Horizontal Plan window, double-click on the Consumed field to open the Supply/Demand window with sales orders that consumed the forecast.

  **Note:** Oracle Advanced Supply Chain Planning retains shipped sales orders for consumption purposes but the sales order is not shown in the demand picture as it has already been shipped. When you drill down from the Consumed field in the Horizontal Plan window to the Supply/Demand window, the planning engine does not show shipped sales orders while the consumption still happens using shipped sales orders. This may cause a mismatch between the numbers in the Consumed field and the numbers in Supply/Demand window (drill down from the Consumed field) .

  You can set the Include Sales Order plan option to control whether the planning engine picks up sales orders behind a specific number of days or not. For details, see Chapter 5: Plan Options.

  You can use the profile MSC: Sales Order offset days to filter out the sales orders that are not supposed to consume the forecast.

- Right click from a specific sales order.

  The Consumption Details window appears.

- Navigate to Exception Details window to review overconsumption exceptions.

  Oracle Advanced Supply Chain Planning generates the following exception for each occurrence of forecast over consumption:

- Items with forecast overconsumptions

### Examples

This section lists a few examples to further explain the global consumption and explosion process based on different scenarios:

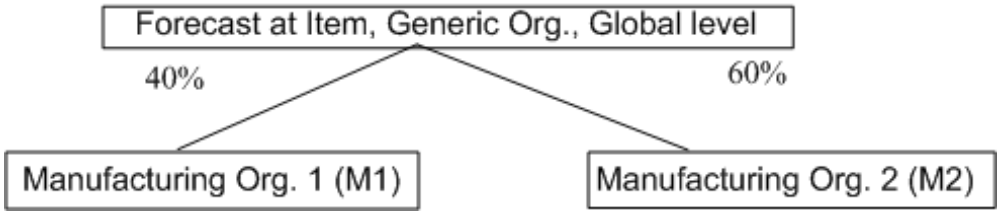

- Example 1: Standard item, page 3-131
- Example 2: Product family Items in multiple organizations, page 3-132
- Example 3: Single level single org ATO assembly, page 3-135
- Example 4: Multi level single org ATO assembly, page 3-138
- Example 5: Single level multi org ATO assembly, page 3-141
- Example 6: Multi level multi org ATO assembly, page 3-145


#### Example 1: Standard item

Consider a standard item A for which:

- The forecast consumption is at the item or global level.
- The forecast is distributed to two manufacturing organizations M1 and M2:
- The sourcing rules for M1 and M2 are set as 40% and 60% respectively.

***Global Forecasting for a standard item***




Refer the table below to see the amount of forecast consumed and distributed by the planning engine:

| Forecast | 1/10 | 1/17 | 1/24 | D2/1 | 2/8 | 2/15 |
|---|---|---|---|---|---|---|
| Consumed forecast | 40 | 80 | 60 | 50 | 50 | 50 |

| Forecast | 1/10 | 1/17 | 1/24 | D2/1 | 2/8 | 2/15 |
|---|---|---|---|---|---|---|
| Forecast distributed to M1 | 20 | 10 | 15 | 11 | 10 | 20 |
| Forecast distributed to M2 | 20 | 70 | 45 | 39 | 40 | 30 |

Result:

- The distributed forecast is not according to settings in the sourcing rules/BOD. The forecast distribution amount can vary depending on the type of plan you run and the options you choose. Oracle Advanced Supply Chain Planning also supports enforcing a sourcing percentage. This option allows you to enforce the amount of forecasts on a percentage basis to specific organizations

- Lead-times used during forecast distribution: If the forecast is specific to a customer site, and you have customer specific sourcing rule, Oracle Advanced Supply Chain Planning uses the intransit lead-time between shipment organization and customer site (via zones) if you have set up intransit lead-time between the two.

#### Example 2: Product family Items in multiple organizations

Consider:

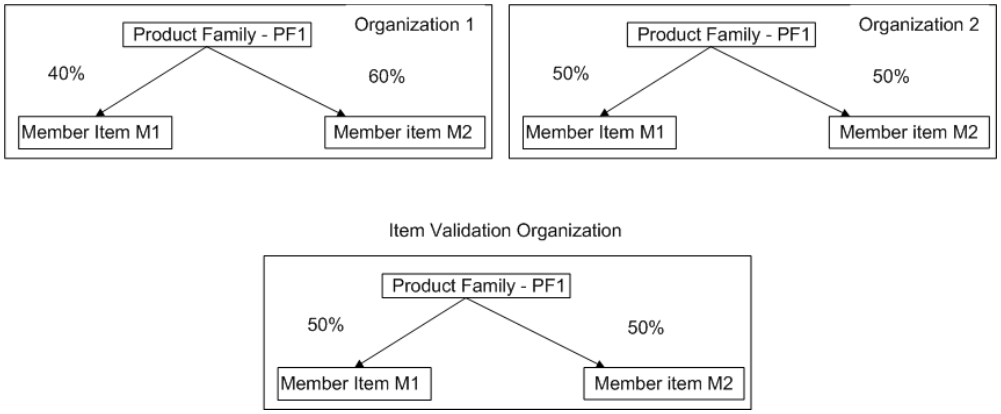
- A product family item PF1 with two member items M1 and M2 is present in Organization 1. The member percentages are 40 and 60 for M1 and M2 respectively.

- The product family item PF1 with two member items M1 and M2 is also present in Organization 2. The member percentages are 50 for both M1 and M2.

- Forecast explosion cannot go across multiple organizations and it needs a single bill of material (product family relationship) to explode the forecast. Therefore, you need to define a representative product family relationship in the item validation organization.

- The representative bill of material is used for forecast explosion purposes only. The planning percentage for M1 versus M2 is adjusted in the item validation organization to get a single definition of the product family.

***Global forecasting for product family items***




Oracle Demand Planning and Oracle Advanced Supply Chain Planning use the product family relationship that you specify in the item validation organization to explode the forecasts to member levels.

**Scenario 1:**

Forecast control is set to Consume and Derive

Assume that the following sales orders are present for members M1 and M2 of product family PF1 in Organization 1:

| Sales Order No | Item | Date | Qty | Customer | Customer Site |
|---|---|---|---|---|---|
| 1001 | M1 | 1/15 | 20 | C1 | S1 |
| 1002 | M1 | 2/1 | 50 | C1 | S2 |
| 1003 | M2 | 2/8 | 40 | C2 | S1 |
| 1004 | M2 | 3/1 | 80 | C3 | - |

Before forecast consumption and explosion and no organization context, the planning engine gives the following result:

| Item | 1/10 | 1/17 | 1/24 | D2/1 | 2/8 | 2/15 |
|---|---|---|---|---|---|---|
| PF1 | 80 | 50 | 50 | 100 | 50 | 100 |

After forecast explosion, the planning engine gives the following result:

| Item | 1/10 | 1/17 | 1/24 | D2/1 | 2/8 | 2/15 |
|---|---|---|---|---|---|---|
| PF1 | 80 | 50 | 50 | 100 | 50 | 100 |
| M1 | 40 | 25 | 25 | 50 | 25 | 50 |
| M2 | 40 | 25 | 25 | 50 | 25 | 50 |

Assume that backward consumption = 30 days.

After forecast explosion and consumption, the planning engine gives the following result:

| Item | 1/10 | 1/17 | 1/24 | D2/1 | 2/8 | 2/15 |
|---|---|---|---|---|---|---|
| PF1 | 60 | 50 | 50 | 5 | 25 | 50 |
| M1 | 20 | 25 | 25 | 0 | 25 | 50 |
| Sales Order No | **1001** | - | - | **1002** | - | - |
| M2 | 40 | 25 | 25 | 5 | 0 | 0 |
| Sales Order No | - | - | - | **1003**<br>**1004** | **1003** | **1004** |

Result:

- The forecasts are consumed against the product family.
- No shipment organization has been referenced in the forecast consumption.
- Forecast explosion can either happen in Oracle Demand Planning or Oracle Advanced Supply Chain Planning. If you bring forecasts at a global level, you can explode the forecast within Oracle Advanced Supply Chain Planning.
- You have forecasts that need to be placed into specific organizations for materials and resources planning. Specify sourcing rules for product family items so that the planning engine can place the item in a specific organization and plan the item and its members.
- When the forecast gets distributed to a specific Ship From organization, the order

type for the demand is Production Forecast.

- You need to assign the sourcing rules at the same level as the forecast consumption level. For example, if the forecasts are consumed at item level, then you need to provide the sourcing rule also at item level.

**Scenario 2:**

Forecast control is set to None or Consume

Consider:

- Forecast control is set to None or Consume
- Specify the sourcing rules for the product family item as mentioned in Scenario 1. This enables Oracle Advanced Supply Chain Planning to distribute the forecasts from generic Ship From organizations to specific organizations.

Result:

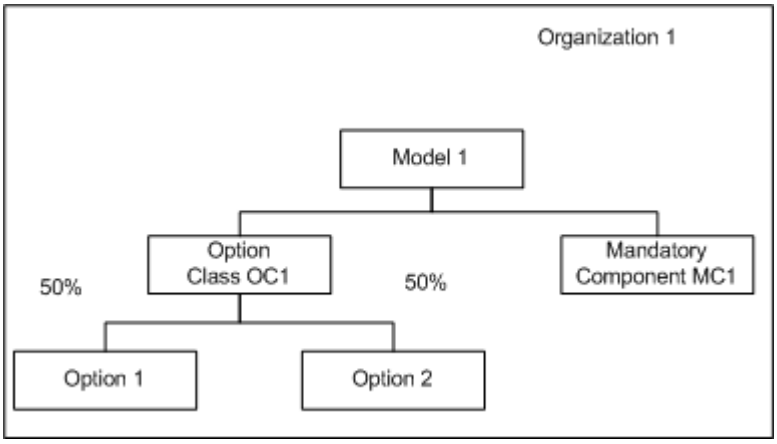
- The forecast consumption happens before the forecast explosion at the product family level and the member item level.
- The product family bill of material is exploded during bill of material explosion in Oracle Advanced Supply Chain Planning.
- Oracle Advanced Supply Chain Planning explodes the demand to member items during the bill of material explosion as it does for standard items during regular planning process. When Oracle Advanced Supply Chain Planning explodes the bill of material in this case, it picks up the bill of material in the true organization and not the one in the item validation organization.

**Example 3: Single level single org ATO assembly**

Consider:

- A single level single org ATO assembly in Organization 1.
- The assembly for Model 1 contains Option Class OC1 and Mandatory Components MC1.
- Option Class OC1 contains Option 1 and Option 2.
- The bill of material is maintained in the item validation organization.
- The fixed and variable lead-times are also maintained in the item validation organization.

*Single level single org ATO assembly*




**Scenario 1:**

Forecast control is set to Consume and Derive

Assume that:

- Forecast control is set to Consume and Derive
- The forecast for the Model item is maintained without any organization context.
- The forecasts for optional items and mandatory components are maintained independently to service independent demands such as spares or safety stock requirements.

Refer the table below for the forecasts maintained for Model 1 in Organization 1:

| Item | 1/10 | 1/17 | 1/24 | D2/1 | 2/8 | 2/15 |
|---|---|---|---|---|---|---|
| Model 1 | 40 | 20 | 10 | 20 | 50 | 40 |
| Option 1 | 5 | 0 | 5 | 4 | 10 | 10 |
| Option 2 | 0 | 0 | 0 | 5 | 6 | 10 |
| Mandatory Components MC 1 | 2 | 2 | 2 | 2 | 2 | 2 |

The forecasts for Option 1, Option 2, and Mandatory components MC1, which belong to Models 1, account for the lead-time of its assembly item.

If you have independent forecasts, the planning engine derives the forecast date for the

independent demand as the ship date for the options and mandatory components. However, the dependent demands Option 1, Option 2, and Mandatory components MC1 for Model 1 are offset for lead-time.

Assume that:

- The sourcing rule for Model 1 is defined at Organization 1. This is the level at which you consumed the forecasts.
- The fixed and variable lead-time for Model 1 = 5 days

After forecast explosion, the planning engine gives the following result:

| Item | 1/5 | 1/10 | 1/12 | 1/17 | 1/19 | 1/24 | 1/25 | 2/1 | 2/3 | 2/8 | 2/10 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 1 | 0 | 40 | 0 | 20 | 0 | 10 | 0 | 20 | 0 | 50 | 0 | 40 |
| Option Class OC1 | 40 | 0 | 20 | 0 | 10 | 0 | 20 | 0 | 50 | 0 | 40 | 0 |
| Option 1 | 20 | 5 | 10 | 0 | 5 | 5 | 10 | 4 | 25 | 10 | 20 | 10 |
| Option 2 | 20 | 0 | 10 | 0 | 5 | 0 | 10 | 5 | 25 | 6 | 20 | 0 |
| Mandatory Components MC 1 | 40 | 2 | 20 | 2 | 10 | 2 | 20 | 2 | 50 | 2 | 40 | 2 |

Assume that:

- You receive a sales order for 25 units of Model with Option 1 on 1/17.
- Backward consumption = 30 days

After forecast consumption, the planning engine gives the following result:

| Item | 1/5 | 1/10 | 1/12 | 1/17 | 1/19 | 1/24 | 1/25 | 2/1 | 2/3 | 2/8 | 2/10 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 1 | 0 | 35 | 0 | 0 | 0 | 10 | 0 | 20 | 0 | 50 | 0 | 40 |
| Option Class OC1 | 5 | 0 | 0 | 0 | 10 | 0 | 20 | 0 | 50 | 0 | 40 | 0 |
| Option 1 | 0 | 5 | 10 | 0 | 5 | 5 | 10 | 4 | 25 | 10 | 20 | 10 |

| Item | 1/5 | 1/10 | 1/12 | 1/17 | 1/19 | 1/24 | 1/25 | 2/1 | 2/3 | 2/8 | 2/10 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Option 2 | 20 | 0 | 10 | 0 | 5 | 0 | 10 | 5 | 25 | 6 | 20 | 10 |
| Mandatory Components MC 1 | 15 | 2 | 20 | 2 | 10 | 2 | 20 | 2 | 50 | 2 | 40 | 2 |

Result: The above forecast is sourced to Organization 1.

**Scenario 2:**

Forecast control set to None or Consume

If the forecast control is set to None or Consume, you do not need to maintain the bill of material in the item validation organization. In this case, planning engine explodes the forecasts as part of regular planning explosion process.

It is enough to maintain the sourcing rules for Model 1. If the top level item's forecast control is set to Consume, Oracle Advanced Supply Chain Planning consumes only the top level model.

### Example 4: Multi level single org ATO assembly

Consider:

- A multi level single org ATO assembly where the entire assembly is produced in Organization 1 but has multiple ATO assemblies.
- The bill of material is maintained in the item validation organization.
- The fixed and variable lead-times are also maintained in the item validation organization.

**Scenario 1:**

Forecast control set to consume for assembly and none or consume to components

Assume that:

- Forecast control is set to consume for assembly and none or consume to components
- The forecast for the Model item is maintained without any organization context.
- The forecasts for optional items and mandatory components are maintained independently to service independent demands such as spares or safety stock requirements.

Refer the table below for the forecasts maintained for Model 1 in Organization 1:

| Item | 1/24 | D2/1 | 2/8 | 2/15 |
|---|---|---|---|---|
| Model 1 | 10 | 20 | 50 | 40 |
| Option 1 | 5 | 4 | 10 | 10 |
| Option 2 | 0 | 5 | 6 | 10 |
| Option 3 | 2 | 2 | 2 | 2 |
| Mandatory Components MC 3 | 4 | 4 | 4 | 4 |

Assume that:

- The forecast is maintained at the global level.
- The sourcing is maintained for the top level model, which is Model 1.
- The fixed and variable lead-time for Model 1 = 3 days
- The fixed and variable lead-time for = 2 days

You receive a sales order for 25 units of Model with Option 1 on 2/8 for Customer 1 and Site 1.

After forecast consumption, the planning engine gives the following result:

| Item | 1/24 | D2/1 | 2/8 | 2/15 |
|---|---|---|---|---|
| Model 1 | 10 | 20 | 25 | 40 |
| Option 1 | 5 | 4 | 10 | 10 |
| Option 2 | 0 | 5 | 6 | 10 |
| Option 3 | 2 | 2 | 2 | 2 |
| Mandatory Components MC 3 | 4 | 4 | 4 | 4 |

After forecast explosion, the planning engine gives the following result:

| Item | 1/19 | 1/21 | 1/24 | 1/25 | 1/27 | 2/1 | 2/2 | 2/5 | 2/8 | 2/10 | 2/12 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 1 | - | - | 10 | - | - | 20 | - | - | 25 | - | - | 40 |
| Option Class OC1 | - | - | 10 | - | - | 20 | - | - | 25 | - | - | 40 |
| Mandatory Components MC 1 | - | - | 10 | - | - | - | - | - | 25 | - | - | 40 |
| Model 2 | - | 10 | - | - | 20 | - | - | 25 | - | - | 40 | - |
| Option 1 | - | 5 | 5 | - | 10 | 4 | - | 13 | 10 | - | 20 | 10 |
| Mandatory Components MC 2 | - | 10 | - | - | 20 | - | - | 25 | - | - | 40 | - |
| Option Class OC2 | 10 | - | - | 20 | - | - | 25 | - | - | 40 | - | - |
| Option 2 | 5 | - | 0 | 10 | - | 5 | 13 | - | 6 | 20 | - | 10 |
| Option 3 | 5 | - | 2 | 10 | - | 2 | 12 | - | 2 | 20 | - | 2 |
| Mandatory Components MC 3 | 10 | - | 4 | 20 | - | 4 | 25 | - | 4 | 40 | - | 4 |

Result:

- The above forecast is sourced to Organization 1 for material and resource planning.
- It is assumed that there are no constraints. If you run a constrained plan, the timing of the supplies and the demand satisfied dates for these forecasts may be away from the due dates.

**Scenario 2:**

Forecast control is set to Consume and Derive

If the forecast control is set to Consume and Derive, you need to maintain the bills of material in the item validation organization. In this case, Oracle Demand Planning performs the forecast explosion and provides forecasts to Oracle Advanced Supply Chain Planning.

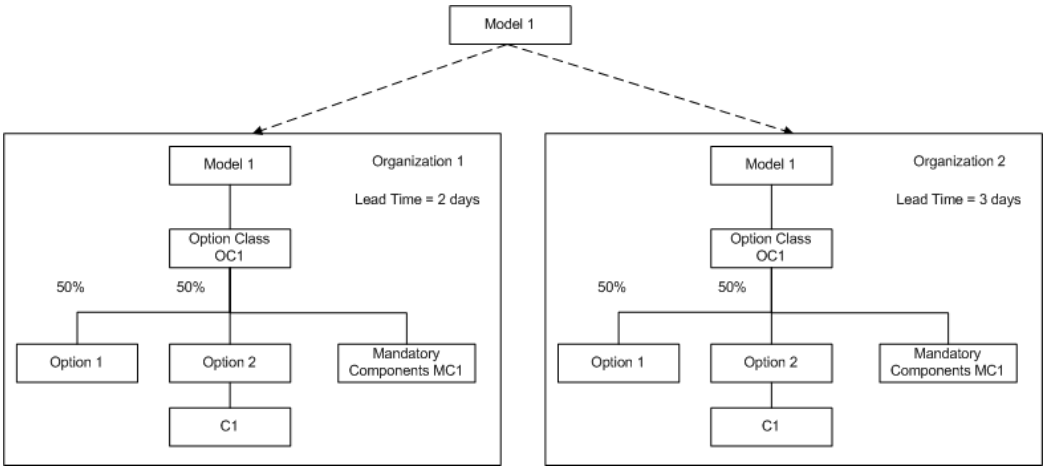
Oracle Advanced Supply Chain Planning consumes the forecasts at the chosen level and distributes the forecasts based on the sourcing rules provided for Model 1, which is the top level model.

#### Example 5: Single level multi org ATO assembly

Consider:

- A single level multi org ATO assembly where Model 1 can be sourced from two different organizations
- The forecast is set globally without the context of an organization.
- Lead-time for Model 1 in Organization 1 = 2 days
- Lead-time Model 1 in Organization 2 = 3 days.

***Single level multi org ATO assembly***




**Scenario 1:**

Forecast control is set to None or Consume

Assume that:

- You need to consume forecast at the top assembly level and distribute the forecasts across sources. You can set the forecast control to None or Consume for the components.
- The sourcing rules for Model 1 is maintained to source the items.
- You need to maintain an independent forecast for the model and some optional items as follows:

| Item | 1/10 | 1/17 | 1/24 | 2/1 | 2/8 | 2/15 |
|---|---|---|---|---|---|---|
| Model 1 | 20 | 20 | 16 | 20 | 30 | 20 |
| Option 1 | 5 | 0 | 5 | 4 | 10 | 10 |
| Option 2 | 0 | 0 | 0 | 5 | 6 | 10 |

- The sourcing rule for Model 1 is maintained to source the items. The level at which you specify the sourcing rule must match the level at which you consume the forecast.
- 25% of the forecast needs to be sourced from Organization 1 and 75% of the forecast needs to be sourced from Organization 2.
- Model 2 is needed for Model 1 assembly 100% of the time.

You get a demand of 25 units of sales order demand for Model 1 on 1/24 with Option 2.

After forecast consumption and explosion, the planning engine gives the following result:

Result for Organization 1:

| Item | 1/7 | 1/10 | 1/14 | 1/17 | 1/21 | 1/24 | 1/27 | 2/1 | 2/5 | 2/8 | 2/12 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 1 | - | 5 | - | 8 | - | 0 | - | 15 | - | 23 | - | 15 |
| Option 1 | 8 | 5 | 4 | 0 | 0 | 5 | 8 | 4 | 12 | 10 | 8 | 10 |
| Option 2 | 7 | 0 | 4 | 0 | 0 | 0 | 7 | 5 | 11 | 6 | 7 | 10 |

Result for Organization 2:

| Item | 1/8 | 1/10 | 1/14 | 1/17 | 1/22 | 1/24 | 1/27 | 2/1 | 2/6 | 2/8 | 2/13 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 1 | - | 5 | - | 3 | - | 0 | - | 5 | - | 8 | - | 5 |
| Option 1 | 3 | 5 | 2 | 0 | 0 | 5 | 3 | 4 | 4 | 10 | 3 | 10 |
| Option 2 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 5 | 4 | 6 | 2 | 10 |

The intransit lead-times and the organization specific lead-times are considered when distributing the demand and sourcing the items. Option 1 and Option 2 forecasts are offset using the lead-time in the Organization 1 and Organization 2 respectively.

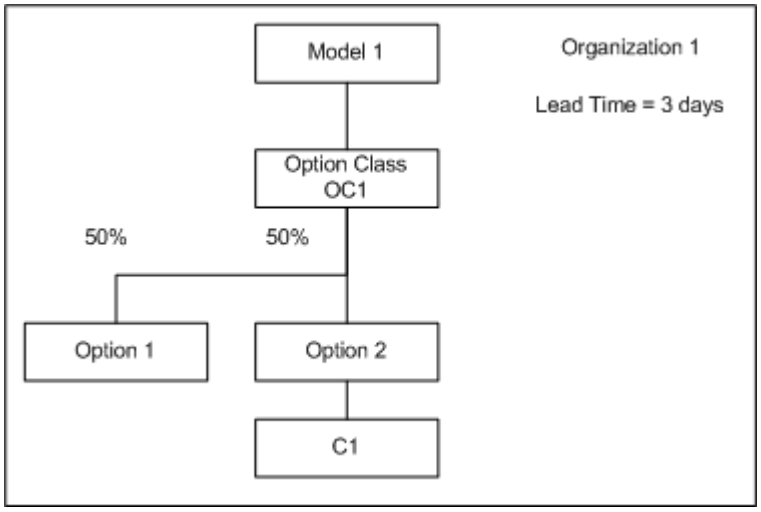
**Scenario 2:**

Forecast control is set to Consume and Derive

Consider:

- The forecast is maintained at the global level.
- The sourcing is maintained for Model 1 to source the items. The level at which you specify the sourcing rule must match the level at which you consumed the forecast.
- A generic bill of material is maintained in the item validation organization with all the options and mandatory components as shown below:

***Bill of Material***




- Adjust the planning percentage on option class items and optional items to arrive at a figure that represent the figure in both organizations.
- In this method the organization specific lead-times are not be applied. The lead-times specified in the item validation organization is used. Therefore, it is important to specify the lead-times that closely represents your set up.
- The forecast control for mandatory components is generally set to None. Therefore, the demand on the mandatory components is placed when the bills of material explosion happens in Oracle Advanced Supply Chain Planning. If you put in mandatory components in the generic bill of material, the forecast is derived to the mandatory components. Therefore, it is not recommended that you add the mandatory components to the generic bill of material.

The forecast explosion occurs using the above bills of material in the item validation organization. After the forecast explosion, Oracle Advanced Supply Chain Planning consumes the forecast at the level you choose.

After forecast explosion, the planning engine gives the following result:

| Item | 1/7 | 1/10 | 1/14 | 1/17 | 1/21 | 1/24 | 1/27 | 2/1 | 2/5 | 2/8 | 2/12 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 1 | - | 20 | - | 20 | - | 16 | - | - | - | 30 | - | 20 |
| Option Class OC1 | 20 | - | 20 | - | 16 | - | - | - | 30 | - | 20 | - |
| Option 1 | 10 | 5 | 10 | 0 | 8 | 5 | 10 | 4 | 15 | 10 | 10 | 10 |
| Option 2 | 10 | 0 | 10 | 0 | 8 | 0 | 10 | 5 | 15 | 6 | 10 | 10 |

You get a demand of 25 units of sales order demand for the model on 1/24 with Option 2.

After forecast consumption, the planning engine gives the following result:

| Item | 1/8 | 1/10 | 1/14 | 1/17 | 1/22 | 1/24 | 1/27 | 2/1 | 2/6 | 2/8 | 2/13 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 1 | - | 20 | - | 11 | - | 0 | - | 20 | - | 30 | - | 20 |
| Option Class OC1 | 20 | - | 11 | - | 0 | - | 20 | - | 30 | - | 20 | - |
| Option 1 | 10 | 5 | 10 | 0 | 8 | 5 | 10 | 4 | 15 | 10 | 10 | 10 |
| Option 2 | 3 | 0 | 0 | 0 | 0 | 0 | 10 | 5 | 15 | 6 | 10 | 10 |

Result:

- After forecast explosion, the forecast is consumed at the level that you choose.
- The planning engine distributes the forecast for optional items between Organization 1 and Organization 2 based on the sourcing rules established for these models. If your optional items follow different sources than the model, you should define the different sources in the sourcing rule for the optional items.
- If you want to maintain the sourcing splits between organizations, set Enforce

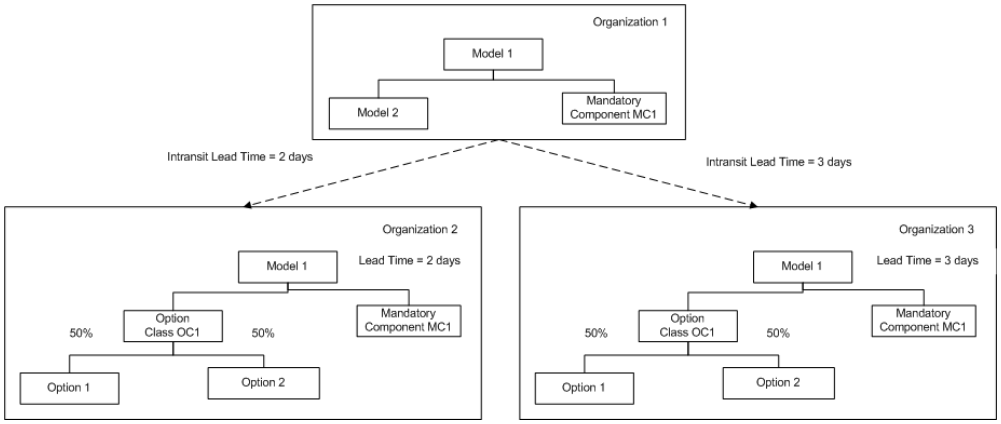
sourcing constraints to No in the Plan Options form. The planning engine recommends the forecast quantities to be placed in each organization based on the constraints you might have in the lower levels of the bills of material in each of the organizations.

#### Example 6: Multi level multi org ATO assembly

Consider:

- A multi level multi org ATO assembly where a lower level Model is sourced from two different organizations.
- Forecasts are specified globally without the context of an organization.
- The lead-time for Model 2 in Organization 2 = 2 days.
- The lead-time for Model 2 in Organization 3 = 3 days.
- The intransit lead-time for Organization 2 = 2 days.
- The intransit lead-time for Organization 3 = 3 days.

***Multi level multi org ATO assembly***




**Scenario 1:**

Forecast control is set to None or Consume

Assume that:

- You need to consume forecast at the top assembly level and distribute the forecasts across sources. You can set the forecast control to None or Consume for the components.
- The sourcing rules for Model 1 and Model 2 are maintained to source the items. The level at which you specify the sourcing rules must match the level at which you

consume the forecast.

- You need to maintain an independent forecast for Model 1 and some optional items as follows:

| Item | 1/24 | D2/1 | 2/8 | 2/15 |
|---|---|---|---|---|
| Model 1 | 16 | 20 | 30 | 20 |
| Option 1 | 5 | 4 | 10 | 10 |
| Option 2 | 0 | 5 | 6 | 10 |

Assume that:

- 25% of the forecast needs to be sourced from Organization 2 and 75% of the forecast needs to be sourced from Organization 3.
- Model 2 is needed for Model 1 assembly 100% of the time.

You get a demand of 25 units of sales order demand for the model on 2/8 with Option 2.

After forecast consumption and explosion, the planning engine gives the following result:

Result for Organization 2:

| Item | 1/20 | 1/24 | 1/26 | 2/1 | 2/4 | 2/8 | 2/11 | 2/15 |
|---|---|---|---|---|---|---|---|---|
| Model 1 | - | 4 | - | 5 | - | 1 | - | 5 |
| Option 1 | 2 | 5 | 3 | 4 | 1 | 10 | 3 | 10 |
| Option 2 | 2 | 0 | 2 | 5 | 0 | 6 | 2 | 10 |

Result for Organization 3:

| Item | 1/18 | 1/24 | 1/24 | 2/1 | 2/2 | 2/8 | 2/9 | 2/15 |
|---|---|---|---|---|---|---|---|---|
| Model 1 | - | 12 | - | 15 | - | 4 | - | 15 |

| Item | 1/18 | 1/24 | 1/24 | 2/1 | 2/2 | 2/8 | 2/9 | 2/15 |
|---|---|---|---|---|---|---|---|---|
| Option 1 | 6 | 5 | 8 | 4 | 2 | 10 | 8 | 10 |
| Option 2 | 6 | 0 | 7 | 5 | 2 | 6 | 7 | 10 |

The intransit lead-times and the organization specific lead-times are considered when distributing the demand and sourcing the items.

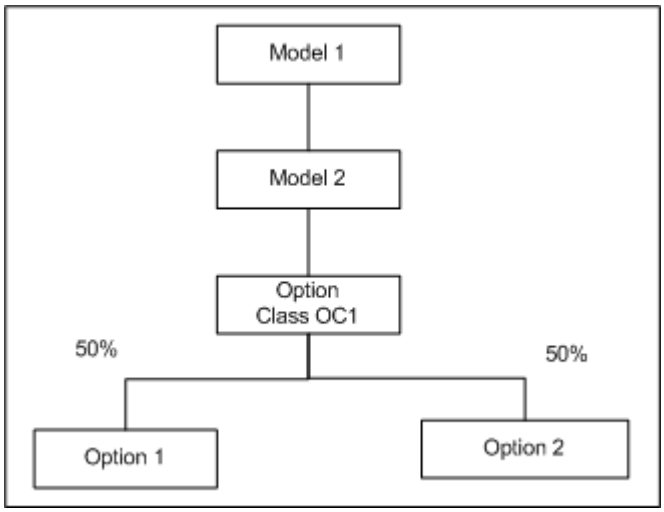
**Scenario 2:**

Forecast control is set to Consume and Derive

Consider:

- The forecast is maintained at the global level.
- The sourcing is maintained for Model 1 and Model 2 to source the items. The level at which you specify the sourcing rules must match the level at which you consumed the forecast.
- A generic bills of material is maintained in the item validation organization with all the options and mandatory components as shown below:

***Bills of Material***




Assume that:

- Lead-time for Model 1 = 1 day.

- Lead-time for Model 2 = 2 days.
- Model 2 is needed for Model 1 assembly 100% of the time.

After forecast explosion, the planning engine gives the following result:

| Item | 1/22 | 1/23 | 1/24 | 1/29 | 1/31 | 2/1 | 2/5 | 2/7 | 2/8 | 2/12 | 2/14 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 1 | - | - | 16 | - | - | 20 | - | - | 30 | - | - | 20 |
| Model 2 | - | 16 | - | - | 20 | - | - | 30 | - | - | 20 | - |
| Option Class OC1 | 16 | - | - | 20 | - | - | 30 | - | - | 30 | - | - |
| Option 1 | 8 | - | 5 | 10 | - | 4 | 15 | - | 10 | 10 | - | 10 |
| Option 2 | 8 | - | 0 | 10 | - | 5 | 15 | - | 6 | 10 | - | 10 |

You get a demand of 25 units of sales order demand for the model on 2/8 with Option 2.

After forecast consumption, the planning engine gives the following result:

| Item | 1/22 | 1/23 | 1/24 | 1/29 | 1/31 | 2/1 | 2/5 | 2/7 | 2/8 | 2/12 | 2/14 | 2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 1 | - | - | 16 | - | - | 20 | - | - | 5 | - | - | 20 |
| Model 2 | - | 16 | - | - | 20 | - | - | 5 | - | - | 20 | - |
| Option Class OC1 | 16 | - | - | 20 | - | - | 5 | - | - | 30 | - | - |
| Option 1 | 8 | - | 5 | 10 | - | 4 | 15 | - | 10 | 10 | - | 10 |
| Option 2 | 8 | - | 0 | 5 | - | 0 | 0 | - | 6 | 10 | - | 10 |

Result:

- After forecast explosion, the forecast is consumed at the level that you choose.
- The planning engine distributes the forecast for optional items between Organization 2 and Organization 3 based on the sourcing rules established for these

models. If your optional items follow different sources than the model, you should define the different sources in the sourcing rule for the optional items.

- If you want to maintain the sourcing splits between organizations, set Enforce sourcing constraints to No in the Plan Options form. The planning engine recommends the forecast quantities to be placed in each organization based on the constraints you might have in the lower levels of the bills of material in each of the organizations.

## Choosing Aggregation Levels

Oracle ASCP allows planning to occur at different levels of aggregation within the same plan. This allows detailed scheduling and long-range planning to take place within a single integrated plan. Flexible aggregation levels exist along several planning dimensions:

- Time
- Product
- Resource/routing

Aggregation level options for each dimension is described below.

### Time Aggregation Levels

In ASCP, the available time aggregation levels are:

- Minutes
- Hours
- Days
- Weeks
- Periods

In order to reduce the computational effort to calculate a plan and to reduce the volume of plan output (for clarity), time bucket sizes should be set only as small as is necessary to capture the necessary detail.

Time bucket size must increase or stay level over the planning horizon; it cannot decrease.

The following sequences of time aggregation levels are examples of those (but not all) that are valid within a single plan:

- Minutes-hours-days-weeks-periods (check Constrained Plan in the Constraints tab)
- Days (Aggregation tab)
- Days-weeks (Aggregation tab)
- Hours-days-periods (check Constrained Plan in the Constraints tab. Note: weeks time aggregation level is skipped.)
- Planning at the minute and hour aggregation levels is referred to as scheduling, and is enabled only when the Constrained Plan check box in the Constraints tab of the Plan Options window is checked.
- Periods default to months.
- All lower level demand that occurs within a higher level time bucket (for example, a daily demand occurring in the middle of a weekly time bucket) is moved to the last day of the higher level bucket for planning purposes. This is the information lost through aggregation.
- Supplies are always scheduled to arrive at the last day of periods.

If you use order modifier Fixed Days of Supply, the planning engine creates a single supply to cover multiple days of demand. During constraint-based scheduling, the planning engine may move the demand and supply dates such that you cannot reconcile the supply quantity to the demand dates and quantities. To attempt a reconciliation, Oracle recommends using the old due date on the planned order demands.

## Product Aggregation Levels

In Oracle ASCP, the available product aggregation levels are:

- Item
- Product family

Planning at the item level explodes material and resource requirements down to each bottom-level component (provided that the component's MRP Planning Type item attribute matches the type of Manufacturing, Production, or Master Plan being run).

When planning at the product family level, no explosion of material or resource requirements occurs. Information concerning the resources required to make a product family are taken from the routing for the product family. Therefore, if planning is to be done at a product family level, there needs to be a routing defined for each product family. No material requirements are considered when planning at a product family level.

## Resource Aggregation Levels

There are two ways in which the aggregation level of resource information may be specified in Oracle ASCP:

- Resource aggregation level of Individual aggregate
- Routing aggregation level of Routing bill of resource (BOR)

> **Note:** Resource aggregation levels do not have any effect unless the Constrained Plan check box in the Constraint tab of the Plan Options window is checked.

Resource aggregation levels can either be individual or aggregate.

- Individual: All resources listed in all item routings (if the item aggregation level is set to Item) or all product family routings (if the item aggregation level is set to Product Family) are considered in planning.
- Aggregate: Only resources specified as aggregate resources are considered in planning. Aggregate resources are specified in the window accessed by the Operations Resources button during routing definition (Use the Manufacturing and Distribution Manager responsibility. From the Navigator window, choose Bills of Material > Routings > Routings). Each operation resource can have a designated aggregate resource (which may be itself or another resource). If you designate a resource as an aggregate resource, do not use it as an individual resource; the planning engine does not plan it.

Routing aggregation levels serve a similar function.

- Routing: all resources listed in all item routings (if the item aggregation level is set to Item) or all product family routings (if the item aggregation level is set to Product Family) are considered in planning. This is identical in meaning to the individual resource aggregation level described above.
- Bill of resource (BOR): only resources listed in bills of resources for items (if the item aggregation level is set to Item) or product families (if the item aggregation level is set to Product Family) are considered in planning. Bills of resource are lists which associate items or product families with individual resources and the processing times (usages) incurred on those resources for each item/product family. (To define a bill of resource, use the Manufacturing and Distribution Manager responsibility. From the Navigator window, choose Capacity Planning > Bill of Resources > Bill of Resource.) The usages in a bill of resource may be automatically generated by summing the resource usages from the routings for an item and its components and subcomponents. A bill of resource may also be manually defined, allowing you to include only certain key resources and to manually adjust the

usage quantity for each key resource as necessary.

- When using the routing aggregation level bill of resources, Oracle ASCP generates resource requirements during planning only for those items or product families that have defined bills of resources.

- When using the routing aggregation level bill of resources, operation sequencing information from the routings that are used to generate the bill of resources is lost. The bill of resources aggregation level is for use with the weekly and period buckets for an approximate rough-cut capacity planning. When using bills of resources, constraint-based planning is not recommended because the resource sequencing and interdependence is not considered. Bill of resources aggregation is not compatible with routing aggregation in the same plan, and bill of resources aggregation is not available when scheduling in minutes and hours.

The higher levels of resource aggregation (aggregate) and routing aggregation (BOR) both have the effect of limiting the number of resources considered in planning.

Resource and routing aggregation level have overlapping effects.

- If either the resource aggregation level is set to individual or the routing aggregation level is set to routing, all individual resources for items (if the item aggregation level is set to Item) or product families (if the item aggregation level is set to Product Family) are considered in planning.

**To set the resource aggregation levels for a time horizon**

1. From the Navigator, select Supply Chain Plan > Options.

   The Plan Options window appears.

2. Choose the Constraints tab.

3. Enter the time horizon in days, weeks, or periods.

   You can specify different levels of aggregation in different time buckets so that detailed information is considered more frequently and less detailed information is considered less frequently.

Resources can be scheduled either individually or in aggregate. Selecting individual resource scheduling generates schedules down to the individual resource level and considers the available capacity of each resource in the schedule recommendations.

Selecting aggregate resource scheduling considers the overall capacity of all resources in a resource group required for an item. For example, the overall capacity of a department to which the individual resources are assigned are used.

For more information, see Defining a Resource in *Oracle Bills of Material User's Guide*.

## Material Aggregation Levels

You can specify material aggregation levels for each of the three planning time horizons.

#### To set the material aggregation level for a time horizon

1. From the Navigator, select Supply Chain Plan > Options.
2. Choose the Constraints tab.
3. Enter the time horizon in days, weeks, or periods.

   You can specify different levels of aggregation in different time buckets so that detailed information is considered more frequently and less detailed information is considered less frequently.

   You can schedule the product at either the item level or the product family level.

   Ensure items are correctly assigned to a product family and that a planning percent is specified when setting up your BOMs.

## Routing Aggregation Levels

You can specify routing aggregation levels for each of the three planning time horizons.

#### To set the routing aggregation level for a time horizon

1. From the Navigator, select Supply Chain Plan > Options.

   The Plan Options window appears.
2. Choose the Constraints tab.
3. Enter the time horizon in days, weeks, or periods.

   You can specify different levels of aggregation in different time buckets so that detailed information is considered more frequently and less detailed information is considered less frequently.

   Either routings or bills of resources can be selected for plans. For detailed scheduling in the minute, hour and daily buckets, routings are used. For long-range simulations in the weekly and monthly buckets, routings or bills of resources can be used. Note that routings and bills of resources cannot be used in the same plan.

   Selecting routing level aggregation will result in schedules that consider the capacity of each resource as well as the sequencing of the resources during the production of an item. Selecting bill of resource level aggregation will only consider the resource requirements needed to produce an item without considering the sequencing and interdependence among the resources required for an item.

The bill of resources aggregation level is for use with the weekly and period buckets for an approximate rough-cut capacity planning. When using bills of resources, constraint-based planning is not recommended because the resource sequencing and interdependence is not considered. Bill of resource aggregation is not compatible with routing aggregation in the same plan, and bill of resource aggregation is not available when scheduling in minutes and hours.

## Choosing an Objective Function

When generating plans via the Optimized option, Oracle ASCP lets you specify the objectives to be considered in generating planned orders across the supply chain.

All objectives are expressed in units of dollars.

This section describes each of the available objectives and how multiple objectives can be combined into a single objective function which captures trade-offs between competing objectives.

You can optimize your plans to the objectives shown in the following table.

| Objective Function | How is the Objective Achieved? |
|---|---|
| Maximize Inventory Turns | Minimize inventory carrying cost |
| Maximize Plan Profit | Maximize plan revenue minus plan cost |
| Maximize On-Time Delivery | Minimize penalty cost for late demand |

### Inventory Turns

The inventory turns are maximized by minimizing inventory carrying cost. Inventory carrying cost is summed up for all items in all time buckets. Inventory carrying cost is calculated as follows:

Inventory carrying cost = (Average inventory per bucket) * (Carrying cost percent) * (Item cost)

### Plan Profit Objective

Profit optimization occurs if you set profile option MSO: Cost Rollup for Optimization is No. Profit optimization should not use the internal cost rollup for optimization. That is used for making sure that costs of assemblies are more than the costs of components. It does not capture the true standard costs that profit optimization needs.

The planning engine optimizes subject to the plan constraints. The penalty factors, for example, demand lateness penalty, are the crucial part of this optimization. Based on

the size of the demand lateness penalty factor, the planning engine may decide to satisfy a demand late in order to increase the profit.

Generally, the remainder of the planning process retains the optimized decisions. However,

- If there are order modifiers, the planning engine may increase the size of some planned orders to satisfy the order modifier and eliminate planned orders no longer needed
- If there are constraints, for example, resource capacity, the planning engine may reschedule some orders

Even if two supplies use the same resources and ingredients, the profit optimization process always schedules a supply pegged to a more profitable demand before a supply pegged to a less profitable demand

If there are several main products in a formula, the profit optimization rollup uses the bill of material usage to calculate and allocate costs. For example, item C is component or ingredient of item A and item B. The rollup determines how many or how much item C is required to make one item A and how many or how much item C is required to make one item B (or how much of ingredient C is used to produce one unit of A @ and one unit of B). The process translates percentages to bill of material usages to calculate the costs.

The profit optimization rollup calculates the cost of by-products using bill of material usage also.

To see the internal cost calculations, view file SCO_COST_<plan id>

The planning engine performs pegging by demand priority even in the case of profit optimization. It may override the profit optimization decision, for example:

- There are two demands: D1 for quantity 100 on Day 5 has higher priority and is less profitable; D2 for quantity 100 on Day 5 has lower priority but is more profitable
- There are two supplies: S1 for quantity 100 on Day 6; S2 for quantity 100 on Day 7
- The profit optimization process recommends S1 > D2 and S2 > D1
- The pegging process overrides the profit optimization recommendations pegs S1 > D1 with higher priority and S2 > D2 with lower priority

The calculation for margin percentage objective is in Margin Percentage, page 10-70

## On-time Delivery Objective

The on-time delivery objective is modeled as minimization of the penalty cost for late demand.

Penalty cost is calculated and summed up for all items with independent demand in all

time buckets.

- Penalty cost for late demand = (Penalty cost factor for late demand in $/unit/day * Days late * Quantity of late demand) + (Penalty cost factor for unmet demand in $/unit/day * Days late * Quantity of unmet demand)

Penalty cost sums two types of costs: late demand cost and unmet demand cost. An unmet demand is simply a very late demand. Specifically, it is a demand for which the plan generates supply that exceeds the demand due date by more than allowable days early/late. Allowable days early/late is a profile option.

Penalty cost factor for late demand is a plan option. Penalty cost factor for unmet demand is a system plan option, obtained by multiplying the penalty cost factor for late demand by a constant that is greater than 1. This makes unmet (very late) demands cost more than late demands.

## Implicit Objectives

In addition to the above objectives, which you can select/weight or deselect, Oracle ASCP maintains a set of implicit (hidden) objectives that it takes into consideration no matter what you select. These objectives are defined to be the negative of various penalty costs, as follows:

Implicit objectives =

- -(Penalty cost for late demand)

  -(Penalty cost for resource capacity violation)

  -(Penalty cost for transport capacity violation)

  -(Penalty cost for material capacity violation)

  -(Penalty cost for safety stock violation)

  -(Penalty cost for using alternate sources)

  -(Penalty cost for using alternate routings)

  -(Penalty cost for using alternate resources)

  -(Penalty cost for using substitute items)

  -(Percentage of carrying cost)

Maximizing implicit objectives results in minimization of the penalty costs.

Penalty costs are the product of the penalty factor and some other parameter such as list price, item cost, resource cost, or transportation cost. For example:

Penalty cost for late demand [$/unit/day] = (Penalty factor) * (List price)

You can set penalty factors at different levels using flexfields, plan options, or profile options. Flexfields let you set penalty factors at the most discrete level. For example, you can set the Penalty Factor for Late Demand at the Demand, Item, or Org level using

flexfields. Plan options and profile options let you set the same penalty factor at the plan level and site level, respectively.

## Combining Objectives

The planning engine combines the above objectives into the following objective function:

Overall objective = Maximize w1 * (Plan profit) + w2 * On-time delivery) + w3 * (Inventory turns) + 1.0 * (Implicit objectives)

Objective weights w1-w3 are restricted to the range 0 to 1. Setting an objective's weight to 0 directs Oracle ASCP not to consider that particular objective. Setting an objective's weight to 1 places the maximum possible emphasis on that objective. Objective weights w1-w3 may be set independently.

Objective weights w1-w3 in general do not precisely show the relative importance of each objective in planning decisions. As can be seen from the above definition of the overall objective, the percentage of the overall objective value occupied by a particular objective depends also on the dollar magnitude of the objective, and it is the product of the weight and the dollar magnitude of the objective which reflects the relative importance of each objective in planning decisions.

Take special note of interdependent objectives. Some costs are contained in more than one objective. For example, inventory carrying cost is a part of both the Plan Profit and Inventory Turns objectives. Therefore, only use these two objectives together if it is desired to artificially weight inventory carrying cost higher than the other costs (item cost, transportation cost) contained within plan profit.

A more subtle case is penalty cost for late demand, which appears both in the On-time Delivery objective and in the implicit objectives not seen by the user. Thus, no matter what the weight on-time delivery, the planning engine considers late demand cost in its planning decision-making.

## Factors Affecting Objectives

Implicit and explicit objectives are affected by several factors and rules. These tables show:

- The relationship of these objectives to costs, prices, priority rules, and sourcing ranks
- The minimum data requirements for optimized plans based on different objectives

Yes means the cost/factor affects the objective.

| Cost-Price/Objectives | Inventory Turns | On-time Delivery | Plan Profit |
|---|---|---|---|
| Resource Cost | No | No | Yes |
| Item Standard Cost | Yes | No | Yes |
| Carrying Cost Percentage | Yes | No | Yes |
| Late Demand Penalty Factor | No | Yes | No |
| List Price and Selling Price | No | Yes | No |
| Transportation Cost | No | No | Yes |

| Factor | Penalty Cost for Late Demand | Penalty Cost for Resource Capacity Violation | Penalty Cost for Transport Capacity Violation | Penalty Cost for Material Capacity Violation | Penalty Cost for Safety Stock Violation |
|---|---|---|---|---|---|
| Resource Cost | No | Yes | No | No | No |
| Item Standard Cost | No | No | No | Yes | Yes |
| Carrying Cost Percentage | No | No | No | No | No |
| Exceeding Item Capacity Penalty Factor | No | No | No | Yes | No |

| Factor | Penalty Cost for Late Demand | Penalty Cost for Resource Capacity Violation | Penalty Cost for Transport Capacity Violation | Penalty Cost for Material Capacity Violation | Penalty Cost for Safety Stock Violation |
|---|---|---|---|---|---|
| Exceeding Resource Capacity Penalty Factor | No | Yes | No | No | No |
| Exceeding Transport Capacity Penalty Factor | No | No | Yes | No | No |
| Late Demand Penalty Factor | Yes | No | No | No | No |
| List Price and Selling Price | Yes | No | No | No | No |
| Transportation Cost | No | No | Yes | No | No |

| Factor | Penalty Cost for Using Alternate Sources | Penalty Cost for Using Alternate Routings | Penalty Cost for Using Alternate Resources | Penalty Cost for Using Substitute Items | Implicit Carrying Cost |
|---|---|---|---|---|---|
| Resource Cost | Yes | No | Yes | No | No |
| Item Standard Cost | Yes | Yes | No | Yes | Yes |
| Carrying Cost Percentage | No | No | No | No | Yes |

| Factor | Penalty Cost for Using Alternate Sources | Penalty Cost for Using Alternate Routings | Penalty Cost for Using Alternate Resources | Penalty Cost for Using Substitute Items | Implicit Carrying Cost |
|---|---|---|---|---|---|
| Sourcing Rank | Yes | No | No | No | No |
| Substitute Item Priority | No | No | No | Yes | No |
| BOM/Routing Priority | No | Yes | No | No | No |
| Alternate Resource Priority | No | No | Yes | No | No |

## Computational Burden Considerations

At all levels of optimization except for unconstrained plan (see Choosing Plan Classes, page 3-39), Oracle ASCP performs some type of finite-capacity scheduling. This is computationally much more complex than the infinite-capacity planning performed in older versions. Therefore, formulating the planning problem so that it is less computationally intensive is worthwhile.

The computational burden of a planning problem increases with the number of scheduled resources, the number of items, and the number of demands.

Ways to decrease the number of resources include:

- Leave non-critical (non-constraint) resources out of routings. For example, an entire cell in a cellular manufacturing system might be modeled as a single resource instead of as a group of resources.
- Set planned resources to bottleneck resources and include only key constraint resources in the bottleneck resource group.
- Maximize the use of resource and routing aggregation (see Choosing Resource , page 3-151Aggregation Levels).

Ways to decrease the number of items include:

- Enable each item in as few organizations as possible because each combination of item-organization counts as a separate item.
- Maximize the use of item aggregation (to the product family level) in the plan

options.

- Set the Planned Items option in the Main tab of the Plan Options window to something other than All Planned Items. For example, set it to Demand Schedule Items Only.

Ways to decrease the number of demands include:

- Maximize the use of time aggregation (larger time buckets) in plan options. This collapses multiple demands occurring within a larger time bucket to a single demand at the end of the time bucket.

- Maintain long-term forecasts in larger time buckets (for example, weeks or periods) instead of shorter time buckets such as days. This reduces the number of MDS demands once the forecast is loaded into an MDS for input to the planning process.

## Optimized Plans Data Requirements

The majority of the data required for optimized plans for different objectives are available in ERP systems. These data include:

- Item Standard Cost, List Price, Selling Price, Discount

- Carrying Cost Percent

- Resource Cost

- Transportation Cost

- Sourcing Rank

- Substitute Item Priority

- BOM/Routing Priority

- Alternate Resource Priority

The remaining data can be set up at the profile option level or plan level to expedite the implementation of optimized plans. These data include:

- Exceeding Item Capacity Penalty Factor

- Exceeding Resource Capacity Penalty Factor

- Exceeding Transport Capacity Penalty Factor

- Late Demand Penalty Factor

Oracle ASCP considers some default values for these fields, such as 0.01 for the

Standard Cost. The Optimization process cannot produce very valuable results based on these default values alone. It is recommended that you specify starting values for these fields at the profile option level at the start of implementation.

## Optimization Effects on Sourcing

Oracle ASCP optimization does not consider allocation percentages specified in the sourcing rules and/or bills of distributions. Sourcing decisions are made based on capacity, item standard cost, and rank with respect to penalty costs and constraints.

**Example 1: Enforce Capacity Constraints Scenario**
Item A is sourced from organizations O1 and O2 with ranks equal to 1 and 2 respectively. If the total costs (item plus penalty costs) are equal in both organizations, and capacity is available only in O2; then this organization is used as the source for item A and ranking is overridden.

**Example 2: Enforce Demand Due Dates Scenario**
Item A is sourced from organizations O1 and O2 with ranks equal to 1 and 2 respectively. If the total costs (item plus penalty costs) are equal for both organizations, Organization O1 with rank 1 is loaded (or overloaded) to source item A.

**Example 3: Enforce Demand Due Dates Scenario**
Item A is sourced from organizations O1 and O2 with ranks equal to 1 and 2 respectively. If the total cost (item plus penalty costs) in organization O1 is greater than organization O2, Organization O2 with rank 2 is loaded (or overloaded) to source item A and ranking is overridden.

## Nervousness

Nervousness is the condition in which small changes in demand cause large changes in supply (planned order releases). In traditional MRP, plan nervousness causes lost time due to extra setups (and confusion and frustration) on the plant floor. With Oracle ASCP's ability to generate a single global supply chain plan, the effects of nervousness are magnified because they extend to trading partners (who may not have the same urgency to constantly replan manufacturing to accommodate rapidly changing requirements).

Consider the following example. End-item A has lead-time 1 day and order modifier of Fixed Order Period = 3 days. End-item A contains one component B, which has a lead-time of 3 days and order modifier Lot for Lot. Initial planned orders for A and B are shown in the next two tables.

| Item A | Current | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Gross Requirements | 0 | 10 | 10 | 10 | 10 | 50 |

| Item A | Current | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Scheduled Receipts | 0 | 0 | 0 | 0 | 0 | 0 |
| Project On-Hand | 15 | 5 | -5 | 0 | 0 | 0 |
| Net Requirements | 0 | 0 | 5 | 10 | 10 | 50 |
| Planned Order Due Date | 0 | 0 | 25 | 0 | 0 | 50 |
| Planned Order Start Date | 0 | 25 | 0 | 0 | 50 | 0 |

| Item B | Current | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Gross Requirements | 0 | 25 | 0 | 0 | 50 | 0 |
| Scheduled Receipts | 0 | 0 | 0 | 0 | 0 | 0 |
| Project On-Hand | 25 | 0 | 0 | 0 | -50 | 0 |
| Net Requirements | 0 | 0 | 0 | 0 | 50 | 0 |
| Planned Order Due Date | 0 | 0 | 0 | 0 | 50 | 0 |
| Planned Order Start Date | 0 | 50 | 0 | 0 | 0 | 0 |

Now suppose that the demand for A on day 2 decreases by 5 units. Revised planned orders are shown in the two tables below.

| Item A | Current | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Gross Requirements | 0 | 0 | 70 | 0 | 0 | 0 |
| Scheduled Receipts | 0 | 0 | 0 | 0 | 0 | 0 |
| Project On-Hand | 25 | 25 | -50 | 0 | 0 | 0 |
| Net Requirements | 0 | 0 | 50 | 0 | 0 | 0 |
| Planned Order Due Date | 0 | 0 | 50 | 0 | 0 | 0 |
| Planned Order Start Date | 0 | 50* | 0 | 0 | 0 | 0 |

| Item B | Current | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Gross Requirements | 0 | 10 | 5 | 10 | 10 | 50 |
| Scheduled Receipts | 0 | 0 | 0 | 0 | 0 | 0 |
| Project On-Hand | 15 | 5 | 0 | -10 | 0 | 0 |
| Net Requirements | 0 | 0 | 0 | 10 | 10 | 50 |

| Item B | Current | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Planned Order Due Date | 0 | 0 | 0 | 70 | 0 | 0 |
| Planned Order Start Date | 0 | 0 | 70 | 0 | 0 | 0 |

* Late Start

- Note that the decrease in demand caused the planned orders for A to change from 25 on Day 1 and 50 on Day 4 to 70 on Day 3. This is an example of nervousness at work.
- Note further that the resulting change in dependent demand for B causes the planned orders for B to become infeasible, resulting in a late start - this after the demand for A decreased.

Several steps may be taken to reduce planning nervousness of the sort illustrated above.

- Eliminate the use of the order modifier Fixed Order Period for end items. Instead, use Fixed Lot Multiple or Fixed Order Quantity. Reserve Fixed Order Period for lowest-level items only.
- Make use of a planning time fence. A planning time fence of x days freezes planned orders in the interval [plan start date, plan start date + x]. This eliminates near-term disruptions to the manufacturing schedule.
- Make use of a release time fence. A release time fence of x days automatically firms and releases to the execution system planned orders in the time interval [plan start date, plan start date + x]. Subsequent planning runs then treat these planned orders as scheduled receipts, not subject to manipulation via order modifiers. This reduces planning nervousness.

Time fences can be used to freeze near-term plans and reduce nervousness. However, they also reduce the ability of the planning process to accommodate changes in demand. They should be set to the lowest values possible.

## Controlling Planned Items

There are three interdependent ways of controlling which items are planned in and which are excluded from an ASCP plan:

1. Setting the Planning Method item attribute in conjunction with selecting the Plan

Type in the Supply Chain Plan Names form

- The Planning Method item attribute can be set to:
  - Not planned
  - MPS planning
  - MRP planning
  - MRP/MPP Planned
  - MPS/MPP Planned
  - MPP Planned
- Plan Type can be set to:
  - Manufacturing Plan
  - Production Plan
  - Master Plan

2. Setting critical items in conjunction with setting the Include Critical Components flag in ASCP plan options

   An item can be set to be critical in two ways:

   - Explicitly, by checking its Critical Component item attribute
   - Implicitly, by having a routing (primary or alternate) that includes a resource in the ASCP plan's bottleneck resource group

3. Setting the value for the Planned Items plan option, along with setting the organization-level Include Sales Order flag in the Organizations tab of the Plan Options form. Valid values for the Planned Items plan option are:

   - All planned items
   - Demand schedule items only
   - Supply schedule items only
   - Demand & Supply schedule items
   - Demand schedule and WIP components
   - Demand schedule items and all sales orders

- Demand schedule items/WIP components/all sales orders

The following tables shows the items planned based on the Planned Items Plan Option, Plan Type, Planning Method Item Attribute, Include Critical Component Plan Option, Critical Component Item Attribute, and Include Sales Order Plan Option:

| Planned Items Plan Option | Plan Type | Include Critical Components Plan Option | Planned Items |
|---|---|---|---|
| All Planned Items | Manufacturing Plan | Unchecked | All items in the planned organizations except ones having MRP planning code of Not Planned. |
| All Planned Items | Manufacturing Plan | Checked | 1. All critical items.<br>2. Any assembly that has a critical item anywhere in its supply chain bill.<br>3. All items sandwiched between 1 and 2.<br>**Note:** If the primary component is critical then ASCP also selects the non-critical substitute components.<br>If the primary component is not critical then ASCP does not select the substitute components even if these substitutes are critical.<br>This behavior is applicable for all variations of Plan Type and Planned Items plan option. |
| All Planned Items | Production Plan | Unchecked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned.<br>2. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill.<br>3. All items sandwiched between 1 and 2. |

| | | | |
|---|---|---|---|
| All Planned Items | Production Plan | Checked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned.<br>2. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill<br>3. All items sandwiched between 1 and 2.<br>4. All critical items.<br>5. Any assembly that has a critical item anywhere in its supply chain bill.<br>6. All items sandwiched between 4 and 5. |
| All Planned Items | Master Plan | Unchecked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>2. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill.<br>3. All items sandwiched between 1 and 2. |

| | | | |
|---|---|---|---|
| All Planned Items | Master Plan | Checked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>2. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill.<br>3. All items sandwiched between 1 and 2.<br>4. All critical items.<br>5. Any assembly that has a critical item anywhere in its supply chain bill.<br>6. All items sandwiched between 4 and 5. |
| Demand schedule items only | Manufacturing Plan | Unchecked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1.<br>**Note:** In this option (Demand schedule items only) ASCP does not include sales orders for those item/organizations that are not in the demand schedule even if the Include Sales Order checkbox is checked for the related organizations. |
| Demand schedule items only | Manufacturing Plan | Checked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. Only critical components and subcomponents of 1.<br>3. All items sandwiched between 1 and 2. |

| | | | |
|---|---|---|---|
| Demand schedule items only | Production Plan | Unchecked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3. |
| Demand schedule items only | Production Plan | Checked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5 |

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|---|---|---|---|
| Demand schedule items only | Master Plan | Unchecked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3. |
| Demand schedule items only | Master Plan | Checked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5. |

| | | | |
|---|---|---|---|
| Supply schedule items only | Manufacturing Plan | Unchecked | 1. All items contained within supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1.<br>**Note:** In this option (Supply schedule items only) ASCP does not include sales orders for those item/organizations that are not in the supply schedule even if the Include Sales Order checkbox is checked for the related organizations. |
| Supply schedule items only | Manufacturing Plan | Checked | 1. All items contained within supply schedules that are specified as input to the plan.<br>2. Only critical components and subcomponents of 1.<br>3. All items sandwiched between 1 and 2. |
| Supply schedule items only | Production Plan | Unchecked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within supply schedules.<br>4. All items sandwiched between 1 and 3. |

| | | | |
|---|---|---|---|
| Supply schedule items only | Production Plan | Checked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within supply schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5. |
| Supply schedule items only | Master Plan | Unchecked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within supply schedules.<br>4. All items sandwiched between 1 and 3. |

| | | | |
|---|---|---|---|
| Supply schedule items only | Master Plan | Checked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within supply schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5. |
| Demand & Supply schedule items | Manufacturing Plan | Unchecked | 1. All items contained within demand or supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1.<br>**Note:** In this option (Demand & Supply schedule items) ASCP does not include sales orders for those item/organizations that are not in the demand or supply schedules even if the Include Sales Order checkbox is checked for the related organizations. |

| | | | |
|---|---|---|---|
| Demand & Supply schedule items | Manufacturing Plan | Checked | 1. All items contained within demand or supply schedules that are specified as input to the plan.<br>2. Only critical components and subcomponents of 1.<br>3. All items sandwiched between 1 and 2. |
| Demand & Supply schedule items | Production Plan | Unchecked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand or supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand or supply schedules.<br>4. All items sandwiched between 1 and 3. |

| | | | |
|---|---|---|---|
| Demand & Supply schedule items | Production Plan | Checked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand or supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand or supply schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5. |
| Demand & Supply schedule items | Master Plan | Unchecked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand or supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand or supply schedules.<br>4. All items sandwiched between 1 and 3. |

| | | | |
|---|---|---|---|
| Demand & Supply schedule items | Master Plan | Checked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand or supply schedules that are specified as input to the plan.<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand or supply schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 3. |
| Demand schedule and WIP Components | Manufacturing Plan | Unchecked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1.<br>3. All WIP components used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** In this option (Demand schedule and WIP Components) ASCP does not include sales orders for those item/organizations that are not in the demand schedule even if the Include Sales Order checkbox is checked for the related organizations. |

| | | | |
|---|---|---|---|
| Demand schedule and WIP Components | Manufacturing Plan | Checked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. Only critical components and subcomponents of 1.<br>3. All items sandwiched between 1 and 2.<br>4. All critical WIP components used in existing work orders (discrete job, lot-based job, process batch) . |
| Demand schedule and WIP Components | Production Plan | Unchecked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All WIP components with Planning Method of MPS Planning or MPS/MPP Planned used in existing work orders (discrete job, lot-based job, process batch). |

| | | | |
|---|---|---|---|
| Demand schedule and WIP Components | Production Plan | Checked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5.<br>7. All critical WIP components with Planning Method of MPS Planning or MPS/MPP Planned used in existing work orders (discrete job, lot-based job, process batch). |

| | | | |
|---|---|---|---|
| Demand schedule and WIP Components | Master Plan | Unchecked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All WIP components with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned used in existing work orders (discrete job, lot-based job, process batch). |

| | | | | |
|---|---|---|---|---|
| Demand schedule and WIP Components | Master Plan | Checked | 1. | Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario). |
| | | | 2. | All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned. |
| | | | 3. | Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules. |
| | | | 4. | All items sandwiched between 1 and 3. |
| | | | 5. | All critical components of 1. |
| | | | 6. | All items sandwiched between 1 and 5. |
| | | | 7. | All critical WIP components with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned used in existing work orders (discrete job, lot-based job, process batch). |

| **Planned Items Plan Option** | **Plan Type** | **Include Critical Components Plan Option** | **Include Sales Order Plan Option (organization specific)** | **Planned Items** |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Demand schedule items and all sales orders | Manufacturing Plan | Unchecked | Unchecked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with sales orders.<br>3. All components and subcomponents of 1 and 2.<br>**Note:** Sales order demands are ignored and not seen in the plan. |
| Demand schedule items and all sales orders | Manufacturing Plan | Unchecked | Checked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with sales orders.<br>3. All components and subcomponents of 1 and 2.<br>**Note:** Sales order demands are planned. |
| Demand schedule items and all sales orders | Manufacturing Plan | Checked | Unchecked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with sales orders.<br>3. Only critical components and subcomponents of 1 and 2.<br>4. All items sandwiched between 1 and 3 as well as 2 and 3.<br>**Note:** Sales order demands are ignored and not seen in the plan. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items and all sales orders | Manufacturing Plan | Checked | Checked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with sales orders.<br>3. Only critical components and subcomponents of 1 and 2.<br>4. All items sandwiched between 1 and 3 as well as 2 and 3.<br>**Note:** Sales order demands are planned. |
| Demand schedule items and all sales orders | Production Plan | Unchecked | Unchecked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>**Note:** Sales order demands are ignored and not seen in the plan. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items and all sales orders | Production Plan | Unchecked | Checked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>**Note:** Sales order demands are planned. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items and all sales orders | Production Plan | Checked | Unchecked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5.<br>**Note:** Sales order demands are ignored and not seen in the plan. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items and all sales orders | Production Plan | Checked | Checked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5.<br>**Note:** Sales order demands are planned. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items and all sales orders | Master Plan | Unchecked | Unchecked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>**Note:** Sales order demands are ignored and not seen in the plan. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items and all sales orders | Master Plan | Unchecked | Checked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>**Note:** Sales order demands are planned. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items and all sales orders | Master Plan | Checked | Unchecked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5.<br>**Note:** Sales order demands are ignored and not seen in the plan. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items and all sales orders | Master Plan | Checked | Checked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>3. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>4. All items sandwiched between 1 and 3.<br>5. All critical components of 1.<br>6. All items sandwiched between 1 and 5.<br>**Note:** Sales order demands are planned. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Manufacturing Plan | Unchecked | Unchecked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with sales orders.<br>3. All components and subcomponents of 1 and 2.<br>4. All WIP components used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** Sales order demands are ignored and not seen in the plan. |
| Demand schedule items / WIP components / all sales orders | Manufacturing Plan | Unchecked | Checked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with sales orders.<br>3. All components and subcomponents of 1 and 2.<br>4. All WIP components used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** Sales order demands are planned. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Manufacturing Plan | Checked | Unchecked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with sales orders.<br>3. Only critical components and subcomponents of 1 and 2.<br>4. All items sandwiched between 1 and 3 as well as 2 and 3.<br>5. All critical WIP components used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** Sales order demands are ignored and not seen in the plan. |
| Demand schedule items / WIP components / all sales orders | Manufacturing Plan | Checked | Checked | 1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with sales orders.<br>3. Only critical components and subcomponents of 1 and 2.<br>4. All items sandwiched between 1 and 3 as well as 2 and 3.<br>5. All critical WIP components used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** Sales order demands are planned. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Production Plan | Unchecked | Unchecked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with Planning Method of MPS Planning or MPS/MPP Planned and with sales orders.<br>3. All components and subcomponents of 1 and 2 with Planning Method of MPS Planning or MPS/MPP Planned.<br>4. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>5. All items sandwiched between 1 and 3 as well as 2 and 3.<br>6. All items sandwiched between 1 and 4 as well as 2 and 4.<br>7. All WIP components with Planning Method of MPS Planning or MPS/MPP Planned used in existing work orders (discrete job, lot-based job, process batch)<br>**Note:** Sales order demands are ignored and not seen in the plan. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Production Plan | Unchecked | Checked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with Planning Method of MPS Planning or MPS/MPP Planned and with sales orders.<br>3. All components and subcomponents of 1 and 2 with Planning Method of MPS Planning or MPS/MPP Planned.<br>4. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>5. All items sandwiched between 1 and 3 as well as 2 and 3.<br>6. All items sandwiched between 1 and 4 as well as 2 and 4.<br>7. All WIP components with Planning Method of MPS Planning or MPS/MPP Planned used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** Sales order demands are planned. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Production Plan | Checked | Unchecked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with Planning Method of MPS Planning or MPS/MPP Planned and with sales orders.<br>3. All components and subcomponents of and 2 with Planning Method of MPS Planning or MPS/MPP Planned.<br>4. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>5. All items sandwiched between 1 and 3 as well as 2 and 3.<br>6. All items sandwiched between 1 and 4 as well as 2 and 4.<br>7. All critical components of 1.<br>8. All items sandwiched between 1 and 7.<br>9. All critical WIP components with Planning Method of MPS Planning or MPS/MPP Planned used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** Sales order demands are ignored and not seen in the plan. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Production Plan | Checked | Checked | 1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with Planning Method of MPS Planning or MPS/MPP Planned and with sales orders.<br>3. All components and subcomponents of and 2 with Planning Method of MPS Planning or MPS/MPP Planned.<br>4. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>5. All items sandwiched between 1 and 3 as well as 2 and 3.<br>6. All items sandwiched between 1 and 4 as well as 2 and 4.<br>7. All critical components of 1.<br>8. All items sandwiched between 1 and 7.<br>9. All critical WIP components with Planning Method of MPS Planning or MPS/MPP Planned used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** Sales order demands are planned. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Master Plan | Unchecked | Unchecked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned and with sales orders.<br>3. All components and subcomponents of 1 and 2 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>4. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>5. All items sandwiched between 1 and 3 as well as 2 and 3.<br>6. All items sandwiched between 1 and 4 as well as 2 and 4.<br>7. All WIP components with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** Sales order demands are ignored and not seen in the plan. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Master Plan | Unchecked | Checked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned and with sales orders.<br>3. All components and subcomponents of 1 and 2 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>4. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>5. All items sandwiched between 1 and 3 as well as 2 and 3.<br>6. All items sandwiched between a and d as well as 2 and 4.<br>7. All WIP components with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned used in existing work orders (discrete job, lot-based job, process batch).<br>**Note:** Sales order demands are planned. |

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Master Plan | Checked | Unchecked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned and with sales orders.<br>3. All components and subcomponents of 1 and 2 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>4. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>5. All items sandwiched between 1 and 3 as well as 2 and 3.<br>6. All items sandwiched between 1 and 4 as well as 2 and 4.<br>7. All critical components of 1.<br>8. All items sandwiched between 1 and 7.<br>9. All critical WIP components with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned used in existing work orders (discrete job, lot-based job, process batch) . |

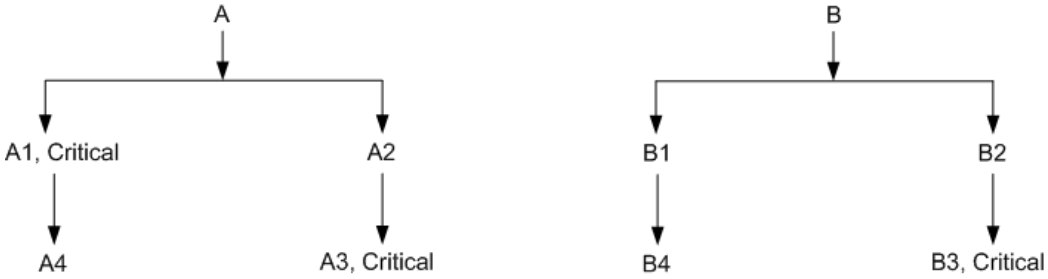
**Note:** Sales order demands are ignored and not seen in the plan.

| | | | | |
|---|---|---|---|---|
| Demand schedule items / WIP components / all sales orders | Master Plan | Checked | Checked | 1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).<br>2. All items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned and with sales orders.<br>3. All components and subcomponents of 1 and 2 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.<br>4. Any assembly that has an item with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned anywhere in its supply chain bill and contained within demand schedules.<br>5. All items sandwiched between 1 and 3 as well as 2 and 3.<br>6. All items sandwiched between 1 and 4 as well as 2 and 4.<br>7. All critical components of 1.<br>8. All items sandwiched between 1 and 7.<br>9. All critical WIP components with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned used in existing work orders (discrete job, lot-based job, process batch). |

**Note:** Sales order demands are planned.

**Example**

Consider items A and B with the following bills of materials and demands at organizations M1 and M2:




In the Organizations tab of the Plan Options form, the Include Sales Order flag is set as follows for M1 and M2:

| Organization | Include Sales Order |
|---|---|
| M1 | Yes |
| M2 | No |

Item A has demand schedules and sales orders for both organizations M1 and M2. Item B has only sales orders in organizations M1 and M2.

The following table shows what items are planned in a Manufacturing Plan. It references some scenarios.

**Scenario 1 - Demand schedule items only and Include Critical Component is not checked**

In this case ASCP plans item A with demand schedules in organizations M1 and M2. All components of item A (A1, A2, A3, A4) are also planned in both organizations. Item B with only sales orders in organizations M1 and M2 is not planned.

Sales order demands of item A for organization M1 are planned. Sales order demands of item A for organization M2 are ignored because the Include Sales Order flag for organization M2 is unchecked.

**Scenario 2 - Demand schedule items only and Include Critical Component is checked**

In this case ASCP plans item A with demand schedules in organizations M1 and M2.

Only critical components of item A (A1, A3) and sandwiched item A2 are planned in both organizations. Item B with only sales orders in organizations M1 and M2 is not planned.

Sales order demands of item A for organization M1 are planned. Sales order demands of item A for organization M2 are ignored because the Include Sales Order flag for organization M2 is unchecked.

**Scenario 3 - Demand schedule items and all sales orders and Include Critical Component is not checked**

In this case ASCP plans item A with demand schedules in organizations M1 and M2. All components of item A (A1, A2, A3, A4) are also planned in both organizations. In addition item B with sales orders in organizations M1 and M2 is planned. All components of item B (A1, A2, A3, A4) are also planned in both organizations.

Sales order demands of items A and B for organization M1 are planned. Sales order demands of items A and B for organization M2 are ignored because the Include Sales Order flag for organization M2 is unchecked.

**Scenario 4 - Demand schedule items and all sales orders and Include Critical Component is checked**

In this case ASCP plans item A with demand schedules in organizations M1 and M2. Only critical components of item A (A1, A3) and sandwiched item A2 are planned in both organizations. In addition item B with sales orders in organizations M1 and M2 is planned. Only critical component of item B (B3) and sandwiched item B2 are planned in both organizations.

Sales order demands of items A and B for organization M1 are planned. Sales order demands of items A and B for organization M2 are ignored because the Include Sales Order flag for organization M2 is unchecked.

| Item | Organization | Planned Items with Demand schedule items only and Include Critical Component Option Set to No (Scenario 1) | Planned Items with Demand schedule items only and Include Critical Component Set to Yes (Scenario 2) | Planned Items with Demand schedule items and all sales orders and Include Critical Component Set to No (Scenario 3) | Planned Items with Demand schedule items and all sales orders and Include Critical Component Set to Yes (Scenario 4) |
|---|---|---|---|---|---|
| A | M1 | Yes | Yes | Yes | Yes |
| A1 | M1 | Yes | Yes | Yes | Yes |
| A2 | M1 | Yes | Yes | Yes | Yes |

| | | | | | |
|---|---|---|---|---|---|
| A3 | M1 | Yes | Yes | Yes | Yes |
| A4 | M1 | Yes | No | Yes | No |
| B | M1 | No | No | Yes | Yes |
| B1 | M1 | No | No | Yes | No |
| B2 | M1 | No | No | Yes | Yes |
| B3 | M1 | No | No | Yes | Yes |
| B4 | M1 | No | No | Yes | No |
| A | M2 | Yes | Yes | Yes | Yes |
| A1 | M2 | Yes | Yes | Yes | Yes |
| A2 | M2 | Yes | Yes | Yes | Yes |
| A3 | M2 | Yes | Yes | Yes | Yes |
| A4 | M2 | Yes | No | Yes | No |
| B | M2 | No | No | Yes | Yes |
| B1 | M2 | No | No | Yes | No |
| B2 | M2 | No | No | Yes | Yes |
| B3 | M2 | No | No | Yes | Yes |
| B4 | M2 | No | No | Yes | No |

This table shows what items are planned in a Production Plan assuming items A and B are MPS Planning (or MPS/MPP Planned) items and their components are not MPS Planning (or MPS/MPP Planned) items. It references some scenarios.

**Scenario 1 - Demand schedule items only and Include Critical Component is not checked**

In this case ASCP plans item A with demand schedules in organizations M1 and M2. Item B with only sales orders in organizations M1 and M2 is not planned.

Sales order demands of item A for organization M1 are planned. Sales order demands of item A for organization M2 are ignored because the Include Sales Order flag for organization M2 is unchecked.

**Scenario 2 - Demand schedule items only and Include Critical Component is checked**

In this case ASCP plans item A with demand schedules in organizations M1 and M2. In addition all critical components of item A (A1, A3) and sandwiched item A2 are planned in both organizations. Item B with only sales orders in organizations M1 and M2 is not planned.

Sales order demands of item A for organization M1 are planned. Sales order demands of item A for organization M2 are ignored because the Include Sales Order flag for organization M2 is unchecked.

**Scenario 3 - Demand schedule items and all sales orders and Include Critical Component is not checked**

In this case ASCP plans item A with demand schedules in organizations M1 and M2. In addition item B with sales orders in organizations M1 and M2 is planned.

Sales order demands of items A and B for organization M1 are planned. Sales order demands of items A and B for organization M2 are ignored because the Include Sales Order flag for organization M2 is unchecked.

**Scenario 4 - Demand schedule items and all sales orders and Include Critical Component is checked**

In this case ASCP plans item A with demand schedules in organizations M1 and M2. In addition all critical components of item A (A1, A3) and sandwiched item A2 are planned in both organizations. Item B with sales orders in organizations M1 and M2 is also planned. In addition critical component of item B (B3) and sandwiched item B2 are planned in both organizations.

Sales order demands of items A and B for organization M1 are planned. Sales order demands of items A and B for organization M2 are ignored because the Include Sales Order flag for organization M2 is unchecked.

| Item | Organization | Planned Items with Demand schedule items only and Include Critical Component Option Set to No (Scenario 1) | Planned Items with Demand schedule items only and Include Critical Component Set to Yes (Scenario 2) | Planned Items with Demand schedule items and all sales orders and Include Critical Component Set to No (Scenario 3) | Planned Items with Demand schedule items and all sales orders and Include Critical Component Set to Yes (Scenario 4) |
|---|---|---|---|---|---|
| A | M1 | Yes | Yes | Yes | Yes |

| | | | | | |
|---|---|---|---|---|---|
| A1 | M1 | No | Yes | No | Yes |
| A2 | M1 | No | Yes | No | Yes |
| A3 | M1 | No | Yes | No | Yes |
| A4 | M1 | No | No | No | No |
| B | M1 | No | No | Yes | Yes |
| B1 | M1 | No | No | No | No |
| B2 | M1 | No | No | No | Yes |
| B3 | M1 | No | No | No | Yes |
| B4 | M1 | No | No | No | No |
| A | M2 | Yes | Yes | Yes | Yes |
| A1 | M2 | No | Yes | No | Yes |
| A2 | M2 | No | Yes | No | Yes |
| A3 | M2 | No | Yes | No | Yes |
| A4 | M2 | No | No | No | No |
| B | M2 | No | No | Yes | Yes |
| B1 | M2 | No | No | No | No |
| B2 | M2 | No | No | No | Yes |
| B3 | M2 | No | No | No | Yes |
| B4 | M2 | No | No | No | No |

# 4

# Supply Chain Plan Modeling

This chapter covers the following topics:

- Overview of Supply Chain Modeling
- Setting Up the Supply Chain
- Setting Outbound Ship Method
- Setting Supplier Capacity
- Allocating Demand to Suppliers
- Setting Up Routings
- Lead-time and the Planning Time Fence
- Safety Stock
- Setting Shipping, Receiving, Carrier, and Supplier Capacity Calendars
- Scheduled Receipts
- Setting Up Batch Resources
- Performing Tasks on the Planning Server
- Minimum Remaining Shelf Life

## Overview of Supply Chain Modeling

Oracle ASCP is a tool that integrates manufacturing and distribution into a single planning process. With Oracle ASCP, you can generate plans that include the entire supply chain. In a single step you can schedule and plan material and distribution requirements for multiple organizations, or centrally plan the entire enterprise. You can also include customer and supplier inventories in the supply chain planning process.

Oracle ASCP lets you plan finished products, intermediate assemblies, and purchased items for all facilities in your supply chain. Material plans for feeder plants and distribution centers automatically consider requirements originating from any number of other facilities. You can load planned order demand from multiple user

organizations into the master schedule of supplying organizations.

In addition to planning the material requirements of your supply chain, you can plan the requirements for your distribution network. This includes all warehouses, distribution centers, and any location that ships products. You can use these master production plans (MPPs) as input for your material plans.

You can combine centralized distribution and material planning for items with significant interorganization supply or demand. You can perform subset planning where you prefer autonomous local planning. Output from the central plan can go into plant-level material plans and vice versa.

Oracle ASCP gives you a transparent view of the virtual enterprise, where all inventory locations participate in the planning process.

## Setting Up the Supply Chain

Sourcing rules and bills of distribution determine the movement of materials throughout your supply chain; these include items that you buy from your suppliers and make at your manufacturing organizations.

Sourcing rules and bills of distribution both specify date-effective sourcing strategies, combining replenishment sources with split allocation percentages and rankings. A replenishment source is:

- An inter-organization transfer (Transfer From)
- The replenished organization manufactures the item (Make At)
- An external supplier (Buy From)
- An organization repairs the item (Repair at)

Sourcing rules and BODs both describe sourcing supply; in other words, for any organization, they answer the question Where do I get part A? (They never ask Where do I send part A?) Sourcing rules apply the answer to one organization or all the organizations in your enterprise. BODs define this behavior across multiple organizations (not just one or all).

In a sourcing rule, time-phasing applies only to the shipping organizations; the receiving organization remains static for the life of the sourcing rule. In a bill of distribution, time-phasing applies both to shipping and receiving organizations.

For each item in a rule or bill, you can define effectivity dates to switch sourcing between make and buy, and set intransit lead times. If an item does not appear in a rule or bill, the item attribute determines the status; when these attributes conflict with a sourcing rule or bill of distribution, the rule or bill takes precedence. (See: Item and Bill of Material Attributes, and Defining Items, *Oracle Inventory User's Guide*.)

The following features are provided in Oracle Supply Chain Planning sourcing logic:

- Alternate source search if allocation exceeds supplier capacity
- Control over Make/Buy attributes
- Delivery frequency calendars
- Historical information used in allocations
- Ranking sources and defining allocation percentages
- Splitting demand according to sourcing percentages
- Supplier capacity constraints
- Supplier specific lead times
- Supplier specific order modifiers
- Tolerance fences

**Sourcing Rules**

Sourcing rules define inventory replenishment methods for either a single organization or all organizations in your enterprise. Time-phasing in a sourcing rule determines when each group of shipping method - ship org combinations is in effect, as in this example:

In the first phase of SR-C01, SAC is replenished equally by AUS and NYC. From 01-JUL-1997, AUS no longer supplies SAC, which receives all transfers from NYC: (mrp_suprulex.if)

This sourcing rule can apply to one org (SAC, in this example), or to all your organizations. However, you cannot choose a single organization in one phase and all organizations in another phase. That would require two sourcing rules, with consecutive effectivity dates. If you assign the sourcing rule to one receiving organization (SAC in this example), it is a local sourcing rule; if you assign it to multiple organizations, it is a global sourcing rule.

You cannot apply sourcing rules and bills of distribution (make them *Planning Active*) until the sum of the allocation percentages equals 100. Secondly, sourcing rules and bills of distribution do not take effect until they are assigned to a part or a range of parts. (See: Assigning Sourcing Rules and Bills of Distribution.)

**Bills of Distribution**

Bills of distribution define the sourcing strategies of several organizations. In other words, a bill of distribution is library of sourcing strategies. For instance, the sourcing strategy described in SR–C01 could apply to different organizations at different periods. You cannot do this with sourcing rules because you have to apply the strategy to one organization or all organizations.

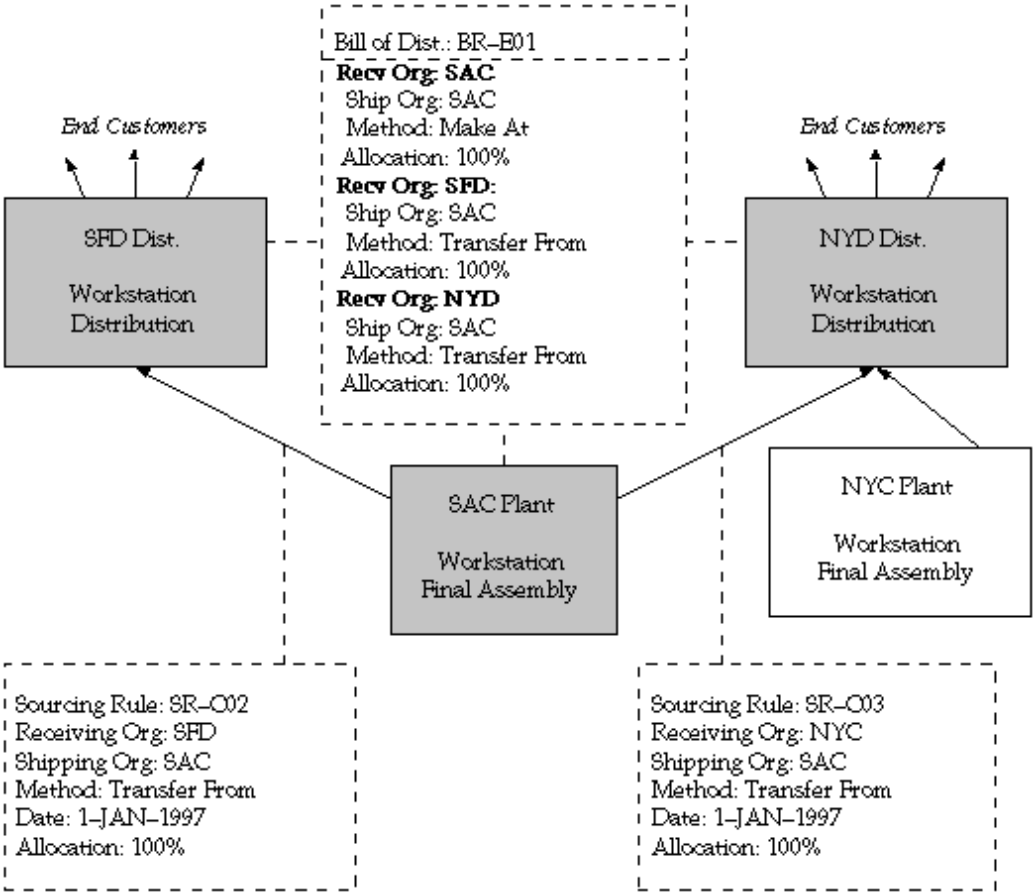
In another example, an item is made in a manufacturing center and supplied to a distribution center, which in turn supplies three sales offices. Instead of using five different local sourcing rules, you could set up a three-level replenishment hierarchy with a bill of distribution for the item. This bill would specify how the item is sourced at each level.

Both sourcing rules and bills of distribution have effective dates, periods during which the scheme is valid. For each period, you can specify a list of sources, type, allocation percentage, rank, shipping method, and intransit time.

You cannot apply sourcing rules and bills of distribution (make them *Planning Active*) until the sum of the allocation percentages equals 100. Secondly, sourcing rules and bills of distribution do not take effect until they are assigned to a part or a range of parts. (See: Assigning Sourcing Rules and Bills of Distribution.)

**Example - Sourcing Rule/Bills of Distribution**

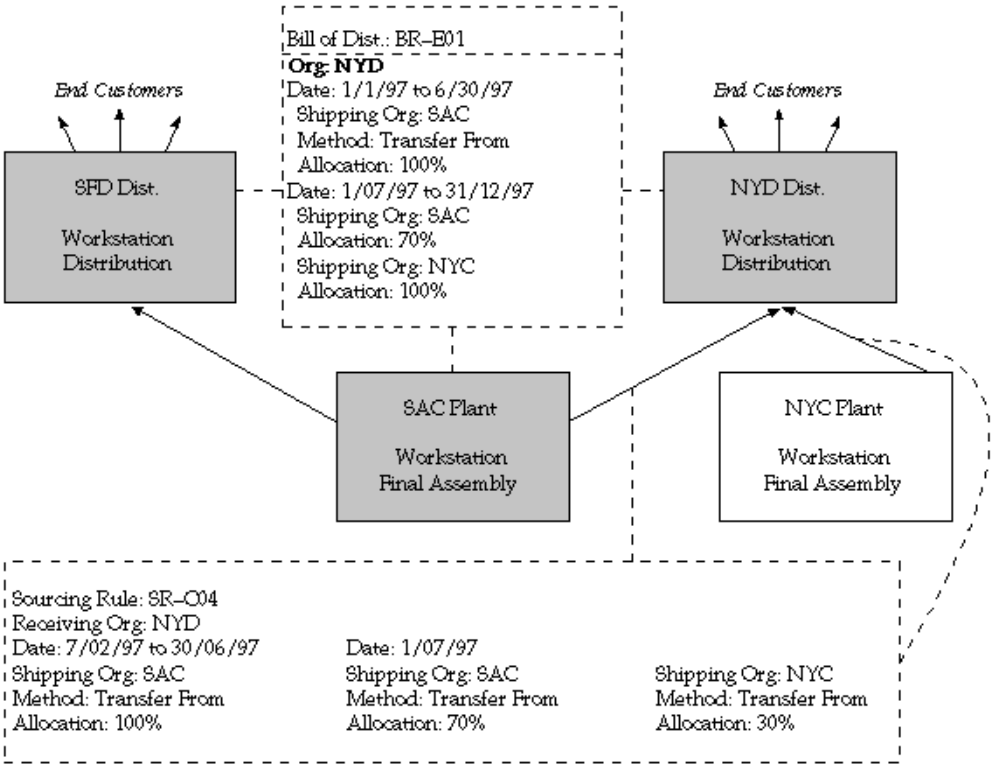
In the following scenario, distribution centers SFD and NYD receive finished goods from manufacturing plan SAC:




Sourcing rule SR-C02 describes the replenishment of SFD by SAC. Since no other plants supply the part (which is assigned to this rule separately), the allocation is 100%. SR-C02 is a *local* sourcing rule because it applies to SFD only. Similarly, SR-C03 describes the replenishment of NYD by SAC.

The bill of distribution (BR–E01 in this example) can define a specific set of receiving organizations, and for each organization it can define any number of shipping organizations - each with its own allocation percentage, ranking, and shipping method. Bills of distribution are more flexible than sourcing rules because, for each organization you list in the bill, you define a range of dates and a sourcing strategy to apply within those dates. Sourcing rules can only define the dates and strategy for one organization or all the organizations in your enterprise.

The following scenario illustrates this flexibility:




As the demand from NYD expands and exceeds SAC's capacity to meet the demand, the enterprise decides to build a new plant, called NYC. While NYC is brought online, SAC continues to meet 100% of demand from NYD. From 1-JUL, however, NYC begins to supply a small percentage of this demand, taking some of the burden away from SAC. The planning process can quickly and easily support this transition. Sourcing rule SR-C04 can define the dates during which the transition will occur, include NYC, and split the demand replenishment between it and SAC. Bill of distribution BR-E01 can accomplish this as well, but the bill can incorporate it into an enterprise–wide sourcing strategy.

## Defining Sourcing Rules

You can define sourcing rules that specify how to replenish items in an organization, such as purchased items in plants. Sourcing rules can also specify how to replenish all organizations, as when the entire enterprise gets a subassembly from a particular organization.

If there are conflicts in Sourcing, a predetermined hierarchy will resolve the sourcing conflict. For instance, if you assign a bill of distribution to an organization AUS that tells it to source the part from another organization NYC, you can still define a local sourcing rule at organization AUS to source the part from yet another organization SAC. In this case, the local sourcing rule overrides the bill of distribution.

The planning assignment set holds information for:

- Sales order global distribution
- Organization-to-organization sourcing

Watch for conflicts between sourcing rules for external demands and sourcing rules for internal demands. For example:

- External demand for an item is sourced globally from either organizations M1 or M2. The sourcing rule is Transfer from with M1, M2. assigned at the item level
- Internal demand at organization M1 is sourced from organization M3. The sourcing rule is Transfer from with M3 assigned at the item/org level. The item/org assignment tells the planning engine that this sourcing rule applies to the sourcing for internal demand and not for the external demand.
- If you assign a sourcing rule for external demand at the item level, then you cannot assign a sourcing rule for internal demand at that level.

Ship methods apply to Buy from and Transfer from sourcing rules. To create the ship methods:

- Navigate to Oracle Inventory > Shipping Networks
- Navigate to the detail region
- Navigate (M) Tools> Shipping Methods

**To define a sourcing rule**

1. Navigate to the Sourcing Rule window.
2. Enter a unique sourcing rule name.
3. Indicate whether this sourcing rule is used for all organizations (global) or a single organization (local). If the sourcing rule is local, you *must* enter an organization name; otherwise, your current organization will be the receiving organization.
4. Choose Copy From to copy the effectivity dates and shipping organization from another sourcing rule into this one.
5. Enter effectivity dates. You must enter a start date, but entering an end date is optional.
6. For each range of effectivity dates, you can include multiple shipping organizations. For each shipping organization you want to include, select a sourcing type to specify whether you make, buy, or internally transfer the item. You can also copy a list of shipping organizations from an existing sourcing rule. If you enter a customer organization as the receiving organization, then you cannot select a supplier organization as the shipping organization.

7. Enter an allocation percentage for each shipping organization. Allocation percentage includes the number of planned orders issued to the part for the entire the planning horizon. Your total allocation may not exceed 100. If the allocation percentage for all the shipping organizations included within a range of effectivity dates equals 100, Planning Active is checked. If the sourcing rule is not planning active, the planning process will not use the rule to assign planned orders.

8. Enter a numeric rank value to prioritize each sourcing type. If you have two sources with the same allocation percentage, planned orders are sourced from the highest rank first.

9. Select a shipping method, such as FEDEX, UPS, or rail. (See: Defining Shipping Methods, *Oracle Inventory User's Guide*.

10. Save your work.

**To copy shipping organizations from an existing sourcing rule**

This feature allows you to include long, previously defined lists of shipping organizations without manual entry.

1. Select a sourcing type to specify whether you make, buy, or internally transfer the item.

2. Choose Copy Shipping Orgs From.

3. In the Find window, select a sourcing rule that includes the shipping organizations you want to duplicate in this new sourcing rule.

4. Choose OK.

**To purge a sourcing rule**

1. Select a sourcing rule name.

2. Choose Purge.

## Defining Bills of Distribution

You can define bills of distribution that specify a multilevel replenishment network of warehouses, distribution centers, manufacturing centers (plants), and trading partners.

**To define a bill of distribution**

1. Navigate to the Bill of Distribution window.

2. Enter a unique bill of distribution name.

3. If the allocation percentage for this bill of distribution equals 100, Planning Active is

checked. (See Step 7.)

> **Note:** You cannot set the allocation percentage to less than or greater than 100 for sourcing rules that are already assigned in assignment sets

4. Choose Copy From to copy the receiving and shipping organization information from another bill of distribution into this one.

5. Enter the effectivity dates for each receiving organization in this bill of distribution.

6. For each receiving organization, you can enter a number of shipping organizations. For each shipping organization, select a sourcing type to specify whether you make, buy, or internally transfer the item. You can also copy a list of shipping organizations from an existing bill of distribution.

   > **Note:** Suppliers and supplier sites must be predefined in Oracle Payables. See: About Suppliers, *Oracle Payables User's Guide*

7. Enter an allocation percentage for each shipping organization. Allocation percentage includes the number of planned orders issued to the part for the entire the planning horizon. Your total allocation may not exceed 100. If the allocation percentage for all the shipping organizations included within a range of effectivity dates equals 100, Planning Active is checked. If the sourcing rule is not planning active, the planning process will use the rule to assign planned orders.

   > **Note:** For bills of distribution that are already named in assignment sets, you cannot set the allocation percentage to less than or greater than 10

8. Enter a numeric rank value to prioritize each sourcing type. If you have two sources with the same allocation percentage, planned orders are sourced in rank order.

9. Select a shipping method, such as FEDEX, UPS, or rail. See: Defining Shipping Methods, *Oracle Inventory User's Guide*.

10. Save your work.

**To copy shipping organizations from an existing bill of distribution**

This feature allows you to include long, previously defined lists of shipping organizations without manual entry.

1. Select a sourcing type to specify whether you make, buy, or internally transfer the item.

2. Choose Copy Shipping Orgs From.

3. In the Find window, select a bill of distribution that includes the shipping organizations you want to duplicate in this new bill of distribution.

4. Choose OK.

**To purge a bill of distribution**

1. Select a bill of distribution name.

2. Choose Purge.

## Assigning Sourcing Rules and Bills of Distribution

Once you have defined your sourcing rules and bills of distribution, you must assign them to particular items and/or organizations. These assignments are grouped together in assignment sets. This is where your various sourcing strategies define a particular supply chain network.

Each assignment set to represents selection of organizations and/or items you want planned. To influence the planning process, you must include an assignment set in your plan options.

In an assignment set can assign your sourcing rules and bills of distribution at different levels, as follows:

- Item-Instance: An item across all organizations. If the Item field is empty, use the Reduce Criteria Window to restrict the selection.
- Item-Instance-Organization: A single item in an inventory organization
- Instance-Organization: All items in an inventory organization
- Category-Instance: Categories of items
- Category-Instance-Organization: Categories of items in an inventory organization
- Instance: All organizations

These levels allow you to assign a replenishment rule to as many or as few items as possible. For example, a category of items could be defined as packaging material, and a sourcing rule that identifies the suppliers could be assigned.

When you specify a customer in an assignment:

- You cannot specify an organization in the same row
- The planning engine does not split planned orders by customer. If you want the planning engine to split planned orders by customer, use project manufacturing.

Create one project per customer so all of the sales orders for each customer peg to one project.

**To assign a sourcing rule or bill of distribution**

1. Navigate to the Sourcing Rule/Bill of Distribution Assignments window.
2. Enter an assignment set name and description.

   **Note:** The assignment specified in profile option MRP: Default Sourcing Assignment Set is the only one used by Oracle Purchasing for its processing

3. Select an Assigned To type.

   **Note:** You can assign a sourcing rule or bill of distribution to a category only if you have updated the profile option MRP:Sourcing Rule Category Set. See: MRP:Sourcing Rule Category Set

4. Enter an organization name, if the Assigned To type requires one.

   **Note:** You cannot assign customers modelled as organizations to a global sourcing rule

5. Enter the name of the customer to which you want to assign a sourcing rule or bill of distribution.
6. Enter the specific site to which you want to assign a sourcing rule or bill of distribution.
7. Enter an Item/Category if you selected Item or Item-Org as the Assign To type.
8. Enter the sourcing rule or bill of distribution as the Type.
9. Enter the name of the sourcing rule or bill of distribution.
10. Enter Condition if the source is Repair at or Transfer from defective and usable items in asset intensive planning. It is the condition of the repairable at the end of the process.
11. Save your work.

**To purge a sourcing rule or bill of distribution**

1. Select an assignment set name.

2. Choose Purge.

## Assignments Hierarchy

In the following table, rows below override rows above them. Columns on the right override columns on the left.

A global sourcing rule has an unspecified receiving organization.

***Sourcing Rules vs. Bill of Distribution Assignments***

| Assignment Scope | Global Sourcing Rule* | Local Sourcing Rule | Bill of Distribution |
|---|---|---|---|
| Global | Yes | No | Yes |
| Organization | No | Yes | No |
| Category of Item | Yes | No | Yes |
| Category of Items in an Organization | No | Yes | No |
| Item | Yes | No | Yes |
| Items in an Organization | No | Yes | No |

Since not all assignment types are valid for both sourcing rules and bills of distribution, the effect of the Sourcing Rules vs. Bill of Distribution Assignments table is illustrated in a linear hierarchy in the following table. The rows below override rows above them.

***Assignment to Levels***

| Assignment Scope | Sourcing Mechanism |
|---|---|
| Global | Global Sourcing Rule |
| Global | Bill of Distribution |
| Organization | Local Sourcing Rule |
| Category of Item | Global Sourcing Rule |

| Assignment Scope | Sourcing Mechanism |
|---|---|
| Category of Item | Bill of Distribution |
| Category of Items in an Organization | Local Sourcing Rule |
| Item | Local Sourcing Rule |
| Item | Bill of Distribution |
| Items in an Organization | Local Sourcing Rule |

## Viewing Sourcing Rules

You can quickly and easily retrieve sourcing rules for reference. After retrieving a sourcing rule, you can display it in a convenient, hierarchical representation, or you can locate the assignment sets in which it is assigned.

**To view sourcing rules**

1. Navigate to the View Sourcing Rule or Sourcing Rule window.
2. Place your cursor in the Name or Description field and select Find or Find All from the query menu.
3. Choose View to launch the Object Navigator and display the graphical view of your sourcing rule.

   With the Object Navigator, you can display your sourcing rule in a visual hierarchy. Each element in the sourcing rule is displayed in a rectangular *node*, with connecting lines that depict the nodes' relationships to each another (known as the *data flow*). The nodes are also color-coded for easy identification, and other aspects of the data flow can be changed to meet specific requirements.

**To view assignments for your sourcing rules**

Sourcing rules govern replenishment of specific items in your enterprise based on the rule's assignment. Sourcing rules can be assigned to an item, and item in an organization, an organization, a category of items, a category of items in an organization, or to all items.

When modifying or viewing a sourcing rule, you can quickly refer to all the assignment sets in which the rule participates. You can also refer to the assignment level assigned to the rule. For more information about assignment sets, see: Assigning Sourcing Rules

and Bills of Distribution.

1. Navigate to the View Sourcing Rule or Sourcing Rule window.
2. Place your cursor in the Name or Description field and select Find or Find All from the Query menu.
3. Choose Assignment Set. The list that appears includes all sets in which the current rule participates.

For each Sourcing Rule and Bill of Distribution in the Assignment Set, you can review the following information:

- *Assigned to*: Each Sourcing and Bill of Distribution can be assigned:
  - A single item (across all organizations)
  - An item in a specific organization
  - All items in a specific organization
  - A category of items
  - A category of items in an organization
  - All items in all organizations (globally)

    **Note:** You can assign a sourcing rule to a category only if you have updated the profile option MRP:Sourcing Rule Category Set. See: MRP:Sourcing Rule Category Set

- *Organization*: Rules or bills assigned to an organization, a category of items in an organization, or an item in an organization will also display the name of that organization.
- *Customer and Customer Site*: Rules or bills associated with a customer will also display this information.
- *Item/Category*: Rules or bills assigned to an item or an item in an organization will display with the associated item or category of items (if the profile option has been updated to include categories).

## Viewing Bills of Distribution

You can quickly and easily retrieve bills of distribution for reference. After retrieving a bill of distribution, you can display it in a convenient, hierarchical representation, or you can locate the assignment sets in which it is assigned.

**To view bills of distribution**

1. Navigate to the View Bill of Distribution or Bill of Distribution window

2. Place your cursor in the Name or Description field and select Find or Find All from the Query menu.

3. Choose View to launch the Object Navigator and display the graphical view of your bill of distribution.

   With the Object Navigator, you can display your bill of distribution in a visual hierarchy. Each element in the bill is displayed in a rectangular *node*, with connecting lines that depict the nodes' relationships to each another (known as the *data flow*). The nodes are also color–coded for easy identification, and other aspects of the data flow can be changed to meet specific requirements.

**To view assignments for your bills of distribution**

Bills of distribution govern replenishment of specific items in your enterprise based on the bill's assignment. Bills of distribution can be assigned to an item, and item in an organization, an organization, a category of items, a category of items in an organization, or to all items.

When modifying or viewing a bill of distribution, you can quickly refer to all the assignment sets in which the bill participates. You can also refer to the assignment level assigned to the rule. For more information about assignment sets, see: Assigning Sourcing Rules and Bills of Distribution.

1. Navigate to the View Bills of Distribution or Bill of Distribution window

2. Place your cursor in the Name or Description field and select Find or Find All from the Query menu.

3. Choose Assignment Set. The list that appears includes all sets in which the current bill participates.

For each Sourcing Rule and Bill of Distribution in the Assignment Set, you can review the following information:

- *Assigned to*: Each Sourcing and Bill of Distribution can be assigned:
  - A single item (across all organizations)
  - An item in a specific organization
  - All items in a specific organization
  - A category of items
  - A category of items in an organization

- All items in all organizations (globally)

  **Note:** You can assign a sourcing rule to a category only if you have updated the profile option MRP:Sourcing Rule Category Set. See: MRP:Sourcing Rule Category Set

- *Organization*: Rules or bills assigned to an organization, a category of items in an organization, or an item in an organization will also display the name of that organization.
- *Customer and Customer Site*: Rules or bills associated with a customer will also display this information.
- *Item/Category*: Rules or bills assigned to an item or an item in an organization will display with the associated item or category of items (if the profile option has been updated to include categories).

## Viewing Sourcing Rule and Bill of Distribution Assignments

Once you have defined your sourcing rules and bills of distribution, you must assign them to particular items and/or organizations. These assignments are grouped together in assignment sets. This is where your various sourcing strategies define a particular supply chain network.

You can quickly view your assignment sets to review particular sourcing schemes, locate particular assignments of sourcing rules or bills of distribution, or view the supply chain bill for a particular assignment set.

**To view sourcing rule and bill of distribution assignments**

1. Navigate to the Sourcing Rule/Bill of Distribution Assignments window.
2. Place your cursor in the Assignment Set or Description field and select Find or Find All from the Query menu.
3. Select an assignment set from the list.

For each Sourcing Rule and Bill of Distribution in the Assignment Set, you can review the following information:

- *Assigned to*: Each Sourcing and Bill of Distribution can be assigned:
  - A single item (across all organizations)
  - An item in a specific organization
  - All items in a specific organization

- A category of items
- A category of items in an organization
- All items in all organizations (globally)

> **Note:** You can assign a sourcing rule to a category only if you have updated the profile option MRP:Sourcing Rule Category Set. See: MRP:Sourcing Rule Category Set.

- *Organization*: Rules or bills assigned to an organization, a category of items in an organization, or an item in an organization will also display the name of that organization.
- *Item/Category*: Rules or bills assigned to an item or an item in an organization will display with the associated item or category of items (if the profile option has been updated to include categories).

**To view details of a particular rule or bill**

When viewing an assignment set, you can quickly retrieve full details on any sourcing rule or bill of distribution named in the set.

1. In the Assignments region, place your cursor in any field on the row containing the rule or bill you want.
2. Choose View Sourcing Rule/BOD

## Setting Outbound Ship Method

When there are multiple ship methods possible between a customer site and an internal organization, Oracle Advanced Supply Chain Planning evaluates the delivery time and selects the ship method that is most appropriate. Each ship method has a specific intransit lead-time. If the default ship method or the current ship method on the sales order does not meet the demand on time, you can evaluate multiple ship methods and select an alternate ship method that meets the demand on time.

For example, you may want to use a cost effective ship method such as ocean shipment or ground shipment for most part and switch to airfreight for certain orders to avoid late orders. With the automatic selection of ship methods, Oracle Advanced Supply Chain Planning suggests change in ship methods to meet orders on time by using ship methods that have shorter lead-times. Therefore, you can use the most cost effective ship methods for normal operations, but decide to use alternate ship methods if the orders are going to be late.

If you use cost based optimization, Oracle Advanced Supply Chain Planning selects the ship method based on costs associated with the specific ship method and the

optimization objectives. You can send the selected ship method to Oracle Order Management along with the recommendation for the ship from organization. These planning decisions are communicated to Oracle Order Management using the Release process.

> **Note:** Intransit lead-time depends on the ship method used to transport goods.

You can model alternate ship methods for:

- Sales orders bound to a customer
- Planned order between two organizations
- Planned orders sourced at a supplier or planned orders with buy source

### To Setup Alternate Ship Methods

You need to complete setup steps in the following Oracle products to setup selection of outbound ship method:

- Oracle Shipping
- Oracle Inventory
- Oracle Advanced Supply Chain Planning

Perform the following setup steps in both the execution as well as planning server.

### Setup Steps in Oracle Shipping

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Order Management > Shipping > Setup > Regions and Zones.
3. Set up ship methods.
4. Optionally set up zones to group customer sites and supplier sites.

   For more details, see *Oracle Shipping Execution User's Guide*.

### Setup Steps in Oracle Inventory

1. Navigate to Inventory > Set up > Organizations > Inter-Location Transit Times.
2. Set up ship methods and intransit lead-times between the following entities:
   - Organization and Customer sites

- Between Organizations
- From supplier site to Organizations

  To model transit lead-time between customers and organizations, include it in supplier processing lead time

  For more details, see *Oracle Inventory User's Guide*.

### Setup Steps in Oracle Advanced Supply Chain Planning

1. Navigate to Advanced Supply Chain Planner > Sourcing > Sourcing Rules.
2. Define sourcing rules or bills of distribution. Create multiple entries for the same source and select different ship methods and intransit lead-times in each entry.
3. Navigate to Sourcing > Assignment set
4. Assign sourcing rules at customer site level or one of the following levels:
   - Item-Instance-Region
   - Category-Instance-Region
   - Instance-Region
5. Assign sourcing rules to items.
6. Select the assignment set in the plan option.

   **Note:** If destination is an Org, the level assignment can be at Item-Instance-Org, Category-Org etc.

### To use Alternate Ship Methods

1. Run a plan with the assignment set that contains sources and alternate ship methods.
2. Review the alternate ship method used/ ship method changed exceptions.
3. Drill down to Exception Details and review old and new ship methods and intransit lead-times.
4. Navigate to the Supply/Demand window and select the sales orders for release.
5. Release the sales orders with the selected ship method from the Planner Workbench.

6. Review the results in Oracle Order Management.

   **Note:** The ship method is automatically changed on the sales order line.

7. Work with your suppliers to use the suggested ship method.

You can also evaluate and select ship methods between two internal organizations each time you run the plan.

# Setting Supplier Capacity

This section explains supplier capacity:

- Constraints
- Set up
- Setting by time periods

## Constraints

Oracle ASCP considers the following supplier capacity constraints.

### Allocation of Demand Based on Historical Allocations

You can allocate planned orders to sources taking historical allocations into account. Planning uses history to determine the allocations necessary to achieve your targeted allocations.

### Allocate Planned Orders With Capacity Constraints

You can specify the capacity of individual suppliers to supply specific items. You can allocate planned orders taking capacity constraints of the suppliers into account. Planning uses the ranking information you specify and first attempts to source the planned orders with the primary sources. If the primary source does not have the capacity to fulfill the demand, planning suggests sourcing with the alternative sources you have specified, in the priority you have specified.

### Supplier-Specific Order Modifiers

You can specify supplier-specific order modifiers at an item/supplier site level. Planning respects the order modifier quantities defined for the sources of the item. This enables you to specify more precisely the conditions related to each source.

### Supplier-Specific Lead-times

You can specify supplier-specific lead-times for items. This ensures orders are placed

early enough to provide the supplier time to react to your needs.

#### Delivery/Reception Frequency Calendars

Use receiving calendars to specify the available delivery dates to:

- An organization
- An organization from a specific carrier

The reception schedule contains the dates that organizations can receive inbound shipments from carriers. The planning engine adjusts planned orders so that they are due on available dates in the reception schedule.

#### Flexible Tolerance Fences

You can define capacity tolerance percentages that vary over time for each source. This allows the allocation of demand over capacity by a variable amount depending on the time in the future.

## Supplier Capacity Accumulation

The planning engine accumulates Supplier Capacity based on the Supplier's calendar. If the Supplier calendar is not specified, then the engine will plan according to a 24 x 7 capacity.

Capacity accumulates for all workdays in the owning organization's manufacturing calendar. Capacity that accumulates on a given day is available for use the next day.

To specify unavailable supplier capacity for a certain supplier (for example, a shutdown), specify zero capacity for that period in the approved supplier list.

You can configure accumulation of supplier capacity depending on when your supplier starts production.

If the supplier has ongoing production, you might assume that material is always in process. Since the supplier can ship almost immediately, you might want to accumulate supplier capacity from the plan start date. Set profile option MSC: Supplier Capacity Accumulation (multiplier) to 0. This table shows an example of this scenario with Approved Supplier List Supplier Capacity at 10 each per day.

| Schedule Entity | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily supplier capacity in source instance | - | 10 | - | - | 10 | 10 | 10 | 10 | 10 | - | - | 10 | 10 | 10 |

| Schedule Entity | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily supplier capacity in planning instance | - | 10 | - | - | 10 | 10 | 10 | 10 | 10 | - | - | 10 | 10 | 10 |
| Cumulative supplier capacity in planning instance | - | 10 | - | - | 20 | 30 | 40 | 50 | 60 | - | - | 70 | 80 | 90 |

If the supplier starts making new material when it receives your order, it can ship after their lead-time. You might want to accumulate supplier capacity at the Approved Supplier List Processing Lead-time or a multiple of it. Set profile option MSC: Supplier Capacity Accumulation (multiplier) to 1 (for the Approved Supplier List Processing Lead-time) or another whole number (for a multiple of the Approved Supplier List Processing Lead-time.

This table shows an example of this scenario with quantity of 10 each per day and Approved Supplier List Processing Lead-time of 6 days. If there is no Approved Supplier List Processing Lead-time, the planning engine uses item attribute Processing Lead-time.

| Schedule Entity | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily supplier capacity in source instance | - | 10 | - | - | 10 | 10 | 10 | 10 | 10 | - | - | 10 | 10 | 10 |
| Daily supplier capacity in planning instance | - | - | - | - | - | - | - | 10 | 10 | - | - | 10 | 10 | 10 |

| Schedule Entity | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cumulative supplier capacity in planning instance | - | - | - | - | - | - | - | - | 10 | - | - | 20 | 30 | 40 |

## Purchase Order Consumption of Supplier Capacity

The planning engine does not consume supplier capacity with purchase orders unless you specify. In general, purchase order deliveries that consume supplier capacity can result in unnecessary reschedule out exception messages. They have consumed supplier capacity in the past; since the planning engine does not track past supplier capacity, it sees not enough supplier capacity between the plan start date and the purchase order delivery dock date.

You can configure purchase order consumption of supplier capacity in several ways depending on the amount of feedback that you receive from your suppliers:

- Constrain new orders only
- Constrain new orders only, purchase order placed early
- Integrate with Oracle Collaborative Planning

### Profile Options

To configure purchase order consumption of supplier capacity, set the following profile options:

- MSC: Supplier Capacity Consumption by Purchase Orders
- MSC: Supplier Capacity Accumulation (multiplier)

### Constrain New Orders Only Scheme

Use this scheme with the following business situation and assumptions:

- The planning engine consumes supplier capacity and lead-time for planned orders after the supplier lead-time.
- You typically place purchase orders just outside the supplier lead-time. The supplier starts to build supplies when you place the purchase order and they need the entire lead-time. If you typically place purchase orders early, consider using the Constrain new orders only, purchase order placed early scheme.

- The supplier will deliver purchase orders on time.
- The planning engine does not consume supplier capacity for purchase orders.

To implement this supplier capacity accumulation scheme, set profile option:

- MSC: Purchase Order Dock Date Calculation Preference to Need By Date
- MSC: Supplier Capacity Accumulation (multiplier) to 1

For example, this table shows the planning engine behavior for this scheme:

- Approved Supplier List Supplier Capacity of 10 each per day and Approved Supplier List Processing Lead-time of 1 day.
- The planning engine begins to accumulate supplier capacity on Friday which is available for receipt of new planned orders or requisitions on Monday.
- The planning engine does not consume supplier capacity against the purchase order for 50. It does not issue an Orders to be rescheduled out exception message because of lead-time.

| Schedule Entity | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Purchase orders | - | - | - | - | - | 50 | - | - | - | - | - | - | - | - |
| Purchase requisitions | - | - | - | - | - | - | - | 30 | - | - | - | - | - | - |
| Planned orders | - | - | - | - | - | - | - | - | - | - | - | 20 | - | - |
| Daily supplier capacity in planning instance | - | 10 | - | - | 10 | 10 | 10 | 10 | - | - | - | 10 | 10 | 10 |
| Cumulative supplier capacity in planning instance | - | - | - | - | 10 | 20 | 30 | 10 | 10 | - | - | 0 | 10 | 20 |

#### Constrain New Orders Only, Purchase Order Placed Early Scheme

Use this scheme with the following business situation and assumptions:

- The planning engine consumes supplier capacity and lead-time for planned orders after the supplier lead-time.
- You typically place purchase orders earlier than just outside the supplier lead-time. The supplier starts to build supplies when you place the purchase order and they need the entire lead-time. If you typically do not place purchase orders early, consider using the Constrain new orders only scheme.
- You maintain the purchase order delivery promise date within the supplier lead-time. Purchase order deliveries with no promise date have not been accepted by the supplier.
- The supplier will deliver purchase orders on time.
- The planning engine does not consume supplier capacity for purchase orders that have been acknowledged by the supplier.

To implement this supplier capacity accumulation scheme, set profile option:

- MSC: Purchase Order Dock Date Calculation Preference to Promise Date
- MSC: Supplier Capacity Accumulation (multiplier) to 1

The planning engine behaves as follows for this scheme:

- For example, the supplier lead-time for an item is 5 days and the supplier capacity is 100 per day.
- The planning engine begins to accumulate supplier capacity on day 5 which is available for receipt of new planned orders or requisitions on day 6.
- The planning engine does not consume supplier capacity against purchase order deliveries with a promise date. It uses the promise date as the dock date.
- The planning engine does not consumes supplier capacity against purchase order deliveries without a promise date. However, it may issue an Orders to be rescheduled out exception message because of lead-time and a Supplier capacity overloaded exception message because of supplier capacity.

#### Integrate with Oracle Collaborative Planning Scheme

##### Oracle Advanced Supply Chain Planning and Oracle Collaborative Planning

You use Oracle Collaborative Planning to produce and send (publish) order forecasts from material plans to suppliers, either:

- Unconsumed: Purchase orders, purchase requisitions, and planned orders
- Consumed: Purchase requisitions and planned orders

The supplier responds to each statement of demand with:

- Acknowledgements: Quantity and date tied to individual purchase order deliveries.

  If the supplier uses *i*Supplier portal to accept purchase orders, the Oracle Advanced Supply Chain Planning collections process sets the promise date to the need by date for accepted purchase order deliveries.

  Otherwise, use this information to manually update the promise date for each purchase order delivery. If the supplier acknowledges several partial quantity deliveries on different dates, manually split the deliveries and enter promise dates for each one.

- Supply commit: Tied to the unconsumed portion of your forecast.

  If the supplier uses Oracle Advanced Supply Chain Planning, they publish a supply commit that represents existing supplies and planned orders for the top level item that are pegged to forecasts and sales orders for a customer. To receive the supplier commit, run concurrent process Receive Supplier Capacity before running collections.

  Otherwise, they provide aggregated time phased supply values into Oracle Supply Chain Collaboration using a flat file, an XML transaction, or manual entry.

You uses the supplier responses to constrain your material plan. The planning engine uses them as the supplier's commitment of capacity instead of the capacity statements in the approved supplier list.

#### Scheme Details

Use this scheme with the following business situation and assumptions:

- You use Oracle Collaborative Planning
- You issue relatively few purchase order deliveries outside of the dates and quantities that Oracle Advanced Supply Chain Planning recommends.

To implement this supplier capacity accumulation scheme, set profile option:

- MSC: Purchase Order Dock Date Calculation Preference to Promise Date
- MSC: Supplier Capacity Accumulation (multiplier) to 0

For example, you run an unconstrained plan. This table shows the supplies for supplier 1, supplier site 1, item A. Although you have issued purchase orders 2 and 3, the supplier has not yet acknowledged them.

| Order Type | Order Number | Order Line | Quantity | Need by Date | Promise Date | Dock Date |
|---|---|---|---|---|---|---|
| Purchase order | 1 | 1 | 20 | 29 April | 29 April | 29 April |
| Purchase order | 1 | 2 | 100 | 1 May | 3 May | 3 May |
| Purchase order | 2 | 1 | 10 | 6 May | - | 6 May |
| Purchase order | 3 | 1 | 100 | 29 April | - | 29 April |
| Purchase requisition | 100 | 1 | 200 | 13 May | - | 13 May |
| Purchase requisition | 101 | 1 | 200 | 10 May | - | 10 May |
| Purchase requisition | 102 | 1 | 300 | 14 May | - | 14 May |
| Planned order | 301 | - | 100 | 20 May | - | 20 May |
| Planned order | 302 | - | 100 | 27 May | - | 27 May |
| Planned order | 303 | - | 100 | 3 June | - | 3 June |

You use Oracle Collaborative Planning to publish a forecast to Supplier 1 for item A of purchase orders, purchase requisitions, and planned orders based on dock date. This table shows the forecast.

| Quantity | Date |
|---|---|
| 20 | 29 April |
| 100 | 1 May |

| Quantity | Date |
|---|---|
| 10 | 6 May |
| 100 | 29 April |
| 200 | 13 May |
| 200 | 10 May |
| 300 | 14 May |
| 100 | 20 May |
| 100 | 27 May |
| 100 | 3 June |

Supplier 1 runs a constrained plan that results in the supply and demand situation for supplier site 1, Item A. This table shows the details of supplier 1 supplies that are pegged to your demands.

Supplier 1:

- Has received sales orders for purchase order 1, lines 1 and 2; they consume your forecast for the demands on 29 April and 03 May.
- Has not received sales orders against the demand that resulted in purchase orders 2 and 3; they do not consume your forecast.

| Order Type | Order Number | Order Line | Quantity | Date |
|---|---|---|---|---|
| Sales order | 1 | 1 | 20 | 29 April |
| Forecast | - | - | 100 | 29 April |
| On hand | - | - | 20 | 29 April |
| On hand | - | - | 100 | 29 April |
| Sales order | 1 | 2 | 100 | 3 May |

| Order Type | Order Number | Order Line | Quantity | Date |
|---|---|---|---|---|
| On hand | - | - | 100 | 29 April |
| Forecast | - | - | 10 | 6 May |
| Oh hand | - | - | 20 | 29 April |
| Forecast | - | - | 200 | 10 May |
| WIP job | 1114 | - | 200 | 10 May |
| Forecast | - | - | 200 | 13 May |
| WIP job | 1113 | - | 200 | 13 May |
| Forecast | - | - | 300 | 14 May |
| Planned order | 3330 | - | 300 | 14 May |
| Forecast | - | - | 100 | 20 May |
| Planned order | 3331 | - | 100 | 20 May |
| Forecast | - | - | 100 | 27 May |
| Planned order | 3332 | - | 100 | 27 May |
| Forecast | - | - | 100 | 3 June |
| Planned order | 3333 | - | 100 | 3 June |

Supplier 1 uses Oracle Collaborative Planning to publish a supply commit with only supplies that are pegged to your forecast. This table shows the supplies that are pegged to your forecast.

| Order Type | Order Number | Quantity | Date |
|---|---|---|---|
| On hand | - | 100 | 29 April |

| Order Type | Order Number | Quantity | Date |
|---|---|---|---|
| On hand | - | 10 | 29 April |
| WIP job | 1114 | 200 | 10 May |
| WIP job | 1113 | 200 | 13 May |
| Planned order | 3330 | 300 | 14 May |
| Planned order | 3331 | 100 | 20 May |
| Planned order | 3332 | 100 | 27 May |
| Planned order | 3333 | 100 | 3 June |

This table shows the supply commit which is the statement of supplier capacity through its last entry date of 3 June. If an item-supplier site does not appear in the supply commit, the planning engine uses the Approved Supplier List Supplier Capacity.

The sales orders in the supplier's system that represent your purchase orders should be consumed during the supplier's forecast consumption process. The supplies pegged to these sales orders should not be in the supply commit.

| Quantity | Due Date |
|---|---|
| 100 | 29 April |
| 10 | 29 April |
| 200 | 10 May |
| 200 | 13 May |
| 300 | 14 May |
| 100 | 20 May |
| 100 | 27 May |
| 100 | 3 June |

You run a constrained plan based on the supply commit. The planning engine must schedule the items in this table.

| Order Type | Order Number | Order Line | Quantity | Need by Date | Promise Date | Dock Date |
|---|---|---|---|---|---|---|
| Purchase order | 1 | 1 | 20 | 29 April | 29 April | 29 April |
| Purchase order | 1 | 2 | 100 | 1 May | 3 May | 3 May |
| Purchase order | 2 | 1 | 10 | 6 May | - | 6 May |
| Purchase order | 3 | 1 | 100 | 29 April | - | 29 April |

This table shows how planning engine consumes supplier capacity in your constrained plan:

- Since the supplier has acknowledged both purchase order deliveries in purchase order 1 (they have Promise Date), the planning engine does not consume supplier capacity against them.
- Since the supplier has not yet acknowledged purchase order 2 and purchase order 3 (they do not have Promise Date), the planning engine consumes supplier capacity against them.
- The planning engine consumes supplier capacity against the purchase requisitions and planned orders.

| Date | Available Capacity | Required Capacity | Consuming Entity |
|---|---|---|---|
| 29 April | 110 | 110 | Purchase orders 2 and 3 (no Promise Date) |
| 10 May | 200 | 200 | Purchase requisition 100 |
| 13 May | 200 | 200 | Purchase requisition 200 |

| Date | Available Capacity | Required Capacity | Consuming Entity |
|---|---|---|---|
| 14 May | 300 | 300 | Purchase requisition 300 |
| 20 May | 100 | 100 | Planned order 3331 |
| 27 May | 100 | 100 | Planned order 3332 |
| 3 June | 100 | 100 | Planned order 3333 |

## Setting Supplier Capacity by Time Periods

Please note the following when setting up supplier capacity:

- It is important to select Global in the Supplier Capacity window.
- Processing lead-time can be selected in number of days. This is a lead-time at the supplier end before the order is processed
- The delivery calendar should be entered to reflect the days the supplier can deliver the order. Examples: M, W or M, W, F
- Minimum order quantity can be entered if the supplier has to deliver some minimum quantity if an order is placed. For example, if you have set the minimum order quantity to 25, and if 20 is ordered, 25 will be delivered
- Fixed lot multiple value needs to be entered if the supplier delivers only in certain multiples. For example, if you have set the fixed lot multiple to 5, if quantity 103 is ordered, 105 will be delivered
- The capacity area of the Supplier Capacity window is used to specify supplier's capacity for a specific time period. The supplier could have different capacity on different days. For examples, from 10/11/00 to 10/22/00, the supplier could have 50 units/day, and from 10/23/00 to 10/31/00, the supplier could have 70 units/day
- Tolerance fence values can be determined to reflect how much capacity a supplier can adjust if given enough advanced notice. For example, on 10/24/00, if tolerance percentage is 10, this means that on 10/24/00, the capacity will be 77 units (in the above example)

Supplier capacity can vary by time period. You can specify one daily capacity for period 1 and a different capacity for period 2. Time periods are specified from a start date to an end date.

**Note:** The methods you use to set capacity by time period vary depending on which version of Oracle Applications you are using.

The planning engine considers supplier capacity as infinite after the end date of the last item-supplier-supplier site capacity entry. If there are no item-supplier-supplier site capacity entries, it considers supplier capacity as infinite for the entire planning horizon

#### To set capacity by time period

1. Navigate to the Purchasing module (you must use the Manufacturing and Distribution Manager responsibility).
2. Choose Purchasing > Supply Base > Approved Suppliers List.
3. Choose the searchlight icon in the toolbar to search for an item.

   The Find ASL Item/Commodity window appears.
4. Choose an item or commodity.

   Supplier information appears.
5. Choose a supplier by clicking in the Supplier field.
6. Select Attributes.
7. Choose the Planning Constraints tab.
8. Enter the numbers of days in advance and the tolerance percentage.

   For example, entering 15 days and 5% means that within 15 days, the supplier can increase the capacity by 5%.

## Allocating Demand to Suppliers

For more information on the following topics, see . Setting Up the Supply Chain, page 4-2.

### Setting Rank and Allocation

You can define a rank for each source of supply named in the sourcing rules and BODs. You can then define a sourcing percentage for each source within a rank, allowing you to allocate a portion of the total orders to each source.

### Splitting Demand According To Sourcing Percentages

The data in these tables demonstrate how allocation percentages for planned orders are divided according to ranking information.

The demand for Item A is shown in the following table.

| Demand | Due Date | Quantity |
|---|---|---|
| 1 | 07/15 | 300 |

Sourcing for Item A is shown in the following table.

| Item | Source | Rank | Percentage | Effective From | Effective To |
|---|---|---|---|---|---|
| A | S1 | 1 | 40 | 05/15 | 12/31 |
| A | S2 | 1 | 30 | 05/15 | 12/31 |
| A | S3 | 1 | 30 | 05/15 | 12/31 |

Demand is assigned using the ranking information and calculating the percentages assigned to each source to calculate the planned orders.

- S1: 300 x 0.40 = 120
- S2: 300 x 0.30 = 90
- S3: 300 x 0.30 = 90

Three planned orders are created for the quantities of 120, 90, and 90 respectively.

> **Note:** All planned orders generated in this process are subject to item order modifiers.

If you run a constrained plan and did not use optimization, the supplies calculated above will be scheduled based on the supplier capacity established for the item. If optimization is used, Oracle ASCP will not split the orders per the sourcing splits in sourcing rules; it will evaluate the suppliers by rank and considers supplier capacities to come up with allocations to suppliers. The rank, lead-time and capacity of 3 suppliers is shown in the following table.

| Supplier | Rank | Lead Time | Capacity |
|---|---|---|---|
| Supplier 1 | 3 | 2 | 100 |

| Supplier | Rank | Lead Time | Capacity |
|---|---|---|---|
| Supplier 2 | 2 | 2 | 100 |
| Supplier 3 | 1 | 2 | 100 |

### Allocating Demand to Suppliers Based on Historical Demand

You can allocate planned orders taking into account historical allocations in unconstrained plans. The enhanced sourcing logic considers historical allocations and allows the splitting of demand to achieve target sourcing percentages.

## Sourcing Example

**Example 1: Sourcing based on Historical Allocations**

The demand for item A is on the following days with the user running an unconstrained plan. The start of the planning horizon is on Day 1:

| Demand for Item A | Due Date | Quantity |
|---|---|---|
| A | Day 4 | 500 |
| A | Day 5 | 500 |

**Sourcing Rule for Item A**

The following is the sourcing rule for item A.

| Item | Source | Rank | Percemtage | Effective From | Effective To |
|---|---|---|---|---|---|
| A | S1 | 1 | 60 | Day 1 | |
| A | S2 | 1 | 40 | Day 1 | |

All lead times are assumed to be zero.

The following are the quantities historically allocated to S1 and S2:

- S1: 1200

- S2: 1000

Since this is an unconstrained plan any supplier capacity constraints that may have been defined will not be considered.

**For the demand on Day 4**

The total historical allocation is 1200+1000=2200

Total Target Allocation = historical allocation + unsatisfied demand on day 4 = 2200 + 500 = 2700

Allocation to S1 + 1200 (historical allocation) / 2700 (total target allocation) = 0.6 (source percent)

Allocation to S1 is therefore= 420

The remainder of the demand (80) is allocated to S2

**For the demand on Day 5:**

We first look at allocations until the end of Day 4

They would be as follows:

- S1: 1200+420=1620
- S2: 1000+80=1080

Total Target Allocation = historical allocation + unsatisfied demand = 2700 + 500 = 3200

Allocation to S1 + 1620 (historical allocation) / 3200 (total target allocation) = 0.6 (source percent)

Allocation to S1 is therefore=300

The remainder of the demand (200) is allocated to S2

**Example 2: Sourcing based on Supplier Ranks in Sourcing Rule**

The user runs a constrained plan with decision rules enabled with the following demands. The start of the planning horizon is on Day 1.

**Demand for Item A**

| Demand for Item A | Due Date | Quantity |
|---|---|---|
| A | Day 8 | 500 |
| A | Day 9 | 500 |

**Sourcing Rule for Item A**

| Item | Source | Rank | Percentage | Effective From | Effective To |
|---|---|---|---|---|---|
| A | S1 | 1 | 100 | Day 1 | |
| A | S1 | 2 | 100 | Day 1 | |

**Supplier Capacity Profile for Item A**

| Source | Capacity/Day |
|---|---|
| S1 | 100 |
| S1 | 100 |

**Supplier Capacity Tolerance Percentages for Item A**

| Source | Tolerance Percentage on all days |
|---|---|
| S1 | 10 |
| S1 | 20 |

**Supplier Capacity with tolerance Included for Item A**

| Source | Capacity/Day |
|---|---|
| S1 | 110 |
| S1 | 120 |

**Order Modifier for Item A:**

- Minimum Order Quantity: 100

**Lead Times:**

- The only lead time is the post processing lead time of 2 days for item A

**Supplier Delivery Pattern**

| Source | Reception Pattern |
|---|---|
| S1 | Wednesdays and Fridays |
| S2 | Fridays |

**Horizontal Plan**

The two demands are on Day 8 (Monday) and Day 9 (Tuesday). The post processing lead time is 2 days. The supplies will need to be received 2 days before the due date (Day 6 and Day 7 respectively). Since Day 6 and Day 7 (Saturday and Sunday) are not part of the reception pattern, the only day that will ensure on time delivery is Friday (Day 5).

The accumulated capacity for S1 by day 5 is 550. A planned quantity of 500 with source S1 is therefore scheduled on Day 5 to meet the demand on Day 8.

The remaining accumulated capacity of S1 until Day 5 is 50. It is less than the minimum order quantity of 100 and therefore is not used to meet the second demand on Day 9.

Since the rank 1 supplier does not have enough capacity to meet the second demand on Day 9, the rank 2 supplier (S2) is used. S2's accumulated capacity by Day 5 is 600. A planned supply of quantity of 500 with S2 as source is scheduled on Day 5 to meet the demand on Day 9.

| | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday | Monday | Tuesday | Wednesday |
|---|---|---|---|---|---|---|---|---|---|---|
| Item A | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10 |
| Demand | | | | | | | | 500 | 500 | |
| Planned Orders –S1 | | | | | 500 | | | | | |
| Planned Orders –S2 | | | | | 500 | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Supplier Capacity-S1 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| Supplier Capacity-S2 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |

## Enforce Sourcing Splits

Supplier contracts require that a company source its materials from suppliers based on specified allocation percentages. Similarly, requirements such as labor agreements necessitate adherence to allocation percentages from internal organizations.

You can control whether the planning process treats contractual sourcing allocation percentages as constraints, or is free to flex the allocation percentages to achieve plan objectives.

Oracle ASCP and Inventory Optimization impose the sourcing allocation percentages during optimization.

### To invoke enforce sourcing splits functionality

1. Specify Allocation Percentages.
   1. Sign on using the Advanced Supply Chain Planner responsibility.
   2. From the Navigator, choose Sourcing > Sourcing Rules.

      The Sourcing Rule screen appears.
   3. Specify the sourcing Allocation Percentages in the Sourcing Rule form using the Allocation % field.
2. Specify Sourcing Allocation Window.
   1. Sign on using the System Administrator responsibility.
   2. From the Navigator, choose Profile > System.

      The Find System Profile Values screen appears.
   3. Enter the profile option name, or use the search feature to search for a component of the profile option name (for example, you could search on the word Sourcing).

4. Select the Find button.

   The System Profile Values screen appears.

   You can specify the new profile option called MSO: Sourcing Allocation Window in the System Profile Values form. The default value is 7 days.

   You can specify a length of time (in days) used to satisfy the allocation percentages. This time period during which the allocation percentages are enforced is called Sourcing Allocation Window. The sourcing constraints are enforced in a rolling horizon manner, in multiples of the Sourcing Allocation Window, with the finest granularity being the specific time bucket.

3. Specify Sourcing Percentage Variance.

   In the System Profile Values screen, you can specify the new profile option called MSC: Sourcing Variance Tolerance in the System Profile Values form. The default value is 0.05 (5%).

   The system allows you to specify a tolerance band for the difference between the user-specified allocation percentages and the plan-derived allocation percentages. If the difference is greater than the tolerance, then an exception is triggered.

4. Specify Allocation History Start Date.

   In the System Profile Values screen, you can specify the new profile option called MSC: Start Date Offset for Sourcing History (Months) in the System Profile Values form. The default value is Null (system collects all history if the collection parameter Recalculate History is set to Yes).

   The system allows you to specify a global allocation percentages start date from which the sourcing history is collected and accumulated for making sourcing decisions. The allocation history is ignored if the sourcing rule effectivity date is after the plan date.

5. Enforce Sourcing Constraints.

   At the plan level, the system allows you to enable sourcing constraints for all sourcing rules. You can enable sourcing constraints by selecting the Enforce Sourcing Constraints checkbox in the Options tab of the Plan Options form.

   1. Sign on using the Advanced Supply Chain Planner responsibility.

   2. From the Navigator, choose Supply Chain Plan > Options.

      The Plan Options screen appears.

   3. Select the Enforce Sourcing Constraints checkbox.

### Enforce Sourcing Splits Example

The following example shows how to use the enforce sourcing splits feature.

Suppliers S1 and S2 have the following contractual allocations:

- Supplier S1: 50%
- Supplier S2: 50%

The table below summarizes supply and demand and sourcing allocation percentages for suppliers S1 and S2.

| Demand/Supply/Sourcing Allocation | Day 1 | Day 2 | Day 3 | Day 4 |
|---|---|---|---|---|
| Dependent Demand | 0 | 3 | 0 | 3 |
| Planned Order Supply, S1 | 0 | 2 | 0 | 1 |
| Planned Order Supply, S2 | 0 | 1 | 0 | 2 |
| Cumulative Allocation, %, S1 | 0% | 67% | 67% | 50% |
| Cumulative Allocation %, S2 | 0% | 33% | 33% | 50% |

On Day 2, it is not possible to exactly achieve the contractual 50%/50% split, so planned order supplies that achieve the closest possible split (67%/33%) are generated.

On Day 4, S2 is given a higher allocation in order to bring the cumulative allocation to the desired 50%/50%.

In this example, the sourcing allocation window is assumed to be equal to one day.

#### Constraints Precedence

If you select the Enforce Sourcing Constraints at the plan option level, the precedence among the above constraints are established as follows:

#### Case 1 - Enforce Demand Due Dates

You have selected the Enforce Demand Due Dates or the Enforce Service Levels plan option. In this case, the order of priority among the constraints is as follows:

1. Enforce Demand Due Dates/Enforce Service Levels (highest priority)
2. Enforce Capacity Constraints
3. Enforce Sourcing Constraints (lowest priority)

#### Case 2 - Enforce Capacity Constraints

You have selected the Enforce Capacity Constraints plan option. In this case, the order of priority among the constraints is as follows:

1. Enforce Capacity Constraints (highest priority)
2. Enforce Demand Due Dates/ Enforce Service Levels
3. Enforce Sourcing Constraints (lowest priority)

   Note that in either case, the sourcing constraints have the lowest priority; that is, these constraints may be violated, if required, to satisfy the capacity constraints or to meet demands.

#### Consideration of Rank 1 Sources

Only Rank 1 sources are considered for enforcing sourcing allocation percentages. The allocation percentages are ignored for sources of ranks 2 and higher.

The system considers sources of ranks 2 and higher only if there is insufficient capacity among rank 1 sources to meet the required supply. If one or more rank 1 sources fall short of capacity, the sourcing allocation percentages are ignored, and the system allocates supply quantities among the sources of ranks 1 and higher based on cost and capacity considerations. The enforcement of ranking priority functionality is unchanged and it is accomplished by means of internal penalty factors.

#### Interorganization Allocations

The allocation percentages are enforced for all sourcing types:

- External supplies from suppliers
- Transfer supplies from internal organizations
- Make supplies made within an organization

#### Penalty Cost for Violation of Sourcing Allocation Percentages

The system automatically uses internal penalty factors (i.e., not exposed to user) to minimize deviations from the desired allocation percentages. The system chooses penalty factors such that the sourcing constraints violations are penalized less than the unmet demands and capacity violations.

## Setting Up Routings

The manufacturing process or routing to make a product includes the operations that are required to be performed in a predetermined sequence.

Operation Resource Schedule Flag

Some resources are also required to carry out these operations and these resources need to be scheduled. The schedule flag determines whether a resource is scheduled.

When the schedule flag has been set to No, the corresponding operation resource is not brought over to the planning server as a part of the routings and is not scheduled. When the schedule flag has been set to Yes, Prior, or Next, the corresponding operation resources are brought over to the planning server as a part of the routings collection.

Within an operation, the planning engine assumes that there is at most one PRIOR activity and at most one NEXT activity. Also if you need to specify an activity as PRIOR, it should be the first activity within the operation; if you need to specify an activity as NEXT, it should be the last activity in the operation.

If a PRIOR activity is not the first activity, the planning engine sets all preceding activities to PRIOR also, regardless of the routing definition. If a NEXT activity is not the last activity, the planning engine sets all succeeding activities to NEXT also, regardless of the routing definition.

If you need a NEXT activity as an intraoperation step, break the routing into two operation steps so that the NEXT is at the end of the first of two operations rather than in the middle of one operation.

### To model the resource schedule

1. Sign on using the Manufacturing and Distribution Manager responsibility.
2. From the Navigator, select Bill of Material > Routings > Routings.

   The Routings screen appears.
3. Select Operation Resources.

   Operation Resources screen appears.
4. Set up resource schedule from the Scheduling tab. The possible values for the schedule flag are: Yes, No, Prior, Next.

   For details on other columns and functionality, refer to the Routings chapter in the *Oracle Bills of Material User's Guide*.

## Modeling Minimum Transfer Quantity (MTQ)

When planning for long-running jobs or batches, Oracle Advanced Supply Chain

Planning can plan for the arrival of the necessary raw materials or ingredients from external suppliers as well as from other internal organizations to occur incrementally throughout the duration of the job or batch instead of the raw materials to arrive prior to the start of the job. This reduces the total manufacturing lead-time significantly.

Oracle Advanced Supply Chain Planning also allows you to model overlaps of manufacturing operations in different organizations. An operation of a routing in the downstream organization can start after completion of a Minimum Transfer Quantity (MTQ) at the operation of another routing in the upstream organization.

> **Note:** Theoretically, it is possible to combine Minimum Transfer Quantity with incremental supplies.

### Understanding Minimum Transfer Quantity

Oracle Advanced Supply Chain Planning allows you to specify a Minimum Transfer Quantity, which is the minimum amount that an operation must be completed in order to trigger the start of the next operation.

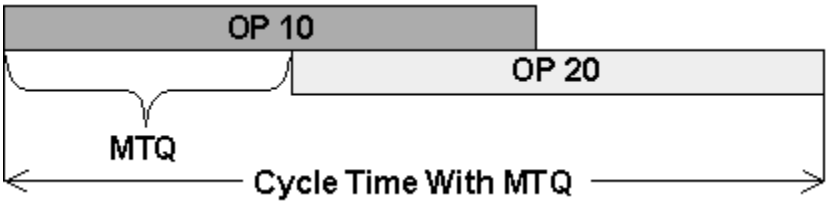
Minimum Transfer Quantity is used to model production operations in which materials are transferred in lots smaller than the processing lots, resulting in subsequent operations that start before the current operation is completely finished. You can specify Minimum Transfer Quantities between routings as well as between operations of a routing. Oracle Advanced Supply Chain Planning respects Minimum Transfer Quantity while scheduling operations.

In the process of scheduling an operation, Oracle Advanced Supply Chain Planning dynamically uses the production rate of the selected alternative resource to determine when to begin the material transfer to the subsequent operation. Production breaks are honored.

Oracle Advanced Supply Chain Planning allows you to model Minimum Transfer Quantity between operations across routings, in a single organization as well as between multiple organizations. This implies that a downstream operation of a routing in one organization can start after completion of Minimum Transfer Quantity at the upstream operation of another routing in a different organization.

The following diagram shows how the planning engine uses the Minimum Transfer Quantity:

***Minimum Transfer Quantity***



You can specify the Minimum Transfer Quantity between routings and between operations. Oracle Advanced Supply Chain Planning schedules operations with respect to Minimum Transfer Quantity.

#### Specifying Minimum Transfer Batch Size

You can specify the Minimum Transfer Quantity in the following manner:

- Interrouting (between routings): The Minimum Transfer Quantity is specified for the last operation of the upstream routing.

- Intrarouting (between operations of one routing): The Minimum Transfer Quantity is specified for the current operation.

#### MTQ Between Processes With Different Run Rates

Oracle Advanced Supply Chain Planning models MTQ with respect to the resource run rates of the upstream and downstream processes. These processes can have the same run rates or different run rates. The scheduling results can be different due to these rates.

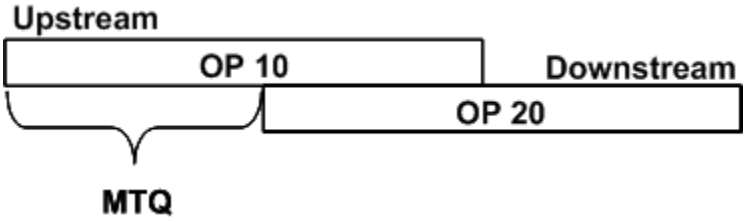
#### Example - Downstream process is slower than the upstream process or it has the same rate

Consider a routing with two operations, Operation 10 using resource R1 and Operation 20 using resource R2. There is an MTQ between Operations 10 and 20. The following equation presents the relationship between the resources run rates:

- R1 Run Rate >= R2 Run Rate

Operation 20 can start after the completion of MTQ at Operation 10 with respect to resource availability.

***Downstream process is slower than the upstream process or it has the same rate***




#### Example - Downstream process is faster than the upstream process

Consider a routing with two operations, Operation 10 using resource R1 and Operation 20 using resource R2. There is an MTQ between Operations 10 and 20. The following equation presents the relationship between the resources run rates:

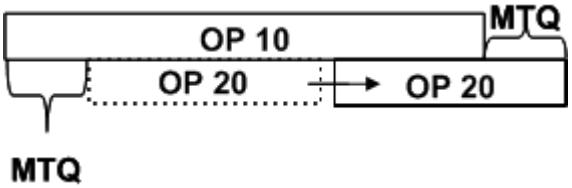
- R1 Run Rate < R2 Run Rate

The planning engine schedules Operation 20 such that the end of Operation 20 is beyond the end of Operation 10 with minimum of MTQ.

- Operations Finish Times Constraint: Operation 20 Finish Time - Operation 10 Finish

Time >= MTQ

***Downstream process is faster than the upstream process***



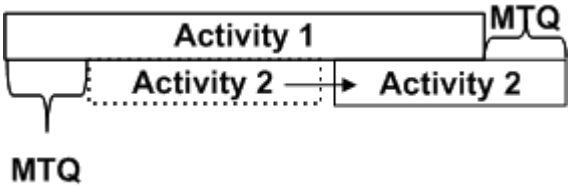

A similar constraint holds for activities with respect to MTQ. Consider an operation with two activities, Activity 1 using resource R1 and Activity 2 using resource R2. The MTQ between Activity 1 and Activity 2 is inferred for the operation MTQ. The following equation presents the relationship between the resources run rates:

R1 Run Rate < R2 Run Rate

The planning engine schedules Activity 2 such that the end of Activity 2 is beyond the end of Activity 1 with minimum of MTQ.

- Activities Finish Times Constraint: Activity 2 Finish Time - Activity 1 Finish Time >= MTQ

***Downstream process is faster than the upstream process***




#### Consideration of Resource Breaks

When resource breaks are present, Oracle Advanced Supply Chain Planning adjusts the start time of the next operation with respect to the start time of the current operation. This ensures that the planning engine respects the Minimum Transfer Quantity constraints and also avoids starvation of the next operation. For more details, see the following examples:

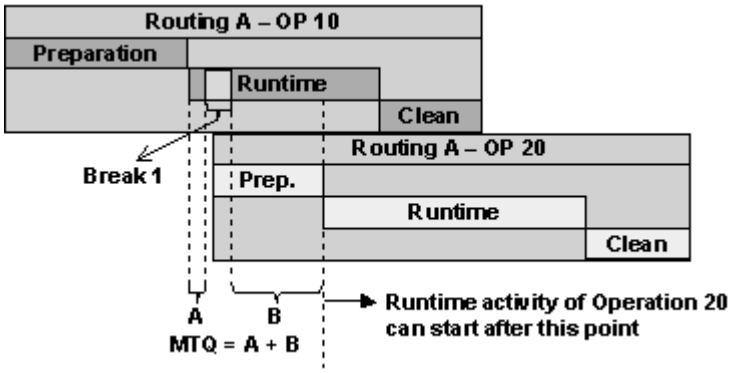
- Resource Break: Scenario 1, page 4-46
- Resource Break: Scenario 2, page 4-47
- Resource Break: Scenario 3, page 4-49
- Resource Break: Scenario 4, page 4-50

#### Resource Break: Scenario 1

Consider:

- The upstream activity has a break within MTQ (MTQ is available after the break)
- The break delays the start of the downstream activity by delaying the time at which MTQ units are completed by the upstream operation.
- MTQ = 100 units = 3 hours
- Break 1 = 15 minutes starting at 10:00 am
- Runtime activity of Operation 10 starts at 9:45 am.
- A = 15 minutes
- B = 2 hours and 45 minutes
- MTQ Production Time = A + B = 3 hours
- Runtime activity of Operation 20 can start any time after 1:00 pm (9:45 am + 3 hours + 15 min = 1:00 pm) with respect to the Activities Finish Times Constraint.

***Resource Break: Scenario 1***




Result:

- Runtime Activity OP 20 Start Time >= (Runtime Activity OP 10 Start Time) + MTQ + Break 1

#### Resource Break: Scenario 2

Consider:

- The upstream activity has a break after the completion of MTQ (MTQ is available before the break)
- MTQ = 100 units = 3 hours

- Break 2 = 15 minutes starting at 2:00 pm

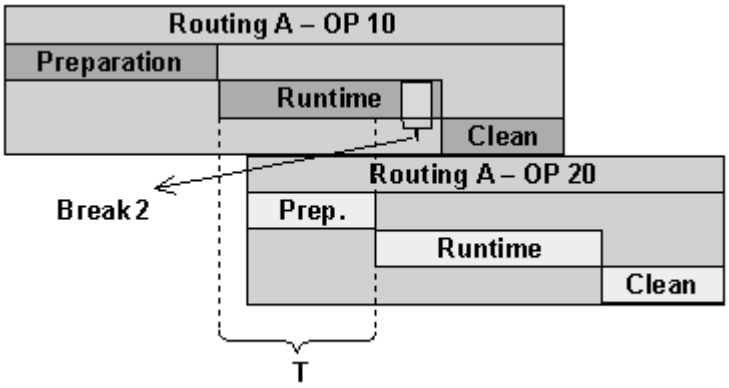
- Runtime activity of Operation 10 starts at 9:45 am.

**Case 1**

- If the downstream activity is faster than the upstream activity or it has the same run rate as the upstream activity, the downstream activity can start after MTQ Production Time plus break. The break postpones the start of the downstream activity.

- Runtime activity of Operation 20 can start any time after 1:00 pm (9:45 am + 3 hours + 15 min = 1:00 pm) with respect to the Activities Finish Times Constraint.

***Resource Break: Scenario 2: Case 1***




Result:

- T >= MTQ + Break 2

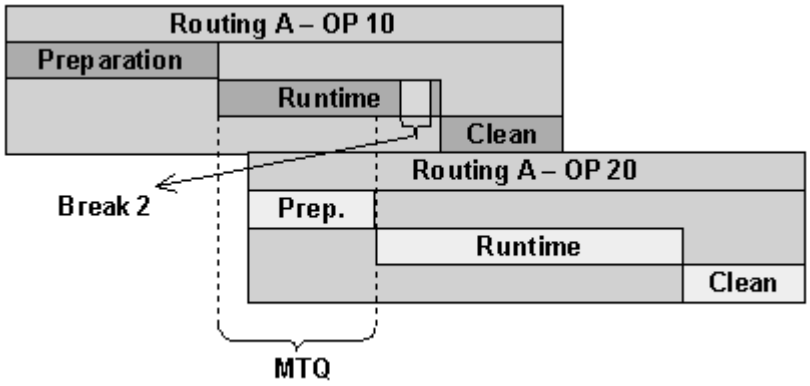
- Runtime Activity OP 20 Start Time >= (Runtime Activity OP 10 Start Time) + MTQ + Break 2

**Case 2**

- If the downstream activity is slower than the upstream activity, then the downstream activity can start any time after MTQ.

- Runtime activity of Operation 20 can start any time after 12:45 pm (9:45 am + 3 hours = 12:45 pm) with respect to the Activities Finish Times Constraint.

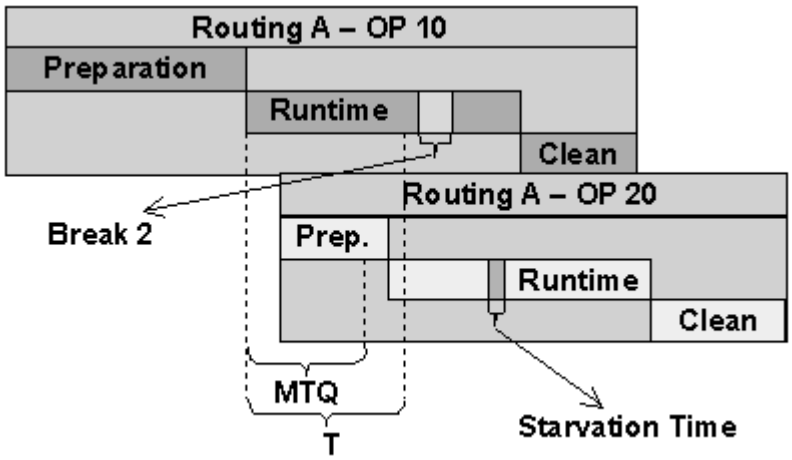
*Resource Break: Scenario 2: Case 2*




Result:

- Runtime Activity OP 20 Start Time >= (Runtime Activity OP 10 Start Time) + MTQ
- In case 1, if the downstream activity cannot start after MTQ plus break time (for example the activity start time has been firmed after MTQ but before MTQ plus break time), then there is a potential for starvation at the downstream activity.

*Resource Break: Scenario 2: Continuation of Case 2*




This implies that the above constraint can be violated with respect to firm requirements.

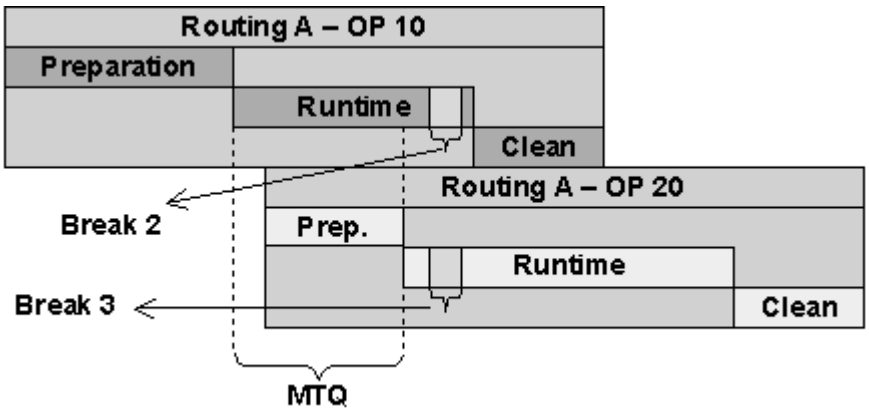
**Resource Break: Scenario 3**

Consider:

- Both the upstream and downstream activities have equal breaks at the same time after the completion of MTQ

- MTQ = 100 units = 3 hours
- Break 2 = 15 minutes starting at 2:00 pm
- Break 3 = 15 minutes starting at 2:00 pm
- Runtime activity of Operation 10 starts at 9:45 am.
- The downstream activity starts after MTQ with respect to the equal breaks.
- Runtime activity of Operation 20 can start any time after 12:45 pm (9:45 am + 3 hours = 12:45 pm) with respect to the Activities Finish Times Constraint.

***Resource Break: Scenario 3***




Result:

- Runtime Activity OP 20 Start Time >= (Runtime Activity OP 10 Start Time) + MTQ
- This scenario is also valid if the downstream activity break is greater than the upstream activity break.

**Resource Break: Scenario 4**

Consider:

- Both the upstream and downstream activities have unequal breaks at the same time after the completion of MTQ
- MTQ = 100 units = 3 hours
- Break 2 = 30 minutes starting at 2:00 pm
- Break 3 = 15 minutes starting at 2:15 pm
- Break 2 (upstream activity) > Break 3 (downstream activity)

- Runtime activity of Operation 10 starts at 9:45 am.
- Considering the larger break of the upstream activity, the downstream activity can start any time after MTQ plus the difference of the breaks.
- Runtime activity of Operation 20 can start any time after 1:00 p.m. [9:45 a.m. + (3 hours) + (30 min -15 min) = 1:00 p.m.] with respect to the Activities Finish Times Constraint.

Result:

- Runtime Activity OP 20 Start Time >= (Runtime Activity OP 10 Start Time) + MTQ + (Break 2 - Break 3)
- If the downstream activity cannot start after MTQ plus the difference of the breaks (for example the activity start time has been firmed after MTQ but before MTQ plus the difference of the breaks), then there is a potential for starvation at the downstream activity.

#### Modeling Material Transfers

When raw materials are replenished by external suppliers, Oracle Advanced Supply Chain Planning respects order quantity-limiting modifiers such as fixed order quantity, issues multiple raw material replenishment orders for each long-running production job, then staggers the due dates of the replenishment orders across the duration of the job.

When raw materials are replenished by internal organizations, Oracle Advanced Supply Chain Planning can model the replenishment as either of the following:

- Continuous transfer- The production order in the destination organization is permitted to start after a suitable time offset from the raw material production order in the source organization.

  The downstream process receives material in lot sizes of 1 from the upstream process. The transfer starts on or after the completion of Minimum Transfer Quantity at the upstream process.

- Discrete incremental or non-continuous transfer - Multiple transfer orders that respect quantity limitations imposed by order modifiers are created, and their due dates are staggered across the duration of the production order in the destination organization.

  The downstream process receives material in discrete increments (more than 1 at a time) from the upstream process.

When you use incremental planned orders, downstream supply can be split into multiple planned orders. In this case, the planned order demand driving these planned orders has a demand date of the later of the planned orders. By referring to the planned order demand, it could appear that the planned order supply occurs after the start of a scheduled activity. For example:

- An assembly supply order calls for making quantity 30
- An activity is scheduled 13-JAN 22:41:00 to 13-JAN 22:59:00
- The planning engine creates incremental planned orders quantity 5 for 13-JAN 22:41:00 and quantity 25 for 13-JAN 22:44:00
- The planned order demand becomes quantity 30 on 13-JAN 22:44:00

You can also model material transfers with respect to convergence and divergence of supplies. In case of divergence, supply from one upstream process splits into two or more downstream processes of the same item. In case of convergence, supplies from two or more upstream processes of the same item are sent to (consumed by) one downstream process.

You can adopt the following supply chain models for material transfer from suppliers and internal organizations:

- To model continuous transfer inside one organization, page 4-52
- To model continuous transfer across organization, page 4-54
- To model non-continuous transfers inside one organization with incremental supplies, page 4-56
- To model non-continuous transfers inside one organization with incremental consumption, page 4-57
- To model non-continuous transfers across organizations with incremental supplies, page 4-58
- To model non-continuous transfers across organizations with incremental consumption, page 4-59
- To model non-continuous transfers across organizations with both incremental supplies and incremental consumption, page 4-60
- To model non-continuous transfers between suppliers and internal organizations, page 4-61

**To model continuous transfer inside one organization**

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Bill of Materials > Routings > Routings.
3. Define Routing.
4. Define Routing Operations.

5. Select the WIP tab.

6. Specify Min Transfer Qty for the feeding operation.

   The Minimum Transfer Quantity is applied between the last scheduled activity of the upstream producing operation and the first scheduled activity of the downstream consuming operation.

   In regular routings the last operation of the routing is considered as the producing operation. In case of network and complex routings, the upstream feeding operation can be any one of the operations in the upstream routing.

   In case of process manufacturing, you can define Min Transfer Qty in the Operation Details Activities form.

7. Navigate to Operation Resources > Scheduling tab.

8. Set the Basis field to:

   1. Item for value added activities (runtime).

   2. Lot for setup (preparation) and teardown (clean up) activities.

9. Set the Schedule field to:

   - Yes for value added activities (runtime)
   - Prior for setup activities (preparation)
   - Next for teardown activities (clean up)

     **Note:** The planning engine models Minimum Transfer Quantity only if both upstream and downstream operations have at least one activity.

10. Navigate to Items > Organization Items > General Planning tab:

11. Set the following item order modifiers:

    - Maximum Order Quantity
    - Fixed Order Quantity
    - Fixed Days Supply

**Example: Continuous transfer inside one organization**

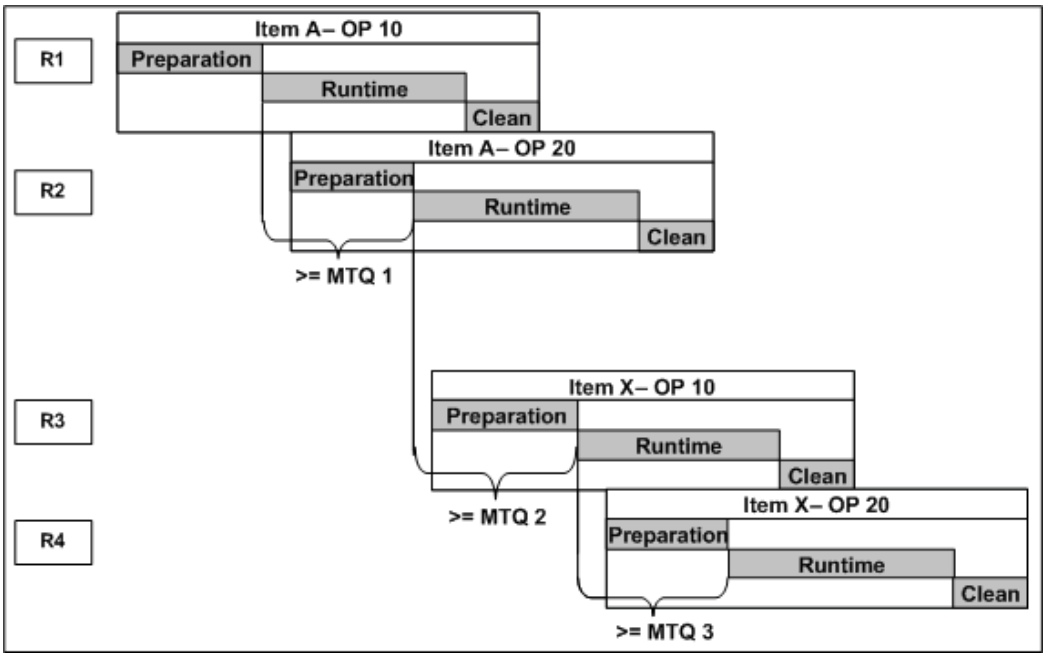
Consider:

- Items A and X are produced in Organization 1.

- Item A routing consists of 2 operations - OP 10 and OP 20 - and each operation consists of 3 activities: Preparation, Runtime, and Clean Up.
- Item X routing also consists of 2 operations - OP 10 and OP 20 - and each operation consists of 3 activities: Preparation, Runtime, and Clean Up.
- The Runtime activity of operation 20 can start after completion of MTQ at the Runtime activity of operation 10.

Refer the figure below to view the continuous transfer modeling in Organization 1:

***Continuous transfer inside one organization with MTQ***




Result: The downstream process starts after a minimum quantity from the upstream process has been completed. The material transfer is continuous after the Minimum Transfer Quantity is completed.

**To model continuous transfer across organization**

This type of transfer is modeled for processes with continuous flow.

1. Complete from Step 1-9 listed in the section To model continuous transfer inside one organization, page 4-52.
2. Navigate to Item > Organization Items > MPS/MRP Planning tab.
3. Set the Continuous Inter-Org Transfers item attribute to Yes.

   Alternatively, you can also set the profile option MSO: Continuous transfer across organizations to Yes in the Personal Profile Values form.

4. Navigate to Items > Organization Items > General Planning tab:

5. Set the following item order modifiers:
   - Maximum Order Quantity
   - Fixed Order Quantity
   - Fixed Days Supply

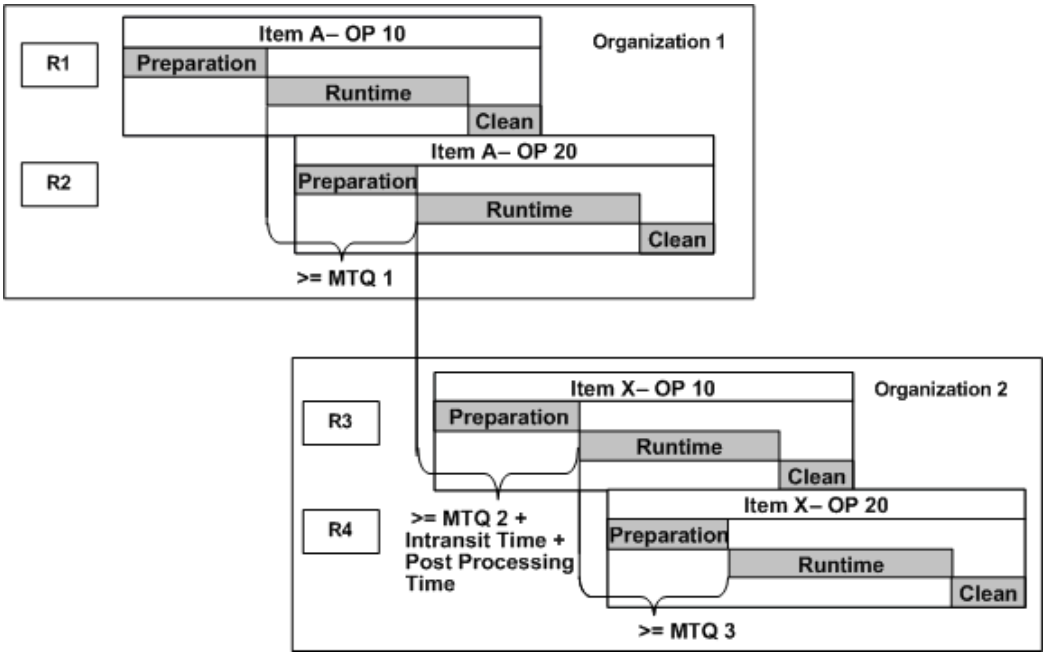
**Example: Continuous transfer across organizations**

Consider:

- Items A is produced in Organization 1.
- Item A routing consists of 2 operations - OP 10 and OP 20 - and each operation consists of 3 activities: Preparation, Runtime, and Clean Up.
- The Runtime activity of operation 20 can start after completion of MTQ at the Runtime activity of operation 10.
- Item X is produced in Organization 2.
- Item X routing consists of 2 operations - OP 10 and OP 20 - and each operation consists of 3 activities: Preparation, Runtime, and Clean Up.
- The Runtime activity of operation 20 can start after completion of Minimum Transfer Quantity at the Runtime activity of operation 10.

Refer the figure below to view the continuous transfer modeling between Organization 1 and Organization 2:

*Continuous transfer across organizations*




Result:

- Downstream operation of the routing in Organization 2 starts after completion of Minimum Transfer Quantity at the upstream operation of the routing in Organization 1.
- The planning engine adds the in-transit time between organizations and the item postprocessing lead-time to the specified Minimum Transfer Quantity to trigger the start of the downstream process.

**To model non-continuous transfers inside one organization with incremental supplies**

1. Navigate to Item > Organization Items > MPS/MRP Planning tab.
2. Set the Divergence Pattern item attribute to Series.

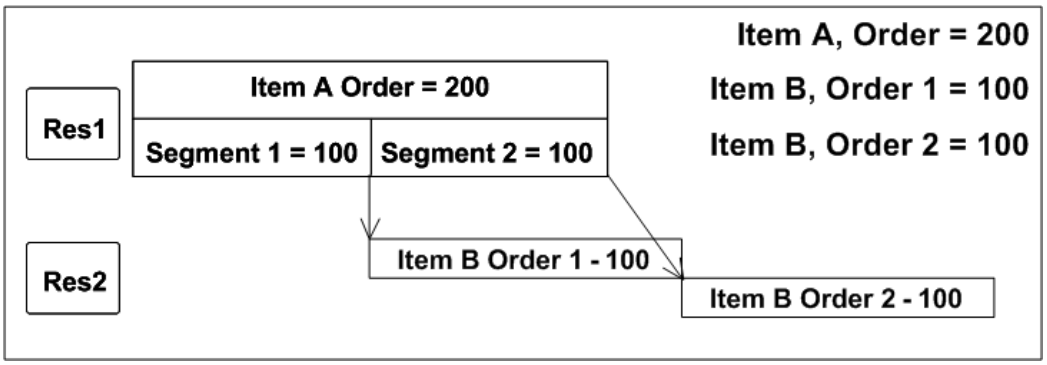
   Alternatively, you can set the profile option MSO: Divergent Supply Feeding Pattern for Intra-Org Sourced orders to Series in the Personal Profile Values form.
3. Navigate to Items > Organization Items > General Planning tab:
4. Set the following item order modifiers:
   - Maximum Order Quantity
   - Fixed Order Quantity

- Fixed Days Supply

**Example: Non-continuous transfers inside one organization with incremental supplies**

Refer the following figure to understand how Oracle Advanced Supply Chain Planning allows you to model incremental transfer of supplies within an organization. The downstream process is incrementally fed with the supply segments of the upstream process.

***Non-continuous transfers inside one organization with incremental supplies***




Result: Order 1 of Item B can start after the completion of the first supply segment of Item A.

**To model non-continuous transfers inside one organization with incremental consumption**

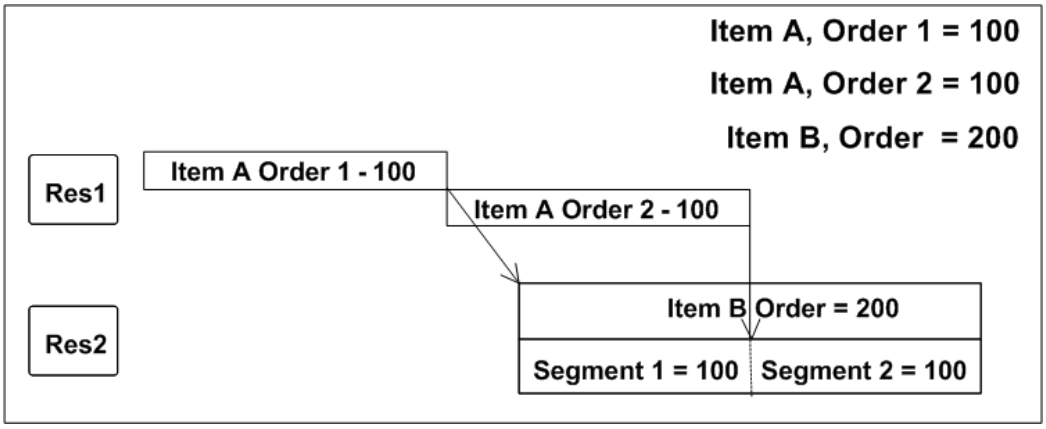
1. Navigate to Item > Organization Items > MPS/MRP Planning tab.
2. Set the Convergence Pattern item attribute to Series.

   Alternatively, you can set the profile option MSO: Convergent Supplies Consumption Pattern for Intra-Org Sourced orders to Series in the Personal Profile Values form
3. Navigate to Items > Organization Items > General Planning tab:
4. Set the following item order modifiers:
   - Maximum Order Quantity
   - Fixed Order Quantity
   - Fixed Days Supply

**Example: Non-continuous transfers inside one organization with incremental consumption**

Refer the following figure to understand how Oracle Advanced Supply Chain Planning allows you to model incremental consumption of supplies within an organization. The downstream process incrementally consumes supply orders of the upstream process.

*Non-continuous transfers inside one organization with incremental consumption*




Result: The supply orders of Item A are consumed in two increments by the downstream process of Item B. In this case, the overlap between the upstream process and the downstream process reduces the cycle time.

**To model non-continuous transfers across organizations with incremental supplies**

1. Navigate to Item > Organization Items > MPS/MRP Planning tab.
2. Set the Divergence Pattern item attribute to Series.

   Alternatively, you can set the profile option MSO: Divergent Supply Feeding Pattern for Inter-Org and Supplier Sourced orders to Series in the Personal Profile Values form.
3. Navigate to Items > Organization Items > General Planning tab:
4. Set the following item order modifiers:
   - Maximum Order Quantity
   - Fixed Order Quantity
   - Fixed Days Supply

Non-continuous transfers with incremental supplies in case of within an organization as well across organizations use the same item attribute:

- Set the Divergence Pattern item attribute to Series

However, non-continuous transfers with incremental supplies in case of within an organization use the profiles options:

- MSO: Divergent Supply Feeding Pattern for Intra-Org Sourced orders to Series

Whereas, non-continuous transfers with incremental supplies in case of across

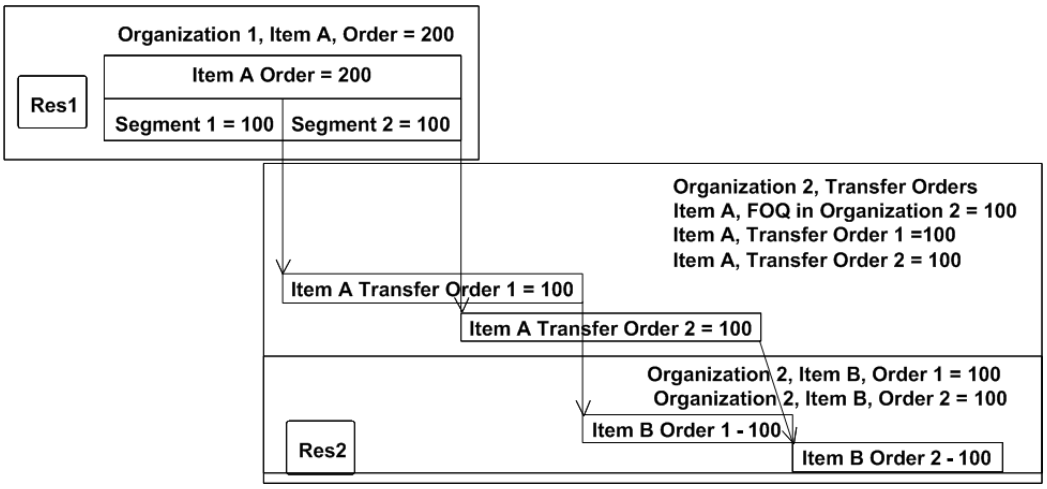
organizations use the profiles options:

- MSO: Divergent Supply Feeding Pattern for Inter-Org and Supplier Sourced orders to Series

**Example: Non-continuous transfers across organizations with incremental supplies**

Refer the following figure to understand how Oracle Advanced Supply Chain Planning allows you to model incremental transfer of supplies between organizations. The downstream process is incrementally fed with the supply segments of the upstream process.

***Non-continuous transfers across organizations with incremental supplies***




Results:

- Transfer Order 1 and Transfer Order 2 of Item A can start after the completion of the corresponding supply segments of Item A at organization 1.

- Order 1 and Order 2 of Item B can start after the arrival of shipments of Item A supply segments (transfer orders) at organization 2. In other words, the production process for Item B Order 1 can start earlier when compared to non-incremental case.

- The two supply segments are generated based on the two transfer orders.

**To model non-continuous transfers across organizations with incremental consumption**

1. Navigate to Item > Organization Items > MPS/MRP Planning tab.

2. Set the Convergence Pattern item attribute to Series.

   Alternatively, you can set the profile option MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders to Series in the Personal Profile Values form.

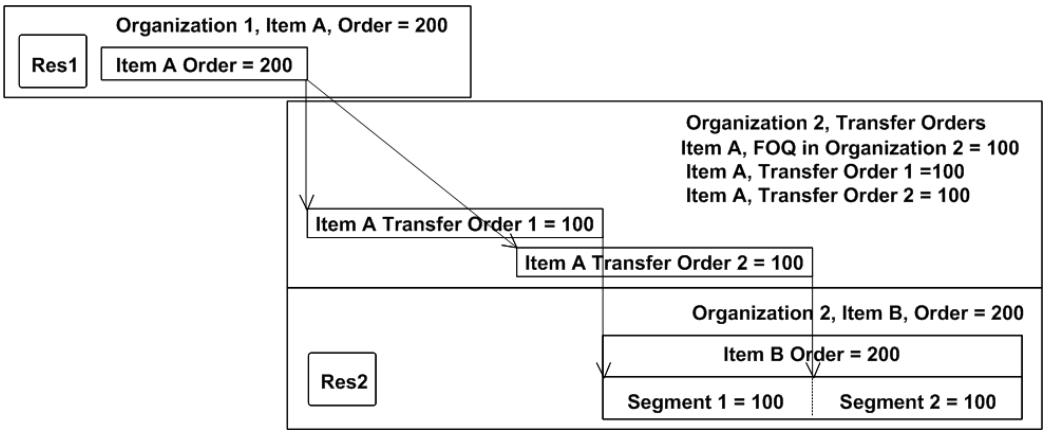
3. Navigate to Items > Organization Items > General Planning tab:

4. Set the following item order modifiers:
   - Maximum Order Quantity
   - Fixed Order Quantity
   - Fixed Days Supply

**Example: Non-continuous transfers across organizations with incremental consumption**

Refer the following figure to understand how Oracle Advanced Supply Chain Planning allows you to model incremental consumption of supplies between organizations. The downstream process incrementally consumes the supply orders of the upstream process.

***Non-continuous transfers across organizations with incremental consumption***




Result: The transfer orders of Item A are consumed in two increments by the downstream process of Item B. In this case, the overlap between the transfer orders and the downstream process reduces the cycle time.

**To model non-continuous transfers across organizations with both incremental supplies and incremental consumption**

1. Navigate to Item > Organization Items > MPS/MRP Planning tab.
2. Set the Divergence Pattern item attribute to Series.

   Alternatively, you can set the profile option MSO: Divergent Supply Feeding Pattern for Inter-Org and Supplier Sourced orders to Series in the Personal Profile Values form.
3. Set the Convergence Pattern item attribute to Series.

   Alternatively, you can set the profile option MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders to Series in the Personal Profile Values form.

4. Navigate to Items > Organization Items > General Planning tab:

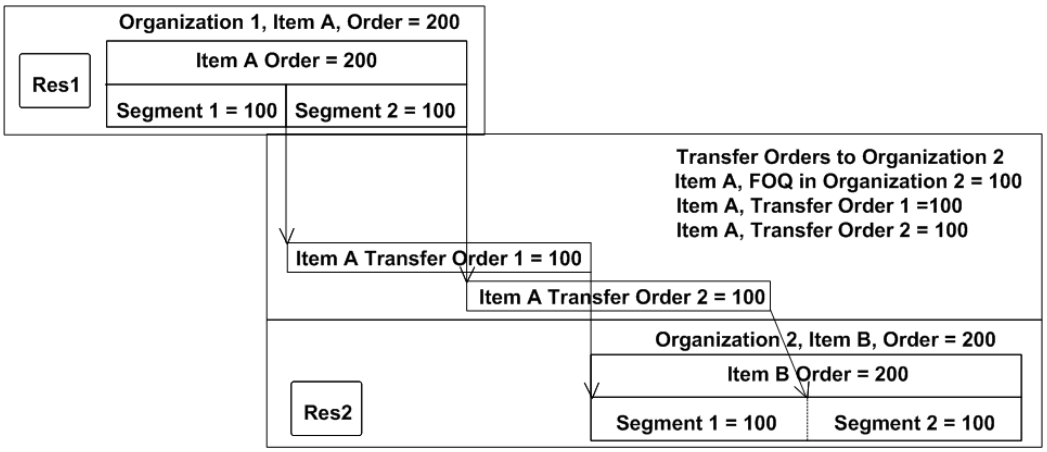
5. Set the following item order modifiers:

   - Maximum Order Quantity
   - Fixed Order Quantity
   - Fixed Days Supply

**Example: Non-continuous transfers across organizations with both incremental supplies and incremental consumption**

Refer the following figure to understand how Oracle Advanced Supply Chain Planning allows you to model incremental supplies and incremental consumption of supplies between organizations.

***Non-continuous transfers across organizations with incremental supplies and incremental consumption***




Result:

- The supply orders of Item A are consumed in two increments by the downstream process of Item B.
- The overlap between the upstream process and the downstream process reduces the cycle time.
- Transfer Order 1 and Transfer Order 2 of Item A can start after the completion of the corresponding supply segments of Item A at Organization 1.
- The transfer orders of Item A are consumed in two increments by the downstream process of Item B. In this case, the overlap between the transfer orders and the downstream process reduces the cycle time.

**To model non-continuous transfers between suppliers and internal organizations**

1. Navigate to Items > Organization Items > General Planning tab.
2. Set the item order modifiers in the Organization Item form
3. Set the Convergence Pattern item attribute to Series.

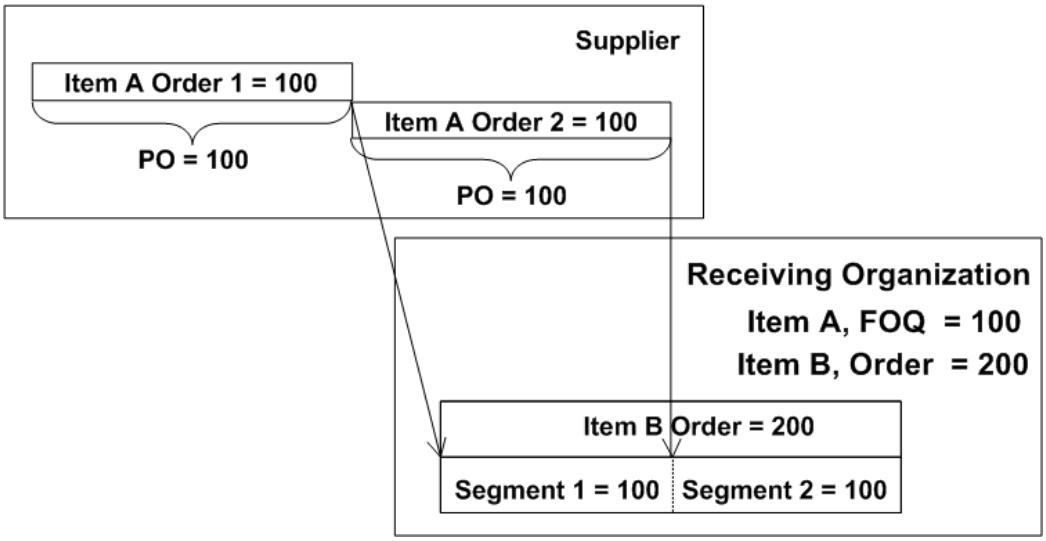
   Alternatively, you can set the profile option MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders to Series in the Personal Profile Values form.

**Example: Non-continuous transfers between suppliers and internal organizations**

Refer the following figure to understand Oracle Advanced Supply Chain Planning allows you to model incremental consumption of supplies (Convergent Supplies Consumption Pattern) between suppliers and internal organizations. The downstream process incrementally consumes supply orders of the upstream process.

Incremental supplies do not always start at the start of the downstream operation and after that. These can also start before the start of the downstream operation.

***Non-continuous transfers between suppliers and internal organizations***




Result:

- The supply orders of Item A are consumed in two increments by the downstream process of Item B.
- The overlap between the supply orders and the downstream process reduces the cycle time.

## Alternate and Simultaneous Resources

This section discusses the business benefits from setting up alternate and simultaneous resources and discusses how to:

- Set up alternate resources.
- Set up simultaneous resources.

### Business Benefits to Setting up Alternate and Simultaneous Resources

- You can schedule two or more resources (simultaneous resources) to be used at the same time within the job operation. For example: you can schedule a person resource operating a machine resource.
- You can define resource groups within the operation. This lets you give your primary resource a group number. This group can then be replaced by other resources. For example: a group of lathes can be replaced by a group of computer numerical control (CNC) machines.
- You have the ability to define substitute resources for each primary resource group defined. This enables you to specify resource sequences that can replace the primary resource group. For example: a group of lathes can be replaced by a group of CNC machines.
- You can assign a priority to the substitute resource groups, and specify the circumstances the substitute groups are to be considered. For example: you can assign a less expensive resources as priority 1, and a more expensive resources as priority 2. This means that resources with priority 1 (less expensive) will be used first.
- You have control over the relative end times of principal and simultaneous resources. Principal and simultaneous resources can start and end at the same time. Or, principal and simultaneous resources can start and the same time and end at different times, which avoids over consumption of capacity and improves resource utilization.
- A simultaneous resource is available as soon as processing is complete. If the simultaneous resource finishes early, it can be reassigned to other activities.
- You can control the scheduling of simultaneous resources across breaks, which avoids cases where the principal resource completes before the simultaneous resource.
- You can improve scheduling accuracy and quality because you can model your requirements precisely, which minimizes manual intervention and reduces cycle times.

**To set up alternate resources**

1. From the Navigator, choose Bills of Materials > Routings > Routings.

   The Routings window appears.

2. From the menu bar, select View > Find.

   The Find Routings window appears.

3. Find your routing, by entering search criteria and selecting the Find button.

   The Routings window appears with your routing.

4. From the Main tab, select the operation sequence with which you want to set up and select the Operation Resources button.

   The Operation Resources window appears with the first resource already entered. This resource is considered as a primary resource.

5. Select the Scheduling tab.

6. Enter the Substitute Group Number.

   If you have a machine and a labor resource modeled as primary and simultaneous resources, enter the same substitute group number for both of them. This indicates that when replacing them with alternate resources, they are both replaces as a group.

   Select the Principal Flag for the resource or one of the resources if there are multiple present in the primary group.

7. Select the Alternate button.

   The Operation Alternate Resources window appears.

8. Enter alternate resources and choose Replacement Group.

   Replacement Group number establishes relative priority. Enter a value of 1 or higher. If you have multiple alternates, enter them as multiple rows with appropriate Replacement Group numbers to indicate priorities.

   You can specify multiple resource sequences with the same replacement group number. This indicates that a set of primary resources are replaced by a set of alternate resources with the resource sequence number, and schedule sequence number, within each replacement group, indicating the order or simultaneity of scheduling within that replacement group.

9. Check the Principal Flag for your alternate resource as appropriate.

#### To set up simultaneous resources

1. From the Navigator, choose Bill of Materials > Routings > Routings. The Routings window appears.
2. From the menu bar, select View > Find. The Find Routings window appears.
3. Find your routing by entering search criteria and selecting the Find button. the Routings window appears with your routing.
4. From the Main tab, select the operation sequence within which you want to set up and select the Operation Resources button. the Operation Resources window appears with the first resource already entered. This resource is considered a primary resource.
5. Select the Scheduling tab.
6. On the Operation Resources - Scheduling page, enter simultaneous resources in the rows below the initial resource.
7. In the Schedule Seq. (schedule sequence) field, enter the same number for both principal and simultaneous resources.

   This indicates to planning that the resources are simultaneous resources.
8. Select the Principal Flag check box to indicate that one of the resources is the principal resource.

## Multiresource Scheduling

For some types of manufacturing operations, the duration can be shortened by applying greater numbers of processing resources. For example, the duration of a visual inspection operation can be approximately halved by increasing the number of inspectors from one to two. For these types of divisible manufacturing operations, it is important to accurately plan for the shrinking of the operation duration as greater numbers of processing resources are deployed. It is also important to be able to designate certain operations as divisible and others as indivisible (one resource per operation). The multiresource scheduling feature of Oracle ASCP accomplishes these aims.

Unconstrained planning mode does not use resources for scheduling. It uses fixed and variable lead times to backward schedule

#### Using Multiresource Scheduling

Shown below are examples of how this feature can be used in various manufacturing scenarios.

**Note:** In the following scenarios, the notation Res 1, Res 2, etc., refers to multiple identical units of a single resource defined in Oracle Bills of Material, not to multiple distinct resources.

### Scenario 1

In this scenario, multiple resource units work together on an operation (divisible).

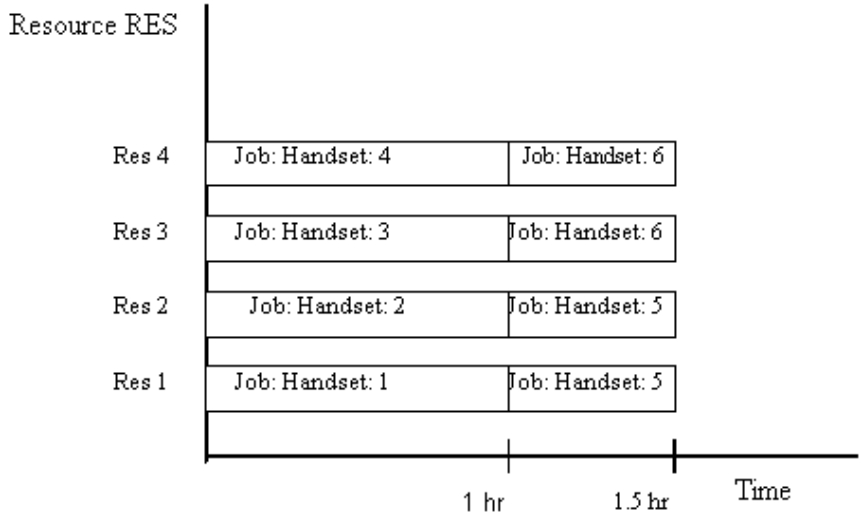
A manufacturing house is assembling telephone handsets. The handset assembly job consists of one assembly operation that takes one hour. The manufacturing house has one resource called RES. The resource RES has 4 resource units which are 4 assemblers (Res 1, Res 2, Res 3, Res 4). Please note that within ASCP, a resource can be either a single or a multiple resource unit of the same type.

The job parameters are:

- Job: Handset assembly
- Job Qty: 6
- Resource RES units: Res 1, Res 2, Res 3, Res 4
- Usage rate: 1 hour per operation

The following figure shows how the resource unit allocation should be done.

***Scenario 1***




Total processing time for the Job = 1.5 hours (when multiple resources can work together on a job)

**Scenario 2**

This scenario shows a single unit per operation (indivisible).

In printed circuit board assembly, one resource unit is required to finish the entire operation. This is because the item is so small, only one person can handle it. Sometimes even from the process perspective it is not possible to use two units on one job at one time. After soldering, cleaning is done by a machine in which the board goes inside the cleaning machine. In this case, two cleaners cannot work together on a single board.

The job parameters are:

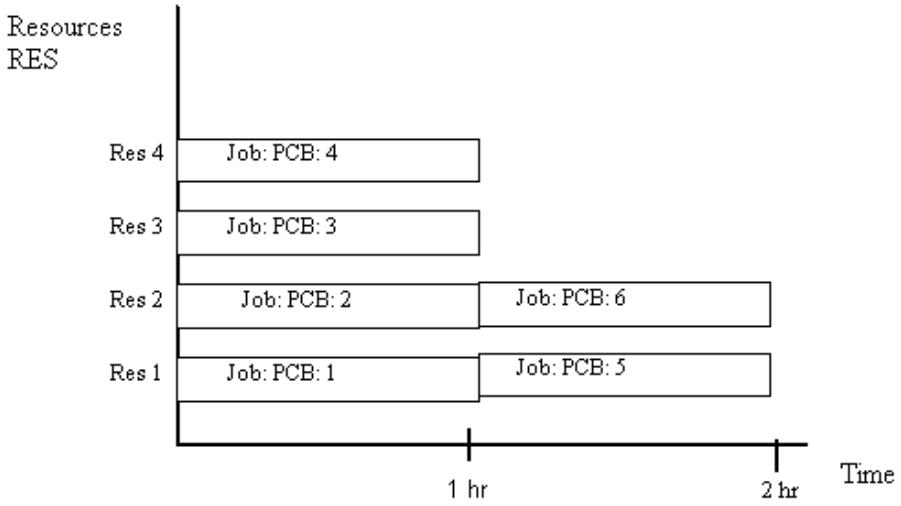
- Job: PCB assembly
- Job Qty: 6
- Resource RES units: Res 1, Res 2, Res 3, Res 4
- Usage rate: 1 hour per operation

The following figure shows how resource unit allocation should be performed in this situation.

> **Note:** In the following figure, Oracle ASCP assumes that during the second hour, Res 3 and Res 4 remain consumed for the purpose of

calculating resource utilization, and are not available for any other job. To overcome this approximation, you can define Res 1, Res 2, Res 3, and Res 4 as individual resources (instead of multiple units of the same resource).

***Scenario 2***




**To assign resource units on a one-to-one basis**

You select a rounding control attribute in the item master. When the Round Order Quantities flag is checked, it means only one resource unit can work on one assembly at a time.

1. From the Manufacturing and Distribution manager responsibility
2. Select Inventory > Items > Master Items.
3. Use the scroll arrow so that the MPS/MRP Planning tab appears.
4. Check or uncheck Round Order Quantities.

   Following are the few examples of behavior when rounding control attribute is checked.

**Example 1**

The job parameters are:

- Job quantity: 4
- Number of assigned resource units: 5

- Job duration: 1 hour

Here, four resource units are assigned 4 jobs and the fifth resource unit is idle. The job takes one hour to complete.

**Example 2**

The job parameters are:

- Job quantity: 4
- Number of assigned resource units: 3
- Job duration: 2 hours

Here, all 3 resource units are occupied for first two hours (job duration). For the next two hours, only one resource unit is occupied. The job takes four hours to complete.

**Example 3**

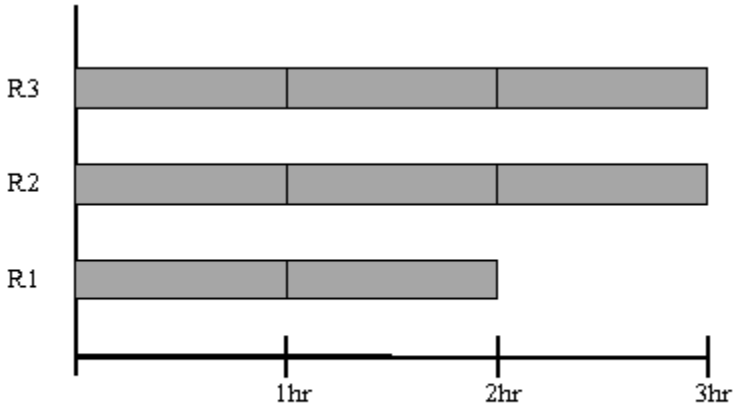
The job parameters are:

- Job quantity: 8
- Number of assigned resource units: 3
- Job duration: 1 hour

Here, all 3 resource units are occupied for first two hours. For the next hour, two resource units are occupied. The job takes 3 hours to complete.

The following table also explains Example 3.

***Example 3***




**Note:** In ASCP, the number of resource units per operation/activity is

controlled by the Assigned Units field in the Routing form.

**Example 4**

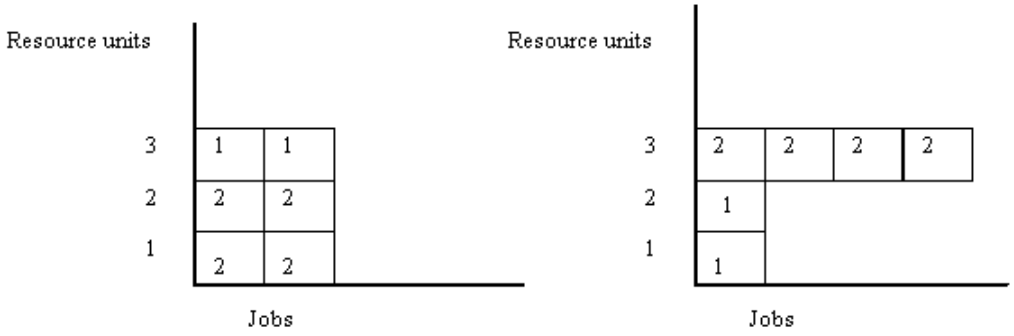
Since Oracle ASCP treats the capacity of multiple units of a single resource as a large bucket (instead of as independent buckets for each resource unit), certain detailed scheduling decisions will be approximate and may not be locally optimal. For example, in the situation below:

The job parameters are:

- Assigned units: 2
- Job 1 quantity: 2
- Job 2 quantity: 4
- Job duration: 1 hour
- Max/available resource units: 3

In the figure below, the table to the left shows what happens when Job 2 is scheduled first and the table to the right shows what happens when Job 1 is scheduled first. Both of the outcomes shown in the figure below are possible, depending on the order in which the jobs are assigned to the resource units.

***Example 4***




## Lead-time and the Planning Time Fence

Lead-times are portions of the span of time from recognizing the need for an order to receiving the goods to inventory.

The planning time fence defines a time period within which the planning engine may not create planned orders. Use planning time fence control for schedule stability during the initial periods of a plan.

The more realistic that your lead-times are, the more accurate the plan matches what

will actually occur during execution. Use planning time fence control for schedule stability during the initial periods of a plan.

## Lead-time

### Lead-time Introduction

Lead-times are portions of the span of time from recognizing the need for an order to receiving the goods to inventory.

This topic reviews the lead-times that the planing process uses to plan and schedule. It also explains concurrent processes, profile options, plan options, and planning parameters that affect lead-time calculations.

### Setting Lead-times

Set lead-time values for the planning process to use in the following source system forms:

- Source instance > Oracle Inventory > Organization items form > Item attributes > Lead-time tabbed region
- Source instance > Oracle Purchasing > Approved Supplier List form
- Destination instance > Item Attributes Mass Maintenance form

The planning process does not use subinventory lead-times from Oracle Inventory. These values are for the Oracle Inventory Min-Max planning process.

### Lead-time Item Attributes

This topic describes the lead-time item attributes. You define them:

- For each organization and not for the master organization
- In work days from the manufacturing calendar

For more information, see *Oracle Inventory User's Guide*.

### Lead-time Item Attributes Definition

You can enter the following lead-time item attributes:

- Preprocessing: The time required to place a purchase order or create a discrete job or schedule. This is also known as the paperwork or planning time.
- Fixed: The time required to complete the tasks to make an assembly that are independent of order quantity, for example, setup, fixed run time, or teardown times.
- Variable: The time required to complete the tasks to make an assembly that depend

on order quantity, for example, run time. Oracle Bills of Material concurrent processes calculate this time.

- Lead Time Lot Size: The typical quantity of the item that you buy, make or transfer. The default value is item attribute Standard Lot Size (set by Oracle Cost Management).

  Oracle Bills of Material concurrent process Calculate Manufacturing Lead Time uses this value to compute Processing.

- Processing: The time required for a supplier or your transfer from facility to deliver an item to your receiving dock or for you to manufacture an item. For make items, this is also known as manufacturing lead-time. For buy and transfer items, it includes in-transit time to your facility.

  For transfer items, the planning engine only takes this lead time into account if the item is not planned at your source organization, If the item is planned at the source organization, the planning engine uses the lead times from the source organization.

- Postprocessing: For buy and transfer items, the time to receive from the receiving dock to inventory or for a make item from production to inventory.

  For make items, the time to receive from production to inventory. It includes post-production activities that you don't model in the item routing, for example, quality control analysis and shipping preparation activities. The planning process adds this time to work orders that you have collected. Set it in the Item Attributes Mass Maintenance window, do not set it in the source using the Item Attributes window. By-products and coproducts cannot have Postprocessing lead time.

- Cumulative Manufacturing: For make items, the time required to make the item if you have all of the buy items in inventory and have to make all subassemblies and the item itself.

- Cumulative Total: For make items, the time required to make the item if you have to purchase all of the buy items, make all subassemblies, and make the item itself.

#### Lead-times and Order Dates

The lead-times define dates that are associated with planned orders and scheduled receipts for these items:

- Order date: The beginning of Preprocessing the date you should begin the processing to release the order.

- Start date: The end of Preprocessing and beginning of Processing; the date you, your supplier, or your ship from facility should begin work on the order.

- Dock date: The end of Processing and the beginning of Postprocessing. For buy and transfer orders, the date that the material should be on your receiving dock. For

make orders, the date that you should finish the operations. The supply of a by-product and a coproduct is ready for downstream consumption on the dock date.

- Due date: The end of Postprocessing and the date that the material should be in your inventory. For make orders, put the on-hand on hold to account for the post processing lead time.

#### Lead-time Item Attributes and Lead Time Calculation Concurrent Processes

If you run the following Oracle Bills of Material concurrent processes, they can update lead-time values that you may have manually set:

- Calculate Manufacturing Lead Time
- Calculate Cumulative Lead Time
- Rollup Cumulative Lead Time

These concurrent processes update the following lead-time item attribute fields:

- Fixed: Oracle Bills of Material concurrent process Calculate Manufacturing Lead Time calculates this time and update your manual entry for make items. It sums the values in field Usage for lot-based, scheduled resources.
- Variable: Oracle Bills of Material concurrent process Calculate Manufacturing Lead Times calculates this time and update your manual entry for make items. It sums the values in field Usage for item-based, scheduled resources.
- Processing: The Oracle Bills of Material lead-time concurrent process Calculate Manufacturing Lead Time calculates this time and replaces your manual entry for make items. It uses calculation Fixed + (Variable * Lead Time Lot Size); if Lead Time Lot Size does not have a value, it uses 1.
- Cumulative Manufacturing: The Oracle Bills of Material lead-time concurrent processes Calculate Cumulative Lead Time and Rollup Cumulative Lead Time calculates this time and replace your manual entry. For an assembly, they take each component's cumulative lead-time and subtract its operation lead-time offset in the assembly's routing. Then, they take the manufacturing lead-time of the assembly and add the largest adjusted cumulative manufacturing lead-time of its components.
- Cumulative Total: The Oracle Bills of Material lead-time concurrent processes Calculate Cumulative Lead Time and Rollup Cumulative Lead Time calculate this time and replace your manual entry. For an assembly, they take each component's cumulative lead-time and subtract its operation lead-time offset in the assembly's routing. Then, they take the manufacturing lead-time of the assembly, add the largest adjusted cumulative manufacturing lead-time of its components, and add the longest buy part lead-time of its components.

Decimal lead-time quantities denote times less then one day and are the result of the lead-time divided by 24 hours.

For more information, see *Oracle Bills of Material User's Guide*.

### Safety Lead Time

Safety lead-time is a lead-time that you add to the normal lead-time of make and buy items. You use it to instruct the planning process to schedule supplies in advance of the demand due dates that peg to them for the purposes of:

- Having an inventory buffer to protecting against fluctuations in lead-time, demand (for example, forecast error), and supply (for example, variable supplier lead times and irregular operation yields)
- Providing a time buffer to recover from fluctuations by taking longer to manufacture the original units or by manufacturing more units either to handle increased demand or to replace unsuitable parts from the original supply run

Safety lead-time is sometimes referred to as protection time or safety time

You can also complete supplies earlier than the demands that peg to them using transient safety stock levels. See the section *Safety Stock* in the *Oracle Advanced Supply Chaining Planning Implementation and User's Guide*. Use safety stock lead-time instead of transient safety stock if you want to have:

- Lower average inventory level: Safety lead-time creates less excess supply because it creates safety stock from supplies pegged to actual demands rather than to additional safety stock level demands
- Less late-satisfied demands: There are no supplies pegged to additional safety stock level demands that compete against actual demands for manufacturing and supplier capacity

Safety stock lead-time is:

- Used in constraint-based planning and is not available for unconstrained planning
- A soft constraint. If hard constraints prevent moving the supply due date to honor the safety lead-time, the planning process will not honor the safety lead-time

To set safety lead time:

- Set profile option MSO: Use Safety Lead Time to Yes
- For each item-organization, set item attribute Safety Stock Method to MRP Planned % then, in item attribute Safety Stock Percent, enter safety lead-time in days.

When the planning engine schedules a supply subject to safety lead-time, it:

- Creates planned orders based on demands

- Pegs demands to these supplies and uses them to cover transient safety stock requirements
- Ignores safety lead-time in forward scheduling so as to meet demand due date
- Inflates the lead-time by the safety lead-time in backward scheduling to plan for receipt to stock.

This example shows how to analyze plan information for items subject to safety lead-time:

- In the diagram, SS means safety stock and PAB means projected available balance.
- Profile option MSO: Use Safety Lead Time = Yes
- Item attribute Safety Stock Method = MRP Planned %
- Item attribute Safety Stock Bucket Days = 5
- Item attribute Safety Stock Percent = 200% = 2 days
- The planning engine ignored transient safety stock, pegged supplies to actual demands, and scheduled supplies two days earlier than the demand due dates of the demands that peg to them.
- Planned orders on day 4 are for quantities 400, 400, and 200.
- The first planned order of quantity 400 on day 4 is against the transient safety stock of quantity 400 on day 1.
- The second planned order of quantity 400 is against the increase in the transient safety stock to quantity 800 on day 3.
- A third planned order of quantity 400 is against the increase in the transient safety stock to quantity 1200 on day 5. The planning engine splits the planned order of quantity 400 into two planned orders of quantity 200 (according to profile option MSO: Demand Size Tolerance Before Splitting Planned Orders). The demand on day 6 pegs to one planned order of quantity 200; the demand on day 8 pegs to the other planned order of quantity 200.

| Entity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Demand | | | | | | 1000 | | 1000 | | 1000 |
| Transient SS | 400 | 400 | 800 | 800 | 1200 | 800 | 800 | 400 | 400 | |
| Non-transient SS | | | | | | | | | | |
| SS level | 400 | 400 | 800 | 800 | 1200 | 800 | 800 | 400 | 400 | |
| Supply | | | | 400<br>400<br>200 | | 200<br>600<br>200 | | 400<br>600 | | |
| PAB | | | | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | |

This example shows the plan information for the same demand position but using non-transient/transient safety stock planning. In the diagram, SS means safety stock and PAB means projected available balance.

| Entity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Demand | | | | | [400] | 1000 [600] | [800] | 1000 [200] | [400] | 1000 [600] |
| Transient SS | | | | 400 | 400 | 800 | 400 | 400 | | |
| Non-transient SS | | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| SS level | | 400 | 400 | 800 | 800 | 1200 | 800 | 800 | 400 | 400 |
| Supply | | 400 [400] | | 400 [0] | | 1400 [0] | | 600 [0] | | 600 |
| PAB | | 400 | 400 | 800 | 800 | 1200 | 1200 | 800 | 800 | 400 |

If you use safety lead-time:

- You might accumulate too much material too early. However, resource constraints reduce the possibility. By using safety lead-time planning, the risk of accumulation should be lower than by using non-transient/transient safety stock planning.

- The planning process might suggest that you delay lower priority demands in order to meet safety lead-time

### Lead-time Item Attribute Notes

You can also view Preprocessing, Processing, Postprocessing, Fixed, and Variable among the items information.

The planning engine does not use Cumulative Manufacturing and Cumulative Total values. You may see them in lists of values when you are entering lead-times, for example, item attribute Planning Time Fence.

Total lead-time is not an item attribute. The planning process calculates it in unconstrained plans to determine an order's Order Date. It:

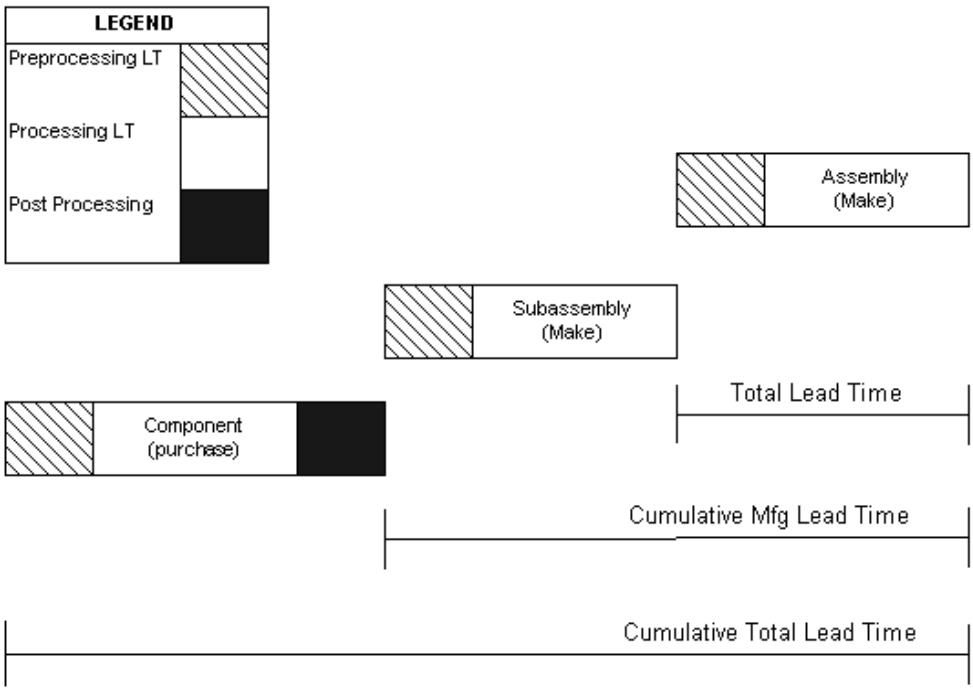
- Begins with the order's Due Date

- Calculates total lead-time for the order as item Fixed + (Variable * Order quantity)
- Adds Preprocessing to calculate the order's Order Date

The Calculate Manufacturing Lead-time concurrent process uses the same general calculation for Processing as the planning process uses for Total Lead-time. The Calculate Manufacturing Lead-time concurrent process uses item attribute Lead-time Lot Size to calculate item attribute Processing. The planning process uses actual order quantity to calculate the processing time for a specific planned order or scheduled receipt.

This diagram shows the relative use of Total Lead-time, Cumulative Manufacturing, and Cumulative Total.

***Calculations of Cumulative Lead-time Attributes***




### Calculated Supply Dates

For all plan types, the planning process schedules planned orders and scheduled receipts based on Demand Due Date of the demand that the supply is pegged to. It calculates these dates:

- Need By Date: The earliest demand due date of all demands pegged to a supply. This does not apply to purchase orders, as the need by date for purchase orders is the collected date from purchasing.

- Suggested Due Date: The date by which the supply is available for use by its demand. In an Unconstrained or Constrained - Enforce demand due dates plan this is the same as Need By Date. In a Constrained - Enforce capacity constraints plan this is the scheduled availability date of the supply.
- Suggested Dock Date: For buy or transfer orders, the date the order arrives on your receiving dock.
- Suggested Ship Date: For transfer orders, the date of departure from the source organization of the last transport used for the transfer.
- Suggested Start Date: The date that you, your supplier, or your ship from facility should begin work on the order
- Suggested Order Date: The date by which you need to place the order. For a scheduled receipt, this field displays the date the date that it was created.

Old Due Date, Old Dock Date, and Original Need By Date are the original dates from the source system for scheduled receipts.

You can view these dates among the supply and demand information.

#### Calculating Planned Order Demand Due Date

The planning process takes into account the actual requirement date and the lead-times for calculating the planned order demand due dates. This provides more accurate lead-time offsets in aggregate planning time buckets.

It allows you to plan at aggregate time bucket levels like periods and weeks. It provides you easy identification of aggregate supply/demand mismatches and helps you make strategic decisions related to equipment and labor acquisition, sourcing etc. without generating needless details.

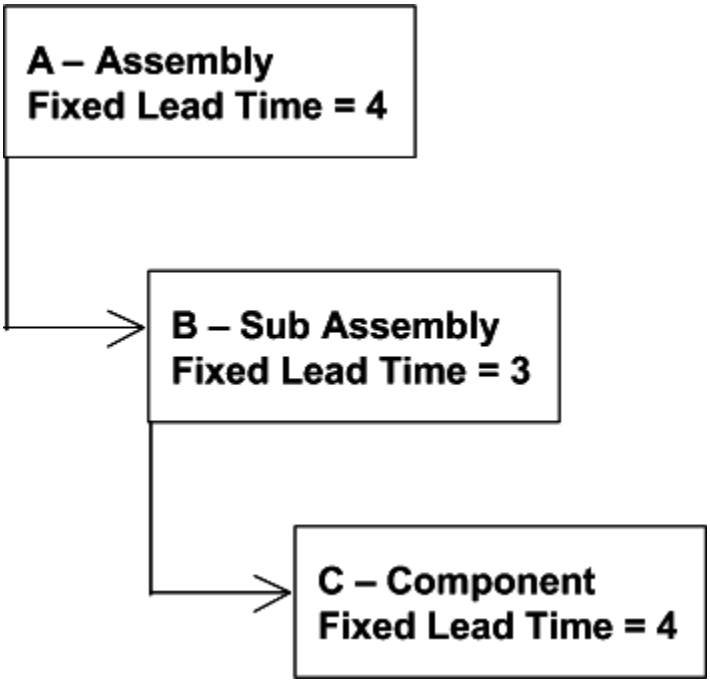
The planning process calculates the planned order demand due dates for dependent demands based on the actual requirement date with respect to lead-time. It saves the calculated requirement date based on the lead-time value for subsequent calculation.

Then, it aligns all dates to the ends of time buckets. You can get more accurate dates by first performing dependent demand explosion followed by alignment.

**Example**

Consider an organization with an assembly A, which has components B and C.

*Assembly*




The quantity per assembly for components B and C is 1.

The lead-time for assembly A = 4

The lead-time for sub-assembly B = 3

The lead-time for component C = 4

The organization follows a weekly planning bucket and working days are Monday through Friday.

An order quantity of 1 is placed for item A on Friday February 28.

The planning process generates the following planned order demands:

*Planned Order Demand Due Date Calculation*

| Item | Requirement Date | Demand Due Date (bucketed) | Quantity |
|---|---|---|---|
| A | | February 28 | 1 |
| B | February 24 | February 28 | 1 |
| C | February 18 | February 21 | 1 |

Explanation:

- Calculated requirement date for B

  = Demand Due Date for A - LT

  = February 28 - 4 days

  = February 24 (Monday)

- Demand Due Date for B

  = Calculated requirement date for B after bucketing into planning bucket

  = February 28 (weekly demands are bucketed into Friday)

- Calculated requirement date for C

  = Calculated requirement for B - LT

  = February 24 - 4 days

  = February 18 (Monday)

- Demand Due Date for C

  = Calculated requirement date for C after bucketing into planning bucket

  = February 21 (weekly demands are bucketed into Friday)

### Date Calculations for Manufactured Supplies

The planning process uses work days from the manufacturing calendar to calculate dates for manufactured supplies, unless otherwise indicated.

Need By Date: The date that the material should ship or be in inventory for a next-higher level assembly. The earliest demand due date that the supply is pegged to.

Suggested Due Date: In an Unconstrained or Constrained - Enforce demand due dates plan this is the same as Need By Date. In a Constrained - Enforce capacity constraints

plan this is the scheduled availability date of the supply. If the supply is constrained, the planning process forward schedules from the constraint.

Suggested Dock Date: Demand Due Date. Dock Date is the day by which all shop floor operations are complete.

Suggested Ship Date: Blank

Suggested Start Date: Suggested Due Date - Production duration. The day that you should begin shop floor operations.

Lead-time offsetting begins only on a workday of the workday calendar. For example:

- The workday calendar shows the week of 15 January as 5 workdays (Monday 15 January to Friday 19 January) followed by 2 non-workdays (Saturday 20 January to Sunday 21 January).
- The planning process creates a planned order against item A for quantity 45 with suggested ship date 20 January. Processing lead-time for item A is 5 days.
- Since 20 January is a non-workday, the planning process moves to 19 January to begin lead-time offsetting and calculates Suggested Start Date 12 January.

  Sunday 21 January (non-workday)

  Monday 20 January (non-workday) > Suggested Ship Date

  Friday 19 January > Beginning of lead-time offsetting

  Thursday 18 January > -1

  Wednesday 17 January > -2

  Tuesday 16 January > -3

  Monday 15-January > -4

  Sunday 14 January (non-workday)

  Saturday 13 January (non-workday)

  Friday 12 January > -5 and Suggested Start Date

  Thursday 11 January

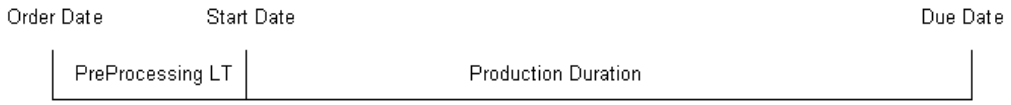
Production Duration:

- Unconstrained plans: Fixed + (Variable * Order quantity)
- Constrained plans: Calculated resource and material duration. If the item does not have a routing, the planning process uses the unconstrained calculation.

Suggested Order Date: Planned order Start Date - Preprocessing. The date on which you should place the order. For a scheduled receipt, this field displays the date the date that it was created.

This diagram shows dates calculated for manufacturing supplies.

***Dates Calculated for Manufacturing Supplies***




### Date Calculations for Manufactured Supply Components

The planning process calculates the component due dates of a manufacturing supply order according to your setting of the plan option Material Scheduling Method.

For value Order Start Date, the component due date is the supply Start Date.

For value Operation Start Date:

- Unconstrained plans: The planning process determines the operation that uses the component. It begins with the supply Start Date and increases it by lead-time % of that operation.
- Constrained plans: Operation Start Date for the operation which uses it

### Purchased Supply Lead-times and Approved Supplier Lists

If the item of the purchased supply has an Approved Supplier List, the planning process uses:

- Uses its Processing Lead-time value instead of the item attribute Processing lead-time
- Adjusts Dock Date to conform to its Delivery Calendar value

You can view Approved Supplier List planning attributes among the items information.

### Date Calculations for Purchased Supplies

The planning process uses work days from the receiving organization calendar to calculate dates for purchased supplies, unless otherwise indicated.

Need by Date: Date that the material is required to satisfy demand.

Suggested Due Date:

- Unconstrained plans: Need by Date
- Constrained plans: The available date of the supply by forward scheduling

Suggested Dock Date:

- Unconstrained plans: Due Date - Postprocessing

- Constrained plans: The latest delivery day for which the capacity is available and the material is needed

- If the purchased supply item has an Approved Supplier List delivery calendar: The planning process verifies that the Suggested Dock Date is a work day on the delivery calendar. If it is not, the planning solver changes Suggested Due Date to the next earliest working day of the delivery calendar.

Suggested Ship Date: Suggested Dock Date, unless you offset the Suggested Dock Date using the Carrier Transit Calendar, the Supplier Shipping Calendar or both of these calendars, as described in My Oracle Support, Doc ID 730061.1 [https://support.oracle.com/epmos/faces/DocumentDisplay?id=730061.1].

> **Note:** The Suggested Ship Date is not relevant to planning and does not influence Start or Order Date calculations.

Suggested Start Date: Dock Date - Production Duration

Production Duration:

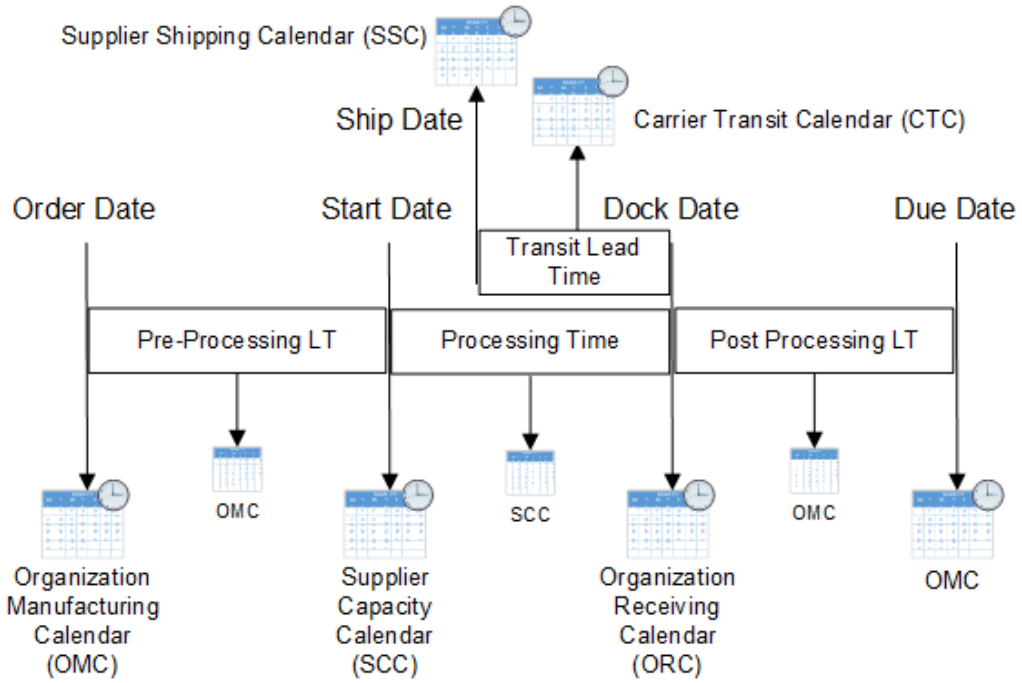
- If the purchased supply item has an Approved Supplier List Supplier Processing lead-time: Approved Supplier List Supplier Processing lead-time

- If the purchased supply item does not have an Approved Supplier List Supplier Processing lead-time: Item attribute Processing

Suggested Order Date: Start Date - Preprocessing. For a scheduled receipt, this field displays the date the date that it was created. For collected information, purchase order create date. The planning process calculates this date using the organization manufacturing calendar.

This diagram shows the calculations for purchased supplies.

***Calculated Dates for Purchased Supplies***




### Date Calculations for Transfer Supplies

The planning process uses work days from the receiving organization calendar and shipping organization calendar to calculate dates for transfer supplies.

Need By Date (receiving organization calendar): Date material is required to satisfy demand.

Demand Due Date (receiving organization calendar):

- Unconstrained plans: Need By Date
- Constrained plans: Forward scheduling from the constraint.

Suggested Dock Date (receiving organization calendar): Due Date - Postprocessing

Suggested Ship Date (shipping organization calendar):

- Unconstrained plans: Dock Date - Intransit Time
- Constrained plans: Dock Date - Intransit Time, considering constrained transportation duration. The planning process considers transportation constraint maximum transfer quantity per day

  Intransit Time is calendar days.

Suggested Start Date (shipping organization calendar):

- Unconstrained plans: Ship Date - Processing
- Constrained plans: Ship Date. The planning process does not consider a build time because the supply may be on-hand.

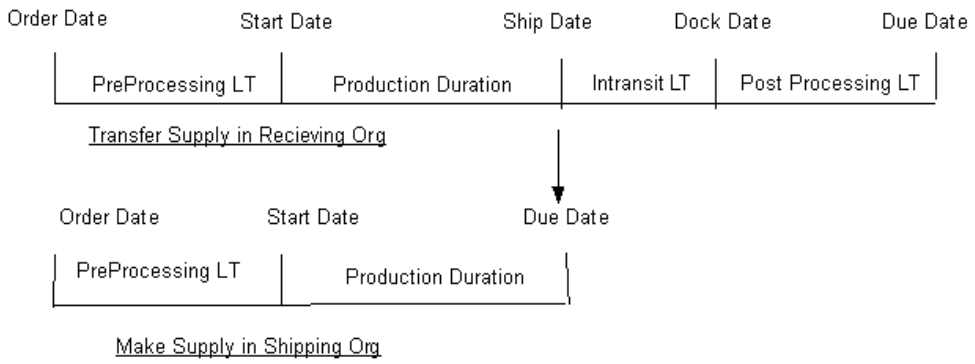
Suggested Order Date (receiving organization calendar):

- Unconstrained plans: Planned order Start Date - Preprocessing
- Constrained plans: Ship date in the receiving organization, if the shipping organization is a planned organization. The constrained plan uses material and resource constraints in the shipping organization.

For a scheduled receipt, this field displays the date the date that it was created.

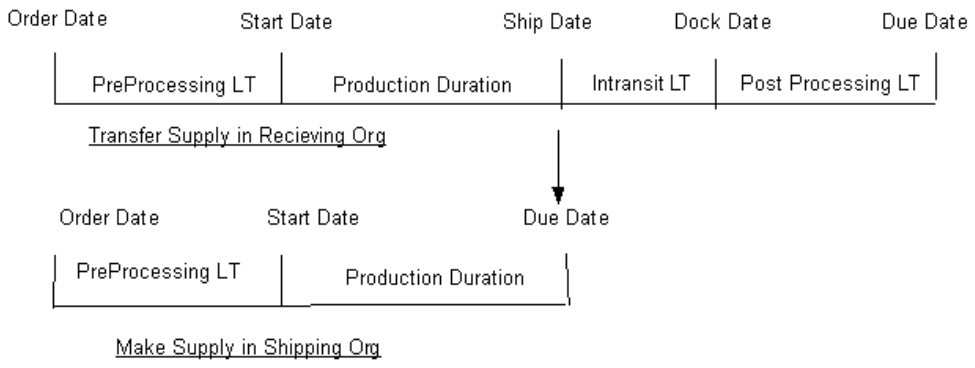
This diagram shows calculated dates for transfer supplies in an unconstrained plan. The planning process calculates production duration differently for the source organization and the destination organizations; therefore, the dates in your plan may not line up as accurately as they appear in this diagram. If material is scheduled inside of these lead-times, planners can determine what action to take on the compression messages.

***Calculated Dates for Transfer Supplies, Unconstrained Plan***




This diagram shows that, in constrained plans, Need By Date and Demand Due Date in the shipping organization should be the same as planned order Ship Date in the shipping organization.

***Calculated Dates for Transfer Supplies, Constrained Plan***




## Planning Time Fence Control

### Planning Time Fence Control Introduction

The planning time fence defines a time period within which the planning engine may not create planned orders. Use planning time fence control for schedule stability during the initial periods of a plan

### Setting Planning Time Fence

Specify a planning time fence time for an item in an organization using the item attributes Planning Time Fence and Planning Time Fence Days.

To enable planning time fence control in a plan, select plan option Planning Time Fence Control.

The planning engine calculates Planning Time Fence Date for each item in each organization as Plan Run Date + item attributes Planning Time Fence and Planning Time Fence Days, considering working days in the organization manufacturing calendar.

You can also instruct the planning engine to create a natural time fence when it first finds a firm scheduled receipt for an item. See Related Profile Options in this topic. If the natural time fence is later than Planning Time Fence Date, the planning engine changes Planning Time Fence Date to the date of the natural time fence.

You can view item attribute Planning Time Fence Days and Planning Time Fence Date on the Planner Workbench Items window. They may be hidden fields.

You can instruct the planning engine whether to remove firm planned orders from the last plan run. Use plan option Overwrite and select one of the values:

- None: Do not remove any firm planned orders
- All: Remove all firm planned orders

- Outside Planning Time Fence: Do not remove firm planned orders due earlier than Planning Time Fence Date and remove firm planned orders due later then Planning Time Fence Date

#### Planning Time Fence Date and Plan Type

The planning engine uses Planning Time Fence Date as follows:

- In unconstrained plans, it does not set any planned order due dates earlier than Planning Time Fence Date
- In constrained plans, it does not set any planned order due dates earlier then Planning Time Fence Date if, for
  - A make order, the start date of the first resource sequence within the first operation is earlier than or on Planning Time Fence Date
  - A buy order, purchase requisition, and purchase order, Dock Date is earlier than or on Planning Time Fence Date
  - A transfer order, internal requisition and flow schedule, Start Date is earlier than or on Planning Time Fence Date

#### Related Profile Options

For more information on profile options, see Profile Options Introduction, page A-1.

These following profile options relate to planning time fence control and firming of supplies:

- MRP: Create Time Fence
- MRP: Firm Internal Req Transferred to OE
- MRP: Firm Planned Order Time Fence
- MRP: Recommend Action within PTF
- MSC: Firm Internal Requisition Time Fence
- MSC: Firm In-transit and PO in Receiving Supplies
- MSC: MPS Auto-Firm All Planned Orders
- MSO: Delay Fulfillment of Small Demands
- 
- MSO: Firm Operations/Orders Within Time Fence

- MSO: Firm Purchase Orders Within Time Fence
- MSO: Firm Requisitions Within Time Fence
- MSO: Maximum Inventory Level % of Safety Stock
- MSO: Net All Firm Supplies Before Creating Planned Orders
- MSO: Target Inventory Level % of Safety Stock

The planning engine decides whether to calculate Planning Time Fence Date based on plan option Planning Time Fence Control. These profile options instruct the planning engine to create natural time fences and to change Planning Time Fence Date to the natural time fence date if the natural time fence date is later than the calculated Planning Time Fence Date:

- MRP: Create Time Fence: Instructs the planning engine to create a natural time fence for an item at the completion date of the latest firm discrete job, purchase order, flow schedule, or shipment.
- MRP: Firm Planned Order Time Fence: Instructs the planning engine to create a natural time fence for an item at the completion date of the latest firm planned order.
- MSC: Firm Internal Requisition Time Fence: Instructs the planning engine to create a natural time fence for an item at the completion date of the latest firm internal requisition.

These profile options affect the firming of specific supply types:

- MRP: Firm Internal Req Transferred to OE: Instructs the planning engine to consider internal requisitions that have transferred to Oracle Order Management as firm.

  You cannot reschedule transferred internal requisitions from Oracle Advanced Supply Chain Planning. To reschedule it, cancel the internal requisition and the internal sales order line in the source instance and create them again.

  Since the planning engine coordinates the dates between internal requisitions and their internal sales orders, it never reschedules the internal sales order of a firm internal requisition.
- MSC: Firm Intransit and PO in Receiving Supplies: Instructs the planning engine, in unconstrained plans, to consider intransit purchase orders and purchase orders in receiving as firm. It issues reschedule recommendations but you cannot release them from Planner Workbench.
- MSC: MPS Auto-Firm All Planned Orders: Instructs the planning engine, for master production schedule plans, to firm all planned orders.

When a master production schedule is a demand schedule for another plan, the planning engine considers all master production schedule planned orders as firm, regardless of this profile option.

- MSO: Firm Orders/Operations within Time Fence: Instructs the planning engine how to use planning time fence control on purchase orders, purchase requisitions, internal requisitions, discrete jobs, and flow schedules. The effect depends on order type; see Planning Time Fence Logic for Supply Types in this topic.

- MSO: Net All Firm Supplies Before Creating Planned Orders: Instructs the planning engine to net firmed supplies available in any future period before creating new planned orders.

Profile option MRP: Recommend action within Planning Time Fence affects exceptions and recommendations. It instructs the planning engine, in unconstrained plans, to generate recommendations for scheduled receipts earlier than Planning Time Fence Date.

**Hard Comstraint**

Profile option MSO: Enforce Planning Time Fence in Day Level Planning makes the planning time fence a hard constraint for Constrained without detailed scheduling plans. It applies to:

- Constrained - enforce capacity constraints

- Comstrained - Enforce demand due dates

This table shows how it works.

| Plan particulars | Profile Option = No | Profile Option = Yes |
|---|---|---|
| Constrained - enforce capacity constraints and Constrained - enforce demand due dates plans with firm supplies | The orders upstream of the firm supplies may violate planning time fence if there not sufficient lead time between the planning time fence date and the start date of the downstream firm orde. | The orders upstream of the firm orders respect the planning time fence. |
| Constrained - enforce demand due dates plans with profile option MSO: Lead time control set to Violate Minimum Processing time to meet demand due date. | Violate planning time fence to meet end demand due dates. | Planning time fence is a hard constraint. |

| Plan particulars | Profile Option = No | Profile Option = Yes |
|---|---|---|
| - Constrained - enforce capacity constraints plans without firm supplies | Planning time fence is a hard constraint. | Planning time fence is a hard constraint. |
| - Constrained - enforce demand due dates plans with firm supplies and profile option MSO: Lead time control set to Do not violate minimum processing time. | | |

#### Planning Time Fence Logic for Order Types and Supply Types

In unconstrained plans, the planning engine uses Due Date to determine if the supply is earlier than, later than, or on Planning Time Fence Date. In constrained plans, the planning engine uses different methods depending on order type and supply type.

#### Planned Orders

Firm planned orders: The planning engine does not reschedule the completion date of a firm planned order but may reschedule its manufacturing resources. If profile option MRP: Firm Planned Order Time Fence is Yes, the planning engine creates a natural time fence.

Planned Orders: The planning engine does not create planned orders earlier than Planning Time Fence date. It schedules planned orders as follows depending on supply type:

- Make supplies: Start Date of the first operation's first resource on or after Planning Time Fence Date.
- Purchased supplies: Dock Date on or after Planning Time Fence Date
- Transfer supplies: Start Date at the receiving organization on or after Planning Time Fence Date.

#### Purchase Orders and Requisitions

Firm purchase orders: Generally, the planning engine does not recommend reschedule or cancel.

Non-firm purchase orders, purchase requisitions, and internal requisitions: Generally, the planning engine recommends reschedule or cancel. However, it does not recommend reschedule in for jobs and schedules in the following circumstances in Unconstrained plans and Constrained - Enforce Capacity Constraints plans:

- The due date is earlier or on the Planning Time Fence Date
- It wants to reschedule the due date from later than Planning Time Fence Date to earlier or on Planning Time Fence Date.

If the profile options MSO: Firm Purchase Orders Within Time Fence, and MSO: Firm Requisitions Within Time Fence are Yes, then the planning engine:

- Considers non-firm purchase orders and purchase requisitions with Dock Date earlier than or on Planning Time Fence Date as firm and does not issue reschedule recommendations.
- Considers internal requisitions with Start Date earlier than or on Planning Time Fence Date in the receiving organization as firm and does not issue reschedule recommendations.

If the profile options MSO: Firm Operations/Orders Within Time Fence, and MSO: Firm Requisitions Within Time Fence is No, then the planning engine:

- For non-firm purchase orders, purchase requisitions and internal requisitions, recommends reschedule out as needed, limited by the demand dates. It can recommend a reschedule out date that is earlier or on Planning Time Fence Date.
- For purchase requisitions and internal requisitions, recommends cancel as needed.

#### Standard Discrete Jobs and Repetitive Schedules

Firm standard discrete jobs and firm repetitive schedules: Generally, the planning engine does not recommend reschedule or cancel.

Non-firm standard discrete jobs and non-firm repetitive schedules: Generally, the planning engine recommends reschedule or cancel. However, it does not recommend reschedule in for jobs and schedules in the following circumstances in Unconstrained plans and Constrained - Enforce Capacity Constraints plans:

- The due date is earlier or on the Planning Time Fence Date
- It wants to reschedule the due date from later than Planning Time Fence Date to earlier or on Planning Time Fence Date.

If profile option MSO: Firm Operations/Orders Within Time Fence is Yes, the planning engine:

- Considers operations with start dates earlier or on Planning Time Fence Date as firm
- Considers operations with start dates later than Planning Time Fence Date as non-firm and subject to reschedule recommendations
- Does not recommend reschedule against orders and schedules entirely earlier than

or on Planning Time Fence Date

If profile option MSO: Firm Operations/Orders Within Time Fence is No, the planning engine, for non-firm orders:

- Recommends reschedule out as needed, limited by the demand dates. It can recommend a reschedule out date that is earlier or on Planning Time Fence Date.
- Does not cancel orders no longer pegged to a demand but issues excess exception messages

#### Non-standard Discrete Jobs and Flow Schedules

The planning engine considers non-standard discrete jobs and flow schedules as firm and not subject to reschedule recommendations. It does not recommend cancel for non-standard discrete jobs.

## Planner Workbench Supply and Demand Dates

The planning engine's calculation of dates that you see in Planner Workbench can differ for:

- Demand dates, depending on whether the demand is independent or dependent
- Supply dates, depending on whether the supply is pegged to an independent or dependent demand

#### Planner Workbench Demand Dates

This table shows Planner Workbench demand dates.

Set the profile option MSC: Use Shipping Receiving Calendar at the site level. Do not set it at the user level or set in the same as at the site level. For example:

- The site level value is Yes. The collection process collects the calendars and the planning engine uses them.
- The user level value is No. Planner Workbench for that user does not display the collected calendars but displays all calendars as 24x7.

  It appears to this user that the planning engine does not follow the calendars.

Demand Satisfied Date is the latest due date of the supplies pegged directly to an end demand. In unconstrained plans, it is the same as Demand Date. All supplies pegged to a end demand that have an end date on or before the suggested due date are included in the Demand Satisfied Date, even if that demand is late by a few hours.

| Demand Date | Independent Demand Meaning | Dependent Demand Meaning |
|---|---|---|
| Requested Ship Date | For sales order demand, see note after the table. For other demand, blank. | Blank |
| Requested Arrival Date | For sales order demand, see note after table. For other demand, blank. | Blank |
| Scheduled Ship Date | For sales order demand, see note after table. For other demand, blank. | Blank |
| Scheduled Arrival Date | For sales order demand, see note after table. For other demand, blank. | Blank |
| Promised Ship Date | For sales order demand, see note after table. For other demand, blank. | Blank |
| Promised Arrival Date | For sales order demand, see note after table. For other demand, blank. | Blank |
| Suggested Due Date | The date by which you need to ship with the planning engine considering alternate ship methods, for example, arrival date of and duration for a new ship method.<br><br>Suggested due date may be for one of the following based on the Schedule By plan option:<br><br>- Requested Ship Date<br><br>- Scheduled Ship Date<br><br>- Promise Ship Date<br><br>The planning engine does not change the suggested due date. | The due date of the dependent demand.<br><br>Determined by the final scheduling phase of the planning engine. |

| Demand Date | Independent Demand Meaning | Dependent Demand Meaning |
|---|---|---|
| Material Available Date | Date when the total demanded quantity is available. If there are multiple supplies pegging to the demand, it is the due date of the latest supply pegging to the demand.<br><br>This date may be different from the date that the material will ship. For example, a customer wants an item on Thursday. Due to shop floor constraints, the material cannot be ready until Saturday. Since the shipping dock does not work on weekends, the material cannot ship until Monday. The dates are:<br><br>• Suggested Due Date of Demand = Day 1 15:00 (Thursday)<br><br>• Material Available Date for Demand = Day 3 12:00 (Saturday)<br><br>• Suggested Ship Date of Demand = Day 5 8:00 (Monday)<br><br>The planning engine issues exception messages Late Replenishment for Forecast or Sales Order based on the difference between Suggested Ship Date and Suggested Due Date. | Blank |

| Demand Date | Independent Demand Meaning | Dependent Demand Meaning |
|---|---|---|
| Suggested Ship Date | The date by which you can ship, with reference to the shipping calendar. For demands, suggested ship date is used only for external and internal sales orders. | Blank |
| Planned Arrival Date | For sales order demand, the calculated arrival date considering the suggested ship date, carrier calendar, intransit lead-time, and the receiving calendar. | Blank |
| Order Date Type | For sales orders only, the customer order date type from the customer or the customer site definition. Valid values are:<br>- Ship Date<br>- Arrival Date | Blank |
| Days Late | For an end demand, the planning engine calculates the days late based on the difference between suggested sue date and the demand satisfied date.<br>If positive, the demand is satisfied late; if negative, the demand is satisfied early | Blank |
| Old Due Date | Suggested demand due date. | For a dependent demand that is pegged to a rescheduled supply, need by date of the dependent demand before the reschedule. |

**Note:** Customer date type is defined as the order date type (ship date or arrival date). When you specify a date in the sales order line in the request date column, the planning engine interprets the date as either a

ship date or an arrival date depending on the customer's order date type. During the ATP calculation process, the planning engine calculates the schedule ship date and schedule arrival date based on the request date, the customer date type, and the transit lead-time from the shipping organization to the customer site using the selected ship method on the sales order.

**Note:** In the Supply Demand window, if the customer date type is ship date, the requested ship date is from the sales order line field Request Date. If the customer date type is arrival date, the requested arrival date is from the sales order line field Request Date. In both cases, the planning engine calculates the other field using the transit lead-time from the shipping organization to the customer site using the selected ship method on the sales order.

**Note:** The scheduled ship date and the scheduled arrival date are from the sales order fields with the same name.

**Note:** The promised arrival date and the promised ship date are from the sales order field promise date, with one of the two calculated using the order date type and the transit lead-time from the sales order. The calculation is the same as the requested arrival date or the requested ship date based on the order date type.

#### Planner Workbench Supply Dates

This table shows Planner Workbench supply dates:

- Need by Date represents the Suggested Due Date of a supply as calculated by an unconstrained plan. For constrained but not optimized plans, Need By Date is the date that the planning engine uses to determine the effectivity date for the bill of material explosion.

- Updated Need by Date represents the Suggested Due Date of a supply as calculated by the optimization planning phase for both cost-based or rule-based optimization. This approximation may not match the results of the detailed scheduling phase. If Updated Need By Date has an entry, the planning engine uses it, instead of Need by Date, to determine the effectivity date for the bill of material explosion.

| Supply Date | Pegged to Independent Demand Meaning | Pegged to Dependent Demand Meaning |
|---|---|---|
| Need By Date | For planned orders and open make orders, the date the supply is due, the Sugg Due Date of end item demand.<br><br>For purchase orders, the need by date from the purchase order line. | For planned orders and open make orders, calculated using unconstrained planning lead-time formulas and considering the plan material scheduling method option (order start date or operation start date).<br><br>If the component is due at the beginning of the first operation of a discrete job, Due Date - [Fixed + (Variable * Quantity)]. If the supply is due at the beginning of another operation of a discrete job, Due Date - [Fixed + (Variable * Quantity)] + Lead-time % from assembly's routing.<br><br>For purchase orders, same as the pegged to independent demand meaning. |
| Updated Need by Date | The supply due date calculated and used by the optimization engine with material scheduling method order start date. This applies only to planned orders.<br><br>The optimization process may schedule the supply either early or late. | Same as the pegged to independent demand meaning. |
| Suggested Order Date | Order Date for the supply. If different from the start date, the difference is Preprocessing lead-time. | Same as the pegged to independent demand meaning. |

| Supply Date | Pegged to Independent Demand Meaning | Pegged to Dependent Demand Meaning |
|---|---|---|
| Suggested Start Date | For make supplies, the job start date.<br><br>For buy supplies, the date the vendor receives the order.<br><br>Determined by the final scheduling phase of the planning engine. | Same as the pegged to independent demand meaning. |
| Suggested Dock Date | The arrival date on the receiving dock, offset from Sugg Due Date by the post processing lead-time.<br><br>Determined by the final scheduling phase of the planning engine. | Same as the pegged to independent demand meaning. |
| Suggested Due Date | The date the supply is in stock and available.<br><br>Determined by the final scheduling phase of the planning engine. | Same as the pegged to independent demand meaning. |
| Old Due Date | Only applies to rescheduled supplies.<br><br>Sugg Due Date of the supply before the reschedule. | Only applies if the dependent supply itself is rescheduled.<br><br>Sugg Due Date of the supply before the reschedule. |
| Old Dock Date | Only applies to buy items with rescheduled supplies.<br><br>Sugg Dock Date of the supply before the reschedule. | Only applies to buy items if the dependent supply itself is rescheduled.<br><br>Sugg Dock Date of the supply before the reschedule. |

| Supply Date | Pegged to Independent Demand Meaning | Pegged to Dependent Demand Meaning |
|---|---|---|
| Sugg Ship Date | For suppliers, this is used only for transfer orders. It is determined by the final scheduling phase of the planning engine.<br><br>The Ship Date is offset from the Sugg Due Date by the intransit lead-time and respects the shipping calendars.<br><br>For transfer planned orders, this is the same as the pegged to independent demand Suggested Ship Date meaning. | Same as the pegged to independent demand Suggested Ship Date meaning. |

### Arrival Time Updates

If you use Oracle Transportation Management, you can update your production plans with the current status of estimated arrival times of purchase and transfer orders in transit. These changes occur either because of a change in the transportation plan or because of carries updates.

When Oracle Transportation Management detects a change in an estimated arrival time, it:

- Notes the estimated arrival time in your production plans for purchase requisitions, internal requisitions, and internal sales orders
- Compares its estimated arrival time to the corresponding plan dock date or scheduled arrival date
- Issues exception messages if the dates differ--Order will be delivered later than scheduled or Order will be delivered earlier than scheduled
- Sends a notification to the planner with a link to drill down to Oracle Transportation Management for details
- Updates the arrival date in Oracle Collaborative Planning
- Arranges for the Oracle Collaborative Planning exception process to evaluate the updates and issue exceptions as necessary

When the next production plan runs, it:

- Updates the dock date with the estimated arrival time
- Firms the order
- Issues exception messages as necessary when the new arrival time has an effect on demand satisfaction—late replenishment, early replenishment, order at risk

You can view transportation updates in form View Transportation Updates

## Examples of Lead-time Calculations

### Introduction

This topic shows examples of lead-time calculations for unconstrained and constrained plans. Some examples show the effect of planning time fence control on lead-time calculations.

Constrained - Enforce demand due dates plans violate the planning time fence to meet the demand due date. Since the lead-time calculations are similar between these and Constrained - Enforce capacity constraints plans, there are no examples specifically for no specific examples are provided for Constrained - Enforce demand due dates plans with planning time fence control.

### Calendars

The lead-time examples use these three calendars. They refer to dates as days, for example, Day 1 and Day 2, rather than as specific dates such as September 1.

Each calendar covers multiple weeks, each row has seven days. Non-work days have the letters NW after their day number; non-delivery days have the letters ND after their day number.

This is the organization calendar that organization ORG1, the receiving organization, uses. It follows a 5 on - 2 off pattern.

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6NW | 7NW |
| 8 | 9 | 10 | 11 | 12 | 13NW | 14NW |
| 15 | 16 | 17 | 18 | 19 | 20NW | 21NW |
| 22 | 23 | 24 | 25 | 26 | 27NW | 28NW |

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|
| 29 | 30 | 31 | 32 | 33 | 34NW | 35NW |
| 36 | 37 | 38 | 39 | 40 | 41NW | 42NW |

This is the organization calendar that organization ORG2, the shipping organization, uses. It follows a 6 on - 1 off pattern.

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7NW |
| 8 | 9 | 10 | 11 | 12 | 13 | 14NW |
| 15 | 16 | 17 | 18 | 19 | 20 | 21NW |
| 22 | 23 | 24 | 25 | 26 | 27 | 28NW |
| 29 | 30 | 31 | 32 | 33 | 34 | 35NW |
| 36 | 37 | 38 | 39 | 40 | 41 | 42NW |

This is the delivery calendar from the approved supplier list for the supplier that supplies the purchased component.

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|
| 1 | 2ND | 3 | 4ND | 5 | 6 | 7ND |
| 8 | 9ND | 10 | 11ND | 12 | 13 | 14ND |
| 15 | 16ND | 17 | 18ND | 19 | 20 | 21ND |
| 22 | 23ND | 24 | 25ND | 26 | 27 | 28ND |
| 29 | 30ND | 31 | 32ND | 33 | 34 | 35ND |

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|
| 36 | 37ND | 38 | 39ND | 40 | 41 | 42ND |

#### Example 1: Manufactured Supply with Purchased Component

This example shows lead-time calculations for Item A manufactured supply using Item B purchased component both in organization ORG1. Item B is used at the first operation of Item A and its usage in Item A is 1.

lead-times:

- Item A: Fixed, 3 days; Variable, 0.5 days, Preprocessing, 1 day
- Item B: Processing, 2 days, Preprocessing, 1 day; Postprocessing, 1 day

Sourcing rules:

- Item A in ORG1: Type, Make at; Allocation, 100; Rank, 1
- Item B in ORG1: Type, Buy from; Allocation, 100; Rank, 1

There is a demand for 8 units of Item A due on day 19.

### Scenario 1: Unconstrained Plan, No Planning Time Fence Control

These calculations are for an unconstrained plan. The calculations for a constrained plan are similar, except that they consider detailed resource and material constraints.

See Example 1: Manufactured Supply with Purchased Component in this topic for setup information.

#### Scenario 1: Calculations for Item A Supply

Need By Date: Day 19 (Demand Due Date)

Suggested Due Date: Day 19 (Need By Date)

Suggested Start Date: Day 10

- Use ORG1 organization calendar
- Suggested Due Date - ((Fixed + (Variable * Supply quantity)) = Day 19 - (3 days (0.5 days * 8) = Day 19 - 7 days
- Two non-work days: Days 13 and 14

Suggested Order Date: Day 9

- Use ORG1 organization calendar
- Suggested Start Date - Preprocessing = Day 10 - 1 day

#### Scenario 1: Calculation for Item B Demand

You use purchased component Item B to manufacture Item A. If you use Item B at Item A's first operation (Material Scheduling Method of Order Start Date), Demand Due Date: Day 10 (Item A Suggested Start Date).

#### Scenario 1: Calculations for Item B Supply

Need By Date: Day 10 (Demand Due Date)

Suggested Due Date: Day 10 (Need By Date)

Suggested Dock Date: Day 8

- Use ORG1 organization calendar
- Suggested Due Date - Postprocessing Time = Day 10 - 1 day = Day 9
- Use ASL delivery calendar for supplier of Item B
- Day 9 is not a delivery work day. Move dock date to next earlier delivery work day.

Suggested Ship Date: Day 4

- Use ORG1 organization calendar
- Dock Date - Processing = Day 8 - 2 days
- Two non-workdays: Days 6 and 7

Suggested Start Date: Day 4 (Suggested Ship Date)

Suggested Order Date: Day 3

- Use ORG1 organization calendar
- Start Date - Preprocessing = Day 4 - 1 day

#### Scenario 1: Summary

This table summarizes the lead-times for Scenario 1: Unconstrained Plan, No Planning Time Fence Control.

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|
| ORG1 | A | Demand | Day 19 | n/a | n/a | n/a |
| ORG1 | A | Planned order | Day 19 | n/a | Day 10 | Day 9 |

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|
| ORG1 | B | Planned order demand | Day 10 | n/a | n/a | n/a |
| ORG1 | B | Planned order | Day 10 | Day 8 | Day 4 | Day 3 |

#### Scenario 2: Unconstrained Plan, Assembly Planning Time Fence Control

See Example 1: Manufactured Supply with Purchased Component in this topic for setup information.

Item A, organization ORG1 Planning Time Fence Days: 15

Item A, organization ORG Planning Time Fence Date: Day 19

- Use ORG1 organization calendar
- Day 1 + Planning Time Fence Days = Day 1 + 15 days
- Four non-work days: Days 6, 7, 13, and 14

The planning engine cannot schedule a planned order until the day after Planning Time Fence Date.

##### Scenario 2: Calculations for Item A Supply

Need By Date: Day 19 (Demand Due Date)

Suggested Due Date: Day 22

- Need By Date is Day 19
- Planning Time Fence Date is Day 19
- The planning engine cannot schedule planned order until Day 22 (Planning Time Fence Date + 1) = Day 19 + 1 day
- Two non-work days: Days 20 and 21
- Supply is due after Demand Due Date; issue shortage and late replenishment exception messages

Suggested Start Date: Day 11

- Use ORG1 organization calendar

- Suggested Due Date - ((Fixed + (Variable * Supply quantity)) = Day 22 - (3 days (0.5 days * 8) = Day 22 - 7 days
- Four non-work days: Days 13, 14, 20, and 21

Suggested Order Date: Day 10

- Use ORG1 organization calendar
- Suggested Start Date - Preprocessing = Day 11 - 1 day

#### Scenario 2: Calculation for Item B Demand

You use purchased component Item B to manufacture Item A. If you use Item B at Item A's first operation (Material Scheduling Method of Order Start Date), Demand Due Date: Day 11 (Item A Suggested Start Date).

#### Scenario 2: Calculations for Item B Supply

Need By Date: Day 11 (Demand Due Date)

Suggested Due Date: Day 11 (Need By Date)

Suggested Dock Date: Day 10

- Use ORG1 organization calendar
- Suggested Due Date - Postprocessing Time = Day 11 - 1 day = Day 10
- Use ASL delivery calendar for supplier of Item B
- Day 10 is delivery work day

Suggested Ship Date: Day 8

- Use ORG1 organization calendar
- Dock Date - Processing = Day 10 - 2 days

Suggested Start Date: Day 8 (Suggested Ship Date)

Suggested Order Date: Day 5

- Use ORG1 organization calendar
- Start Date - Preprocessing = Day 8 - 1 day
- Two non-work days: Days 6 and 7

#### Scenario 2: Summary

This table summarizes the lead-times for Scenario 2: Unconstrained Plan, Assembly Planning Time Fence Control.

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|
| ORG1 | A | Demand | Day 19 | n/a | n/a | n/a |
| ORG1 | A | Planned order | Day 22 | n/a | Day 11 | Day 10 |
| ORG1 | B | Planned order demand | Day 11 | n/a | n/a | n/a |
| ORG1 | B | Planned order | Day 11 | Day 10 | Day 8 | Day 5 |

### Scenario 3: Constrained - Enforce Capacity Constraints Plan, Assembly Planning Time Fence Control

Constrained plans perform detailed scheduling which considers resource and material constraints. These examples assume no constraints and use lead-time offsets; the planning engine would only do this if Item A has no routing.

See Example 1: Manufactured Supply with Purchased Component in this topic for setup information.

#### Scenario 3: Calculations for Item A Supply

Need By Date: Day 19 (Demand Due Date)

Suggested Due Date: Day 19 (Need By Date)

Suggested Start Date: Day 22

- Use ORG1 organization calendar
- Suggested Due Date - ((Fixed + (Variable * Supply quantity)) = Day 19 - (3 days (0.5 days * 8) = Day 19 - 7 days = Day 10
- Two non-work days: Days 13 and 14
- Planning Time Fence Date is Day 19
- The planning engine cannot schedule planned order until Day 22 (Planning Time Fence Date + 1) = Day 19 + 1 day
- Two non-work days: Days 20 and 21

Suggested Order Date: Day 19

- Use ORG1 organization calendar

- Suggested Start Date - Preprocessing = Day 22 - 1 day
- Two non-work days: Days 20 and 21

Recalculate Suggested Due Date by forward scheduling from Suggested Dock Date

Suggested Due Date: Day 23

- Use ORG1 organization calendar
- Suggested Dock Date + Postprocessing = Day 22 + 1 = Day 23
- Supply is due after Demand Due Date; issue shortage exception message

#### Scenario 3: Calculation for Item B Demand

You use purchased component Item B to manufacture Item A. If you use Item B at Item A's first operation (Material Scheduling Method of Order Start Date), Demand Due Date: Day 22 (Item A Suggested Start Date).

#### Scenario 3: Calculations for Item B Supply

Need By Date: Day 22 (Demand Due Date)

Suggested Due Date: Day 2 (Need By Date)

Suggested Dock Date: Day 19

- Use ORG1 organization calendar
- Suggested Due Date - Postprocessing Time = Day 22 - 1 day = Day 19
- Two non-work days: Days 20 and 21
- Use ASL delivery calendar for supplier of Item B
- Day 19 is delivery work day

Suggested Ship Date: Day 17

- Use ORG1 organization calendar
- Dock Date - Processing = Day 19 - 2 days

Suggested Start Date: Day 17 (Suggested Ship Date)

Suggested Order Date: Day 16

- Use ORG1 organization calendar
- Start Date - Preprocessing = Day 17 - 1 day

#### Scenario 3: Summary

This table summarizes the lead-times for Scenario 3: Constrained - Enforce Capacity Constraints Plan, Assembly Planning Time Fence Control.

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|
| ORG1 | A | Demand | Day 19 | n/a | n/a | n/a |
| ORG1 | A | Planned order | Day 31 | n/a | Day 22 | Day 19 |
| ORG1 | B | Planned order demand | Day 22 | n/a | n/a | n/a |
| ORG1 | B | Planned order | Day 22 | Day 19 | Day 17 | Day 16 |

#### Example 2: Purchased Component

These examples are the same as the scenarios in Example 1 but purchased component Item B has a planning time fence.

The scenarios in this example are similar to Scenario 1. In Scenario 1, neither assembly Item A or purchased component Item B has a planning time fence. In this scenario, assembly Item A does not have a planning time fence but purchased component Item B has a planning time fence.

Item B, organization ORG1 Planning Time Fence Days: 15

Item B, organization ORG Planning Time Fence Date: Day 19

- Use ORG1 organization calendar
- Day 1 + Planning Time Fence Days = Day 1 + 15 days
- Four non-work days: Days 6, 7, 13, and 14

The planning engine cannot schedule a planned order until the day after Planning Time Fence Date.

### Scenario 4: Unconstrained Plan, Purchased Component Planning Time Fence Control

See Example 2: Purchased Component in this topic for setup information.

See Scenario 1: Unconstrained Plan, No Planning Time Fence Control in this topic for the calculations of supply for Item A and demand for Item B. Item B has dependent demand due on Day 10.

#### Scenario 4: Calculations for Item B Supply

Need By Date: Day 10 (Demand Due Date)

Suggested Due Date: Day 22

- Need By Date is Day 10
- Use ORG1 organization calendar
- Planning Time Fence Date is Day 19
- The planning engine cannot schedule planned order until Day 22 (Planning Time Fence Date + 1) = Day 19 + 1 day
- Two non-work days: Days 20 and 21
- Supply is due after Demand Due Date; issue shortage exception message. Do not reschedule supply for Item A.

Suggested Dock Date: Day 19

- Use ORG1 organization calendar
- Suggested Due Date - Postprocessing Time = Day 22 - 1 day = Day 19
- Two non-work days: Days 20 and 21
- Use ASL delivery calendar for supplier of Item B
- Day 9 is a delivery work day

Suggested Ship Date: Day 17

- Use ORG1 organization calendar
- Dock Date - Processing = Day 19 - 2 days

Suggested Start Date: Day 17 (Suggested Ship Date)

Suggested Order Date: Day 16

- Use ORG1 organization calendar
- Start Date - Preprocessing = Day 17 - 1 day

**Scenario 4: Summary**

This table summarizes the lead-times for Scenario 4: Unconstrained Plan, Purchased Component Planning Time Fence Control.

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|
| ORG1 | A | Demand | Day 19 | n/a | n/a | n/a |

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|
| ORG1 | A | Planned order | Day 31 | n/a | Day 10 | Day 9 |
| ORG1 | B | Planned order demand | Day 10 | n/a | n/a | n/a |
| ORG1 | B | Planned order | Day 22 | Day 19 | Day 17 | Day 16 |

#### Scenario 5: Constrained - Enforce Capacity Constraints Plan, Purchased Component Planning Time Fence Control

See Example 2: Purchased Component in this topic for setup information.

See Scenario 1: Unconstrained Plan, No Planning Time Fence Control in this topic for the calculations of supply for Item A and demand for Item B. Item B has dependent demand due on Day 10.

**Scenario 5: Calculations for Item B Supply**

Need By Date: Day 10 (Demand Due Date)

Suggested Due Date: Day 10 (Need By Date)

Suggested Dock Date: Day 22

- Use ORG1 organization calendar
- Suggested Due Date - Postprocessing Time = Day 10 - 1 day = Day 9
- Planning Time Fence Date is Day 19
- The planning engine cannot schedule planned order until Day 22 (Planning Time Fence Date + 1) = Day 19 + 1 day
- Two non-work days: Days 20 and 21
- Use ASL delivery calendar for supplier of Item B
- Day 22 is a delivery work day

Suggested Ship Date: Day 18

- Use ORG1 organization calendar
- Dock Date - Processing = Day 22 - 2 days

- Two non-work days: Days 21 and 21

Suggested Start Date: Day 18 (Suggested Ship Date)

Suggested Order Date: Day 17

- Use ORG1 organization calendar
- Start Date - Preprocessing = Day 18 - 1 day

Recalculate Suggested Due Date by forward scheduling from Suggested Dock Date

Suggested Due Date: Day 23

- Use ORG1 organization calendar
- Suggested Dock Date + Postprocessing = Day 22 + 1= Day 23 + 7 days = Day 10
- Supply is due after Demand Due Date; issue shortage exception message. Reschedule supply for Item A.

#### Scenario 5: Recalculations for Item A Supply

Suggested Start Date: Day 23 (Item B Suggested Due Date)

Suggested Due Date: Day 32

- Use ORG1 organization calendar
- Suggested Start Date + ((Fixed + (Variable * Supply quantity)) = Day 23 - (3 days + (0.5 days * 8) = Day 23 + 7 days = Day 32
- Two non-work days: Days 27 and 28
- Supply is due after Demand Due Date; issue shortage exception message.

Suggested Order Date: Day 22

- Use ORG1 organization calendar
- Suggested Start Date - Preprocessing = Day 23 - 1 day

#### Scenario 5: Summary

This table summarizes the lead-times for Scenario 5: Constrained - Enforce Capacity Constraints Plan, Purchased Component Planning Time Fence Control.

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|
| ORG1 | A | Demand | Day 19 | n/a | n/a | n/a |

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|
| ORG1 | A | Planned order | Day 32 | n/a | Day 23 | Day 22 |
| ORG1 | B | Planned order demand | Day 23 | n/a | n/a | n/a |
| ORG1 | B | Planned order | Day 23 | Day 22 | Day 18 | Day 17 |

#### Example 3: Transfer Component

This example shows lead-time calculations for Item A manufactured supply using Item C transfer component both in organization ORG1. ORG2 supplies Item C to organization ORG1. Item C is used at the first operation of Item A and its usage in Item A is 1.

Lead-times:

- Item A in ORG1: Fixed, 3 days; Variable, 0.5 days, Preprocessing, 1 day
- Item C in ORG1: Processing, 2 days, Preprocessing, 1 day; Postprocessing, 1 day
- Item C in ORG2: Fixed, 4 days; Variable, 0.25 days, Preprocessing, 3 days

Sourcing rules:

- Item A in ORG1: Type, Make at; Allocation, 100; Rank, 1
- Item C in ORG1: Type, Transfer from; Allocation, 100; Rank, 1; Intransit Time, 2 days
- Item C in ORG2: Type, Make at; Allocation, 100; Rank, 1

There is a demand for 8 units of Item A due on day 33.

### Scenario 6: Unconstrained Plan, No Planning Time Fence Control

These calculations are for an unconstrained plan. The calculations for a constrained plan are similar, except that they consider detailed resource and material constraints.

See Example 3: Transfer Component in this topic for setup information.

#### Scenario 6: Calculations for Item A Supply (Make At, Receiving Organization)

Need By Date: Day 33 (Demand Due Date)

Suggested Due Date: Day 33 (Need By Date)

Suggested Start Date: Day 24

- Use ORG1 receiving organization calendar
- Suggested Due Date - ((Fixed + (Variable * Supply quantity)) = Day 33 - (3 days (0.5 days * 8) = Day 33 - 7 days
- Two non-work days: Days 27 and 28

Suggested Order Date: Day 23

- Use ORG1 receiving organization calendar
- Suggested Start Date - Preprocessing = Day 24 - 1 day

**Scenario 6: Calculation for Item C Demand (Transfer From, Receiving Organization)**

You use purchased component Item C to manufacture Item A. If you use Item C at Item A's first operation (Material Scheduling Method of Order Start Date), Demand Due Date: Day 24 (Item A Suggested Start Date).

**Scenario 6: Calculations for Item C Supply (Transfer From, Receiving Organization)**

Need By Date: Day 24 (Demand Due Date)

Suggested Due Date: Day 24 (Need By Date)

Suggested Dock Date: Day 23

- Use ORG1 receiving organization calendar
- Suggested Due Date - Postprocessing = Day 24 - 1 day = Day 23

Suggested Ship Date: Day 20

- Use ORG1 receiving organization calendar
- Suggested Dock Date - Intransit Time [include non-workdays] = Day 23 - 2 days = Day 21
- Use ORG2 shipping organization calendar
- Day 21 is not a work day. Move suggested ship date to next earlier work day.

Suggested Start Date: Day 13

- Use ORG2 shipping organization calendar
- Suggested Ship Date - ((Fixed + (Variable * Supply quantity)) [Fixed and Variable from ORG2]= Day 20 - (4 days (0.25 days * 8) = Day 20 - 6 days
- One non-workday: Day 14

Suggested Order Date: Day 12

- Use ORG1 receiving organization calendar
- Start Date - Preprocessing = Day 13 - 1 day

**Scenario 6: Calculation for Item C Demand (Make At, Shipping Organization)**

You transfer component Item C from ORG2 to ORG1. Demand Due Date: Day 20 (Item A at ORG1 Suggested Ship Date).

**Scenario 6: Calculations for Item C Supply (Make At, Shipping Organization)**

Need By Date: Day 20 (Demand Due Date)

Suggested Due Date: Day 20 (Need By Date)

Suggested Start Date: Day 13

- Use ORG2 shipping organization calendar
- Suggested Due Date - ((Fixed + (Variable * Supply quantity)) = Day 20 - (4 days - (0.25 days * 8) = Day 20 - 6 days
- One non-work day: Day 14

Suggested Order Date: Day 10

- Use ORG2 shipping organization calendar
- Suggested Start Date - Preprocessing = Day 13 - 3 day

**Scenario 6: Summary**

This table summarizes the lead-times for Scenario 6: Unconstrained Plan, No Planning Time Fence Control.

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Ship Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|---|
| ORG1 | A | Demand | Day 33 | n/a | n/a | n/a | n/a |
| ORG1 | A | Planned order | Day 33 | n/a | n/a | Day 24 | Day 23 |
| ORG1 | C | Planned order demand | Day 24 | n/a | n/a | n/a | n/a |
| ORG1 | C | Planned order | Day 24 | Day 23 | Day 20 | Day 13 | Day 12 |

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Ship Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|---|
| ORG2 | C | Planned order demand | Day 20 | n/a | n/a | n/a | n/a |
| ORG2 | C | Planned order | Day 20 | n/a | n/a | Day 13 | Day 10 |

#### Scenario 6: Calculations for Item C Supply (Make At, Shipping Organization) for Constrained Plan

In constrained plans, the planning engine does not schedule Start Date to include the estimated processing time in the shipping org. This avoids pushing out a receiving order when the item may be on-hand or in process.

Compare this table with the table for unconstrained plans in Scenario 6: Calculations for Item C Supply (Make At, Shipping Organization) in this topic. Note the differences in the Suggested Start Date and Suggested Order Date in the receiving organization ORG1.

This table summarizes the lead-times for Scenario 6: Unconstrained Plan, No Planning Time Fence Control if you used a constrained plan.

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Ship Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|---|
| ORG1 | A | Demand | Day 33 | n/a | n/a | n/a | n/a |
| ORG1 | A | Planned order | Day 33 | n/a | n/a | Day 24 | Day 23 |
| ORG1 | C | Planned order demand | Day 24 | n/a | n/a | n/a | n/a |
| ORG1 | C | Planned order | Day 24 | Day 23 | Day 20 | Day 20 | Day 19 |
| ORG2 | C | Planned order demand | Day 20 | n/a | n/a | n/a | n/a |

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Ship Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|---|
| ORG2 | C | Planned order | Day 20 | n/a | n/a | Day 13 | Day 10 |

#### Scenario 7: Unconstrained Plan, Purchased Component Planning Time Fence Control

This scenario is the same as Scenario 6 but transfer component Item C has a planning time fence in receiving organization ORG1.

See Example 3: Transfer Component in this topic for setup information.

In Scenario 6, neither assembly Item A or transfer component Item C has a planning time fence. In this scenario, assembly Item A does not have a planning time fence but transfer component Item C has a planning time fence.

Item C, organization ORG1 Planning Time Fence Days: 20

Item C, organization ORG1 Planning Time Fence Date: Day 26

- Use ORG1 receiving organization calendar
- Day 1 + Planning Time Fence Days = Day 1 + 20 days
- Six non-work days: Days 6, 7, 13, 14, 20, and 21

The planning engine cannot schedule a planned order until the day after Planning Time Fence Date.

See Scenario 6: Unconstrained Plan, No Planning Time Fence Control in this topic for the calculations of supply for Item A and demand for Item C at the receiving organization ORG1. Item C in the receiving organization has dependent demand due on Day 24.

##### Scenario 7: Calculations for Item C Supply (Transfer From, Receiving Organization)

Need By Date: Day 24 (Demand Due Date)

Suggested Due Date: Day 29

- Use ORG1 receiving organization calendar
- Need By Date: Day 24
- Planning Time Fence Date is Day 26
- The planning engine cannot schedule planned order until Day 29 (Planning Time Fence Date + 1) = Day 26 + 1 day

- Two non-work days: Days 27 and 28
- Supply is due after Demand Due Date; issue shortage exception message. Do not reschedule any other supply order that requires this supply. However, supplies below this one in the supply chain bill are delayed as the planning engine plans them.

Suggested Dock Date: Day 26

- Use ORG1 receiving organization calendar
- Suggested Due Date - Postprocessing = Day 29 - 1 day
- Two non-work days: Days 27 and 28

Suggested Ship Date: Day 24

- Use ORG1 receiving organization calendar
- Suggested Dock Date - Intransit Time [include non-workdays] = Day 26 - 2 days = Day 24
- Use ORG2 shipping organization calendar
- Day 24 is a work day

Suggested Start Date: Day 17

- Use ORG2 shipping organization calendar
- Suggested Ship Date - ((Fixed + (Variable * Supply quantity)) [Fixed and Variable from ORG2] = Day 24 - (4 days + (0.25 days * 8) = Day 24 - 6 days
- One non-workday: Day 21

Suggested Order Date: Day 16

- Use ORG1 receiving organization calendar
- Start Date - Preprocessing = Day 17 - 1 day

**Scenario 7: Calculation for Item C Demand (Make At, Shipping Organization)**

You transfer component Item C from ORG2 to ORG1. Demand Due Date: Day 24 (Item A at ORG1 Suggested Ship Date).

**Scenario 7: Calculations for Item C Supply (Make At, Shipping Organization)**

Need By Date: Day 24 (Demand Due Date)

Suggested Due Date: Day 24 (Need By Date)

Suggested Start Date: Day 17

- Use ORG2 shipping organization calendar
- Suggested Due Date - ((Fixed + (Variable * Supply quantity)) = Day 24 - (4 days - (0.25 days * 8) = Day 24 - 6 days
- One non-work day: Day 21

Suggested Order Date: Day 13

- Use ORG2 shipping organization calendar
- Suggested Start Date - Preprocessing = Day 17 - 3 day
- One non-work day: Day 14

**Scenario 7: Summary**

This table summarizes the lead-times for Scenario 7: Unconstrained Plan, Purchased Component Planning Time Fence Control

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Ship Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|---|
| ORG1 | A | Demand | Day 33 | n/a | n/a | n/a | n/a |
| ORG1 | A | Planned order | Day 33 | n/a | n/a | Day 24 | Day 23 |
| ORG1 | C | Planned order demand | Day 24 | n/a | n/a | n/a | n/a |
| ORG1 | C | Planned order | Day 29 | Day 26 | Day 24 | Day 17 | Day 16 |
| ORG2 | C | Planned order demand | Day 24 | n/a | n/a | n/a | n/a |
| ORG2 | C | Planned order | Day 24 | n/a | n/a | Day 17 | Day 13 |

**Scenario 8: Constrained - Enforce Capacity Constraints Plan, Transfer Component Planning Time Fence Control**

Constrained plans perform detailed scheduling which considers resource and material constraints. These examples assume no constraints and use lead-time offsets; the

planning engine would only do this if Item A has no routing.

See Example 3: Transfer Component in this topic for setup information.

See Scenario 7: Unconstrained Plan, Purchased Component Planning Time Fence Control in this topic for the calculation of Planning Time Fence Date for Item C in organization ORG1. Item C organization ORG1 Planning Time Fence Date: Day 26. The planning engine cannot schedule a planned order until the day after Planning Time Fence Date.

See Scenario 6: Unconstrained Plan, No Planning Time Fence Control in this topic for the calculations of supply for Item A and demand for Item C at the receiving organization ORG1. Item C in the receiving organization has dependent demand due on Day 24.

#### Scenario 8: Calculations for Item C Supply (Transfer From, Receiving Organization)

Need By Date: Day 24 (Demand Due Date)

Suggested Due Date: Day 24 (Need by Date)

Suggested Dock Date: Day 23

- Use ORG1 receiving organization calendar
- Suggested Due Date - Postprocessing = Day 24 - 1 day

Suggested Ship Date: Day 20

- Use ORG1 receiving organization calendar
- Suggested Dock Date - Intransit Time [include non-workdays] = Day 23 - 2 days = Day 21
- Use ORG2 shipping organization calendar
- Day 21 is not a work day. Move suggested ship date to next earlier work day.

Suggested Start Date: Day 27

- Use ORG2 shipping organization calendar
- Suggested Ship Date - ((Fixed + (Variable * Supply quantity)) [Fixed and Variable from ORG2] = Day 24 - (4 days + (0.25 days * 8) = Day 20 - 6 days = Day 13
- One non-workday: Day 14
- Planning Time Fence Date is Day 26
- The planning engine cannot schedule planned order until Day 29 (Planning Time Fence Date + 1) = Day 26 + 1 day = Day 27
- Day 27 is a workday in ORG2 shipping organization. It is a non-workday in ORG1

receiving organization.

Suggested Order Date: Day 26

- Use ORG1 receiving organization calendar
- Start Date - Preprocessing = Day 27 - 1 day

**Scenario 8: Recalculations for Item C Supply (Transfer From, Receiving Organization)**

Recalculate Suggested Ship Date, Suggested Dock Date, and Suggested Due Date by forward scheduling from Suggested Start Date.

Suggested Ship Date: Day 31

- Use ORG2 shipping organization calendar
- Suggested Start Date + (Fixed + (Variable * Supply quantity)) [Fixed and Variable from ORG2] = Day 27 + (4 days + (0.25 days * 8) = Day 27 + 6 days
- One non-workday: Day 28

Suggested Dock Date: Day 33

- Use ORG1 receiving organization calendar
- Suggested Ship Date + Intransit Time [include non-workdays] = Day 31 + 2 days = Day 33
- Use ORG2 shipping organization calendar
- Day 33 is a work day.

Suggested Due Date: Day 36

- Use ORG1 receiving organization calendar
- Suggested Dock Date + Postprocessing = Day 33 + 1 day
- Two non-workdays: Days 34 and 35

**Scenario 8: Recalculation for Item A Supply (Make At, Receiving Organization)**

Reschedule Item A supply Suggested Start Date and Suggested Due Date by forward scheduling from Day 36 (Item C Suggested Due Date in ORG1 receiving organization)

Suggested Start Date: Day 36 (Item C Suggested Due Date)

Suggested Due Date: Day 45

- Use ORG1 organization calendar
- Suggested Start Date + ((Fixed + (Variable * Supply quantity)) = Day 36 + (3 days - (0.5 days * 8) = Day 36 + 7 days

- Two non-work days: Days 41 and 42

Reschedule Item A supply Suggested Order Date by backward scheduling from Day 36 (Item C Suggested Due Date in ORG1 receiving organization)

Suggested Order Date: Day 33

- Use ORG1 organization calendar
- Suggested Start Date - Preprocessing = Day 36 - 1 day
- Two non-workdays: Days 34 and 35

#### Scenario 8: Calculation for Item C Demand (Make At, Shipping Organization)

You transfer component Item C from ORG2 to ORG1. Demand Due Date: Day 31 (Item C Suggested Ship Date at ORG1 receiving organization).

#### Scenario 8: Calculations for Item C Supply (Make At, Shipping Organization)

Need By Date: Day 31 (Demand Due Date)

Suggested Due Date: Day 31 (Need By Date)

Suggested Start Date: Day 24

- Use ORG2 shipping organization calendar
- Suggested Due Date - ((Fixed + (Variable * Supply quantity)) = Day 31 - (4 days - (0.25 days * 8) = Day 31 - 6 days
- One non-work day: Day 28

Suggested Order Date: Day 20

- Use ORG2 shipping organization calendar
- Suggested Start Date - Preprocessing = Day 24 - 3 day
- One non-work day: Day 21

#### Scenario 8: Summary

This table summarizes the lead-times for Scenario 8: Constrained - Enforce Capacity Constraints Plan, Transfer Component Planning Time Fence Control.

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Ship Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|---|
| ORG1 | A | Demand | Day 33 | n/a | n/a | n/a | n/a |

| Organization | Item | Order Type | Suggested Due Date | Suggested Dock Date | Suggested Ship Date | Suggested Start Date | Suggested Order Date |
|---|---|---|---|---|---|---|---|
| ORG1 | A | Planned order | Day 45 | n/a | n/a | Day 36 | Day 33 |
| ORG1 | C | Planned order demand | Day 36 | n/a | n/a | n/a | n/a |
| ORG1 | C | Planned order | Day 36 | Day 33 | Day 31 | Day 27 | Day 26 |
| ORG2 | C | Planned order demand | Day 31 | n/a | n/a | n/a | n/a |
| ORG2 | C | Planned order | Day 31 | n/a | n/a | Day 24 | Day 26 |

## Examples of Planning Time Fence Control

### Manufacturing Work Order Scheduling

This topic explains the scheduling of manufacturing work orders. Although the examples use Oracle Work in Process discrete jobs, they also apply to the scheduling of the primary path of Oracle Shop Floor Manufacturing lot based jobs and Oracle Process Manufacturing work orders.

This diagram shows a plan with the following features:

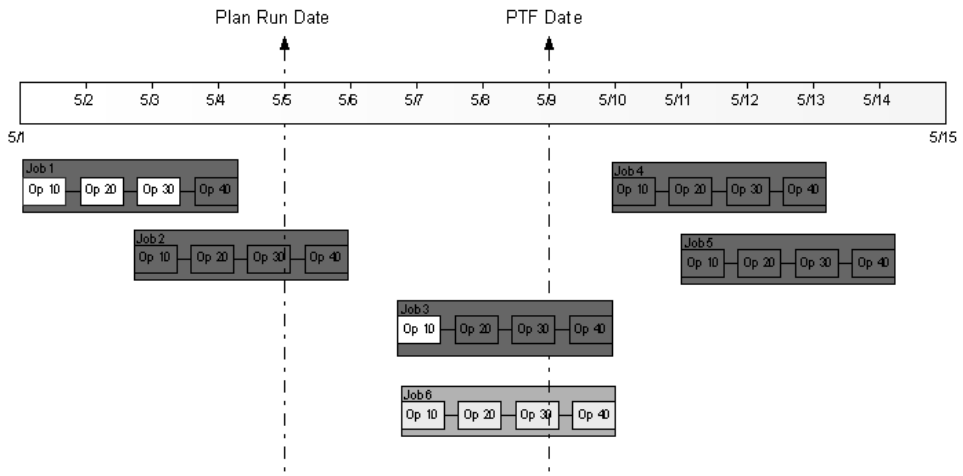
- Run on May 5
- Planning time fence control enabled
- The profile options that create a natural time fence based on existing firmed supplies are disabled.
- Planning Time Fence Date is based on the item attribute (User defined, 4 days) as May 9 and considers working days in the organization. The calendar for this organization has no non-work days in the organization calendar.

This diagram shows the supplies for this item after the plan run. The supplies have the following characteristics:

- Job 1: Completely scheduled in the past.
- Job 2: Operations scheduled in the past and completion date of May 6 is earlier than Planning Time Fence Date.
- Job 3: Three operations scheduled to start prior to Planning Time Fence Date.
- Job 4 and 5: All operations scheduled to start after Planning Time Fence Date.
- Job 6: This job is firmed to complete on May 10.

This diagram shows the state of the collected discrete jobs.

***State of Collected Discrete Jobs***




### Manufacturing Work Order Scheduling in Unconstrained Plans

In unconstrained plans, the planning engine schedules manufacturing work order completion dates earlier than Planning Time Fence Date, as follows:

- Planned manufacturing orders and non-firm manufacturing work orders: Order Due Date never scheduled earlier than the item's Planning Time Fence Date.
- Firm manufacturing work orders: Never cancel, reschedule, or change the Order Due Date.
- Firm planned manufacturing orders: Retained based on the value of plan option Overwrite. If None or Overwrite Outside Planning Time Fence, retain the order and consider Order Due Date firm.

This diagram shows the same manufacturing work orders from topic Manufacturing Work Order Scheduling scheduled in an unconstrained plan. The planning engine

schedules Order Due Date then offsets operations from Order Due Date according to Lead Time % on the manufacturing work order routing. For operations scheduled prior to the plan run date, the planning engine compresses them to start and complete on the plan run date:

- Job 1: is rescheduled out to meet its demand on time. Operation 10 would have been scheduled to start and complete in the past. These dates are both updated to Start on Plan Run Date. Operation 20 would have been scheduled to start in the past and is now updated to Start of Plan Run Date

- Job 2: Order Due Date rescheduled out to meet its demand on time. Operation start and completion dates offset with no compression.

- Job 3: Order Due Date rescheduled out to meet its demand on time. Operation start and completion dates offset with no compression

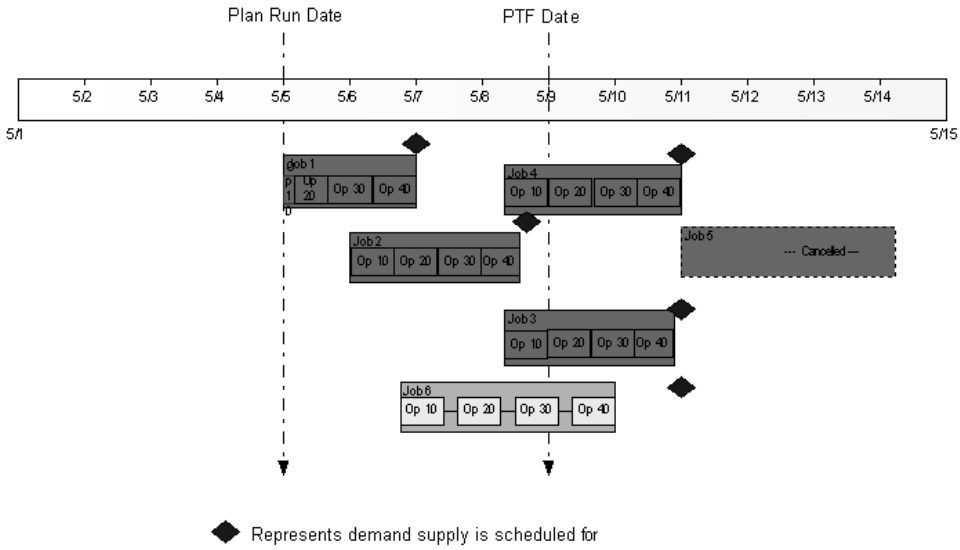
- Job 4: Rescheduled in to meet demand on time because Order Due Date is later than the Planning Tine Fence Date. All operations offset from this date.

- Job 5: Canceled because it has no pegged demand

- Job 6: A firm job, not rescheduled.

This diagram shows the effect of Planning Time Fence Date and firming on discrete job scheduling in Unconstrained plans.

***Discrete Job Scheduling with Planning Time Fence and Firming, Unconstrained Plan***




### Manufacturing Work Order Scheduling in Constrained - Enforce Capacity Constraints Plans

For a Constrained - Enforce capacity constraints plan, the planning engine applies the following planning time fence control rules based on the item's Planning Time Fence Date:

- Planned orders: Do not schedule the first operation to start earlier than Planning Time Fence Date.

- Non-firm manufacturing work orders: If an order, operation, or resource has a start date inside the planning time fence, do not rescheduled in. If the job a start date outside of the planning time fence, only reschedule in up to Planning Time Fence Date.

- Firm manufacturing work orders: Never cancel or reschedule. Do not change the completion date or reschedule the operations. Calculate firm work order resource requirements and reduce resource availability by these requirements. Consider the resource loads for firmed jobs prior to scheduling all other supplies.

- Firm planned manufacturing orders: Retained based on the value of plan option Overwrite. If None or Overwrite Outside Planning Time Fence, retain the order and consider Order Due Date firm. Consider the completion date firm; reschedule operations as required. The operation rescheduling may cause compression or violate Planning Time Fence Date because the supply is firmed.

In the operation detailed scheduling, the planning engine calculates Earliest Possible

Start Date for each operation. This is never earlier than Planning Time Fence Date, but it may be later.

This diagram shows the same manufacturing work orders from topic Manufacturing Work Order Scheduling scheduled in an unconstrained plan:

- Jobs 1, 2, and 3: Rescheduled out based on the required demand dates. All of these jobs had job and operation start dates earlier than Planning Time Fence Date, so their operations would never be rescheduled in. Job 1 cannot be scheduled in time to meet its required demand; the planning engine schedules the operations respecting their minimum lead-time and the first operation cannot start prior to the plan run date. The planning engine reschedules Jobs 2 and 3 to meet their demands on time. It schedules all operations to minimize slack between resources except Operation 10 which is scheduled earlier due to a capacity constraint

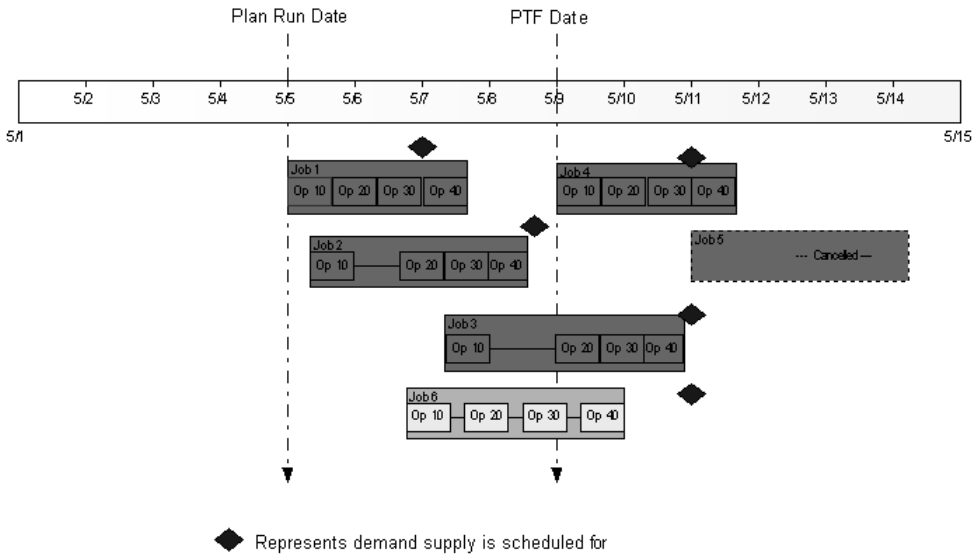
- Job 4: Rescheduled in based on its demand due date. Since the planning engine cannot reschedule Start Date of the first operation earlier than Planning Time Fence Date, it forward schedules from Planning Time Fence Date.

- Job 5: Canceled because it has no pegged demand and its start date is outside the planning time fence.

- Job 6: Since the work order is firm, the planning engine never cancels it or reschedules its completion date. It does not reschedule the operation start and end dates and loads the resources are based on their requirements on the existing schedule dates.

This diagram shows the effect of Planning Time Fence Date and firming on discrete job scheduling in Constrained - Enforce capacity constraints plans.

***Discrete Job Scheduling with Planning Time Fence and Firming, Constrained - Enforce Capacity Constraints Plan***




### Manufacturing Work Order Scheduling in Constrained - Enforce Demand Due Dates Plans

Constrained - Enforce demand due dates plans generally follow the same rules as Constrained - Enforce capacity constraints plans. However, the planning engine may schedule supplies earlier than Planning Time Fence Date to meet the demand. It may also compress operations.

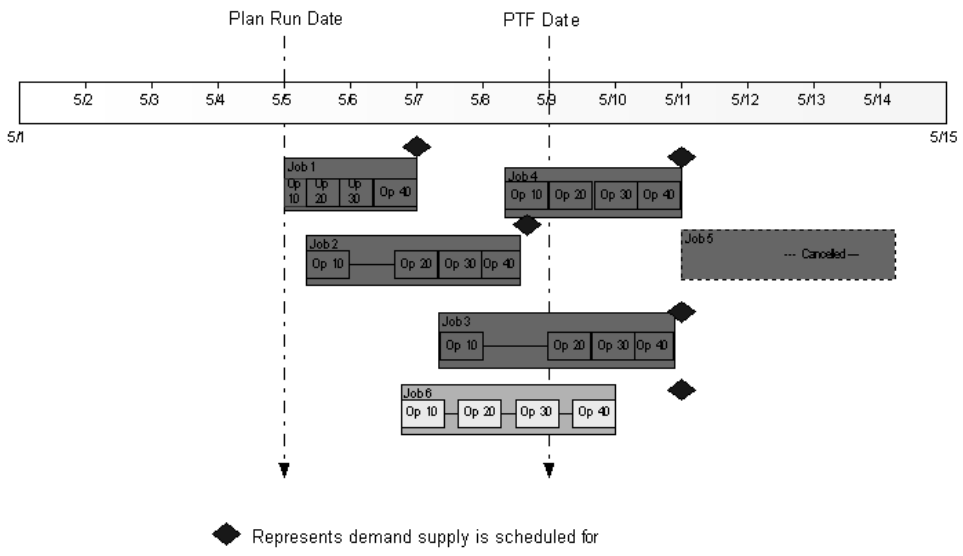
This diagram shows the same manufacturing work orders from topic Manufacturing Work Order Scheduling in Constrained - Enforce Capacity Constraints Plans scheduled in a Constrained - Enforce demand due dates plan. The planning engine schedules all the supplies to meet the due dates of their pegged demands even if it violates the planning time fence:

- Job 1: Rescheduled out to meet its demand on time. May overload or compress resources.
- Jobs 2 and 3: Rescheduled out to meet their demands on time with no resource overload or compression
- Job 4: Rescheduled in to meet its demand on time. Operation 10 rescheduled in earlier than Planning Time Fence Date.
- Job 5: Canceled because it has no pegged demand
- Job 6: Firm, not rescheduled

This diagram shows the effect of Planning Time Fence Date and firming on discrete job

scheduling in Constrained - Enforce capacity constraints plans.

***Discrete Job Scheduling with Planning Time Fence and Firming, Constrained - Enforce Demand Due Dates Plan***




### Manufacturing Work Order Scheduling with Firm Operations and Orders

If you want to maintain the detailed schedule dates from a previous plan or that you have set, you can direct the planning engine to consider operations within the planning time fence as firm.

In constrained plans only, set profile option MSO: Firm Operations/Orders Within Time Fence to Yes at the site level. The planning engine:

- Consider operations with Start Date earlier than Planning Time Fence Date as firm
- Does not change their schedule dates and loads resources on these schedule dates
- Considers work orders with completion dates earlier then Planning Time Fence Date as firmed
- Does not reschedule their the job completion dates or cancel them

This diagram shows the same manufacturing work orders from topic Manufacturing Work Order Scheduling scheduled in a Constrained - Enforce capacity constraints plan. The scheduling in Constrained - Enforce demand due dates plans is similar:

- Jobs 1 and 2: All operations are earlier than Planning Time Fence Date; do not reschedule. Do not change Order Due Date. Compress the first two operations of Job 1 ad the first three operations of Job 2 to occur on the plan run date because

their schedule dates occurred prior to the plan run date.

- Job 3: Operations 10, 20, and 30 have Start Date earlier than Planning Time Fence Date (May 9); do not reschedule. Operation 40 starts after Planning Time Fence Date; schedule out based on the required demand date. Reschedule out completion date.

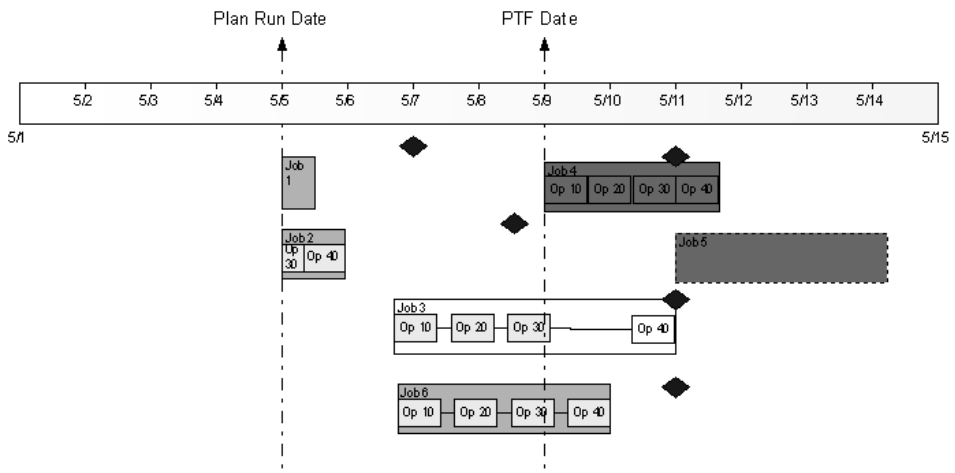
- Job 4: All operations have Start Date after Planning Time Fence Date; reschedule them. Reschedule the first operation up to Planning Time Fence Date. In a Constrained - Enforce capacity constraints plan, do not violate the operation start date and forward schedule the job; the job is late for its demand. In a Constrained - Enforce demand due dates plan, schedule the operation prior to Planning Time Fence Date to meet the demand on time.

- Job 5: Cancel because all operations scheduled to start after Planning Time Fence Date

- Job 6: Firm; do not reschedule job completion date and operation schedule dates

This diagram shows the effect of firm operations and orders on discrete job scheduling in Constrained plans.

***Discrete Job Scheduling with Firm Operations and Orders, Constrained Plans***




## Safety Stock

Safety stock is a quantity of stock you plan to remain in inventory to protect against fluctuations in demand (for example, forecast error) and supply (for example, variable supplier lead times and irregular operation yields). Safety stock is sometimes referred to as over planning, a market hedge, buffer stock, or reserve stock.

Safety stock is an inventory level that needs to be maintained. You satisfy demand, for example, sales orders and forecasts, by consuming inventory. Safety stock is an inventory level that you must maintain; it remains in projected available balance.

Safety stock level can be made up of different types of safety stock levels:

- Non-transient safety stock levels are levels that you hold from their point of origination to the end of the planning horizon. They are safety stock levels without ending effectivity dates.

- Transient safety stock levels are levels that you hold for only a certain time during the planning horizon. They are safety stock levels with ending effectivity dates. Transient safety stock levels plan for supplies to be completed earlier than the demands that peg to them and plan for the inventory to be held as safety stock. You can also complete supplies earlier than the demands that peg to them using safety lead-time; see Safety Lead-time , page 4-71

This diagram shows a safety stock level and its components for a 15-day planning horizon (PH). It details:

- SSL: Safety stock level

- T1, T2: Transient safety stock levels

- NT1, NT2: Non-transient safety stock levels

| | **D1** | **D2** | **D3** | **D4** | **D5** | **D6** | **D7** | **D8** | **D9** | **D10** | **D11** | **D12** | **D13** | **D14** | **D15** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SSL | 10 | 10 | 10 | 10 | 10 | 10 | 25 | 25 | 25 | 18 | 18 | 18 | 15 | 15 | 15 |
| T1 (D7 > D9) | - | - | - | - | - | - | 10 | 10 | 10 | - | - | - | -- | - | - |
| T2 (D10 < D12) | - | - | - | - | - | - | - | - | - | 3 | 3 | 3 | - | - | - |

| | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 | D12 | D13 | D14 | D15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NT 1 (D7 > PH ) | - | - | - | - | - | - | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| NT 2 (D1 > PH ) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |

## Specifying Safety Stock Levels

You can use several ways to specify safety stock levels to the planning engine:

- You specify
- Oracle Inventory calculates
- The planning engine calculates
- Oracle Inventory Optimization calculates

If you run optimized plans, see also Implicit Objectives, page 3-156.

**You Specify Safety Stock Levels**

Navigate to the item attributes (Inventory > Items > Master Items or Inventory > Items > Organization Items > tab General Planning > region Safety Stock > field Method.

Set Method to Non MRP Planned

Navigate to form Enter Item Safety Stocks (Inventory > Planning > Safety Stocks).

Enter Item, Quantity, and Effective Date.

If you specify only one safety stock level for an item, the planning engine considers the safety stock level as non-transient. If you enter more than one safety stock level for an item, the planning engine generally considers the safety stock level as transient if the first safety stock at date D1 is greater than the safety stock at a later date D2 and the extra inventory used to satisfy the safety stock between D1 and D2 can be used to satisfy demands after D2. If the levels are always increasing, then the planning engine considers the safety stock levels as non-transient. If there is no safety stock level for an

item, then the planning engine considers the safety stock level as zero.

The following example describes safety stock levels:

| Safety Stock Date | Safety Stock (units) |
|---|---|
| June 10, 2020 (D1) | 50 |
| June 20, 2020 (D2) | 30 |

In this example, the transient safety stock is calculated as 50 less 30 = 20 units. If we generate a supply of 50 units to satisfy the safety stock on June 10, 2020 (D1) and the safety stock is decreasing to 30 units on June 20, 2020 (D2), then the transient part of 20 units from that supply can be used to satisfy demands. Non-transient safety stock is 30 units.

See Entering and Reloading Safety Stocks, *Oracle Inventory User's Guide*.

**Oracle Inventory Calculates Safety Stock Levels**

Navigate to the item attributes (Inventory > Items > Master Items or Inventory > Items > Organization Items > tab General Planning > region Safety Stock > field Method.

Set Method to Non MRP Planned

Use one of these Oracle Inventory methods for calculating safety stock:

- Mean absolute deviation (MAD): The formula is safety stock = Z * 1.25 * MAD, where Z is a function of the desired service level, which you enter.
- User-defined percentage

  User-defined percentage: The formula is the percentage you enter times the average monthly demand.

See Entering and Reloading Safety Stocks, *Oracle Inventory User's Guide*.

**The Planning Engine Calculates Safety Stock Levels**

Navigate to the item attributes (Inventory > Items > Master Items or Inventory > Items > Organization Items) > tab General Planning > region Safety Stock.

Set field Method to MRP Planned %

Specify Bucket Days as the number of days to be used for aggregating demand

Specify Percent as the percentage of aggregated demand to be used for safety stock.

If either Bucket Days or Percent are zero, the planning engine calculates the safety stock as zero.

The planning engine calculates safety stock level for all for working days in the planning horizon during the planning process. The level is a target to be satisfied by the

end of the day. You can control it with profile option MSO: Default Timestamp Safety Stocks.

For each day, the planning engine multiplies the safety stock percentage you define by the sum of gross requirements for the safety stock days. For repetitively manufactured items in unconstrained plans only, the planning process multiplies the percentage you define by the average daily demand during each repetitive planning period.

The formula for discrete safety stock is (Sum of gross requirements for Bucket Days working days * Percent) / (100 * Bucket Days).

The organization manufacturing calender determines the working days.

The gross requirements includes both independent and dependent demands. For independent demands, the planning engine uses the demand date. For dependent demands, it uses the unconstrained demand date. In constrained and optimized plans, the scheduling process occurs after the safety stock calculation; the planning engine does not recalculate safety stock even if the scheduling process changes dates.

If the demand is in weekly buckets, the planning evenly divides the weekly demand over the days.

For example, an item has these item attributes:

- Safety stock method: MRP Planned %
- Bucket Days: 5
- Percent: 500% = 5

  Days D6 & D7 are non-workdays.

  This table shows the demands for days D1 through D9 and the safety stock level for days D1 and D2. The planning engine does calculate safety stock levels for the other work days.

| | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 |
|---|---|---|---|---|---|---|---|---|---|
| Demand (independent and dependent) | 10 | 20 | 15 | 35 | 25 | - | - | 5 | 35 |
| Safety stock level | 105 [(10+20+15 +35+25) * 500] / (100 *5)] | 100 [(20+15+35 +25+5) * 500] / (100 *5)] | - | - | - | - | - | - | - |

**Oracle Inventory Optimization Calculates Safety Stock Levels**

Navigate to the item attributes (Inventory > Items > Master Items or Inventory > Items >

Organization Items > tab General Planning > region Safety Stock.

Set field Method to MRP Planned %. You may leave Bucket Days and Percent blank. Oracle Inventory Optimization calculates safety stock level only for items with item attribute Method set to MRP Planned %.

Use Oracle Inventory Optimization to calculate safety stock levels that account for variability in demand and lead times. See Oracle Inventory Optimization Implementation and User's Guide.

The planning engine receives information for each item-organization combination. The levels are timed with the inventory optimization plan's time buckets.

If there is a planned item that is not in the inventory optimization plan and item attribute Method is set to:

- MRP Planned %: The planning engine calculates safety stock level for the item
- Non MRP Planned: The planning engine receives safety stock level for the item from Oracle Inventory.

When receiving safety stock information from Oracle Inventory Optimization, the planning engine:

- Does not process safety stock demands that occur after the plan horizon date
- Sets safety stock demand for the last bucket to be the same as the safety stock demand in the second to the last bucket
- In weekly and period buckets, moves safety stock demands that occur on a non-workday to the previous workday

## Safety Stock Planning

### Enabling Safety Stock Planning

Navigate to form Plan Options (Supply Chain Planning > Supply Chain Plan > Options). In tab Organizations:

- In region Organizations, select field Plan Safety Stock for the organizations that you want. You can default this setting in the Plan Parameters form (Supply Chain Planning > Setup > Parameters > Execution Defaults).
- Only if you set safety stock levels by an Oracle Inventory Optimization plan, in region Demand Schedules > field Name, select the inventory optimization plan with the safety stock levels that you want the planning engine to use.

### Planning Phases for Safety Stock

The planning engine plans to meet safety stock levels through a process of sequential phases:

- Safety stock smoothing: Smooths out fluctuations in safety stock. This phase is optional. The planning engine only performs safety stock pegging if profile option MSC: Use FIFO Pegging is No.
- Inventory netting: Creates planned orders and recommendations to meet safety stock levels
- Pegging: Associates supplies and demands
- Scheduling: Detailed schedules supplies

This topic explains phases Safety stock smoothing, Inventory netting, and Scheduling. To understand the Pegging phase, see Safety Stock Pegging, page 16-83.

**Safety Stock Smoothing Planning Phase**

Consider this phase especially if you have the planning engine calculate safety stock levels. The planning engine bases safety stock levels on demand levels; as demand levels fluctuate, safety stock levels fluctuate. This phase help smooth out nervous safety stock levels.

There are the types of safety stock smoothing:

- Within time intervals:
- Across time intervals:

**Safety Stock Smoothing Planning Phase: Within Time Intervals**

You can instruct the planing engine to keep safety stock levels relatively constant within a time interval.

You specify:

- The number of days in the time interval: Set profile option MSC: Safety stock change interval (Days)
- The method that the planning engine should use to calculate the constant value: Set profile option MSC: Smoothing method to calculate Safety stock within Change interval

The planning engine begins at the plan start date and:

- Groups the days in to the time interval based on the number of days you specify
- Finds the value among the days that corresponds to the method--minimum, maximum, or average
- Sets the safety stock level for all the days in the time interval to that value

This table shows the daily safety stock levels. It then shows the smoothed safety stock levels that the planning engine calculates for the value of profile option MSC:

Smoothing method to calculate Safety stock within Change interval with profile option MSC: Safety stock change interval (Days) set to 3. Levels are rounded to integers.

| | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 | D12 | D13 | D14 | D15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily | 11 | 14 | 25 | 5 | 5 | 15 | 35 | 45 | 25 | 12 | 45 | 23 | 5 | 10 | 15 |
| Min | 11 | 11 | 11 | 5 | 5 | 5 | 25 | 25 | 25 | 12 | 12 | 12 | 5 | 5 | 5 |
| Avg | 17 | 17 | 17 | 8 | 8 | 8 | 35 | 35 | 35 | 27 | 27 | 27 | 10 | 10 | 10 |
| Max | 25 | 25 | 25 | 15 | 15 | 15 | 45 | 45 | 45 | 45 | 45 | 45 | 15 | 15 | 15 |

**Safety Stock Smoothing Planning Phase: Across Time Intervals**

You can instruct the planning engine to minimize safety stock levels across the smoothed time intervals.

You specify:

- Whether you want the planning engine to do this smoothing only for MRP Planned % items or for all items. Set profile option MSC: Apply Safety Stock Change interval to non MRP Planned Safety Stock.
- The maximum change in safety stock values that you will allow between time intervals. Set profile option MSC: Maximum Percentage variation in safety stock values.
- The minimum change in safety stock values that you consider significant enough to trigger a change in the safety stock level from one bucket to the next. Set profile option MSC: Minimum Percentage variation in safety stock values.

The planning engine finds the highest safety stock level within the planning horizon and begins the smoothing process from that time interval. It proceeds backwards to the plan start date and smooths each time interval, then proceeds forward to the end of the planning horizon and smooths each time interval.

The planning engine calculates the change between time intervals as [100 * (Safety stock level in the next interval - Safety stock level in this interval)] / Safety stock level in this interval.

If the deviation between the two time intervals is:

- Between the minimum and maximum changes in safety stock levels that you will allow, the planning engine leaves the original safety stock level
- Higher than the maximum changes in safety stock levels that you will allow, the planning engine adjusts the original safety stock level to be at the maximum percent.
- Lower than the minimum changes in safety stock levels that you consider significant, the planning engine retains the safety stock level for the two buckets.

In this table:

- The value you enter for profile option MSC: Smoothing method to calculate Safety stock within Change interval is Minimum.
- You set profile option MSC: Maximum Percentage variation in safety stock values to 55. This is the maximum deviation that is considered significant to trigger a change in safety stock between two periods.
- You set profile option MSC: Minimum Percentage variation in safety stock values to 10. This is the minimum allowed deviation between any two periods.
- The planning engine finds the highest smoothed safety stock level in the planing horizon to be D7-9. It begins from there and smooths across time intervals by calculating deviations in the order D7-9 to D4-6, then D4-6 to D1-3, then D7-9 to D10-12, and then D10-12 to D13-15.

| | D1-3 | D4-6 | D7-9 | D10-12 | D13-15 |
|---|---|---|---|---|---|
| Smoothed Minimum safety stock level within time intervals | 11 | 5 | 25 | 12 | 5 |
| Maximum allowed deviation | +/- 55% | +/- 55% | Base | +/- 55% | +/- 55% |
| Minimum allowed deviation | +/- 10% | +/- 10% | Base | +/- 10% | +/- 10% |
| Order of smoothing calculations | 2 | 1 | Base | 3 | 4 |

| | D1-3 | D4-6 | D7-9 | D10-12 | D13-15 |
|---|---|---|---|---|---|
| Actual deviation | +46.6%<br>[100*(16.13-11)/11] | +400%<br>[100*(25- 5) /5] | Base | -52%<br>[100*(12-25) /25] | -58%<br>[100*(5-12) /12] |
| Decision | Actual deviation within minimum / maximum range; retain value | Actual deviation outside of maximum allowed; cap safety stock level at 55% of base level | Base | Actual deviation within minimum / maximum range; retain value | Actual deviation outside of maximum allowed; cap safety stock level at 55% of previous level |
| Smoothed safety stock level across time intervals | 11 | 16<br>[25 / (1+0.55) = 16.13] | 25 | 12 | 5<br>[12*(1 - 0.55)] = 5.4] |

**Inventory Netting Planning Phase for Safety Stock**

When there is a safety stock level for an item, the netting process checks for a shortage using this formula: Projected available balance from last period + Supplies in this period - Independent and dependent demand in this period - Safety stock level in this period.

After the planning engine resolves the shortage through planned orders, future firm planned orders, and recommendations, the projected available balance should be the safety stock level. However, the projected available balance may be affected by order modifiers and constraints.

**Pegging Planning Phase for Safety Stock**

To understand the Pegging phase, see Safety Stock Pegging, page 16-83.

**Scheduling Planning Phase for Safety Stock**

The planning engine uses the safety stock pegging information to schedule supplies. It schedules supplies so that they meet both demands and safety stock levels as appropriate.

**Other Safety Stock Planning Principles**

The planning engine uses unconstrained demand dates in the inventory netting and pegging phases. The scheduling phase may move supplies in and out and that could result in your holding too much or too little safety stock.

The planning engine uses unconstrained demand dates when it calculates safety stock level. Therefore, it could sometimes be difficult to tie safety stock level to the MRP

Planned % values. The dependent demands used in the initial calculation of safety stock level may have moved by the scheduling process.

These profile options also relate to safety stock:

- MSC: Excess and Safety Stock by Demand Class, see MSC Profile Options, page A-13
- MSO: Default Timestamp Safety Stock, see MSD Profile Options, page A-77

**Viewing Safety Stock Results**

To see the results of safety stock planning, see Horizontal Plan, page 16-52, Supply/Demand Window, page 16-64, and Pegging, page 16-83.

## Setting Shipping, Receiving, Carrier, and Supplier Capacity Calendars

Oracle Advanced Supply Chain Planning plans a variety of supply chain activities like manufacturing, inter facility shipments, purchases, and shipment to customers. Each of these activities is controlled by a set of calendars. Manufacturing, supplier, and customer facilities may be able to ship or receive goods on specific days. Oracle Advanced Supply Chain Planning plans each type of supply or demand considering the working and non working days in the appropriate set of calendars.

The planning engine considers the following calendars while planning and scheduling:

- Org/Supplier shipping calendar
- Org/Customer receiving calendar
- Carrier calendar
- Supplier capacity calendar
- Manufacturing Calendar

It does not consider account-level customer calendars.

The planning engine generates specific exceptions when the dates in the calendar cause a delay in meeting a customer order or, when the dates are violated.

### Shipping Calendar

The shipping calendar indicates the valid working days for shipment activities originating from suppliers and organizations. The planning engine does not recommend a shipment out from those facilities if the date is a non-working day. The planning engine adjusts the shipment date if the current shipment date is a non-working day. For example, an inter organization shipment that originates at a certain organization may be able to start only between 9 a.m. and 5 p.m. on Monday through Friday. The planning engine considers the working days and times when generating

recommended transfers as part of the planning process.

Shipping calendars also need to be variable by the combination of carrier and the service level. For example, a carrier company may only pick up parcels between Monday and Friday. However, another carrier company may also have a Saturday pickup. In addition, any carrier or service level shipping calendars override the default shipping calendar for the organization or a supplier.

The planning engine uses:

- Processing lead time to calculate the dock date during the planning and scheduling process
- Shipping calendars to calculate valid ship date (dock date - intransit lead time) after the planning and scheduling process completes

In some cases, the planning engine may not find a valid ship date for a buy order, for example, if:

- You have an item with processing lead time that is less than the intransit time from supplier to organization
- Your shipping calendar has many non-workdays

In these cases, the planning engine uses today's date (the plan run date) as the ship date. If today is a non-workday on the shipping calendar, the planning engine issues exception message Order violates a business calendar.

### Receiving Calendar

The receiving calendar governs the receiving activities at the organizations or customer sites that receive goods. The planning engine allows organizations to receive shipments only on a working day. If the current shipment arrival date is a non-working day according to the receiving calendar, the planning engine defers the receipt of the shipment until the next (or previous) working day. For example, the dock doors of a distribution center that receives truckload shipments from a manufacturing facility may be open between 12 noon and 5 p.m. on a daily basis. When generating planned transfers between these two facilities, the planning engine assigns dock dates on these planned transfers based on the receiving calendar of the organization.

Receiving calendars can also vary by combination of carrier and service level. You need to specify valid receiving calendars for organizations and customers at the carrier and service levels.

### Carrier Calendar

The carrier calendar indicates the working and non-working days and times for material that is intransit using different means of transport. For example, certain methods of shipment such as parcel carriers may not work on weekends. This may cause the transit time to be stretched over the weekends. The planning engine needs to

consider these non-working times of various transportation modes that are modeled in the supply chain. Consider a carrier that has a regular transit time of 3 days. However, this carrier does not pick, deliver or operate during weekends. This implies that while a shipment that starts on a Monday morning can arrive on a Thursday morning, a shipment that starts on a Friday morning cannot arrive on a Monday morning. It can only arrive on a Wednesday morning because the carrier does not operate on Saturday and Sunday.

> **Note:** The carrier calendar indicates the operating calendar of the carrier or the service. It does not indicate the pickup or delivery dates of the carrier.

### Supplier Capacity Calendar

The supplier capacity calendar governs how supplier capacity is accumulated over a period of time. Supplier capacity is only accumulated on the working days according to the supplier capacity calendar. The supplier capacity calendar also governs how the supplier processing time is calculated.

### Default Hierarchy for Calendars

You may or may not define all the calendars available. Therefore, depending on the calendars that you define, the valid calendar for scheduling dates could change. Refer the following table for the hierarchy that the planning engine uses for determining valid calendars:

| Calendar Name | Option 1 | Option 2 | Option 3 | Option 4 | Option 5 |
|---|---|---|---|---|---|
| Supplier capacity calendar | Supplier/supplier site capacity calendar | 24x7 calendar | - | - | - |
| Supplier shipping calendar | Carrier/supplier/supplier site calendar | Supplier/Supplier Site Shipping Calendar | Carrier/Supplier Calendar | Supplier Shipping Calendar | 24x7 calendar |
| Organization Receiving Calendar | Carrier/Org Calendar | Organization Receiving Calendar | Organization Manufacturing Calendar | - | - |

| Calendar Name | Option 1 | Option 2 | Option 3 | Option 4 | Option 5 |
|---|---|---|---|---|---|
| Organization Manufacturing Calendar | Organization Manufacturing Calendar | - | - | - | - |
| Organization Shipping Calendar | Carrier / Org Calendar | Organization Shipping Calendar | Org Manufacturing Calendar | - | - |
| Customer Receiving Calendar | Carrier/Customer/Customer Site Calendar | Customer/Customer Site Receiving Calendar | Carrier/Customer Calendar | Customer Receiving Calendar | 24x7 calendar |
| Intransit Calendar | Carrier Intransit Calendar | 24x7 calendar | - | - | - |

**Note:** An organization manufacturing calendar always exists for an organization.

The planning engine first checks option 1 for each calendar. In case, option 1 is not defined in your setup, then it checks the next option available. For example, when the planning engine needs to take into account a supplier shipping calendar, it checks for a supplier / supplier site / carrier shipping calendar. If not specified, the planning engine looks for a supplier / supplier site shipping calendar. If not specified, it looks for a supplier / carrier calendar. If not specified, then it looks for a supplier shipping calendar and if that does not exist, it then defaults to a 24x7 calendar.

If you want any organization shipping and receiving calendars to be 24x7, then you need to define the specific calendar as 24x7 if the organization manufacturing calendar is not 24x7.

In case of receiving calendars, the planning engine checks customer receiving calendars set up at the customer level. Customer receiving calendars set up at the account level are not supported.

If you do not want to use any shipping, receiving, or, carrier calendar for planning/scheduling, set the profile MSC: Use Shipping/Receiving Calendars to No. When you set this profile to No, the planning engine uses only the organization manufacturing calendar while generating a plan. Irrespective of the setting of this profile, the planning engine takes into account the supplier capacity calendar to accumulate supplier capacity. If the supplier capacity calendar is not specified, the planning engine uses the 24x7 calendar. If you want to accumulate supplier capacity

based on the organization manufacturing calendar, you need to set your supplier capacity calendar to be the same as the organization manufacturing calendar.

### Lead-time Calculation

Oracle Advanced Supply Chain Planning plans orders depending on the type of order as well as the type of date on the order. The planning engine checks the working and non working days on specific calendars after taking into consideration the lead-time for each type of order.

Lead-time offsetting begins only on a workday of the workday calendar.

### For Make Orders

Refer the following figure for the calendars and lead-times that the planning engine takes into account while processing make orders.

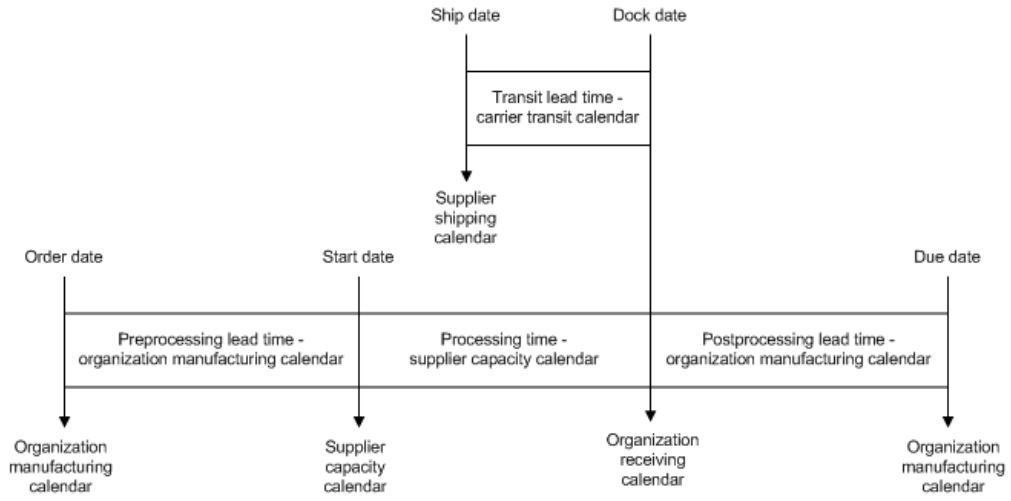
The processing time for make orders is calculated as follows:

- Routing specified: Manufacturing duration based on resource usages in the routing
- Routings not specified: Fixed + variable lead-time

  In unconstrained plans, the value of fixed + variable lead-time is used regardless of whether routings are specified or not.

### For Buy Order

Refer the following figure for the calendars and lead-times that the planning engine takes into account while processing buy orders.




The processing time for buy orders is calculated as follows:

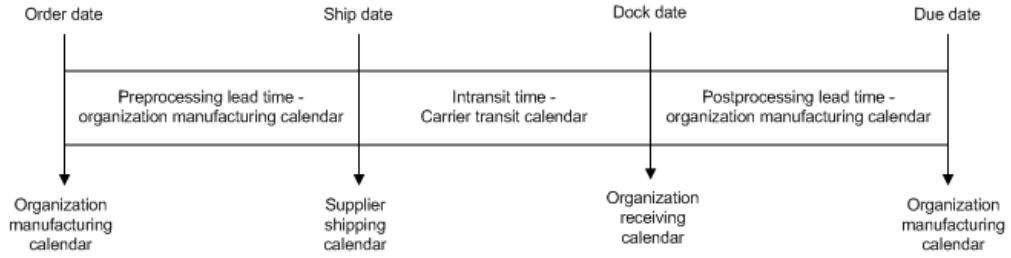
- Supplier defined: Supplier processing lead-time (assumed to include transit lead-time)
- Supplier not defined: Item processing lead-time

The planning engine calculates the transit lead-time as follows:

- Planned order: The ship method on the sourcing rule that the planning engine selects
- Purchase order: The default ship method between the supplier and the receiving organization

## For Transfer Orders

Refer to the following figure for the calendars and lead-times that the planning engine takes into account while processing transfer orders.



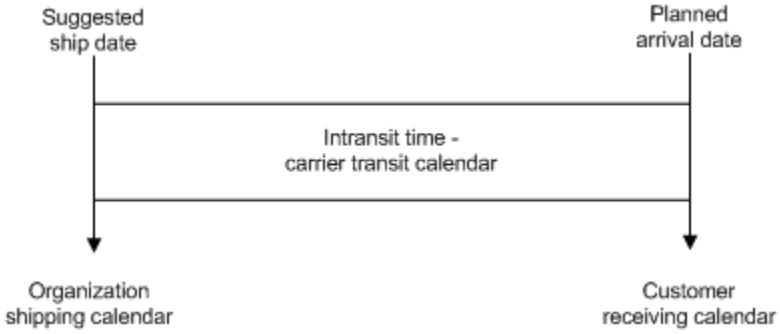

In case of transfer orders for constrained plans:

- Ship Date = Start Date

The intransit lead-time between the organizations is specific to the carrier used.

### For Sales Orders and Forecast

Refer to the following figure for the calendars and lead-times that the planning engine takes into account while processing sales orders and forecasts.




The intransit lead-time is specific to the carrier used and the location of the customer site.

### Shift Times

Oracle Advances Supply Chain Planning optionally uses the specified shift timings on the shipping, receiving, and carrier calendars for calculating lead-times. When the profile MSO: Use Shift Definitions When Scheduling Lead Times is set to Yes, the planning engine counts only the working time within the shifts. This is applicable only to constrained plans.

This means that if each working day defined in a calendar has only one active shift with 8 hours of working time, a lead-time of 1 day (24 working hours) takes 3 working days, since each working day only offers 8 hours of working time. Also, with this profile option set to Yes, each date on the order lies within a valid shift timing defined as part of the calendar. For example, if the shift timing is from 8 a.m. to 4 p.m., then any date on the order will have a time stamp between 8 a.m. and 4 p.m.

### To setup and collect the calendar data from an ERP source

1. Select Order Management > Shipping > Setup > Calendars > Enter.

   The Workday Calendar window appears.

2. Select Order Management > Shipping > Setup > Calendars > Assign.

   The Assign Calendars window appears.

3. Define the calendar that you need to use.

   For more details on setting up the calendars, see *Oracle Shipping User Guide*.

4. Run collections.

   For more details on collections, see Running Collections.

   The planning engine collects the following data:

5. The shipping, receiving, and carrier calendar association with their respective trading partners (including the carrier or the shipment method) into the destination tables.

6. The supplier calendar associated with the Approved Suppliers List (ASL).

7. Manufacturing calendars associated to the organizations.

8. Run a plan.

   The start date, ship date, arrival dates, order date etc. are associated with the respective shipping, receiving, and carrier calendars instead of the organization's manufacturing calendar.

9. View the calendar from the Planner Workbench.

### To collect the calendar data from a legacy source

1. Collect the calendar data using the following control files
   - msc_st_calendars.ctl
   - msc_st_workday_patterns.ctl
   - msc_st_calendar_exceptions.ctl
   - msc_st_shift_exceptions
   - msc_st_shift_times

2. Collect the calendar associations using the following control files:
   - msc_st_item_suppliers.ctl
   - msc_st_trading_partners.ctl
   - msc_st_calendar_assignments.ctl

3. Run the Legacy Collections concurrent program.

   For more details on Legacy Collections, see Legacy Collection.

4. Run a plan.

The start date, ship date, arrival dates, order date etc. are associated with the respective shipping, receiving, and intransit calendars rather than with the organization's manufacturing calendar.

5. View the calendar from the Planner Workbench.

### To view calendar data from the Tools Menu

You can use the Calendar window to view the valid working days and shift timings on the various calendars used by the planning engine.

1. Open the Planner Workbench or Collections Workbench.
2. Select Tools > Work Dates.

   The Calendar window appears.

You can also view calendar data from the following windows:

- Supply/Demand window: For more details, see Supply/Demand Window.
- Pegging region of the Supply/Demand window: For more details see Right-click Menu Options in the Pegging Region of the Supply/Demand Window.
- Exceptions Details window: For more details, see Exception Details Window.

### Viewing Calendar from Exceptions

You can view the calendar data for the following exceptions:

- Late Replenishment for Sales Order
- Late Replenishment for Forecast
- Early Replenishment for Sales Order
- Early Replenishment for Forecast
- Overcommitment for Sales Order
- Order Violates a Business Calendar

For more details about the exceptions listed above, see Exception Messages. Only those calendars that are relevant to the exception message are enabled in the popup menu.

To view calendar data from exceptions:

1. In the Exceptions Details window, select one of the exceptions listed above.
2. Right-click and select the Calendar option from the pop-up menu.

## Scheduled Receipts

Scheduled receipts are open orders with assigned due dates. This topic explains scheduled receipts as they relate to planning.

### Non-standard Discrete Jobs

When you use non-standard discrete jobs to model rework, the item is both the assembly and a component of the discrete job. Use one of the following processes to create and process the discrete job:

- Store and record the item in a nettable subinventory. In the non-standard discrete job, set MRP Net Qty to the expected yield of the non-standard job. Immediately issue the component material from the nettable subinventory to the to the discrete job. Complete the finished assemblies to a nettable subinventory.

- Store and record the item in a non-nettable subinventory. In the non-standard discrete job, set MRP Net Qty to the expected yield of the non-standard job and clear the component Net MRP. Complete the finished assemblies to a nettable subinventory.

For successful planning when you have non-standard discrete jobs for rework, if you provide a value for the job MRP Net Qty, then clear the component Net MRP.

## Consume Supplies from Substitution Chain

You can instruct the planning engine to use all non-firm purchase orders of components in the substitution chain before creating a planned order for a primary component. It uses the purchase orders in first-in, first-out sequence.

The planning engine:

- Generally fulfills all possible demands in a day with a purchase order before moving to the demands on the next day.

- Uses purchase orders in order of purchase order availability. It uses component substitution priority to prioritize multiple purchase orders for the same item on the same day

- Does not reserve supply to meet demands

- May create a planned order on one item and cancel purchase orders on another item in order to follow purchase order availability sequence.

This method:

- Only applies to purchased items

- Only applies in Constrained – Enforce capacity constraint plans
- Does not pay attention to order modifiers for scheduled receipts. Oracle recommends no order modifiers on these items.
- Does not pay attention to safety stock. Oracle recommends no safety stock on these items.
- Works only with single-level bills of material
- Does not source across organizations
- Bases demand priorities on demand date

This diagram shows an example of the processing.

There are two assemblies, A and AA.

The primary component of:

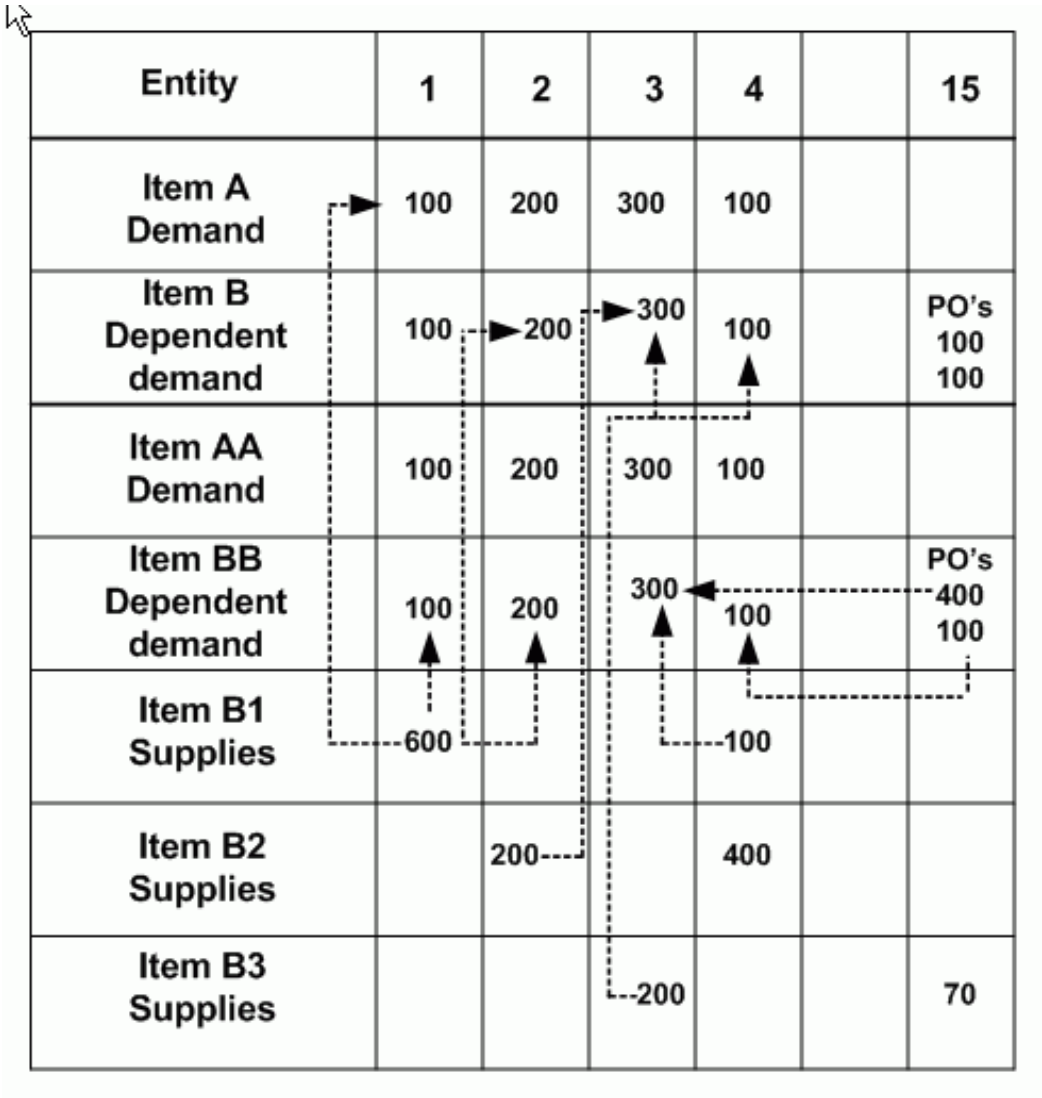
- Assembly A is component B
- Assembly AA is component BB

The substitution chain for:

- Component B is B1 - B2 - B3
- Component BB is B1

In this example:

- The supply of item B1 on day 1 for quantity 600 satisfies demands for items B and BB on days 1 and 2.
- The supplies of items B2 and B3 on days 2 and 3 satisfy demands for item B on days 3 and 4. These items are not in the substitution chain for item BB.
- The supply for item B1 on day 4 partially satisfies the demand for item BB on day 3.
- The planning engine uses the purchase order for item BB quantity 400 to satisfy its remaining demand quantity on day 3 and its demand on day 4. It does not use quantity 100 of this purchase order.
- The planning engine recommends that you cancel both purchase orders for item B on day 15 and the purchase order for item BB quantity 100 on day 15. In the diagram, they have asterisks after their quantities.




To enable this processing, set these profile options:

- MSO: Component offset logic for optimization to 2
- MSC: Use Optimization Phase Supply Due Dates for Pegging to Yes
- MSO: Schedule PO in FIFO to Yes
- MSO: Additional Demand Slices for Shared Supply Rescheduling to -1
- MSO: Net All Firm Supplies Before Creating Planned Order to All Supply Types

## Maximize Use of Substitute Supplies

You can instruct the planning engine to use the on-hand and on order supply of

substitute components before using the on-hand, on order, and planned supply of primary components. Use this method if you prefer to buy or produce less of primary components by first using the supply of their substitute components

This method uses supplies in this order to satisfy its demands:

- Use on-hand and scheduled receipts of substitute components
- Use on-hand and scheduled receipts the of primary component
- Recommend planned orders for primary components
- Recommend planned orders for substitute components

This method:

- Only applies in Constrained (Without Scheduling) planning mode
- Only uses on-hand of a substitute component if it is higher than order modifiers Minimum Order Quantity, Fixed Order Quantity, and Fixed Lot Multiplier
- May only use part of the on-hand of a substitute component if it is higher than order modifiers but not a multiple of them

It uses substitute priority to decide the substitute component supply to use first. However, the highest priority substitute component supply may not always satisfy the earliest demand. These tables show an example:

This table shows demand for assembly A.

| Entity | Day 10 | Day 20 | Day 30 |
|---|---|---|---|
| Item A Demand | 5 | 5 | 5 |

This table shows the substitute components for assembly A, their substitute priority, and their on-hand.

| Substitute Component | Substitute Priority | On-hand |
|---|---|---|
| B1 | 1 | 10 |
| B2 | 2 | 5 |
| B3 | 3 | 5 |

In this example, the planning engine does not use the on-hand for substitute component

B3; the quantities of substitute components with higher substitute priorities (B1 and B2) are enough to satisfy the demands for assembly A. The planning engine can do any of the following

- Use on-hand of substitute component B1 quantity 10 to satisfy the demands for assembly A on day 10 quantity 5 and day 20 quantity 5. Use on-hand of substitute component B2 quantity 5 to satisfy the demand for assembly A on day 30 quantity 5.

- Use on-hand of substitute component B2 quantity 5 to satisfy the demand for assembly A on day 10 quantity 5. Use on-hand of substitute component B1 quantity 10 to satisfy the demands for assembly A on day 20 quantity 5 and day 30 quantity 5.

- Use on-hand of substitute component B1 quantity 10 to satisfy the demands for assembly A on day 10 quantity 5 and day 30 quantity 5. Use on-hand of substitute component B2 quantity 5 to satisfy the demand for assembly A on day 20 quantity 5.

This diagram shows an example of the processing if you use this method.

There is an assembly A with order modifier Minimum Order Quantity of 500.

The primary component of assembly A is component B

The substitution chain for component B is C.

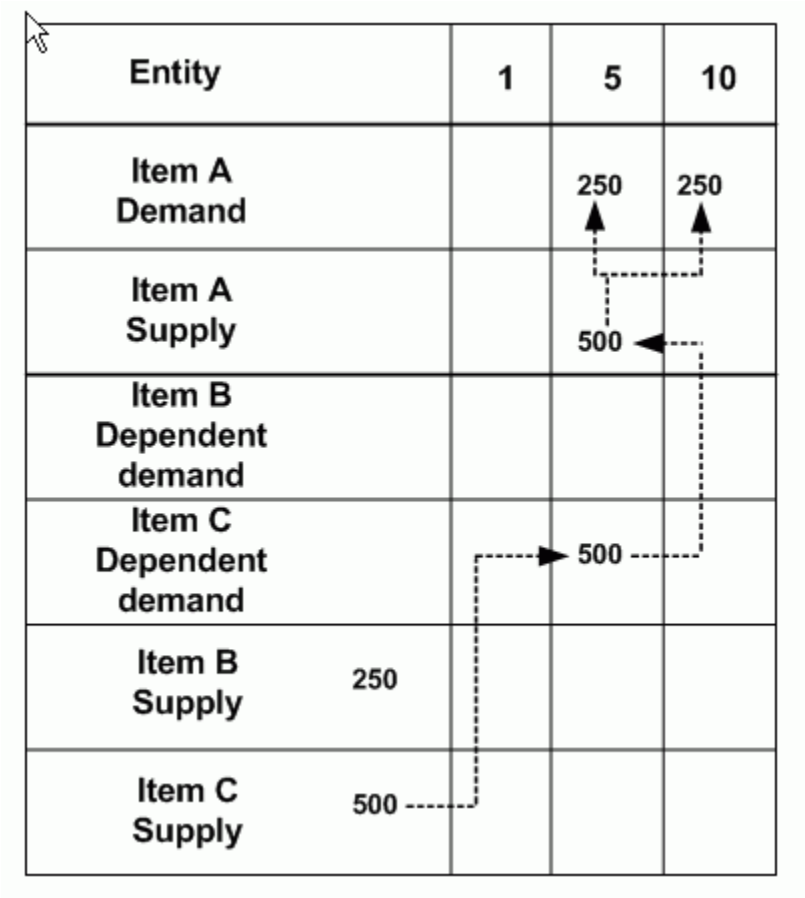
In this example:

- Assembly A has demands of quantity 500, quantity 250 on day 5 and quantity 250 on day 10.

- The planning engine recommends a planned order against assembly A of quantity 500 on day 5 to satisfy both demands.

- Because of the planned order for assembly A on day 5, the planning engine creates planned order demand for quantity 500 against substitute component C.

- The on-hand for component C of quantity 500 satisfies the planned order demand for substitute component C on day 5.




To enable this processing, set these profile options:

- MSO: Use up existing supply of primary components before substitute to No; This setting states your preference to use substitute supplies before primary supplies. However, if there is no on hand or scheduled receipts for the substitute components or the primary component, the planning engine creates planned orders for the primary component first, then the substitute components

- MSO: Use Existing Supplies in Alternate BOM/Subs. Comp to 0 or 1 (do not use 2 or 3): This setting states your preference for whether or not the planning engine uses alternate bill of material component supplies.

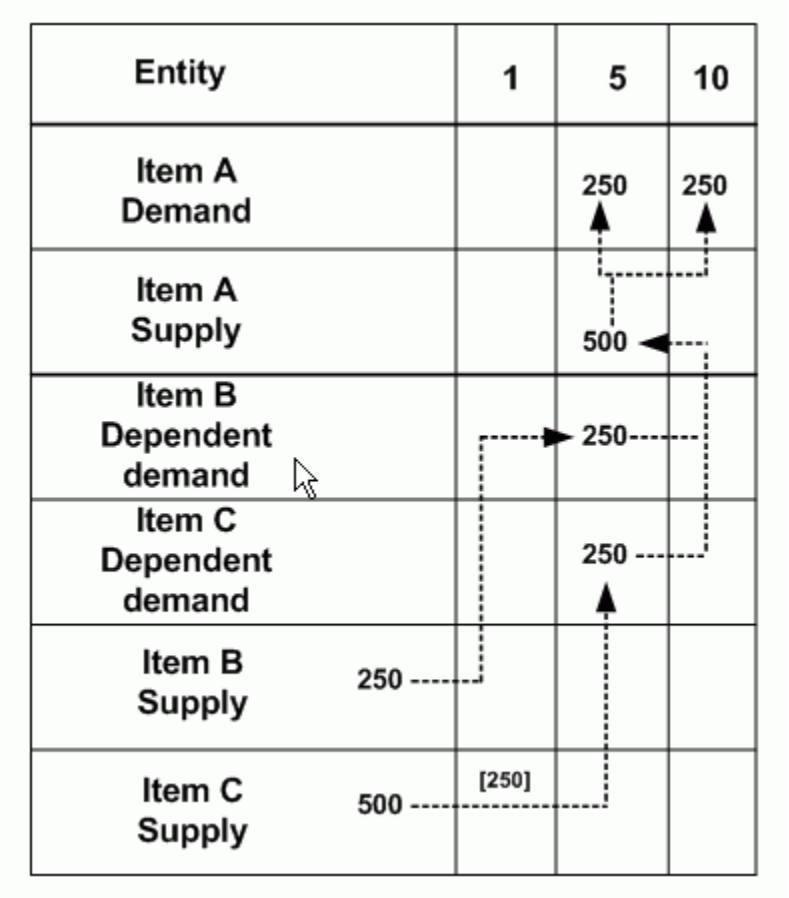
- MSO: Postpone Use of Alternates to Latest Possible Time to No: This setting states your preference that the planning engine should not delay planning alternate supplies until the last possible moment.

- MSO: Cost Roll-up incremental factor to 1

This diagram shows an example of the processing if you do not use this method.

In this example

- Because of the planned order for assembly A on day 5, the planning engine creates planned order demand for quantity 250 on primary component B and creates planned order demand for quantity 250 on substitute component C.
- The on-hand for primary component B of quantity 250 satisfies the planned order demand for primary component B on day 5.
- Quantity 250 of the on-hand for substitute component C of quantity 500 satisfies the planned order demand for substitute component C on day 5.




## Setting Up Batch Resources

Batch operations can process multiple items simultaneously. Typical examples of batch operations are heat treatment, sand blasting, electroplating, specialized drying, and gamma ray treatment to kill bacteria.

Work scheduled via batch processing is characterized by the same work performed on multiple items simultaneously for a preset amount of time. Some of the other characteristics of batch processing are similarities in processing, capacity available to hold the items, and minimum batch size considerations.

The critical issues for scheduling batch operations are:

- Grouping items for scheduling
- Constraining resources along multiple dimensions
- Honoring minimum and maximum batch sizes
- Delaying or prebuilding to make up a batch

The following steps show the basic business process flow for scheduling batch operations:

1. Group orders for an item or across items for batch operations.
2. Evaluate batch resources availability along multiple dimensions.
3. Determine minimum and maximum batch sizes.
4. Determine delaying and/or prebuilding criteria for batching.

## Capability

Oracle ASCP allows you to specify a resource as a batch type resource at the department resource level. A batch type resource is consumed only on a Lot basis. Oracle ASCP batches several orders for an item or across items when scheduling batch resources. Oracle ASCP batches operation sequences that carry the same batchable resource and schedules them as a batch. The criteria for batching depends on the following factors:

- Sharing same standard operation code
- Same usage on the routing

If you do not assign a standard operation code to an operation sequence that uses a batchable resource, Oracle ASCP only batches orders with matching durations.

If the maximum capacity is exceeded, the planning engine pushes out batchable resources to the first unconstrained bucket.

## To set up Resource Batching

1. Sign on using the Manufacturing and Distribution Manager responsibility.
2. From the Navigator, select Bills of Materials > Routings > Resources.

   The Resources form appears.
3. To specify a resource as a batch type resource at the department resource level,

select Batchable.

You cannot use some batchable alternate resources and some non-batchable alternate resources in the same make order. To model this, use alternate routings instead of alternate resources.

4. Enter Minimum Batch Capacity and Maximum Batch Capacity quantities and their Batch Capacity UOM.
   - The minimum batch size is implemented as a non-enforced constraint. The maximum batch size is an enforced constraint; the planning engine continues to batch orders until it meets the maximum batch size or exceeds the batching window.
   - Verify that there is a unit of measure conversion factor between the routing assembly primary unit of measure and the resource Batch Capacity UOM.
5. Enter Batching Window and its UOM

   Specify the window size in days. If the planning engine does not find enough order quantity within the batching window to at least meet Minimum Batch Capacity, it:
   - Starts a batch with less than the minimum quantity
   - Issues an exception message
6. Enter Batching Penalty.

## Batchable Resources and Planned Orders

Oracle Advanced Supply Chain Planning calculates the capacity of the batchable resource as

(Specified Batch Capacity in Resource Screen) * (Number of Resource Units specified in Department/Resources Screen)

When releasing a planned order, Oracle Advanced Supply Chain Planning always sets the assigned units on a batchable resource requirement to 1. To prevent data inconsistencies, make sure that the planned order quantities do not require more than one assigned unit's worth of capacity. Use order modifier Maximum Order Quantity against the routing assembly.

## Batching Window

You can specify a window to batch orders and specify the window size at the department resource level. If the system does not find orders in the batching window which is equal to or more than the minimum batch quantity, it starts a batch with less than minimum quantity. In this case, an exception message is generated.

Specify the batching window value on the source system in days to match the way that the collections process considers it.

If the planning engine appears to schedule large gaps between resources and you want to reduce them, Oracle recommends that you lower the batching window size.

## Minimum / Maximum Batch Capacity

You can specify minimum and maximum batch quantities for batch type resources. The minimum batch size is implemented as a soft constraint. The maximum batch size is a hard constraint. Oracle ASCP continues to batch orders until the maximum batch size is met or until the Batching window is exceeded.

## Batchable Unit of Measure

You can specify a unit of measure (volume or weight) at the resource level that is appropriate to your resource. In addition to the resource availability (time dimension), Oracle ASCP allows you to constrain a resource in one other dimension (batching dimensions are time, volume, and weight).

The batching activity is constrained by the maximum capacity set for a resource.

In order to define routings including batchable resources, you must have a unit of measure conversion factor between the item's primary unit of measure and its batchable unit of measure.

**Example: Batching orders for 2 items**

The following table presents order quantities for two items, A and B, sharing the same batchable resource:

| Item | Day 1 Qty. | Day 2 Qty. | Day 3 Qty. | Day 4 Qty. | Day 5 Qty. | Day 6 Qty. | Day 7 Qty. | Day 8 Qty. | Day 9 Qty. | Day 10 Qty. |
|---|---|---|---|---|---|---|---|---|---|---|
| Item A | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 4 |
| Item B | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 |

Batching Window = 3

Maximum Capacity = 6

Considering the batching window and the maximum capacity of the resource, the first batch is processed on day 2 for the total quantity of 4:

First Batch on Day 2 = 2 + 2 = 4

Because there is a maximum capacity of 6, the 3 units on day 5 is not included in the first batch.

Second Batch on Day 5 = 3 + 3 = 6

**Example: Required Hours and Required Capacity**
Order Qty: 2500

Weight requirement: 15 pounds/item

Batch process time: 14 hours

Routing assigned units: 2

If the order is firm order, if it pegs to a firm order, or if the plan is Constrained - Enforce demand due dates, the resources are overloaded.

The resources consume 8 assigned units instead of 2 units (max), then:

- Required hours: 112
- Required capacity: 525,000 resource hours per batch (2500 units * 15 pounds/unit * 14 hours)

## Performing Tasks on the Planning Server

You can perform the following tasks only on the Planning Server:

- Create instances
- Define plan names and its options
- Create priority rules

You can perform the following tasks on the source or Planning Server:

- Add new sourcing rules
- Add new assignment sets
- Add new bill of distribution
- Change the order priority for any independent demand
- Add/change supplier capacity and flex fences
- Change plan parameters

## Minimum Remaining Shelf Life

Minimum Remaining Shelf Life (MRSL) is used in organizations with goods that can expire. MRSL enables Planning to consider the expiration date of on hand lots when transferring to the destination, the longevity of safety stock, and sourcing and netting

logic calculations.

You can use it to ensure sales orders and forecasted material has not reached its expiry date when shipped; or in the period between when the customer receives, uses, or sells it.

> **Note:** This feature is supported only in plan mode Constrained (Without Detailed Scheduling).

> **Note:** Advanced Supply Chain Planning does not support MRSL with Project Planning.

## Prerequisites

❒ If you use the Item Attributes Mass Maintenance window to load MRSL item attributes, enter the Item Simulation Set Name value used in the Plan Options window. Enter this value in the Item Simulation Set field of the Main tabbed region.

### To set up Minimum Remaining Shelf Life:

1. Navigate to the System Profile Values window.

   See: MSC Profile Options, page A-13

2. Enable shelf life functionality by setting profile MSC: Respect Minimum Remaining Shelf Life Days to Yes.

3. Specify the date to begin minimum remaining shelf life in profile, MSC: Anchor date for calculating remaining shelf life. Choices are:

   - Ship Date
   - Arrival Date

4. Select whether or not to use order modifiers when planning for transfer orders in profile MSC: Shelf Life Override of Order Modifiers for Transfer Orders. Choices are:

   - Off: Respect order modifiers for transfer orders.
   - On: Ignore order modifiers for transfer orders.

   Use this profile option to instruct the planning engine whether or not to maximize the number of demands satisfied with respect to minimum remaining shelf life. MRSL is more efficient without order modifiers. If you cannot ignore order modifiers, use modifiers with smaller values.

5. If using priority pegging, set the following profile options:
   - Set profile MSO: Supply Window Size to 1.
   - Set profile MSO: Demand Window Size to 1.
6. Navigate to the Item Attributes Control window in Oracle Inventory.

   See: Defining Item Attribute Controls, *Oracle Inventory User's Guide*
7. For your inventory item, set the Inventory item attribute: Item Shelf Life. You set it to the calendar days from the stocking of an item until it expires.
8. Set end item minimum remaining shelf life.

   To specify the calendar days after shipment or arrival that the material should not expire, set Minimum Remaining Shelf Life in calendar days. You can set it:
   - For each item-organization. Use the Item Attributes Mass Maintenance form, Organization scope
   - For each item-customer-customer site. Use the Item Attributes Mass Maintenance form, Customer scope.
   - On each sales order line: To do this, enter the value in a descriptive flexfield and add your own process to a data collections request set that puts it into the ODS on the planning server.
   - On each forecast line that has a customer/customer site

   The sales order and forecast values override the item-customer-customer site values. Use these, for example, if your customer will accept a shipment outside the MRSL parameters because it knows it will ship it before it expires. The item-customer-customer site values override the item-organization values.

   If some of your customer's storage conditions are worse than yours, the product may expire quicker than you've expected when you set item shelf life. You can model this situation by increasing the minimum remaining shelf life for those customers.
9. Navigate to the Item Attributes Mass Maintenance window, select the Organization Scope.
10. For your inventory item, define the shelf life tolerance by selecting Shelf Life Slack (Days) in the Attribute field.

    The tolerance is the allowable limit in calendar days that the item can miss the expiration requirement:
    - This value increases an item's shelf life and therefore increases whether or not

Planning uses it to satisfy a demand.

- The value of zero, the default, makes it more probable to have unused material, and the least likely you are to use expired material.
- The higher the value, the less likely you are to have unused material and the more likely you are to use expired material.

11. Set the shelf life for transfer and onhand safety stock supplies by selecting Safety Stock MRSL in the Attribute field.
12. Define ingredients as the MRSL of end items by selecting MRSL Ingredient Item in the Attribute field.
13. Navigate to the Line Items tabbed region in the Sales Orders window to specify sales order priority.

    Sales order priority controls which items the Planning engine allocates to sales orders. Update the following fields on the sales order:

    - Line Item
    - Planning Priority
14. Align variable and routing processing lead times to reduce violating capacity constraints in the planning process. See:
    - Variable lead time: Lead Time and the Planning Time Fence, page 4-70
    - Routing lead time: Creating a Routing, *Oracle Bills of Material User's Guide*

## Processing

The shelf life of end items begin when you receive them to stock

When planning to ship a lot to a customer site, the planning engine knows:

- When the lot went into stock and when it expires (expiry date)
- When the lot ships to (ship date) or arrives at (arrival date) the customer site
- How long the lot should remain unexpired after it ships to (ship date) or arrives at (arrival date) the customer site (minimum remaining shelf life)

The planning engine only ships lots that will not be expired (reached their expiry date):

- When you ship them and when they arrive at the customer site

- Between the time that the customer receives it and uses it or sells it (minimum remaining shelf life)

If there are onhand quantities that you have not used before their expiration date:

- They expire
- You cannot use them
- They become excess inventory

If there are multiple lots that suit, the planning engine selects one that is available before the demand date by the least number of days.

**Example 1**

An item has shelf life of 60 days

You stock a lot of a part on day 1

The item expires on day 60

You want to ship it to a customer who wants the lot to be unexpired for 30 days after they receive it

The transit time to the customer is 5 days

The lot arrives at the customer site on day 5

The lot must be unexpired until day 35 [Arrival day + Minimum remaining shelf life = 5 + 30]

The planning engine recommends shipment of this lot. The customer expects the lot to stay unexpired until day 35 and the lot expires on day 60

| Day | 1 | … | 5 | … | 35 | … | 60 |
|---|---|---|---|---|---|---|---|
| Event | - Lot into your stock<br>- Lot shipped to customer site | | Lot arrives at customer site | | Customer cutoff for lot expiration | | Lot expiry date |
| Activity | | Transit time to customer site | | Minimum remaining shelf life to day 35 | | | |

**Example 2**

An item has shelf life of 60 days

You stock a lot of a part on day 1

The item expires on day 60

You want to ship it to a customer who wants the lot to be unexpired for 55 days after they receive it

The transit time to the customer is 10 days

The lot arrives at the customer site on day 10

The lot must be unexpired until day 65 [Arrival day + Minimum remaining shelf life = 10 + 55]

The planning engine does not recommend shipment of this lot. The customer expects the lot to stay unexpired until day 65 but the lot expires on day 60.

| Day | 1 | … | 5 | … | 60 | 65 |
|---|---|---|---|---|---|---|
| Event | - Lot into your stock<br>- Lot shipped to customer site | | Lot arrives at customer site | | Lot expiry date | Customer cutoff for lot expiration |
| Activity | | Transit time to customer site | | Minimum remaining shelf life to day 65 | | |

### Maximum Time Offset Constraint

In constrained and optimized planning, it there is the Max Time Offset constraint. It overrides many other constraints. Instead of shipping expired material or material with not enough shelf life left, the planning engine creates more supply and

- Overloads capacity.
- Ignores source rank
- Ignores source tier
- Ignores sourcing split percentage
- Ignores end item substitute distance from demanded item

For example:

- An item has shelf life of 10 days
- You stock a lot of a part on day 1
- The item expires on day 10
- You want to ship it to a customer who wants the lot to be unexpired for 3 days after they receive it
- Max Time Offset constraint is seven days. The material must arrive at the customer site at the latest by day 7 [Shelf life - Minimum remaining shelf life = 10 – 3]. The material can arrive earlier than day 7.

| Day | 1 | … | 5 | 7 | … | 10 |
|---|---|---|---|---|---|---|
| Event | - Lot into your stock<br>- Lot shipped to customer site | | Demand date | Latest day for lot to arrive at customer site | | - Customer cutoff for lot expiration<br>- Lot expiry date |
| Activity | | Max Time Offset | | | Minimum remaining shelf life to day 10 | |

The planning engine plans lot arrival as close to the demand date as possible. If there is a lot that can arrive on day 6 and a lot that can arrive on day 7, the planning engine plans to deliver the lot that can arrive on day 6.

However, if the lot that can arrive on day 6 is an end item substitute and the lot that can arrive on day 7 is the item on the sales order line, the planning engine plans to deliver the lot that can arrive on day 7

Planning allocates supplies to sales orders based on the demand priorities that you specify. If you rerun plans for:

- On hand and firm supplies: The allocations and committed dates do not change.
- Non-firm supplies: The allocations and committed dates may change.

When the Planning engine calculates the remaining shelf life, it uses the either the Requested or Scheduled date, depending on which one is later–as shown in the following table:

| Anchor Date | IF | Remaining Shelf Life Days Must be < or = |
|---|---|---|
| Arrival Date | Scheduled Arrival Date < Requested Arrival Date | Expiry Date - Requested Arrival Date |
| Arrival Date | Scheduled Arrival Date > or = Requested Arrival Date | Expiry Date - Scheduled Arrival Date |

| Anchor Date | IF | Remaining Shelf Life Days Must be < or = |
|---|---|---|
| Ship Date | Scheduled Ship Date < Requested Ship Date | Expiry Date - Requested Ship Date |
| Ship Date | Scheduled Ship Date > or = Requested Ship Date | Expiry Date - Scheduled Ship Date |

You cannot use profile option MSO: Net All Firm Supplies Before Creating Planned Order.

You cannot use MRSL if you are doing project manufacturing.

The planning engine uses end item substitution. It may use substitute item supply that meets the MRSL parameters better than ordered item supply.

The planning engine allocates available and planned supplies to committed sales orders in preference to uncommitted sales orders.

### Safety Stock

The planning engine uses MRSL to plan to satisfy intransient and transient safety stock levels.

You decide how much remaining shelf life the safety stock should have to be useful. In form Item Attributes Mass Maintenance, set item-organization attribute Safety Stock MRSL. If you don't set a value, the planning engine uses item MRSL.

It is the minimum number of days of remaining shelf life for the safety stock when the planning engine uses it to satisfy a demand. Oracle recommends that:

- You use a value based on all customers MRSL for the item.
- Consider setting it to the longest customer MRSL's that the safety stock needs to protect for; a little above or, most typically, a little below this value.

The planning engine validates the remaining shelf life of transfer and on hand safety stock supplies against Safety Stock MRSL. It creates more supplies for transfer and on-hand supply if its remaining shelf life is longer than Safety Stock MRSL.

**Example 1**

Item ships from organization M1 to customers.

Its:

- Primary source is Make at M1.

- Alternate source is Transfer from M2, lead time is 2 days.

M1:

- Shelf life is10 days.
- Item MRSL is 7 days
- Safety Stock MRSL is 8 days

| Onhand/ Safety Stock Lot | Quantity | Location | Expires | Remaining Shelf Life | Status |
|---|---|---|---|---|---|
| 1.1 | 20 | M1 | Day 9 | 9 days | Valid to satisfy customer order day 1; remaining shelf life 9 >= SS MRSL 8.<br>Valid to satisfy customer order day 2; remaining shelf life 8 >= SS MRSL 8. |
| 1.2 | 20 | M2 | Day 10 | 10 days | Valid to satisfy customer order day 3 from M1; (remaining shelf life 10 – in transit 2) >= SS MRSL 8 |
| 1.3 | 20 | M3 | Day 8 | 9 days | Invalid to satisfy customer order day 1; (remaining shelf life 9 – intransit 2 not >= SS MRSL 8 |

**Example 2**

Item ships from organization M1 to customers.

Its:

- Primary source is Make at M1.
- Alternate source is Transfer from M2, lead time is 2 days.

M1:

- Shelf life is 20 days.
- Item MRSL is 7 days

The onhand in lot 1.1:

- Supplies the safety stock demand on day 1
- Its remaining shelf life is 15 days

A sales order appears on day 8; the onhand in lot 1:1 can satisfy it:

- The sales order is within the Safety Stock MRSL of Lot 1.1
- When it arrives at the customer, it is within the Customer Site MRSL.
- It has enough remaining shelf life to last until the end of the Customer Site MRSL

| Day | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sales Order | | | | | | | | 20 | | | | | | | |
| Customer Site MRSL | | | | | | | | X | X | X | X | X | X | X | |
| Safety Stock Demand | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 30 | | | | | | | |
| Safety Stock MRSL | X | X | X | X | X | X | X | X | | | | | | | |
| Onhand Lot 1.1 | 20 | | | | | | | | | | | | | | |
| Lot 1.1 Remaining Shelf Life | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |

### Transfer Orders

The planning engine subtracts from minimum remaining shelf life for days when the item is in transit.

It bases expiration dates for in transit items on the item-organization shelf life in the destination organization.

### Sourcing and Substitution

The planning engine considers the MRSL in its sourcing decisions. It bases its decisions on:

- MRSL of the item at the destination, customer-customer site, or sales order level
- The expiry dates of the supplies at the sources

It tries to use as many supplies as it can to satisfy the demand due dates and their MRSLs.even if it has to ignore source organization ranking and use end-item substitution. For example, to satisfy a demand, it might use:

- On-hand at the secondary distribution center instead of on-hand from the primary distribution center

- A substitute end item instead of the sales order end item

It uses shelf life first to decide what supply to use first by using shelf life. It uses rank, tier, split percentage, and end-item substitute distance from demanded item only when many supplies meet the MRSL. For example:

- You can substitute item A or item B for item C
- You stock item A in organization 1.
- You stock item B in organization 2.
- Item C sourcing rule is rank 1 = organization 1 and rank 2 = organization 2

This table shows the supply and demand position for the items.

| Day | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| C demand | | 100 (MRSL = 4) | | 100 (MRSL = 4) | | Day 2 MRSL cutoff | | Day 4 MRSL cutoff | |
| C supply | | | | | | | | | |
| A supply | Qty 100, Org 1 | | | | | | | | Shelf life expires |
| B supply | Qty 100, Org 2 | | | | | | Shelf life expires | | |

The planning solver processes like this:

- Without MRSL, the rank 1 quantity satisfies the first demand. So the A onhand should satisfy the demand for C on day 2 and the B onhand should satisfy the demand for C on day 4.
- With MRSL, both the A onhand and the B onhand can satisfy the demand for C on day 2. Only the A onhand can satisfy the demand for C on day 4; the B onhand expires before the MRSL cutoff.
- Therefore, ignore rank. The B onhand should satisfies the demand for C on day 2 and the A onhand satisfies the demand for C on day 4

### MRSL Ingredient

You can set the shelf life of an ingredient as the shelf life for its end item. The Planning engine plans the end item using the:

- MRSL of the end item
- Shelf life of the MRSL ingredient

You can use an ingredient anywhere in the multi-level supply chain bill of materials of the end item.

In the Item Attributes Mass Maintenance window, set item-organization attribute MRSL Ingredient.

Each end item can have only one MRSL ingredient. Do not set an ingredient that has substitutes as an MRSL Ingredient.

### Analyzing Exceptions

If the planning engine cannot satisfy a demand within MRSL, it issues exception message End item minimum remaining shelf life violation.

See these fields in Planner Workbench, Items window:

- Shelf Life Slack (Days)
- Safety Stock MRSL
- MRSL Ingerdient

See these fields in Planner Workbench, Supply/Demand window:

- Expiry Date: The supply expiration date. If the supply does not expire, the field is blank.
- MRSL Days: The minimum remaining shelf life days of demand. If there is no MRSL, the field is blank.
- MRSL Date: The date for minimum remaining shelf life days of demand. If there is no MRSL, the field is blank.

# 5

# Supply Chain Plan Simulations

This chapter covers the following topics:

- Overview of Simulations
- Simulation Scenarios
- Simulation Modes
- Running Net Change Replan Simulations
- Using Undo to Reverse Actions or Make Changes
- Comparing Scenarios Quantitatively

## Overview of Simulations

Oracle ASCP provides simulation planning so you can simulate changes and respond to changing conditions. Simulations can be run by changing plan inputs and parameters and rerunning the new, simulated plan. The new simulated plan can be saved as a new plan and compared to the original (baseline) plan. You can copy and version your plan, save and compare exceptions, and visually highlight changes.

## Simulation Scenarios

You can simulate changes to material and resource capacity simultaneously. In addition, you can simulate the effects of changing planned orders.

### Supplier Capacity

To simulate item supply changes, you can add new supplier capacity and adjust a supplier's capacity (for example, change daily capacity from 100 units to 200 units) over a specified time frame.

### Resource Availability

You can add new resource availability and modify how many resources are available over user defined time frame. Resource constraints include available machine hours, available worker hours, and adding or removing shifts.

### Shutdown Planning

Oracle Enterprise Asset Management plans maintenance activity and creates maintenance work orders which may specify shutdown of equipment resources. To plan for those shutdowns in Oracle Advanced Supply Chain Planning, run the Oracle Enterprise Asset Management Load Equipment Maintenance Downtime concurrent process.

The process creates a simulation set with the downtimes recorded as capacity changes for reduced hours. You can limit the organizations, departments, and resources that appear in the simulation set.

It does not create capacity changes for resources with Available 24 Hours selected.

You cannot edit the capacity change entries but you can make additional simulation set entries.

For more information, see *Oracle Enterprise Asset Management User's Guide*.

### Supplies

To simulate supply changes, you can:

- Add new planned orders
- Firm planned orders, discrete jobs, and purchase orders
- Modify quantities, dates, sources, and alternates

### Demands

You can alter the demand priority of any demand. Oracle ASCP then modifies the existing schedule to accommodate changes to demand priority. To simulate demand changes, you can modify quantities and due dates for independent demand (MDS entries). You can also add new Manual MDS.

## Simulation Modes

You can use the Planner Workbench to simulate and evaluate changes to specific orders, supplier capacity, and resource capacity. Additions to demand and supplies can also be simulated. Net change replan simulation is a powerful What If analysis feature

that lets you update a material plan by planning only the items you have changed in the Planner Workbench. Replanning is based on the snapshot data gathered during the original planning run and the changes you have made with the Planner Workbench. No other transactions, such as receipts in Oracle Inventory, are considered in the replanning process. You can also implement the changes recommended by net change replan.

## Net Change Replan

Net change replan generates only those plan outputs that have changed compared to a baseline plan. When you make minor changes to a plan, it evaluates it in a time that depends on the plan size and complexity.

Batch Mode Planner

Batch mode lets you communicate directly with the database while making and replanning your changes. While frequent replanning can place an excessive load on system resources, batch mode gives other users access to the plan while you are performing simulations.

Batch mode is particularly useful when you want to complete a single replanning cycle.

Online Planner

The online planner lets you simulate and replan manual changes to supply and demand records without increasing database traffic. Starting an online session loads all planning data into memory. Afterwards, you can make changes to that data, then replan the changes to see their effect on the rest of the plan. You can implement and release your changes from within the session, or you can make changes and replan as many times as necessary before the release.

As a simulation tool, the online planner lets you see the effect of the changes you make in the Planner Workbench. As an implementation tool, it reduces unnecessary database transactions and offers rapid plan revision and execution. As a monitoring tool, it generates the full set of exception messages following a replan. It also lets you save the exceptions generated by previous sessions, offering you feedback on successive planning decisions.

The online planner is particularly useful when performing frequent simulation on a single plan. In online mode, you can do this without suffering a significant loss in performance.

The following are some of the rules of operation for the Online Planner:

- You can view any plan even if another user is running online simulation.
- You are not allowed to start another Online Planner session nor are you allowed to make changes to the plan when Online Replan is progressing.
- You are allowed to enter changes before and after, but not during Online Replan session.

- The changes you have made prior to Online Replan are incorporated into the replan.
- You can view all of the changes that have been made since the last batch rerun of the plan.
- You can see the user and timestamp of all changes.
- The changes you made during an online session can be undone.

## Running Net Change Replan Simulations

You have two options for running net change replan simulations:

- Batch plan
- Online replan

Run the online planner or batch replan process after making changes to supplies and demands in Planner Workbench, for example, adding new supplies and demands, changing supply dates and quantities. If you do not run these, your next complete regeneration may fail, especially if you set plan option Overwrite to None or Outside Planning Time Fence.

If the plan has end item substitutions, the original exception messages about that subject remain in the plan output even though they do not apply after the replan.

### Running Batch Replan

**Note:** Save and make a copy of your baseline plan before running batch replan (make modifications to the copy). Otherwise, you will lose visibility to your baseline plan. SeeUsing Undo to Reverse Actions or Changes, page 5-6

### To run a batch replan

1. Select a plan in the Planner Workbench.
2. Make the desired changes to the plan.
3. Run your plan again by choosing Plan > Batch Replan.
4. Make a note of the concurrent request ID and choose OK.
5. Verify that the replanning process is complete.

6. Re-query the plan to review your changes.

7. If you are not satisfied with the replan results, repeat steps 2 through 6 as needed.

## Running Online Replan

**Note:** Save and make a copy of your baseline plan before running batch replan (make modifications to the copy). Otherwise, you will lose visibility to your baseline plan.

### To run online replan

1. Select a plan in the Planner Workbench Window.

2. Choose Plan > Start Online Planner.

3. Make a note of the concurrent request ID and choose OK.

   While the online planner loads the data into memory, you will see the Online Planner Status window. This window displays the progress of the loading and signals you when the session is ready for planning

4. When the status window informs you that the session is ready for planning, close the window to return to the Planner Workbench. Your online planner session is now active.

5. Make the desired changes to your plan.

6. Save the plan.

7. Choose Plan > Online Replan.

### To check the status of an online planner session

Choose Plan > Online Planner Status.

The Online Planner Status window appears.

**Note:** Though you can view a plan while another user is running an online simulation for that plan, you can neither make changes to the plan nor start another simulation until the current run completes. An icon denoting that online planner is running accompanies the plan in the left pane tree.

**Note:** It is recommended that the online planner be stopped as soon as a series of simulations is complete. Multiple active online planners could consume a lot of system resources (CPU/memory) in a production environment.

### To stop an online planner session

1. Choose Plan > Stop Online Planner
2. Click OK to confirm your choice.

   **Note:** Do not stop the online planner until all simulations are complete.

### To save your actions

1. Choose Plan > Save actions.

   A pop-up window indicates the version number of your saved actions. Note this version number if you wish to view your actions later.

### To view your actions

1. Select the Actions tab (left pane) then scroll down to the desired version.

## Using Undo to Reverse Actions or Make Changes

The Undo feature enables you to reverse changes for online planning. The following list details how this feature functions:

- You can undo your changes in any order, as long as the record you are undoing has not had subsequent changes made to it.
- You can undo changes until the plan is rerun in batch mode.
- You can view online planning changes using Undo Summary.
- You can view all of the changes that have been made since the last batch rerun of the plan. You can see the user and timestamp of all changes.
- You can tell immediately upon entering the Planner Workbench that the online planner is running or that it has been run.
- You can create a savepoint/bookmark and undo all of your changes to that

savepoint. Bookmark names are not required to be unique.

- You cannot undo a release.
- You cannot undo changes made to the implement properties.

## To view the Undo Summary for a plan

1. Select Plan > Undo Summary.

   The Undo Summary window appears. This window lists the user and timestamp for every action/change made to the plan since the last batch replan. It includes online planning changes, sorted by user.

## To view details on an action

1. Select an action in the Undo Summary window.
2. Click Detail.

   The Undo Detail window appears.

## To undo your actions

You can undo actions you make in the online planner in any order so long as no one else has made subsequent changes to the record you are undoing.

> **Note:** You can only undo changes made between batch replan runs.

1. Select Plan > Undo Summary.

   The Undo Summary window appears.
2. Select a change you initiated in the online planner.
3. Click Undo.

   > **Note:** You cannot undo another user's changes. If you attempt to do so, you will receive an error message.

## To create a bookmark

You can create save points for undoing online planner actions. Subsequently, you can undo only those online planner actions made after the bookmark.

1. Select Plan > Add Undo Bookmark.
2. In the pop-up window, enter a name for the bookmark.

## Comparing Scenarios Quantitatively

Simulation lets you compare Key Performance Indicators (KPIs) of multiple plans and make necessary changes to reach your goals. Standard KPIs available in Oracle ASCP are:

- Inventory Turns
- On-time Delivery
- Planned Utilization
- Margin Percentage
- Margin
- Cost Breakdown

You can quantify the results of simulation scenarios and graphically compare the results of multiple scenarios to help you choose the plan that best meets your performance objectives.

You can also compare the differences in exception messages between two plans in the Plan Comparison Report; see Identifying Differences Between Plans, page 15-142.

### To compare scenarios quantitatively

1. Navigate to the Planner Workbench.
2. Select the baseline plan.
3. While holding the shift key, select the simulated plan.

   KPIs for both plans show side by side.

# 6

# Supply Chain Plan Optimization

This chapter covers the following topics:

- Overview of Optimization
- Optimization Objectives
- Setting Penalty Factors
- Comparing Different Optimization Runs

## Overview of Optimization

In optimized supply chain plans, Oracle ASCP uses a combination of traditional linear programming and constraint programming techniques.

You can choose to optimize your plans to meet one or more of the following objectives:

- Maximize inventory turns
- Maximize plan profit
- Maximize on-time delivery

The plan objective is derived by combining and weighting chosen objectives. Optimization determines the best possible sources of supply, considering all your material, resource, and transportation constraints.

Optimized plans automatically choose (on the basis of minimizing plan objective cost) the following:

- Alternate bills of material
- Alternate routings
- Alternate resources
- Substitute components

Constrained plans with decision rules also select alternate bills of material, routings, and resources; however, they do not do so on the basis of maximizing plan objectives.

If the planning engine selects an alternate bill of material that does not have a corresponding routing, it uses the primary routing. If the planning engine selects an alternate routing that does not have a corresponding alternate bill of material, the planning engine uses the primary bill of material.

Optimized plans will override the rankings and sourcing percentages provided in sourcing rules and bills of distribution as necessary in order to minimize the plan objective cost.

You cannot plan repetitive items in optimized plans.

## Optimization Objectives

Multiple optimization objectives can be met by assigning weights to each. This is done using the Optimization tab.

For more information on the Optimization tab, see Defining Plans., page 3-1

Following are descriptions of the various optimization objectives:

**Maximize Inventory Turns**

This objective is achieved by minimizing the total inventory for the plan duration.

**Maximize Plan Profit**

- The following are considered:
  - Item cost
  - Resource cost
  - Inventory carrying cost
  - Transportation cost

    Other penalty costs are considered, such as demand lateness, resource over utilization, etc.

**Maximize On-time Delivery**

This maximizes on-time delivery by trying to ensure that all demand is met on time. Penalty factors specify the relative importance of demands when maximizing on-time delivery.

## Setting Penalty Factors

Oracle ASCP depends a great deal on data related to costs, penalties, and priorities above and beyond what is available from the ERP system. You can set penalty factors at

different levels using flexfields, plan options, or profile options. Flexfields let you set penalty factors at the most discrete level. For example, you can set the Penalty Factor for Late Demand at the Demand, Item, or Org level using flexfields. Plan options and profile options let you set the same penalty factor at the Plan level and Site level, respectively.

> **Warning:** Penalty costs are different from penalty factors. Penalty costs are the product of the penalty factor and some other parameter such as list price, item cost, resource cost, or transportation cost.

For all of the steps related to setting penalty factors, please log in as Manufacturing and Distribution Manager, unless otherwise noted. You must run the Create Planning Flexfields program beforehand for the flexfields used for setting penalty factors to be operational. Please see Oracle ASCP Flexfields, page B-1 for additional details. Finally, please refer to Choosing an Objective Function for help with setting actual penalty costs.

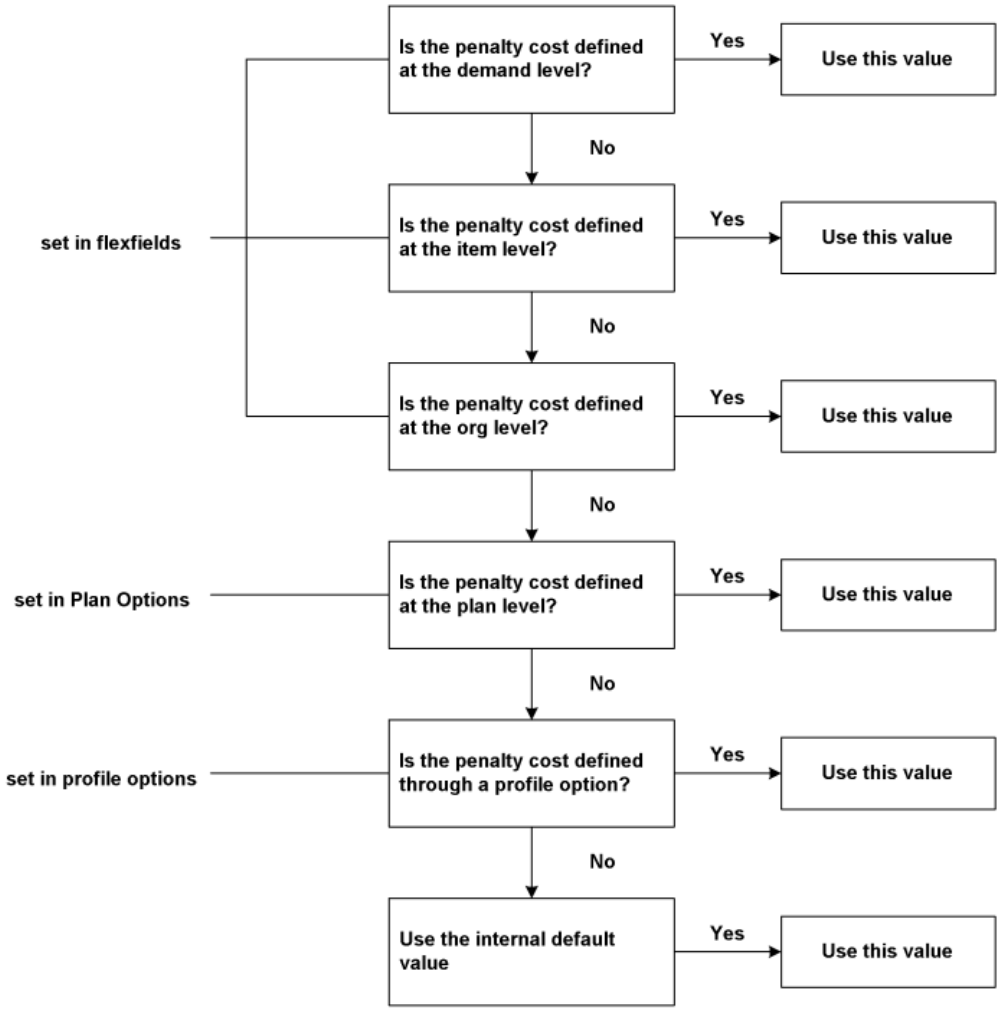
For more information on setting penalty factors, see Profile Options, page A-1 and Oracle ASCP Flexfields., page B-1

## Setting Late Demand Penalty Costs

The following figure shows the hierarchy for Setting Penalty Factor for Late Demand.

### Hierarchy for Setting Penalty Factor for Late Demand

***Hierarchy for Setting Penalty Factor for Late Demand***




If the data is not available at a given level, Oracle ASCP will check for available data at the next level in the hierarchy and so on.

### To set late demand penalty cost at the demand level

1. From the Navigator, choose Supply Chain Planning > Forecast > Entries.

   The Item Forecast Entries window appears.

2. Select a forecast.

3. Select the flexfield.

   The MRP Forecast Dates window appears.

4. Enter the Late Forecasts Penalty factor.

**To set late demand penalty cost at the item level**

For more information on these steps, please refer to the *Oracle Inventory User's Guide*.

1. From the Navigator, choose Inventory > Items > Master Items.

   The Master Item window appears.

2. Click the Item field.

3. Select View menu > Find.

   The Find Master Items window appears.

4. Enter a search string for the item in the Item field and click the Find button.

   The Master Item window appears.

5. Select the flexfield.

   The Items window appears.

6. Enter the Late Demands Penalty factor.

**To set late demand penalty cost at the organization level**

1. From the Navigator, choose Inventory > Setup > Organizations > Parameters.

   The Organization Parameters window appears.

2. Select the flexfield.

   A second Organization parameters window appears.

3. Enter the Late Demands Penalty factor.

**To set late demand penalty cost at the plan level**

1. Select the Advanced Supply Chain Planner responsibility.

2. From the Navigator, choose Supply Chain Plan > Options.

3. Select a plan.

   The Plan Options window appears.

4. Select the Optimization tab.

5. Enter the penalty factor in the Demand Lateness field.

**To set late demand penalty cost through a profile option**

1. Log in as the System Administrator.
2. From the Navigator, choose Profile > System.

   The Find System Profile Values window appears.
3. Enter the profile name MSO: Penalty Cost Factor for Late Demands in the Profile field and click Find.

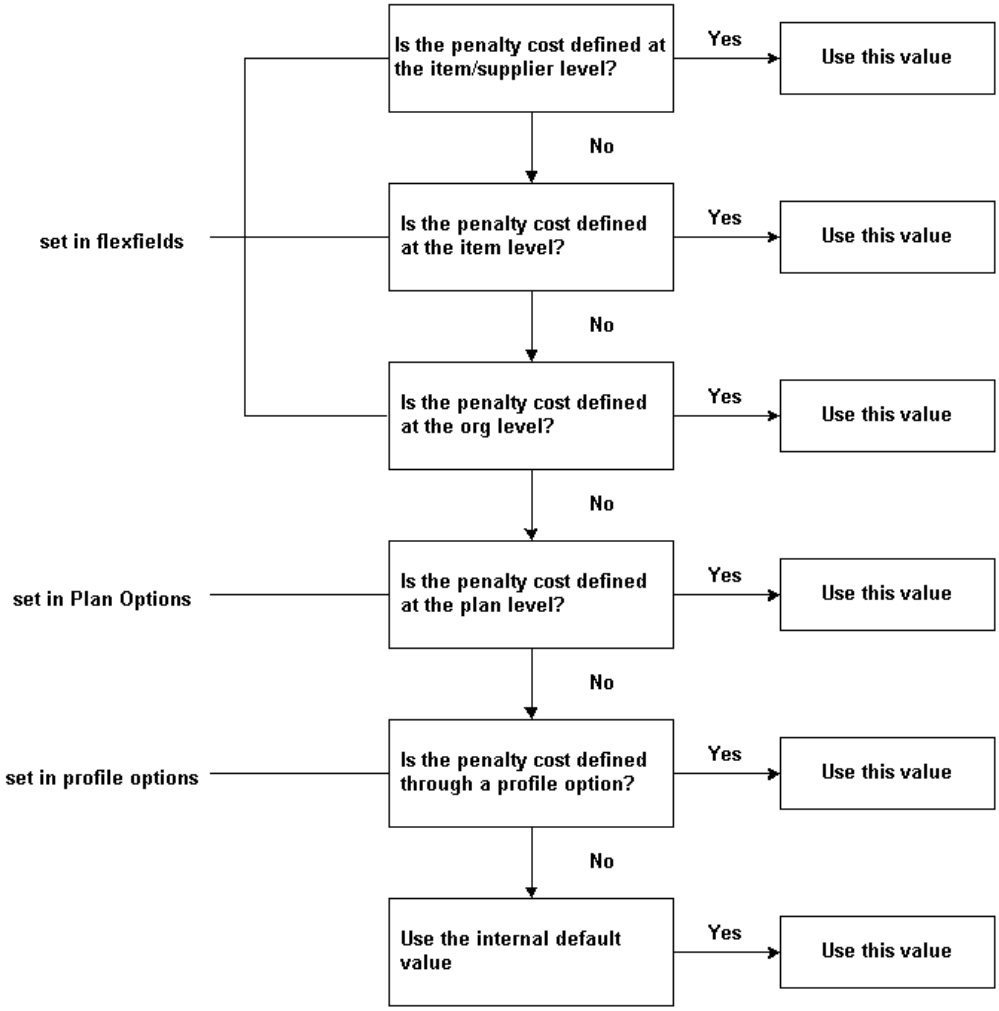
   The System Profile Values window appears.
4. Enter the penalty factor in the Site column.

## Setting Penalty Factors for Exceeding Material Capacity

The following figure shows the hierarchy for Setting Penalty Factor for Exceeding Material Capacity.

### Hierarchy for Setting Penalty Factor for Exceeding Material Capacity

***Hierarchy for Setting Penalty Factor for Exceeding Material Capacity***




If the data is not available at a given level, Oracle ASCP will check for available data at the next level in the hierarchy.

### To set penalty factors for exceeding material capacity at the item/supplier level

For more information on these steps, please refer to the *Oracle Purchasing User Guide*.

1. From the Navigator, choose Purchasing > Supply Base > Approved Supplier List.
2. Click Attributes.

   The Supplier-Item Attributes window appears.
3. Select the flexfield.

The Attributes window appears.

4. Enter the Material Over-Capacity Penalty factor.

**To set penalty factors for exceeding material capacity at the item level**

For more information on these steps, please refer to the *Oracle Inventory User's Guide*.

1. From the Navigator, choose Inventory > Items > Master Items.

   The Master Item window appears.

2. Click the Item field.

3. Select View menu > Find.

   The Find Master Items window appears.

4. Enter a search string for the item in the Item field and click Find.

   The Master Item window appears.

5. Select the flexfield.

   The Items window appears.

6. Enter the Material Over-Capacity Penalty factor.

**To set penalty factors for exceeding material capacity at the organization level**

1. From the Navigator, choose Inventory > Setup > Organizations > Parameters.

   The Organization Parameters window appears.

2. Select the flexfield.

   A second Organization Parameters window appears.

3. Enter the Material Over-Capacity Penalty factor.

**To set penalty factors for exceeding material capacity at the plan level**

1. Select the Advanced Supply Chain Planner responsibility.

2. From the Navigator, choose Supply Chain Plan > Options.

3. Select a plan.

   The Plan Options window appears.

4. Select the Optimization tab.

5. Enter the penalty factor in the Exceeding material capacity field.

**To set penalty factors for exceeding material capacity through a profile option**

1. Log in as the System Administrator.
2. From the Navigator, choose Profile > System.

   The Find System Profile Values window appears.
3. Enter the profile name MSO: Penalty Cost Factor for Exceeding Material Capacity in the Profile field and click Find.

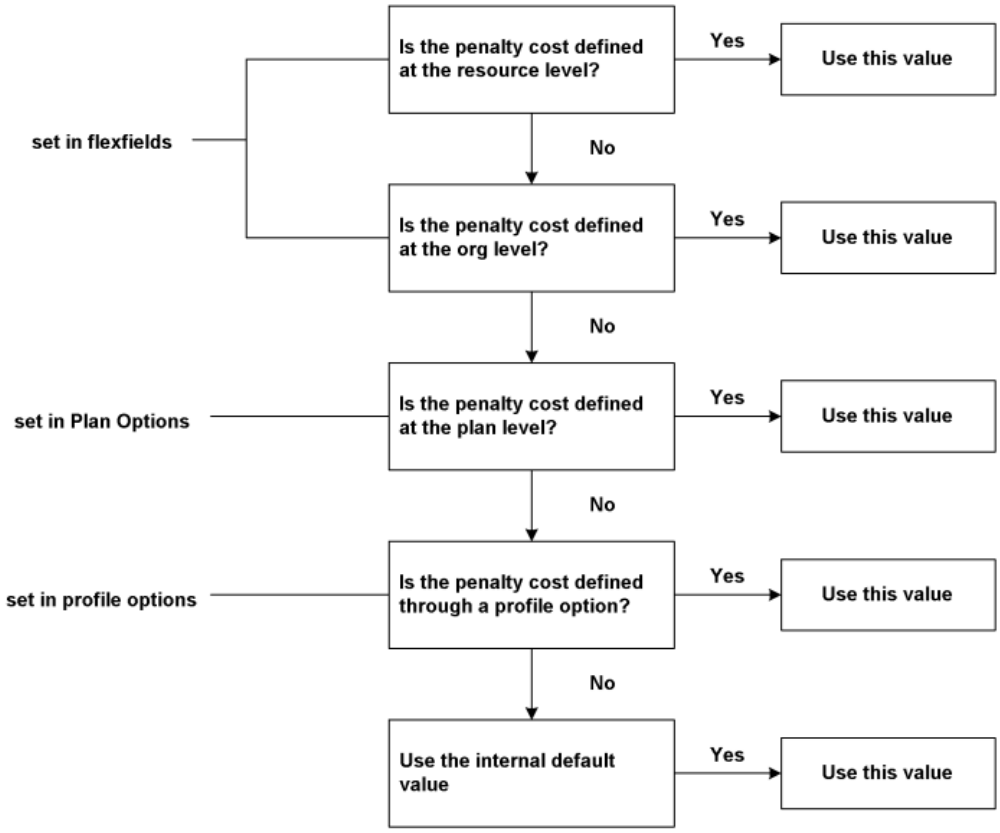
   The System Profile Values window appears.
4. Enter the penalty factor in the Site column.

## Setting Penalty Factors for Exceeding Resource Capacity

The following figure shows the hierarchy for Setting Penalty Factor for Exceeding Resource Capacity.

### Hierarchy for Setting Penalty Factor for Exceeding Resource Capacity

***Hierarchy for Setting Penalty Factor for Exceeding Resource Capacity***




If the data is not available at a given level, Oracle ASCP will check for available data at the next level in the hierarchy.

#### To set penalty factors for exceeding resource capacity at the resource level

1. From the Navigator, choose Bills of Material > Routings > Departments.

   The Departments window appears.

2. Find a department.

3. Click Resources.

   The Resources window appears.

4. Select the flexfield

   The Department Resource Information window appears.

5. Enter the Resource Over-Capacity Penalty factor.

**To set penalty factors for exceeding resource capacity at the organization level**

1. From the Navigator, choose Inventory > Setup > Organizations > Parameters.

   The Organization Parameters window appears.

2. Select the flexfield.

   The Organization Parameters window appears.

3. Enter the Resource Over-Capacity Penalty factor.

**To set penalty factors for exceeding resource capacity at the plan level**

1. Select the Advanced Supply Chain Planner responsibility.

2. From the Navigator, choose Supply Chain Plan > Options.

3. Select a plan.

   The Plan Options window appears.

4. Select the Optimization tab.

5. Enter the penalty factor in the Exceeding resource capacity field.

**To set penalty factors for exceeding resource capacity through a profile option**

1. Log in as the System Administrator.

2. From the Navigator, choose Profile > System.

   The Find System Profile Values window appears.

3. Enter the profile name MSO: Penalty Cost Factor for Exceeding Resource Capacity in the Profile field and click Find.

   The System Profile Values window appears.

4. Enter the penalty factor in the Site column.

## Setting Penalty Factors Using Plan Options

There are four penalty factors that can be set in the Optimization tab. For more information on the Optimization tab, see Defining Plans., page 3-1

- Penalty Factor for Late Demand
- Penalty Factor for Exceeding Material Capacity

- Penalty Factor for Exceeding Transportation Capacity
- Penalty Factor for Exceeding Resource Capacity

#### Penalty Cost for Late Demand

The penalty cost for late demand (forecasts and sales orders) is equal to:

- (Penalty factor) x (List price)

#### Penalty Cost for Exceeding Material Capacity

The penalty cost for exceeding material capacity is equal to:

- (Penalty factor for exceeding material capacity) x (Item cost)

#### Penalty Cost for Exceeding Transportation Capacity

The penalty cost for exceeding transportation capacity is equal to:

- (Penalty factor for exceeding transportation capacity) x (Transportation cost)

#### Penalty Cost for Exceeding Resource Capacity

The penalty cost for exceeding resource capacity is equal to:

- (Penalty factor for exceeding resource capacity) x (Resource cost)

> **Note:** Unit costs (list price, item cost, and so on) play an important role in determining penalty costs.

## Setting Penalty Factors Using Optimization Profile Options

These profile options can be used to specify default values necessary for optimization.

> **Note:** For detailed information on setting these and other profile options, see Profile Options, page A-1.

#### Penalty Factor for Late Demand

Use this profile option to define a penalty factor common to all demands. The demands include sales orders and forecasts.

#### Penalty Factor for Exceeding Material Capacity

Use this profile option to define a global penalty factor for exceeding material capacity. This value will be common to all items in the plan.

#### Penalty Factor for Exceeding Resource Capacity

Use this profile option to define a global penalty factor for exceeding resource capacity. This value will be common to all manufacturing and transportation resources in the plan.

#### Inventory Carrying Costs Percentage

Use this profile option to specify the inventory carrying costs percentage for all items in the plan. The value is specified as a number between 0 and 1.

#### Maximum Allowable Days Late

Use this profile option to limit the number of days by which a demand or non-firm scheduled receipt can be moved out. This value is used to improve performance during optimization. The value is specified as an integer greater than 0.

## Comparing Different Optimization Runs

You can generate an optimized and executable plan based on your plan objectives as well as material, resource, and transportation constraints. For example, you could compare two optimized plans with different objective weights and compare the results based on performance indicators.

Results of optimized plans are stored for use by future planning runs.

For more information on simulations see Simulations, page 5-1. For more information on evaluating plan performance and comparing multiple plans, see Exception Messages , page 15-142.

# 7

# Supply Chain Constraint-Based Planning

This chapter covers the following topics:

- Overview of Constraint-Based Planning
- Constraint Types
- Enabling and Disabling Constraints
- Setting Constraints for Different Plan Types
- Enforce Purchasing Lead-time
- Rules Used in Constrained Plans
- Enforce Capacity Constraints Scheduling
- Enforce Demand Due Date Scheduling
- Engineering Change Orders Use-Up Effectivity
- Forecast Expiration
- Sequence Dependent Setups
- Planned Inventory Points

## Overview of Constraint-Based Planning

Constraint-based planning and scheduling is an approach for balancing material and plant resources while meeting customer demand. It takes into account constraints at the enterprise and plant levels. Material and capacity constraints are considered simultaneously. Capacity constraints include factory, distribution, and transportation resources. This complete picture of the problem provides instant and global visibility to the effects of planning and scheduling decisions throughout the supply chain.

There are two types of constraint-based planning--with and without optimization. This section first describes constraint types that are applicable to both types, and then describes constraint-based planning without optimization. Constraint-based planning with optimization is described in Optimization, page 6-1.

You cannot plan repetitive items in constrained plans.

## Constraint Types

You can define constraints for materials and resources in your plan. You will also be able to specify the level of importance of these constraints depending on your business needs and the planning horizon. You can generate plans using the following scenarios for each planning bucket type (days, weeks, periods):

- Plan considering material constraints only
- Plan considering resource constraints only
- Plan with respect to both material and resource constraints

See Defining Plans, page 3-1 for information on defining the relative importance of constraints.

The following table gives you the information you need to run a constraint-based plan:

| Constraint Type | Includes |
|---|---|
| Items | BOM effectivities (process effectivity), ECOs, alternate BOMs, substitute components, by-products, safety stocks, order modifiers, supplier-specific order modifiers, supplier-specific lead-times, pegging restrictions |
| Manufacturing Resources | Routing effectivities, alternate routings, alternate resources, resource capacities, line rates, workday calendar |
| Transportation Resources | Carrier capacities, shipment and delivery calendars |
| Sourcng Constraints | Sourcing effectivities, sourcing ranks, allocation percentages, supplier capacity |
| Suppliers | Supplier capacity, supplier rank, supplier calendar, flex fences, supplier order modifier |
| DemDands | Sales orders/forecasts, demand priority, demand priority rules |

## Items

### Item Definition

General Planning tab, Source Organization field: Do not set the value of this field to the same organization in which you are setting the item attributes.

You set item attributes for process manufacturing supply tolerances as item attributes. These tolerances instruct the planning engine not to exactly match supply to demand at all times through the planning horizon. See Supply Tolerances, page 18-67.

The item attribute Create Supply only applies to end item substitution. It specifies whether to create supply at the current revision of the item or at a higher revision of the item. It does not control whether or not the planning engine creates planned orders for the item; for this, use item attribute MRP Planning Type.

Use the Item Attributes Mass Maintenance form to update the same item attributes for multiple items.

### Bills of Material

You can set effective dates for BOMs. Similarly, you can set effective dates for process effectivity (this is for Oracle OPM only). You can specify effectivities in the form of effective dates, use ups, model/unit numbers. For more information, see Effective Date Fields, *Oracle Bill of Materials User's Guide* and Primary and Alternate Bills of Material, *Oracle Bills of material User's Guide*

> **Note:** Effectivity can be set not only at the date level, but also at the unit number level.

The planning engine uses the yield percentage that is effective on the pegging demand date. Because of constraints, the planning engine could later schedule the component to be used on a date that has different yield percentage in the bill of material; however, the planning engine continues to use the yield from the pegging demand date.

### Engineering Changes (ECOs)

Oracle ASCP evaluates the engineering change orders as of their scheduled effective date. You can order material and plan resources that you need for new revisions ahead of time.

> **Note:** The planning process only suggests implementing engineering change orders when the unconstrained start date of the planned order is later than the effective date. Oracle ASCP does not suggest a planned order using an ECO if the planned order needs to start before the effective date of the ECO.

For a pending ECO, you can specify whether to include the engineering changes during

the planning process. Set the MRP Active Flag to Yes in the Engineering Change Order window if you want the planning process to consider the engineering changes on the ECO.

Oracle ASCP considers engineering changes when generating component requirements for planned orders and suggested repetitive schedules. The quantity specified by an engineering change order is considered if the scheduled effective date of the ECO is before the suggested start date of the order. For additional information, see Engineering Change Orders Use-Up Effectivity, page 7-66.

### Substitute Components

Substitute components are modeled similarly to alternate resources. Each primary BOM component is assumed to have a set of possible substitutes. The primary item will be used instead of the substitute when it is available.

For more information, seeAssigning Substitute Components, *Oracle Bills of Material User's Guide*.

### By-products

You can define negative usages for component items on a bill of material in Oracle Bills of Material. You can add by-products to discrete jobs using Oracle Work in Process.

Oracle ASCP includes by-products on standard and non-standard discrete jobs and components with a negative usage on a bill of material when netting supply and demand. Oracle ASCP considers this type of component requirement as supply available on the job completion date.

The due date for this by-product is the completion date of the operation that creates it. This is true both for planned orders and work orders.

> **Note:** You can manually add a negative requirement to a non-standard job in Oracle Work in Process to manage components that result in disassembly. You could use this option for repairing assembly units. It lets you track the item that is issued to the job as available supply on completion of the repair job.

### Planned Orders

You can turn off planned order creation for an item.

Consider turning off planned order creation if your business has these or similar situations

- You have a by-product in a bill of material that can be a downstream component. You want to consume the available stock of the by-product, but you do not want to buy any of it. In addition, you want to take sales orders for the by-product, to ship against them as supplies are available, but not to make any of the by-product to meet sales order demand.

- You want to phase out item components and their replacement with newer ingredients. You cannot have any orders or builds for the phased out item, but you want to use up the available stock that you have.
- You do not want to make more of an item, but you do want to distribute and sell the available stock.

To turn off planned order creation for an item, use Item Mass Maintenance and set item attribute New Planned Order Creation. Valid values are:

- Create New Planned Orders (default)
- Do Not Create New Planned Orders

This item attribute applies only to plans that do not have a planning phase. To use this feature:

- Set profile option MSC: Enable Advanced Constraints to Yes
- Select Plan Type Constrained (Without Detailed Scheduling)

If you want to turn off planned order creation for items in other plan types, use a workaround; see My Oracle Support Note 1486358.1.

#### Product Families

Product families improve plan performance, letting you plan further down the plan horizon. You can do the following at the product family level:

- Specify demands
- Run planning and scheduling
- Create supplies

For more information, see Forecast Explosion, page 3-115.

#### Safety Stock

See Safety Stock, page 4-129.

#### Order Modifiers

Order sizing is a set of item attributes that allow you to control the recommended order quantities for planned orders. The planning process creates planned orders using basic lot-for-lot sizing logic.

You can set order modifiers in the following forms:

- Master Items and Organization Items
- Supplier-Item Attributes: These values supersede values in Master Items and

Organization Items

- Recipe Validity Rule Details: For process manufacturing

> **Note:** The planning process ignores order modifiers for items that have a phantom supply type.

> **Note:** Order modifiers for supplied items may be defined by their suppliers.

For additional information, please refer to Items, General Planning Attribute Group and MPS/MRP Planning Attribute Group in the *Oracle Inventory User's Guide.*

**Fixed Days Supply**

The planning process places single orders for the quantity that covers the requirements for the user-defined number of days. When suggesting planned orders, the planning process looks forward this many days and accumulates all of the demand in that time period. It then suggests a planned order to satisfy the total quantity required for that time period.

If you use order modifier Fixed Days of Supply, the planning engine creates a single supply to cover multiple days of demand. During constraint-based scheduling, the planning engine may move the demand and supply dates such that you cannot reconcile the supply quantity to the demand dates and quantities. To attempt a reconciliation, Oracle recommends using the old due date on the planned order demands.

Fixed Order Quantity

The planning process places one or more orders for the user-defined quantity or repetitive rate.

- For discretely planned items, when the requirement for a given date exceeds the fixed order quantity, place multiple orders.

- For repetitively planned items, either recommend a rate equal to the fixed order quantity or a rate of zero.

**Fixed Lot Multiple**

The planning process places single orders in quantities that are multiples of the user-defined quantity or rate.

For example, when the fixed lot multiple quantity is 100 and the requirement equals 110 units, place a single order for 200 units.

**Minimum and Maximum Order Quantity**

The planning process places one or more orders for at least the minimum quantity, but

no greater than the maximum quantity.

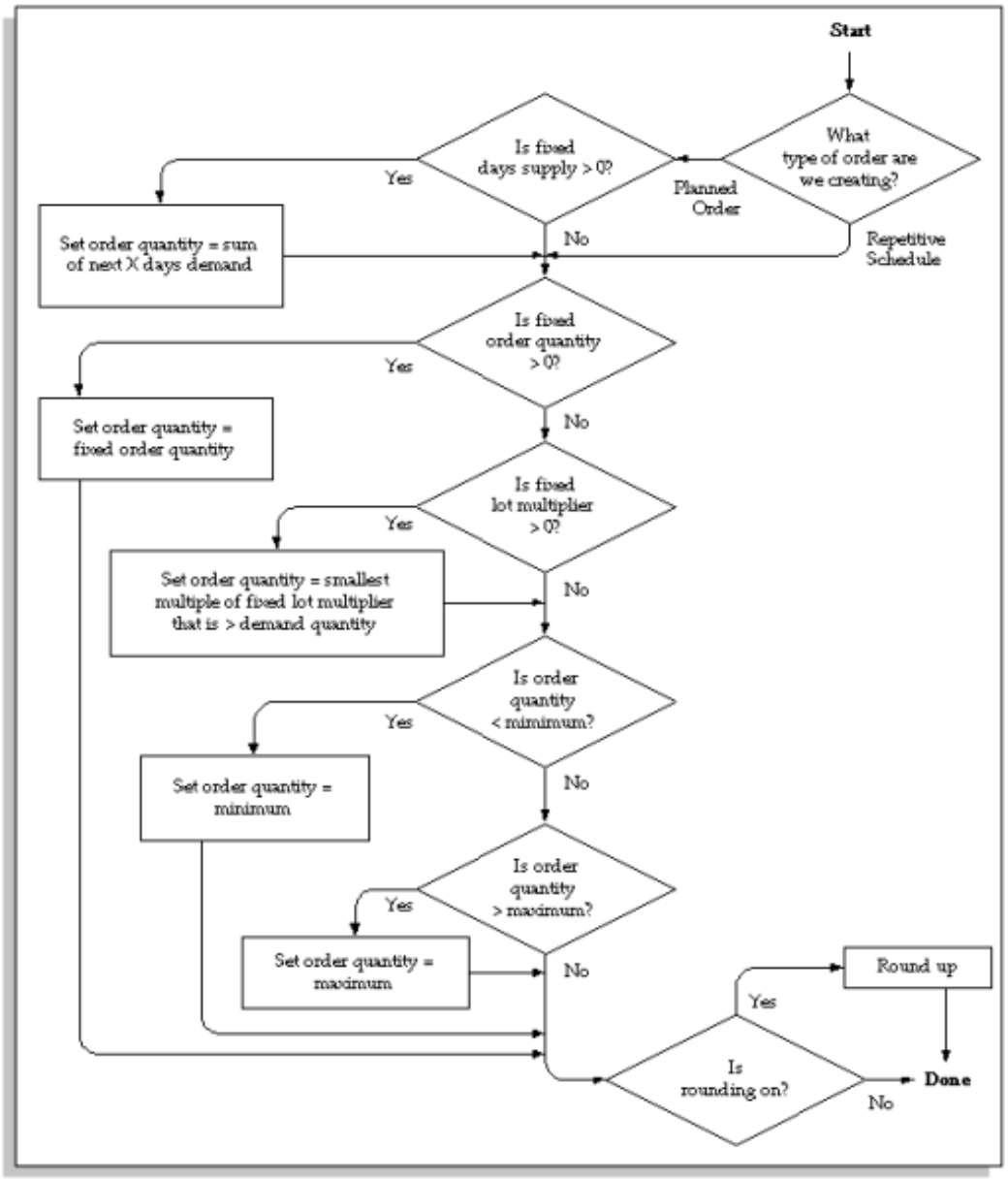
For discretely planned items, when the requirement for a given date exceeds the maximum order quantity, the planning process places multiple orders.

**Rounding Order Quantities**

You can define, for each inventory item, whether the planning process should round order quantities when the actual order quantity is calculated as a fraction. If you choose to round, order quantities are rounded to the next highest whole number.

> **Note:** By rounding up, the planning process may suggest a planned order for more than what is actually needed. This extra quantity is carried over into the next period as supply; therefore, the planning engine rounds other orders down to account for the excess supply from the last period.

This diagram shows the order in which the planning engine applies order modifiers to planned orders (precedence of order modifiers).




### Requirement Integer Quantities

Use requirement integer quantities to instruct the planning engine only to pass dependent demand requirement quantities that are whole numbers. You set the instruction for each component of each assembly in each organization.

The order modifier item attribute Round Order Quantities instructs the planning engine that when it calculates a fractional quantity for an assembly supply order, it should round the assembly supply order quantity up to the next highest whole number. Fractional supply order quantities occur because of:

- Fractional bill of material quantities

- Process yield
- Shrinkage
- Co-product relationship percentages
- MRP-planned safety stock
- Component yield

From the extra supply order quantities, the planning engine creates fractional dependent demands on the components to match those extra supply order quantities and carries pegging in fractional quantities through the lower bills of material levels. Pegging to fractional demand quantities is both inaccurate and difficult to understand when you actually make the components and subcomponents in whole number quantities.

To instruct the planning engine to round dependent demand quantities for components:

- On the Organization Items form, MPS/MRP planning tabbed region, select the item attribute Round Order Quantities for the component.
- On the Bills of Material form, Component Details tabbed region, select a value for the field Enforce Integer Req for the component.
    - Select Up to instruct the planning engine to round fractional dependent demand requirements up to the next highest whole number.
    - Select Down to instruct the planning engine to round fractional dependent demand requirements down to the next lowest whole number.
- If you use Oracle Process Manufacturing and want requirement integer quantities processing, select attribute Integer Multiple Scaled Items. This duplicates the Up selection of Enforce Integer Reqs.
- If you use substitute items, you can select Enforce Integer Reqs in the Substitute window.
- If you use engineering change orders, you can select Enforce Integer Reqs as you add and change the component list.

You can view the setting for each component in the Planner Workbench Components window, Item Details tabbed region.

The planning engine does not issue any new exceptions as a result of the rounding.

In the following situations, the planning engine honors your instruction:

- Material requirement plan, master production schedule, and distribution requirement plan

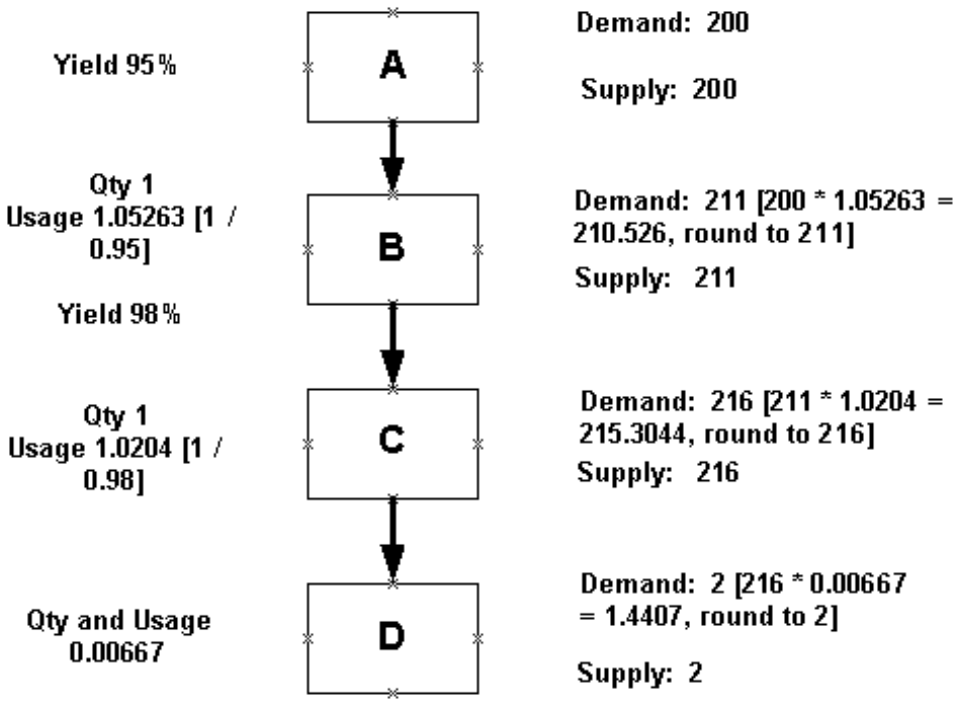
- Unconstrained, constrained, and optimized plan
- Netting with reservation levels of Projects/Seiban and Planning Groups

In the following situations, the planning engine does not honor your instruction:

- Inventory optimization plans
- Order promising
- Product family bills of material

This diagram shows a multilevel bill of material with all of the components Enforce Integer Reqs set to Up.

***Multi Level Bills of Material***




**Lead-times**

Enter intransit lead-time based on calendar days.

## Manufacturing Resources

### Routings

You can:

- Set effective dates for routings
- Specify alternate routings and alternate resources for the planning engine to use when the primary routing resources are not available
- Define different routings with varying priorities
- Associate a bill of material with routings
- Define the costs of using routings
- Specify the number of resources (resource units) that are available to work on an operation at a given time; the planning engine uses this number for resource availability instead of the resource unit numbers that you specified for each resource and its shifts.
- Specify operation yield: Do not enter cumulative yields; the planning engine calculates it from the operation yield.
- Set the profile option MSO: Use of Assigned Units in Scheduling to control the number of resource units to be used when scheduling a resource activity. For more information, see MSO Profile Options, page A-84.

When you define operation effectivity dates, always make the effective time 00:00:00. If this is not the effective time, the planning engine assumes 00:00:00 but the release process for planned orders using the operation may not complete correctly.

For more information, see Routings in *Oracle Bills of Material User's Guide*.

You specify process yields in the routings. The planning engine inflates material requirements and calculates resource requirements based on the amount of expected material at each operation sequence. The following process yield information is available in the standard, flow, and network routing types:

- Yield
- Cumulative yield
- Reverse cumulative yield
- Process yield

### Resources

You can define alternate resources for an operation, but not for a routing. A resource for an operation can have different alternates, each with its own priority. You can specify if two resources must be used simultaneously.

For more information, see Defining a Resource in Oracle Bills of Material User's Guide.

If you attempt to fix a late replenishment exception message by adding resource capacity and running the plan again, you may expose additional resource and material constraints and need to fix their exception messages. Constraint resolution can be an iterative process.

The planning engine rounds resource consumption to an integer value for each assigned unit. For example:

- A resource works eight hours per day and has five assigned units
- The routing for an item uses that resource for one hour
- A supply order for quantity 40 is scheduled on that resource for three assigned units
- The expected resource consumption is 40 hours [40 pieces * 1 hour per piece]
- The planning engine calculates resource consumption as 42 hours [((40 pieces * 1 hour per piece) / 3 assigned units) * 3 assigned units = (40 / 3) * 3 = 13.3 * 4 = 14 rounded * 3]

Consider an example that illustrates the use of the profile option MSO: Use of Assigned Units in Scheduling and the related impact on backward and forward scheduling. Three items (A, B and C) are being manufactured.

Make A

- Operation Sequence 10
- Resource R1
- Assigned Units = 1
- 200 units/day
- Maximum Availability of Resource = 2

Make B

- Operation Sequence 10
- Resource R2

- Assigned Units = 2
- 80 units/day
- Maximum Availability of Resource = 2

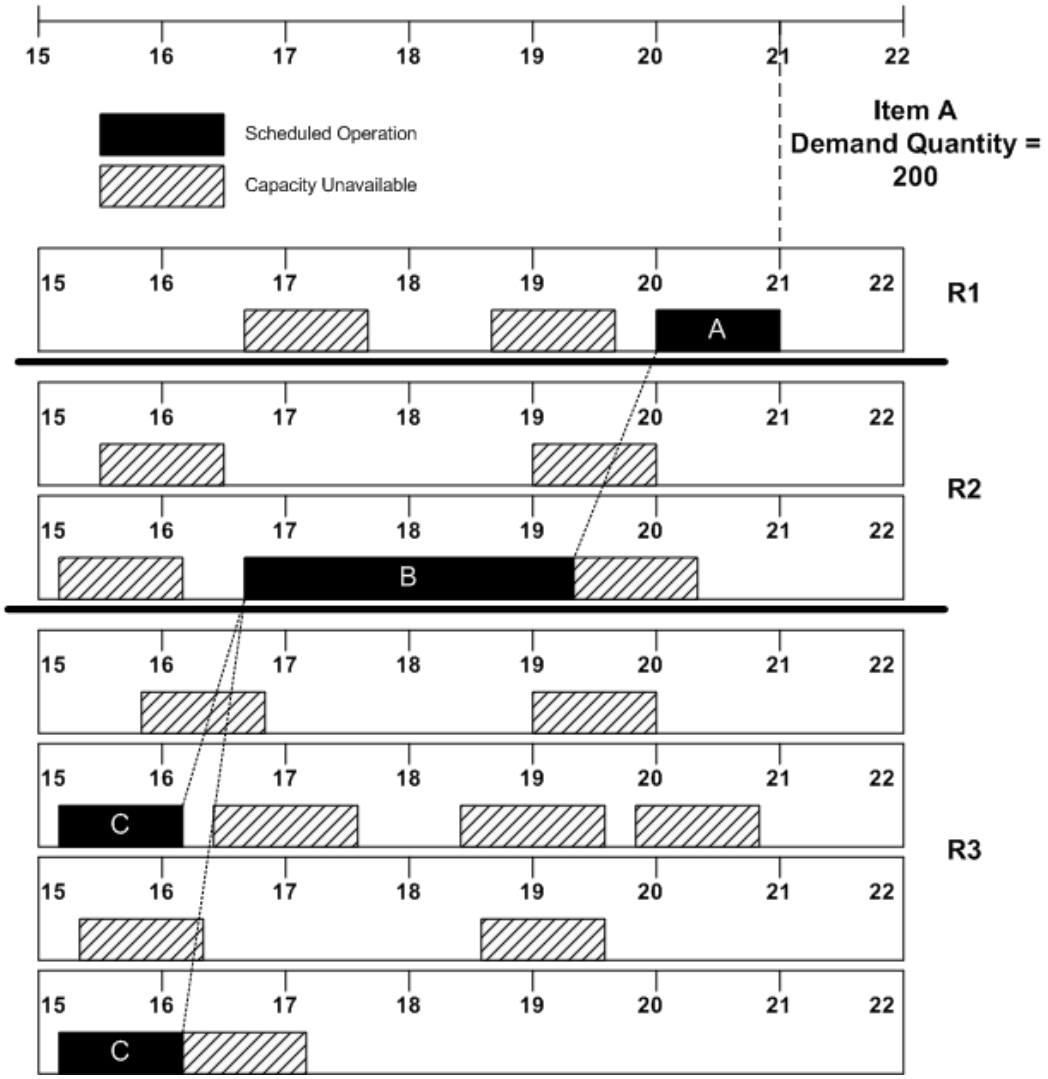
Make C

- Operation Sequence 10
- Resource R3
- Assigned Units = 4
- 100 units/day
- Maximum Availability of Resource = 4

#### Case 1: Backward Scheduling With Value Set to Variable

If you set the profile option MSO: Use of Assigned Units in Scheduling to Variable, backward scheduling succeeds as depicted by the illustration. In the illustration, A, B and C represent three items. R1, R2 and R3 represent the three resources who have specific units assigned. The demand is due on the 21st day.

*Impact on Backward Scheduling With Value Variable*

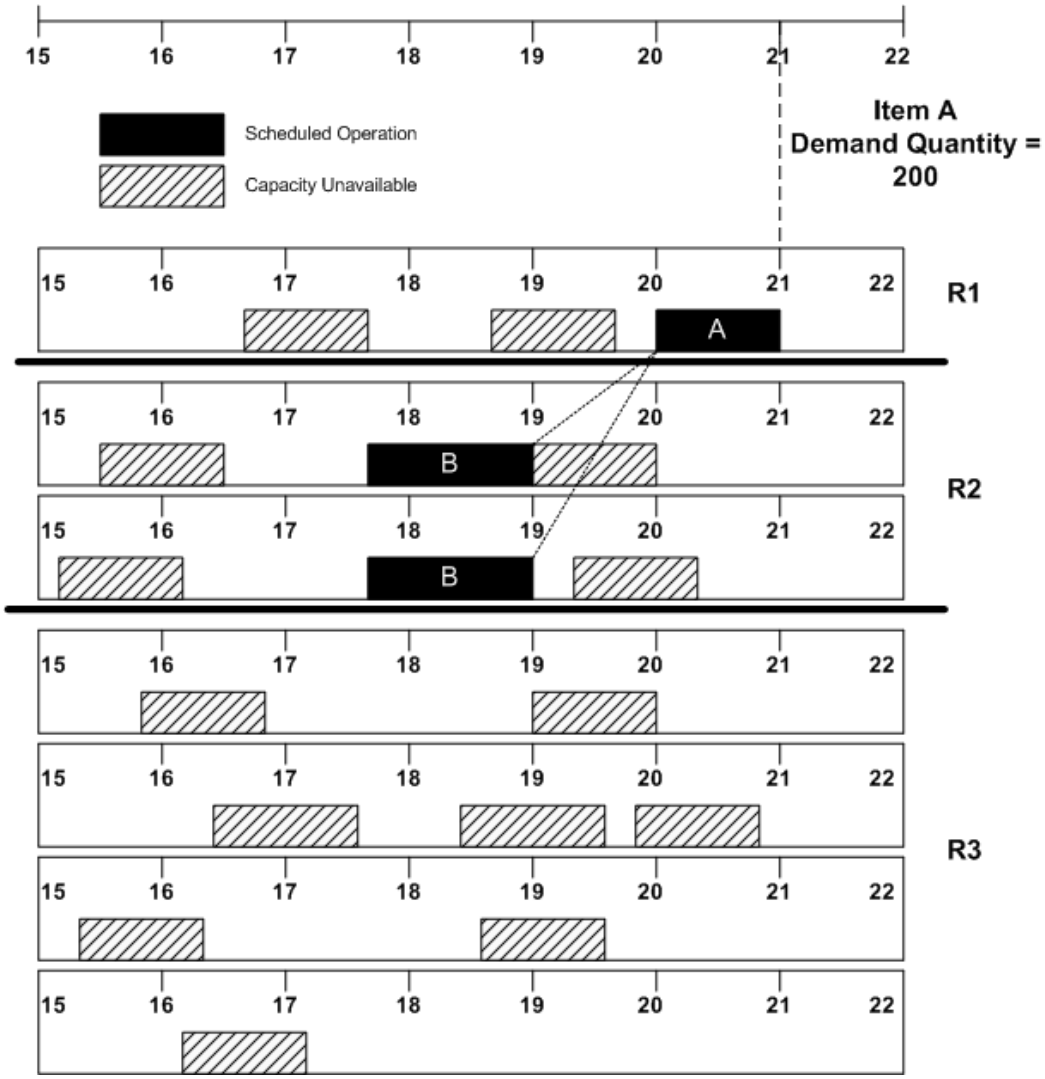



Backward schedule succeeds as the item C is scheduled in the available planning horizon.

#### Case 2: Backward Scheduling With Value Set to Fixed at Routing Value

The following illustration depicts the case when the profile option is set to Fixed at Routing Value.

*Impact on Backward Scheduling With Value Fixed at Routing Value*

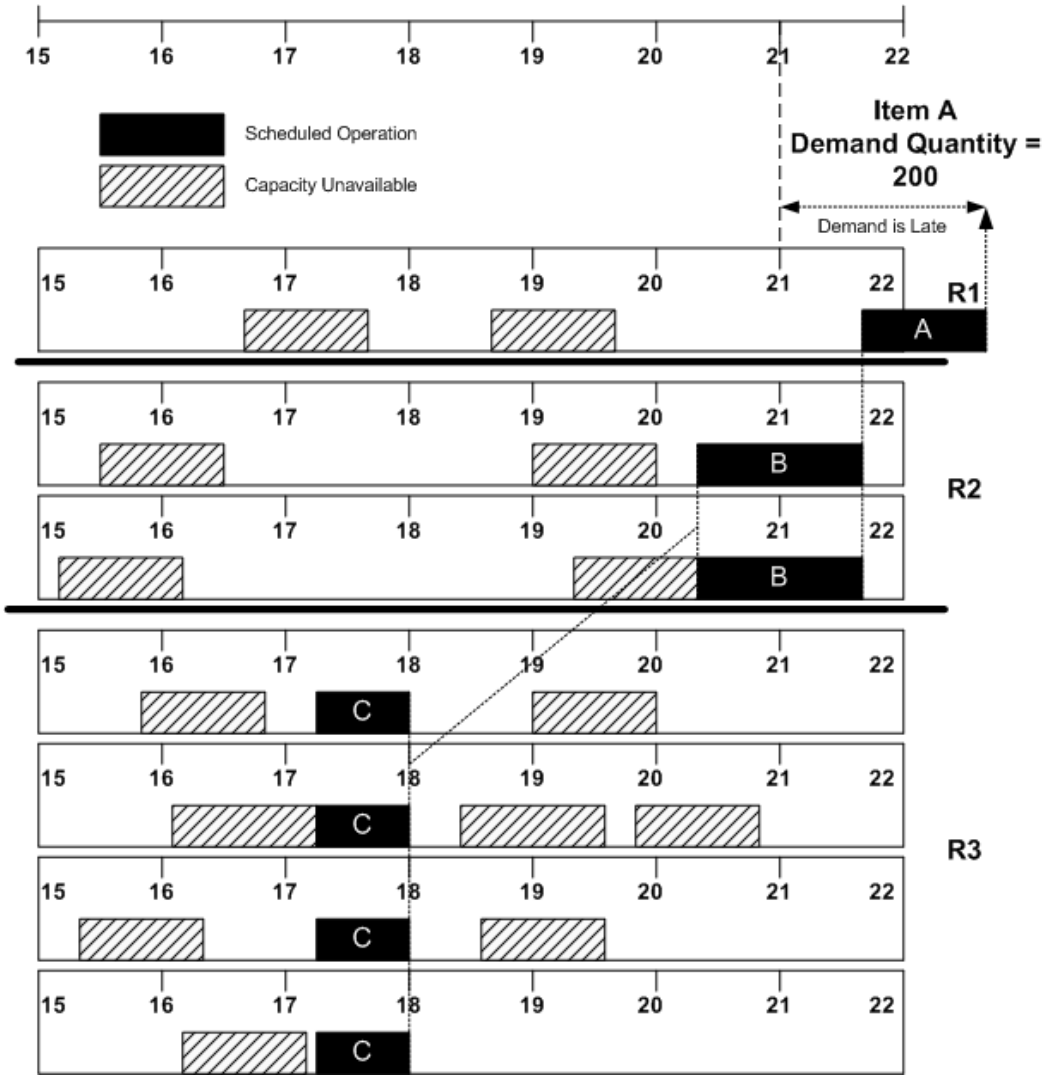



Backward scheduling fails when the profile option MSO: Use of Assigned Units in Scheduling is set to Fixed at Routing Value. There is no date available in the planning horizon to schedule 4 units for resource 3.

#### Case 3: Forward Scheduling With Value Set to Fixed at Routing Value

Using the same example, consider the following illustration that depicts the late demand scenario when you perform forward scheduling with the profile option MSO: Use of Assigned Units in Scheduling to Fixed at Routing Value.

*Impact on Forward Scheduling With Value Fixed at Routing Value*




## Shifts

A shift is a period of time over which a resource works. You either specify the shifts that each resource is available for work or specify that the resource is available 24 hours.

You also specify the number of units of the resource that are available (assigned units) when the resource is available on a shift. If resource M--a machine resource--has 3 resource units and is available on shifts 1 and 2, the planning engine schedules work for 3 machines during shift 1 and 3 machines during shift 2.

The planning engine determines the number of units of the resource that are available on any given shift (maximum available units). While the maximum available units are never more than the assigned units, they may be less, for example, a resource is down. If this situation occurs in a Constrained - Enforce capacity constraints plan, the planning

engine may schedule planned orders to finish later than if all of the assigned units were available.

For person and miscellaneous type resources, you can specify different resource units for each resource shift in addition to the resource units for the resource. For example, resource P, a person resource, has 12 resource units for the resource and is available on shift 1 with 12 resource units, on shift 2 with 10 resource units, and on shift 3 with 2 resource units. Each shift is 8 hours.

For more information, see Defining a Resource in *Oracle Bills of Material User's Guide*.

The data collection process calculates resource availability as follows:

- Resource availability (shift) = Capacity units (shift) * Hours available (shift)
- Resource availability (resource) = Sum of resource availability for all shifts

For example, resource P has 192 available hours per day:

- Shift 1: 96 hours per day (12 Capacity units (shift) * 8 Hours available (shift))
- Shift 2: 80 hours per day (10 Capacity units (shift) * 8 Hours available (shift))
- Shift 3: 16 hours per day (2 Capacity units (shift) * 8 Hours available (shift))

The planning engine uses the resource units for the resource if the shift resource units is blank or 0. It does not use instance-specific capacity information that you specify for Oracle Manufacturing Scheduling; it uses only the total available resource units. If you neither specify a resource as available 24 hours nor assign shifts, the collection process does not calculate available capacity and the planning engine schedules the resource as available 24 hours.

View the resource unit information both on the collections workbench and on the planner workbench.

You can also record capacity changes to specific shifts with simulation sets, for example, add or delete resource units and add or delete workdays. For example, resource P has 10 resource units per day on shift 2 and you make the following capacity changes:

- For 11 February to 11 March, you add 20 resource units per day. The planning engine uses 30 resource units available from 11 February to 11 March and calculates resource availability for shift 2 as 240 hours per day (30 Capacity units (shift) * 8 Hours available (shift))
- For 12 March to 14 March, you reduce 1 resource unit per day. The planning engine uses 9 resource units available from 12 March to 14 March and calculates resource availability for shift 2 as 72 hours per day (9 Capacity units (shift) * 8 Hours available (shift)).
- You change 24 February from a non-workday to a workday. The planning engine uses 30 resource units available on 24 February and calculates resource availability

for shift 2 on 24 February as 240 hours (30 Capacity units (shift) * 8 Hours available (shift))

You change 25 February from a workday to a non-workday. The planning engine uses 30 resource units available on 24 February and calculates resource availability for shift 2 on 25 February as 0 hours (30 Capacity units (shift) * 0 Hours available (shift))

### Workday Calendar

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.

Oracle Advanced Supply Chain Planning supports 4-4-5-type periods.

For more information, see Defining a Workday Calendar in *Oracle Bills of Material User's Guide*.

### Resource Efficiency and Utilization

Oracle Advanced Planning includes support for shop floor scheduling. It considers resource efficiency and utilization that you specify at the resource level while scheduling.

Resource efficiency is a measure (expressed as a percent) of the actual output to the standard output expected. Resource efficiency determines the time a resource takes to complete a task. For example, if you expect a resource having an efficiency of 100% to complete a task in 12 hours, the resource having an efficiency of 50% would take 24 hours to complete the task. Effective usage of a resource is the ratio of resource hours as specified in routing (theoretical usage) to efficiency.

Resource utilization is a measure (expressed as a percent) of how intensively a resource is utilized. For example, a resource might take frequent breaks or you might assign maintenance tasks to the resource. As such, a percent of the resource time is not available for the task. The actual usage is the ratio of the resource hours as specified in routing to the product of efficiency and utilization.

For example, if a routing has a resource requirement for 2 hours. The efficiency and utilization of the resource is expected to be 90% and 75%, respectively. Therefore, the actual resource usage is calculated as 2.96 hours.

Considering the actual resource efficiency and utilization, the planning engine generates a plan. In case additional resource usage is required to satisfy a demand, the planning engine recommends inflating the resource usage. This might lead to stretched plans where a longer time is required for completing a task.

### Releasing and Collecting Plans Considering Resource Efficiency and Utilization

Perform the following steps to define, release and collect discrete jobs:

1. Define resource efficiency and utilization for the resources.

2. Run a plan. The planned order for a discrete Work in Process job includes inflated resource usage based on the resource efficiency and utilization that you specified.

3. Release a planned order for a discrete Work in Process job. When you release the planned order, the planning engine releases the start and end times according to the resource usage. However, the planning engine does not include the inflated resource usage value while releasing the planned order. When the planning engine releases Work in Process jobs, it deflates the resource usage by readjusting the resource efficiency and utilization value. This helps avoid costing issues. However, the start and end times for the resource requirement remains inflated as Oracle Costing does not consider these.

4. Using Oracle Work in Process, you can update the Work in Process discrete job and even transact against the discrete job. In addition, you can use Oracle Manufacturing Scheduling to reschedule the discrete job. Oracle Manufacturing Scheduling does not change the resource usage for open discrete jobs

5. When you collect the rescheduled Work in Process discrete jobs (firm, unfirm, and non-standard) back to the planning engine, it inflates the resource usage by considering the resource efficiency and utilization. You can control this behavior of the planning engine during collection by setting the profile option MSC: Inflate WIP Resource Requirements to No. However, the planning engine does not change the start and end times during collection.

6. Run a plan.

7. The planning engine reschedules the Work in Process discrete job based on the inflated resource usage. However, the planning engine does not reschedule firm, non-standard discrete jobs, individual operations, and resources. Based on the value you specify for the profile option MSO: Firm Operations/Orders Within Time Fence, the planning engine determines whether or not to reschedule discrete jobs that are within the planning time fence.

   You can view the resource efficiency and utilization values in the Planner Workbench.

   The Planner Workbench displays fields such as Resource Hours, Touchtime, and Adjusted Resource Hours. Resource hours are calculated as the product of adjusted resource hours, efficiency (in percent) and utilization (in percent). The adjusted resource hours indicate the actual collected resource hours (based on routing or discrete job). Touchtime is the product of adjusted resource hours and utilization (in percent).

   Example:

   Planned Order in Planning Engine

   Consider a routing with 1 operation and 2 resources (R1 and R2).

   Efficiency of R1 = 50%

Utilization of R1 = 80%

Efficiency of R2 = 100%

Utilization of R2 = 100%

When the planning engine schedules resources for a planned order, the resource usage for R1 is inflated owing to the efficiency and utilization. The following table depicts the inflated resource usage.

| Resource Sequence | Resource | Usage | Units | Start Time | End Time |
|---|---|---|---|---|---|
| Total Job | - | - | - | 9:00 AM | 1:30 PM |
| 10 | R1 | 2.5 | 1 | 9:00 AM | 11:30 AM |
| 20 | R2 | 2 | 1 | 11:30 AM | 1:30 PM |

The following table depicts how the resource usage is deflated when the Work in Process job is released by the planning engine.

| Resource Sequence | Resource | Usage | Units | Start Time | End Time |
|---|---|---|---|---|---|
| Total Job | - | - | - | 9:00 AM | 1:30 PM |
| 10 | R1 | 1 | 1 | 9:00 AM | 11:30 AM |
| 20 | R2 | 2 | 1 | 11:30 AM | 1:30 PM |

If you set the profile option MSC: Inflate WIP Resource Requirements to Yes, the planning engine inflates the resource usage for R1 during the collection process. The following table shows the re-inflated value for the resource usage.

| Resource Sequence | Resource | Usage | Units | Start Time | End Time |
|---|---|---|---|---|---|
| Total Job | - | - | - | 9:00 AM | 1:30 PM |
| 10 | R1 | 2.5 | 1 | 9:00 AM | 11:30 AM |
| 20 | R2 | 2 | 1 | 11:30 AM | 1:30 PM |

### Data Consistency While Rescheduling Discrete Jobs

The planning engine determines rescheduling resource duration, start and end dates based on the nature of the job.

- If the planning engine collects a non-firm discrete job from Oracle Manufacturing Scheduling, it reschedules the resource start and end times based on the resource usage.

- If the planning engine collects firm discrete jobs from Oracle Manufacturing Scheduling, it calculates resource capacity consumption based on the resource start and end times.

However, the planning engine treats a non-firm open job as firm in the following cases:

- If you set a planning time fence by using the system-level profile options MRP: Create Time Fence and MRP: Firm Planned Order Time Fence. For more information on the profile options, see MRP Profile Options.

- If you set the profile option MSO: Firm Operations/Orders Within Time Fence to Yes. If you set this profile option to No, the planning engine can reschedule the start dates within the planning time fence out.

### Sequence Dependent Steps

Sequence dependent steps represent the times to set up machine resources when the setup depends on the sequence of jobs running on the machine. They are lot-based resource requirements of discrete jobs that Oracle Manufacturing Scheduling schedules.

Oracle Advanced Supply Chain Planning:

- Simulates sequence dependent setups when creating planned orders by using the resource utilization factor

- In some cases, schedules with sequence dependent setup resources from discrete jobs.

  The planning time fence determines the Oracle Application that schedules discrete job operations. Oracle Manufacturing Scheduling schedules discrete job operations inside the planning time fence and Oracle Advanced Supply Chain Planning schedules discrete job operations outside the planning time fence.

To set the information that the planning engine needs to plan sequence dependent setups:

- Define resource utilization factors for resources. For example, on average, 5% of the time that a resource is in an operation, it needs setup. Set resource utilization to 95%.

- Define sequence dependent setups and associate them to resources.

- Set profile option MSC: Inflate WIP Resource Requirements to Yes. If you have a shop floor scheduling system that adjusts resource requirements, you might not want to use this feature. In that case, set profile option MSC: Inflate WIP Resource Requirements to No.

- Set Oracle Manufacturing Scheduling to ignore resource utilization. The planning engine inflates resource times as a simulation; if Oracle Manufacturing Scheduling inflates the resource times and then also schedules sequence dependent setup requirements, it overstates the resource requirements.

- Review item planning time fences.

The sequence dependent setup processing works as follows:

- During a planning run, the planning engine does not consider resource sequence dependent setup factors for new planned orders. As it schedules, it uses the resource utilization factor to inflate resource usages to simulate sequence dependent setup time. Then, it schedules the order resources based on those resource usages.

- You release the planned orders as discrete jobs. Their resource requirements are not inflated by resource efficiency or utilization.

- You reschedule the discrete jobs using Oracle Manufacturing Scheduling. Based on the job sequence, Oracle Manufacturing Scheduling may add a sequence dependent setup to the discrete job.

- When the collections process collects discrete jobs, it collects sequence dependent setups of discrete job operations within the item planning time fence and deletes those outside the item planning time fence. For those outside the planning time fence, it inflates resource usages to simulate sequence dependent setup time.

- The next time that you run a plan, the planning engine processes the operations with sequence dependent setups. The processing depends on whether the planning engine considers the operation with the sequence dependent setup as firm.

  If the planning engine considers the operation firm, it consumes resource capacity both for its sequence dependent setup and for the run time. It does not inflate the resource usage by utilization and does not reschedule the operation.

  If the planning engine does not consider the operation firm, it deletes sequence dependent setup requirements, consumes resource capacity for its runtime only. It inflates the resource usage by utilization to duplicate sequence dependence setup and may reschedule the operation.

  The planning engine considers an operation firm if:

  - It is in a firm discrete job, in a non-standard discrete job, inside the planning time fence item attribute, or inside the natural time fence

- Profile option MSO: Firm Operations/Orders within the Planning Time Fence is Yes

For example, this table shows a routing with one operation and two resources.

| Op Seq | Res Seq | Resource | Usage | Assigned Units | Efficiency | Utilization |
|---|---|---|---|---|---|---|
| 10 | - | - | - | - | - | - |
| - | 10 | R1 | 1 | 1 | 0.50 | 0.80 |
| - | 20 | R2 | 2 | 1 | 1 | 1 |

This table shows a planned order to make one unit of the item.

The planning engine inflates R1 resource usage by efficiency and utilization. R1 efficiency is 50% and utilization is 80%. The usage is 2.5 hours (1 Hour / (50% * 80%).

| Op Seq | Res Seq | Resource | Adjusted Usage (hour) | Assigned Units | Start Time | End Time |
|---|---|---|---|---|---|---|
| 10 | - | - | - | - | 0900 hours | 1330 hours |
| - | 10 | R1 | 2.5 (inflated) | 1 | 0900 hours | 1130 hours |
| - | 20 | R2 | 2 | 1 | 1130 hours | 1330 hours |

This table shows the discrete job released from the planned order.

The resource usages are deflated but Oracle Advanced Supply Chain Planning does not change the resource start and end times. These times remain in the discrete job until you change them in Oracle Work in Process or Oracle Manufacturing Scheduling.

| Op Seq | Res Seq | Resource | Usage (hour) | Assigned Units | Start Time | End Time |
|---|---|---|---|---|---|---|
| 10 | - | - | - | - | 0900 hours | 1330 hours |

| Op Seq | Res Seq | Resource | Usage (hour) | Assigned Units | Start Time | End Time |
|---|---|---|---|---|---|---|
| - | 10 | R1 | 1 (deflated) | 1 | 0900 hours | 1130 hours |
| - | 20 | R2 | 2 | 1 | 1130 hours | 1330 hours |

This table shows the discrete job that you released from Oracle Advanced Supply Chain Planning after the next collections process to the planning server.

Since you released this job from Oracle Advanced Supply Chain Planning, the start and end times reflect the inflated resource usages. You do not need to change the end times. However, the planning engine may change the start and end times during the next planning run but it continues to base them on the inflated resource usages.

| Op Seq | Res Seq | Resource | Advanced Supply Chain Planning Usage (hour) | Assigned Units | Start Time | End Time |
|---|---|---|---|---|---|---|
| 10 | - | - | - | - | 0900 hours | 1330 hours |
| - | 10 | R1 | 2.5 (inflated)<br>Work in Process usage: 1 | 1 | 0900 hours | 1130 hours |
| - | 20 | R2 | 2<br>Work in Process usage: 2 | 1 | 1130 hours | 1330 hours |
| 10 | - | - | - | - | 0900 hours | 1330 hours |

This table shows a discrete job for one unit that you manually created in Oracle Work in Process.

R1 in this job finishes 1.5 hours earlier then the job released from Oracle Advanced Supply Chain Planning because this job does not consider the resource efficiency and utilization.

| Op Seq | Res Seq | Resource | Usage (hour) | Assigned Units | Start Time | End Time |
|---|---|---|---|---|---|---|
| 10 | - | - | - | - | 0900 hours | 1200 hours |
| - | 10 | R1 | 1 | 1 | 0900 hours | 1000 hours |
| - | 20 | R2 | 2 | 1 | 1000 hours | 1200 hours |

This table shows the discrete job that you created in Oracle Work in Process after the next collections process to the planning server.

The collections process does not change the start and end times during collections but does inflate the resource usages. During the next planning run, the planning engine correctly calculates the start and end times using the inflated resource usages.

| Op Seq | Res Seq | Resource | Advanced Supply Chain Planning Usage (hour) | Assigned Units | Start Time | End Time |
|---|---|---|---|---|---|---|
| 10 | - | - | - | - | 0900 hours | 1200 hours |
| - | 10 | R1 | 2.5 (inflated)<br>Work in Process usage: 1 | 1 | 0900 hours | 1000 hours |
| - | 20 | R2 | 2<br>Work in Process usage: 2 | 1 | 1000 hours | 1200 hours |

In some cases, you create a discrete job in Oracle Work in Process and firmed it. This table shows it after the next collections process to the planning server.

The collections process does not change the start and end times during collections but does inflate the resource usages.

| Op Seq | Res Seq | Resource | Advanced Supply Chain Planning Usage (hour) | Assigned Units | Start Time | End Time |
|---|---|---|---|---|---|---|
| 10 | - | - | - | - | 0900 hours | 1200 hours |
| - | 10 | R1 | 1 (based on resource usage)<br>Work in Process usage: 1 | 1 | 0900 hours | 1000 hours |
| - | 20 | R2 | 2<br>Work in Process usage: 2 | 1 | 1000 hours | 1200 hours |

## Transportation Resources

Oracle APS considers Transportation and Storage Capacity constraints to plan accurately while providing a strong Available/Capable to Deliver (ATD/CTD).

You will be able to define transportation capacity for a lane of a ship method. In addition, you will be able to define aggregate capacity for an intransit/destination warehouse or a storage location.

## Sourcing Constraints/Suppliers

You can specify the time-phased capacity of individual suppliers to specific items in Oracle Purchasing. You can allocate planned orders using the constraints of the suppliers--planned orders are assigned supplier sources in respect to their capacity. Planning uses the ranking information you specify and first attempts to source the planned orders with the primary sources. If the capacity to fulfill the demand is not available, alternative sources are used.

| Source | Rank | Percentage | Effective From | Effective To |
|---|---|---|---|---|
| Supplier 1 | 1 | 40 | 05/15 | 12/31 |

| Source | Rank | Percentage | Effective From | Effective To |
|---|---|---|---|---|
| Supplier 2 | 1 | 60 | 05/15 | 12/31 |
| Supplier 3 | 2 | 100 | 05/15 | 12/31 |

Supplier capacity is specified in units per day over a designated time period. Supplier capacity accumulates if not used on a particular day. For example, if a supplier's capacity is 100 units per day from 1/1/99 to 1/10/99 and no units are ordered from the supplier from 1/1/99 to 1/3/99, then planning considers a total of 1000 units to be available from 1/4/99 to 1/10/99. No capacity is assumed available on nonworking days based on the owning organization calendar.

Supplier capacity can vary by time period. You can specify one daily capacity for Period 1 and a different capacity for Period 2. Time periods are specified from a start date to an end date.

See Supply Chain Modeling, page 4-1 for more information about setting supplier capacity constraints.

### Tolerance Fences

You can define capacity tolerance percentages that can vary for each of your items. The tolerance fence data in Oracle Purchasing is used to adjust production according to capacity changes for item/supplier combinations when the order is placed. Tolerance fence values can be specified for the capacity fluctuation allowed for available to promise; and used to determine demand based on the amount of advanced notice given to the supplier.

See Supply Chain Modeling, page 4-1 for more information about setting tolerance fences.

## Enabling and Disabling Constraints

### To enable and disable constraints

1. From the Navigator, select Supply Chain Plan > Options.

   The Plan Options window appears.

2. Select the Constraints tab.

3. Using the drop-down menus, set Resource or Material Constraints to Yes or No based on your business requirements.

**Note:** To generate exception messages related to material resource capacity, you must select the Constrained Plan checkbox.

For more information on setting constraints prior to launching plans, see Defining Plans, page 3-1.

**Note:** You cannot update the Start Date and End Date. The End Date is calculated based on your time bucket settings.

## Setting Hard and Soft Constraints

Oracle ASCP lets you prioritize how you enforce Capacity Constraints or Demand Due Dates. Whichever constraint takes precedence over the other is the hard constraint; the other is the soft constraint. If you choose to enforce Demand Due Dates (setting Demand Due Dates as a hard constraint), then resources are used and possibly overloaded to satisfy demand due dates. In this case, Oracle ASCP returns overloaded exception messages.

If you choose to enforce Capacity Constraints (setting Capacity Constraints as a hard constraint), then resource are loaded to their limit to satisfy demand (if required). Unsatisfied demand are pushed to future. In this case, Oracle ASCP returns late replenishment exception messages.

**Note:** You must choose one and only one type of constraint.

#### To set hard and soft constraints

1. From the Navigator, select Supply Chain Plan > Options.

   The Plan options window appears.

2. Select the Constraints tab.

3. Check either the Enforce Demand Due Dates or the Enforce Capacity Constraints check box. The selected check box represents a hard constraint while the cleared check box represents a soft constraint.

# Setting Constraints for Different Plan Types

The following table describes the requirements for setting constraints for various types of plans:

| Plan Type | Constraints Tab | Optimization Tab |
|---|---|---|
| Unconstrained | Constrained Plan checkbox is unchecked. Enforce Demand Due Dates checkbox is checked. Resource Constraint and Material Constraint fields are set to No. Calculate Resource Requirements can be checked to calculate capacity even for unconstrained plans. | Optimize checkbox is unchecked. |
| Material Constrained | Constrained Plan checkbox is checked. Check either Enforce Demand Due Dates or Enforce Capacity Constraints checkbox.You can check only one checkbox. Resource Constraint fields are set to No; Material Constraint fields are set to Yes. | Optimize checkbox is unchecked. |
| Resource Constrained | Constrained Plan checkbox is checked. Check either Enforce Demand Due Dates or Enforce Capacity Constraints checkbox.You can check only one checkbox. Resource Constraint field set to Yes; Material Constraint fields are set to No. | Optimize checkbox is unchecked. |
| Material and Resource Constrained | Constrained Plan checkbox is checked. Check either Enforce Demand Due Dates or Enforce Capacity Constraints checkbox.You can check only one checkbox. Resource Constraint and Material Constraint fields are set to Yes. | Optimize checkbox is unchecked. |

| Plan Type | Constraints Tab | Optimization Tab |
|---|---|---|
| Optimized | Constrained Plan check box is checked. Depending on your hard and soft constraint requirements, check either Enforce Demand Due Dates or Enforce Capacity Constraints check box.You can check only one check box. Either or both Resource Constraint Material Constraint fields are set to Yes. | Optimize check box is checked. |

For additional information on setting constraints, see Defining Plans, page 3-1 and Supply Chain Modeling., page 4-1

## Enforce Purchasing Lead-time

Oracle Advanced Supply Chain Planning allows you to distinguish between supplier capacity constraints and purchasing lead-time constraints for constrained plans.

The supplier capacity constraints considers that the supplier capacity and the receiving calendar that are defined on the ASL planning tab.

The Enforce Purchasing Lead-times Constraint considers:

- Purchasing lead-times that are defined as lead-time item attributes or processing, pre processing and post processing lead-times
- Supplier specific processing lead-time that is defined on the ASL planning tab

The Enforce Purchasing Lead-times Constrain plan option governs the purchasing lead items of items that are procured from suppliers as shown in the table below:

| Enforce Purchasing Lead-time Constraints Plan Option = | The planning engine: |
|---|---|
| Yes | Enforces purchasing lead-times. |
| No | If necessary, compresses purchasing lead-times, then generates exception. |

The plan option does not affect the items sourced from an internal organization or make

items. It applies to supply frim planned orders, purchase requisitions, and purchase orders.

However, the MSO: Lead Time Control profile option governs the lead-times for make, buy and transfer items as shown in the table below:

| Enforce Purchasing Lead-time Constraints Pan Option = | Profile MSO: Lead Time Control = | The planning engine: |
|---|---|---|
| Yes | Do not violate min processing times | Enforces purchasing lead-times. |
| No | Do not violate min processing times | Does not enforce purchasing lead-times. |
| Yes | Violate min processing times to meet demand due date | Does not enforce purchasing lead-times. |
| No | Violate min processing times to meet demand due date | If necessary, compresses purchasing lead-times, then generates exception. |

When the Enforce Purchasing Lead-time Constraints is set to No and lead-time violation occurs, the planning engine generates the following exception message:

- Order with Insufficient Lead-time

For more details, see Chapter 9: Exception Messages.

Irrespective of whether the Enforce Purchasing lead-time Constraints plan option is set to Yes or No, the planning time fence is enforced depending on the plan option Planning Time Fence control. If Enforce Purchasing lead-time Constraints is set to No and the planning time fence control option is selected, then the planning engine forces the suggested due date to be after the planning time fence. This means that all other purchase order dates can be inside the planning time fence, but the suggested due date cannot be inside the planning time fence.

In Constrained - Enforce demand due dates plans, when MSO: Lead Time Control is Do Not Violate Min Processing Times and Enforce Purchasing Lead Time is:

- Yes: The planning engine treats all lead times as enforced constraints and moves demands to a later date if necessary to enforce the constraints.

- No: The planning engine treats all lead times except purchasing lead times as enforced constraints and moves demands to a later date if necessary to enforce make at and transfer from constraints. It may compress supplier lead times to meet the demand due date.

These settings have no effect in Constrained - Enforce capacity constraints plans.

## Rules Used in Constrained Plans

There are two types of constrained plans; one that uses the User Defined Decision Rules and one that does not. This is determined by the setting for the profile option MSO: Enable Decision Rules. If it is set to No (the default), then when running a constrained but not optimized plan, the following rules are used:

- Demand Priorities are respected

  **Note:** When Demand Priorities are not specified, the default priorities of the various demand types are (in order): sales order, forecast, and safety stock.

- Alternate BOMs will not be considered
- Alternate routings will not be considered
- Substitute items will not be considered

If MSO: Enable Decision Rules is set to Yes, then when running a constrained but not optimized plan, the following rules are used:

- Demand Priorities are respected

  **Note:** When Demand Priorities are not specified, the default priorities of the various demand types are sales order, then forecast, and then safety stock.

- Alternate BOMs are considered
- Alternate routings are considered
- Substitute items are considered

For additional information, please refer to User-Defined Alternate Decision Rules, page 10-39.

### Look-Ahead Heuristic

Using the look-ahead heuristic, the planning engine:

- Schedules supplies so that, as much as possible, you work on supplies pegged to higher priority demands ahead of supplies pegged to lower priority demands.

- Looks ahead at a certain group of demands and schedules supplies to meet these demands in a single pass.
- May schedule supplies ahead of their due dates. This can result in higher priority demands completing earlier than their actual due dates and benefitting from additional protection of their delivery dates.

To enable the heuristic:

- Set the value of profile option MSO: Heuristic type to Look Ahead
- Specify the number of demands to group by setting profile option MSO: Maximum Demands per Slice.

When using the look-ahead heuristic, the planning engine:

- Orders demands by demand priority
- Groups demands into slices; each slice has no more than the number of demands in profile option MSO: Maximum Demands per Slice
- Plans each slice in the plan

When the planning engine plans each slice, it schedules as follows:

- Backward schedules the demands in the slice.

  It starts with the demand with the latest completion date in the slice and resolves demands due on the same day by scheduling the lowest priority demand first. It results in resources for higher priority demands scheduled earlier then resources for lower priority demands.

  It tries to schedule activities to take as little time as possible and use as much capacity as possible, even if the activity ends earlier than needed.

- Determines if the schedule is feasible, that is, that you have enough resources to schedule supplies for all of the demands. In a feasible schedule, no supplies are scheduled to start in the past and no demands are complete in the past.
- If the schedule is not feasible, the planning engine forward schedules the demands in the slice.

  It starts with the highest priority demand and schedules each demand respecting material and capacity constraints. It starts on the calculated schedule date from the backward pass for each demand; however, if the calculated schedule date for the demand is in the past, it schedule it to start it today.

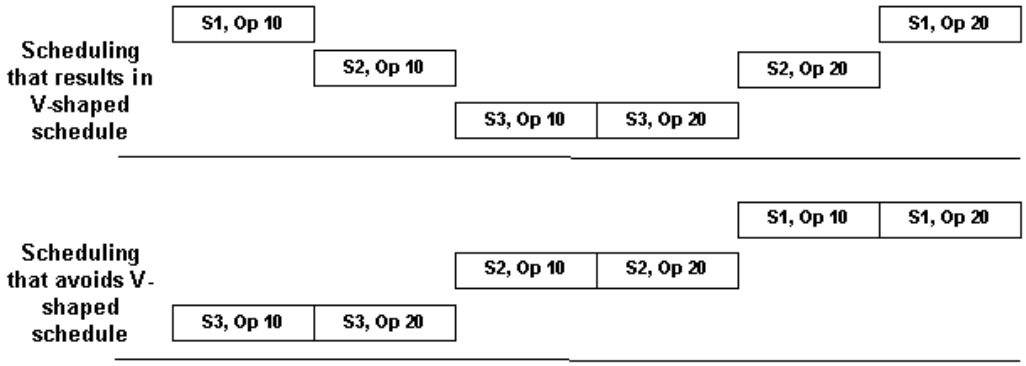
If it schedules a demand complete earlier than its actual due date, the planning engine right justifies it if possible.

### V-Shaped Schedules

The planning engine tries to avoid V-shaped schedules by scheduling all of the operations of a supply before scheduling any other supplies. This reduces the chance of scheduled gaps between operations of any supply.

A V-shaped schedule is a schedule with a consistent pattern of gaps between operations in the same routings. For example, a routing has operation sequences 10 and 20 which use the same resource. The planning engine needs to schedule three supplies (S1, S2, and S3) for that item that are pegged to different demands. This diagram shows the resource scheduling which results in and with avoiding V-shaped schedules.

***Resource Scheduling***




The planning engine may not always avoid gaps and V-shaped schedules, especially in cases of:

- Resource constraints in Constrained - Enforce due dates plans
- Components assigned to operations in the middle of the routing
- Co-products assigned to operations in the middle of the routing

The easiest way to see the pattern of the supplies for a demand is in the Planner Workbench, Gantt Chart, Order View.

## Flexible Shift Times

This feature enables planners to plan resource shift start and end times at any minute within the hour. This feature enables ASCP to handle aggregate planning and detailed scheduling concurrently and to accurately schedule resources down to the minute time level.

For the portion of the planning horizon that is planned at greater than minute-level granularity (the portion that is planned at the hour, day, week or period levels), ASCP

factors in break periods by extending operation times to reflect the proportion of breaks within each planning time bucket. For example, a 2-hour operation that occurs during a day-level planning bucket that has breaks at 4:00-5:00, 12:00-13:00 and 20:00-21:00 would be stretched into a 2 / (21/24) = 2.29-hour operation. The exact timing of breaks within this day-level planning bucket is ignored. This solution maintains as much scheduling accuracy as possible when more aggregate (time-bucketed) planning is being done.

#### Example 1: Planning Time Bucket Size = 1 Hour

Consider a one-hour portion of the planning horizon (1:00 - 2:00). Within this period there is a resource break of 15 minutes (1:30-1:45). The size of the planning time bucket is 1 hour.

ASCP calculates an elongation factor for this period that is equal to the ratio of working time within the period to the total duration of the period.

- Elongation factor = (60 - 15) / 60 = 0.75

If there is a resource requirement of 18 minutes, due at 2:00, by using the elongation factor, the requirement duration is calculated to be:

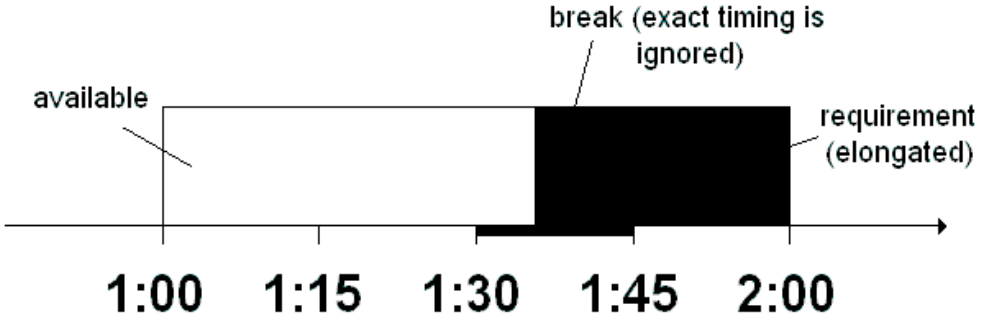
- Requirement duration = 18 / 0.75 = 24 minutes

The requirement start time is therefore set to requirement end time (2:00) minus 24 minutes:

- Requirement start time = 1:36

The following figure is an example of how a resource break is scheduled for when the planning time bucket size is one hour:

***One Hour Planning Time Bucket Size***




Note that the requirement is scheduled to start in the middle of the resource break; the exact timing of the resource break is ignored. This is an approximation that ASCP makes in any time bucket of size 1 hour or more. It allows for as much scheduling accuracy as possible while planning at more aggregate time levels.

#### Example 2: Planning Time Bucket Size = 1 Minute

Consider the same one-hour portion of the planning horizon (1:00 - 2:00), with the same resource break of 15 minutes (1:30-1:45). In this example, the size of the planning time bucket is 1 minute (the smallest permitted by ASCP).

Once again there is a resource requirement of 18 minutes, due at 2:00.

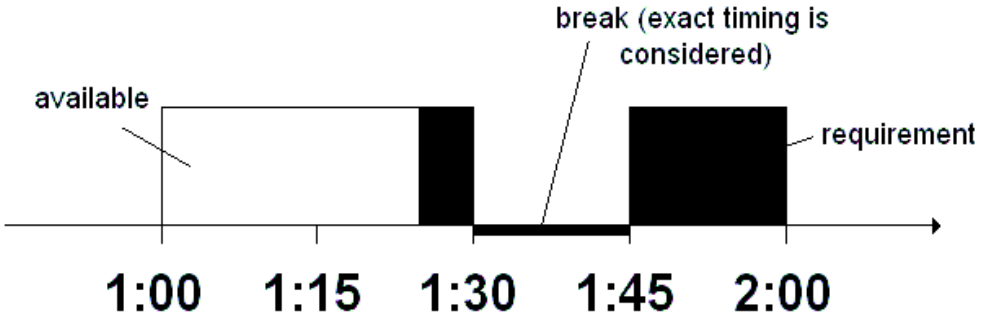
Since this is the minute-by-minute detailed scheduling portion of the plan horizon, break start and end times are accounted for down to the nearest minute. An elongation factor is not used.

The requirement start time is calculated to be:

- Requirement start time = 1:27

The following figure is an example of how a resource break is scheduled for when the planning time bucket size is one minute:

***One Minute Planning Time Bucket Size***




This allows for 3 of the 18 minutes of work to be done before the break (1:27 to 1:30), then the remaining 15 minutes of work to be done after the break (1:45 to 2:00). No work is scheduled during the break.

The above two examples demonstrate the contrast in the level of detail of scheduling that occurs in aggregate (greater than one minute duration) time buckets versus detailed (one minute duration) time buckets.

#### Example 3: Efficiency Factor Rounding

Use profile option MSO: Floating Point Precision for Planning Bucket Efficiency specify the efficiency factor precision. The default value is 1000 which instructs the planning engine to truncate the efficiency factor to three decimal places. See also MSO Profile Options, page A-84.

For example, you set:

- Plan Options form, Aggregation tabbed region, Days Bucket: 30

- Plan Options form, Constraints tabbed region, Constrained Plan: Selected, Enforce Demand Due Dates: Selected, Resource Constraints: Yes, Material Constraints: Yes

You have a resource shift for 8 May for 5.25 hours (from 1300 hours to 1710 hours and 1755 hours to 1900 hours = 6 hours - 45 minutes = 6 hours - 0.75 hours)

Your resource can produce 10 pieces per hour or one every six minutes (60 minutes / 10 pieces)

The master demand schedule has quantity 12 on 8 May. You need 72 minutes to meet the demand (12 pieces * 6 minutes per piece).

The planning engine should calculate Efficiency factor = Working time / Total time available. The efficiency factor in this example is 0.21875 (5.25 hours in the shift / 24 hours in the day)

The planning engine should calculate Requirement duration = Time needed for operation / Efficiency factor. The requirement duration in this example is 5.48 hours (72 minutes / 0.21875 = 329 minutes).

However, Planner Workbench schedules the operation for 5.63 hours (343 minutes) which is 0.14 hours/8.4 minutes discrepancy:

- Suggested Start Date: 8 May 18:16:00
- Suggested Due Date: 8 May 23:59:00

The difference is due to your setting profile option MSO: Floating Point Precision for Planning Bucket Efficiency to 100:

- The planning engine calculates efficiency factor as 0.21 (5.25 hours in the shift / 24 hours in the day = 0.21875, truncate to two decimal places)

The planning engine calculates requirement duration as 5.63 hours (72 minutes / 0.21 = 342.85 minutes, round to 343 minutes).

#### Planned Order Suggested Dates

You may notice a difference between planned order suggested dates from the planning engine and the theoretical offset calculation due to rounding. This example illustrates the reason.

Offset formulas:

- Efficiency Factor = Working Time / Total Time Available
- Requirement Duration = Operation Time/Efficiency Factor

Shifts for operation resource:

- 1300h - 1710h
- 1755h - 1900h

Resource qty/rate: 6 minutes or 10 per hour

Demand: 08-MAY, quantity 12

Constrained - Enforce demand due date plan. Plan options are:

- Aggregation tab, Days buckets = 30
- Constraints tab, Days Resource Constraints = Yes
- Constraints tab, Supplier Capacity Constraints = Yes

Supply, planned order in Planner Workbench:

- Sugg Start Date: 08-MAY 18:16:00
- Sugg Due Date: 08-MAY 23:59:00
- Requirement Duration = 5.62 hours or 343 min

Planned order offset calculations:

- Efficiency Factor = 0.21875 [5.25 hours / 24 hours]
- Requirement Duration = 5.48 hours [72 minutes/0.21875 = 329 minutes]

The difference between the Planner Workbench suggestion and the planned order offset calculation is 8.4 minutes or 0.14 hours [(5.62 hours - 5.48 hours]. The explanation is:

- Profile option MSO: Floating Point Precision for Planning Bucket Efficiency = 100
- Efficiency Factor = 0.21 [5.25 hours / 24 hours = 0.21875]
- Requirement Duration = 5.62 hours or 343 minutes [72 minutes/0.21 = 342.85 minutes]

### Elongation Factor

The scheduling process calculates an elongation factor to express resource availability in terms of daily buckets - (Resource Availability / Total Hours in Planning Bucket) * 100. For example:

- There is a resource available daily for 8 hours [0800 hours to 1600 hours
- The total hours in a day is 24 [0000 hours to 2400 hours]
- The daily elongation factor is 33% [8/24 = 0.3333]
- When the planning engine schedules this resource for 12 hours in a daily planning bucket, the resource usage is 4 hours [12 * 0.3333]

In the first planning bucket, the calculation depends on the plan start time. For example:

- The plan start time is 1400 hours
- The resource is available for 2 hours in day 1 [1400 hours to 1600 hours]
- The total hours in day 1 is 10 [1400 hours to 2400 hours]
- The elongation factor for day 1 is 20% [(2/10) * 100 = 0.2]
- Resource usage for day 1 is 2 hours [10 * 0.2]

## Partial Demand Satisfaction

When multiple planned order supplies are required to satisfy a demand, ASCP schedules all supplies that can be completed by the due date for the due date, and the remaining supplies for the demand satisfied date.

This allows the supplies that can be completed on time to be released, executed, and shipped as a partial order shipment to the customer.

The Partial Demand Satisfaction capability applies only to the end demand (independent demand). For the dependent demand, it is not cost effective and beneficial to complete part of the order quantity and then carry this inventory up to the time when it is needed.

#### To establish Partial Demand Satisfaction functionality

1. Set Partial Demand Completion Profile Option.
   1. Sign in as System Administrator.
   2. From the Navigator, choose Profile > System.

      The Find System Profile Values screen appears.
   3. Enter your search criteria and select the Find button.

      The System Profile Values screen appears.

      Set the MSO: Allow Partial Demand Completion profile option to any of the following values:
      - All End Demands
      - Sales Orders Only
      - None

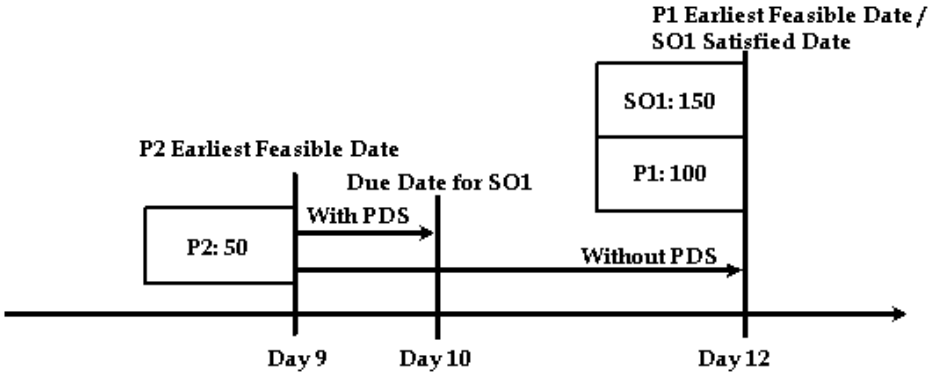
        The default value for this profile option is All End Demands.

**Example**

In this example, there is a sales order SO1 for 150 with a due date on day 10. There

are two planned orders P1 and P2 satisfying this sales order demand. This is shown in the following diagram:

***Partial Demand Satisfaction***




The planned order P2 can be completed on time; however, the planned order S1 can be completed only by day 12.

Without the Partial Demand Satisfaction enhancement, ASCP would have scheduled both P and P2 to complete on day 12.

Using the Partial Demand Satisfaction feature, P2 is scheduled to complete on time (on day 10), while P1 remains scheduled for day 12. This permits P2 to be released, executed and shipped in time to partially satisfy customer demand on time.

In the Exception Details form (Supply Chain Plan > Workbench > Actions tab > drill down on an Action Type), the column named Quantity Satisfied By Due Date is used to present the portion of a demand that can be satisfied by the due date.

## Phantom Routings

In order to run constrained plans in ASCP, you must set the BOM parameter Use Phantom Routings to No.

#### To set the BOM parameter Use Phantom Routings to No

1. Sign in using the Manufacturing and Distribution Manager responsibility.
2. Select Bills of Materials > Setup > Parameters.

   The Parameters screen opens.
3. Uncheck the Use Phantom Routings checkbox.

## Split Planned Orders

Smaller planned orders typically give the planning engine more flexibility and result in a schedule in which supplies are more likely to be made just in time to meet their demands. This feature instructs the planning engine to split planned orders to more closely match the quantities of the demands to which they are pegged. Use it if:

- You do not typically use order modifiers
- Your plan results in planned orders which peg to demands with widely separated due dates
- Your plan results in product made near-term when most of it is needed to satisfy demands that are due farther out

Split planned orders defaults such that if a planned order with quantity more than 10% higher than the quantity of the demand to which it is pegged, the planning engine splits it. To change the default percentage or disable the feature, set profile option MSO: Demands Size Tolerance PCT Before Splitting Planned Orders with the percentage in decimal format (for example, for 10%, enter 0.1, not 10).

During pegging, the planning engine:

- Pegs a planned order to a demand.
- Checks to see if the planned order item has order modifiers. If so, it does not split the planned order.
- Checks to see if the planned order quantity is significantly larger than the demand quantity. The check is (Planned order quantity - Demand quantity) / Demand quantity >MSO: Demands Size Tolerance PCT before Splitting Planned Orders.

  If the calculation shows not significantly larger, the planning engine does not split the planned order.

  If the calculation shows significantly larger, the planning engine splits the planned order, assigns the demand quantity to the new planned order, and pegs the new planned order to the demand.

For example, MSO: Demands Size Tolerance PCT before Splitting Planned Orders is 0.1. The planning engine:

- Pegs planned order 1 for item S with quantity 100 to demand A with quantity 20.
- Verifies that item S has no order modifiers set.
- Calculates ((100 - 20) / 20 = 4.
- Verifies 4 > 0.1.

- Splits planned order 1. Planned order 1 has quantity 80 and new planned order 1-a has quantity 20.
- Removes the peg of planned order 1 to demand A and pegs planned order 1a to demand A.

#### Split Planned Order: Sizing and Timing

Use the profile option MSC: Split Planned Orders for Scheduling Flexibility to specify whether or not you want the planning engine to split a planned order into multiple planned orders. For more information about this profile option, see Profile Options. The planning engine considers and applies the profile option MSC: Split Planned Orders for Scheduling Flexibility before the profile option MSO: Demands Size Tolerance PCT before Splitting Planned Orders. The profile option MSC: Split Planned Orders for Scheduling Flexibility applies to:

- Constrained plans for which decision rules are enabled
- Cost-optimized plans

## Firm Work Orders

Firm work orders are work orders that are:

- Under the control of a shop floor manufacturing application
- Marked as do not change by shop-floor or planning personnel

The planning engine does not change firm work order operation start and end times and resource usages. However, it calculates firm work order resource requirements and reduces resource availability by these requirements (processes firm work orders).

The planning engine processes firm work orders before it schedules non-firm work orders and planned orders. It does this without regard to the demand priorities. After it processes firm work orders, it schedules non-firm work orders and planned orders in the manner prescribed by the plan options and profile options.

Firm work orders can overconsume resource capacity; when that occurs, the planning engine issues Resource overloaded exception messages.

## Plan Shared Supplies

Shared supplies are scheduled receipts, firm planned orders, and planned orders that peg to more than one end item demand.

The planning engine schedules a shared supply based on the due date of one of the demands and that shared supply may be late with respect to the other demands that are also pegged to it.

### Multiple Demands in Same Slice

If multiple demands that are pegged to one shared supply are in the same demand slice (see Pegging), the planning engine always reschedules the shared supply.

The rescheduling:

- Attempts to meet all demands on time
- Attempts to meet higher priority demands early or just in time
- Selects lower priority demands to be late, if necessary
- Occurs only if the reschedule can fit within available supplier capacity and within lead-times, depending on constraints

For example, the last process to produce light posts is to have a welder attach a purchased bracket to a light post subassembly. The welder can attach 100 brackets a day.

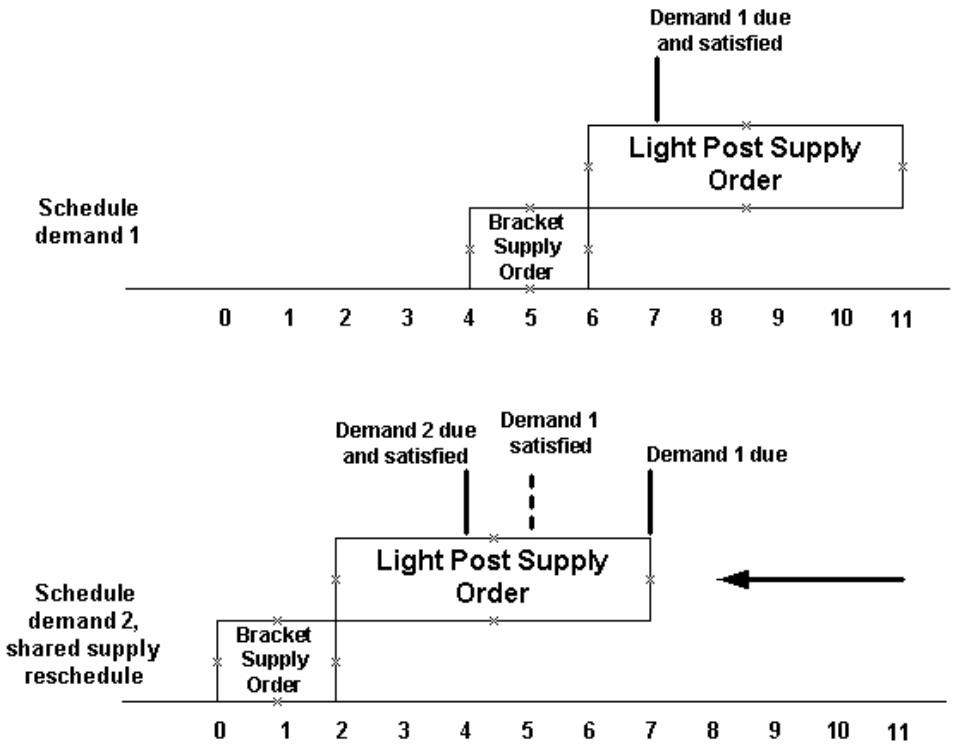
Two demands peg to a shared supply for attaching the brackets. Both demands are in the same demand slice:

- Demand 1: End Item: Light post, Quantity: 100, Demand Due Date: Day 7, Priority: 1
- Demand 2: End Item: Light post, Quantity: 200, Demand Due Date: Day 4, Priority: 200

The planning engine:

- Processes demand 1, the higher priority demand which is due on day 7.
- Schedules the brackets to arrive on day 6. The welder is to produce 100 light posts on day 6 and meet demand 1 on time.
- Processes demand 2, the lower priority demand which is due on day 4, earlier than demand 1.
- Reschedules the brackets to arrive on day 2. The welder is to produce 200 light posts on days 2 and 3 and meet demand 2 on time, then is to produce 100 brackets on day 4 and meet demand 1 early.

*Figure Title*




### Multiple Demands in Different Slices

If multiple demands that are pegged to one shared supply are in different demand slices, the planning engine does not typically reschedule the shared supply.

For example, the last process to produce light posts is to have a welder attach a purchased bracket to a light post subassembly. The welder can attach 100 brackets a day.

Two demands peg to a shared supply for attaching the brackets. Each demand is in a different demand slice:

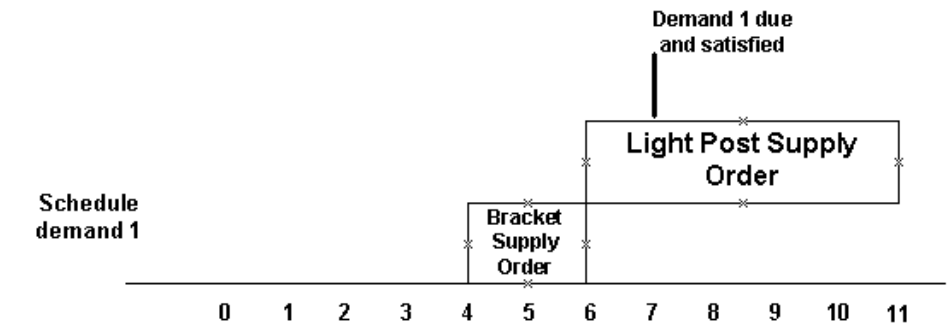
- Demand 1: End Item: Light post, Quantity: 100, Demand Due Date: Day 7, Priority: 1
- Demand 2: End Item: Light post, Quantity: 200, Demand Due Date: Day 4, Priority: 200

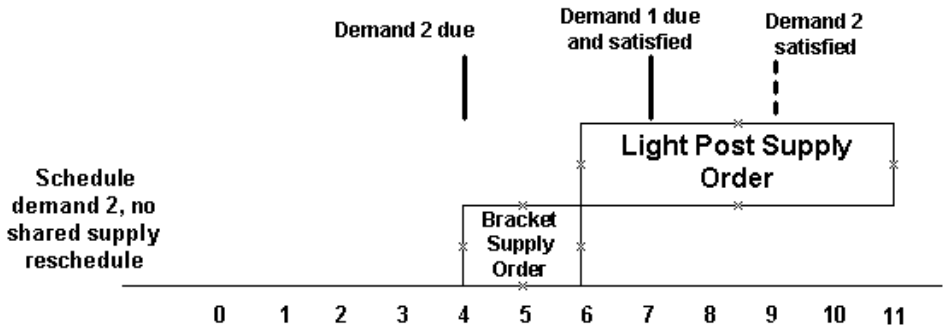
The planning engine:

- Processes demand 1, the higher priority demand which is due on day 7.

- Schedules the brackets to arrive on day 6. The welder is to produce 100 light posts on day 6 and meet demand 1 on time.
- Processes demand 2, the lower priority demand which is due on day 4, earlier than demand 1 and is in a different slice than demand 1.
- The welder is to produce 100 light posts on day 6 and meet demand 1 on time, then is to produce 200 brackets on days 7 and 8 and meet demand 2 late.

***Figure Title***




Use the plan shared supplies feature to instruct the planning engine to attempt to reschedule shared supplies that it scheduled in previous demand slices. The goal is the same as when the multiple demands are in the same slice--to make the shared supply on time or early for all demands which peg to it.

To enable the feature, set profile option, MSO: Additional Demand Slices for Shared Supply Rescheduling which defaults to 0. Specify either:

- A positive integer: The planning engine attempts to reschedule shared supplies across this many previous demand slices. After that, it does not reschedule a shared supply even if that results in a demand being late.

- -1: The planning engine reschedules shared supplies across all slices.

The higher the integer, the more impact there is on plan performance. The value -1 has the most impact.

## Premium Resource Capacity

The premium resource capacity feature enables you to utilize regular (baseline) capacity to the best extent before using premium (overtime) capacity.

> **Note:** This enhancement is only supported in the planning mode Constrained (Without Detailed Scheduling).

The Planning engine uses alternate sources, alternate suppliers, alternate bills of material, routings, and end item substitution before employing premium capacity. The overall objectives of the planning process are:

- Use regular capacity to the fullest extent possible before resorting to premium capacity. If demands cannot be met on time using regular capacity, use premium capacity.
- If demands cannot be met on time using both regular and premium capacity by demand due date, demand lateness can be minimized by using both regular and premium capacity on each day following the demand due date.
- Allow a mix of regular capacity and premium capacity to be used for a given supply order. For example, in such cases where order modifiers are not an optimal match between order size and regular capacity.

### Setting up Premium Resource Capacity

Premium Capacity is set in the Collections Workbench. The Premium Capacity percentage value in the Resources window of the Collections Workbench is editable, but read-only in the Planner Workbench.

#### To set up Premium Resource Capacity tolerance:

1. Navigate to the Collections Workbench and select a resource.
2. Right-click on the resource to display the Resources window.
3. Enter a percentage value in the Premium Capacity Percentage field.
4. Save your work.

### Premium Resource Capacity Examples

The value entered in the Premium Capacity field is interpreted as a percentage value as

shown in the following examples:

| Resource | Capacity per Day | Premium Capacity Percentage |
|---|---|---|
| 1 | 16 | 20 |
| 2 | 8 | 50 |
| 3 | 4 | 150 |

Planning considers the following capacity profiles for resources if the first week is planned in daily buckets:

| Res | Cap. Type | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
|---|---|---|---|---|---|---|---|---|
| Res1 | Regular | 16 | 16 | 16 | 16 | 16 | 0 | 0 |
| | Prem | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 0 | 0 |
| Res2 | Regular | 8 | 8 | 8 | 8 | 8 | 0 | 0 |
| | Prem | 4 | 4 | 4 | 4 | 4 | 0 | 0 |
| Res3 | Regular | 4 | 4 | 4 | 4 | 4 | 0 | 0 |
| | Prem | 6 | 6 | 6 | 6 | 6 | 0 | 0 |

Planning considers the following capacity profiles if subsequent weeks are in weekly buckets:

| Resource | Capacity Type | Week 2 | Week 3 |
|---|---|---|---|
| Res1 | Regular | 80 | 80 |
| | Premium | 16 | 16 |
| Res2 | Regular | 40 | 40 |
| | Premium | 20 | 20 |

| Resource | Capacity Type | Week 2 | Week 3 |
|---|---|---|---|
| Res3 | Regular | 20 | 20 |
| | Premium | 30 | 30 |

Oracle recommends the following options:

- Inflate lead times using the profile option MSO: Minimum Processing Lead Time Adjustment Factor.

  The profile option applies only to the calculated lead time.

- Manually set the lead time to a value large enough to permit ASCP to use resource capacity efficiently.

For example, the premium capacity is only 8 hours per day and the order modifier is 600 (production rate is 10 units per hour). In the event where all the regular capacity is fully used, the premium capacity is unused since an order of 600 will not be able to fit within a lead time of 5 days.

### Loading Legacy Collections

You can also insert the values from legacy collections using the Resources.dat flat file.

If there is a value for a resource and the collections process does not have a value to load for that resource, it uses the Premium Capacity Percentage value.

> **Note:** In this method, you cannot collect from Oracle E-Business, only legacy instances.

## Maximum Resource Capacity Utilization

Use maximize resource capacity utilization if you are either a:

- Highly capital-intensive manufacturing company with large capital asset startup and shutdown costs

- Highly labor-intensive manufacturing company that needs to keep your workforce utilized at a constant level due to labor contract constraints and other external factors.

You need to maximize resource utilization at the expense of building up inventory (front load).

It operates only in plan mode Constrained without detailed scheduling for both Constrained – Enforce capacity constraints and Constrained – Enforce demand due dates constraint types.

It does not apply to buy and transfer orders.

**Set Up**

Select plan option Maximize Resource utilization. It is in the Main tabbed region.

**Processing**

The planning process front loads supplies to the beginning of the plan horizon to use as much of the resource capacity as it can.

It may not always be able to fully load a resource. For example, if not enough buy item supplies are available on the front loading days, the planning engine cannot fully front load a resource.

For example:

- You have finished goods item FG
- You make it on production line MAKE FG
- You make 10 units per hour using Resource 1
- Resource 1 works 16 hours per day

This diagram shows netting for item FG if you do not maximize resource utilization. The planning engine plans the supplies just in time to meet demands and aligns the resource utilization with the supply dates.

| | | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item: FG | Demand | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Supply (Planned Orders) | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | | | | | | | | | | |
| Resource: R1 | Available Capacity | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | Required Capacity | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Load Ratio | 63% | 63% | 63% | 63% | 63% | 63% | 63% | 63% | 63% | 63% |

This diagram shows netting for item FG if you maximize resource utilization. The planning engine front loads Resource 1 by running it at capacity regardless of inventory buildup.

| | | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item: FG | Demand | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Supply (Planned Orders) | 160 | 160 | 160 | 160 | 160 | 160 | 40 | | | |
| | | | | | | | | | | | |
| Resource: R1 | Available Capacity | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | Required Capacity | 16 | 16 | 16 | 16 | 16 | 16 | 4 | 0 | 0 | 0 |
| | Load Ratio | 100% | 100% | 100% | 100% | 100% | 100% | 25% | 0% | 0% | 0% |

If your manufacturing plant receives orders from a distribution center, the planning engine does not front load those orders because they are transfer orders. It front loads the make orders that come from the transfer orders.

In this example:

- The planning engine cannot fully load a resource due to buy item constraint

- The onhand of item C1, quantity 400 will use up on Day 3.
- However, C1's lead time is three days, so the planning engine can't create a planned order until Day 4.
- Therefore, it can't fully load Resource 1 on Day 3.

| | | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item: FG @ D1 | Demand | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Supply (Planned Orders) | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | | | | | | | | | | |
| Item: FG @ M1 | Demand | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | |
| | Supply (Planned Orders) | 160 | 160 | 80 | 160 | 160 | 160 | 20 | | | |
| | | | | | | | | | | | |
| Item: C1 @ M1 | Demand | 160 | 160 | 80 | 160 | 160 | 160 | 20 | | | |
| | On Hand | 400 | | | | | | | | | |
| | Supply (Planned Orders) | | | | 160 | 160 | 160 | 20 | | | |
| | | | | | | | | | | | |
| Resource: R1 @ M1 | Available Capacity | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | Required Capacity | 16 | 16 | 8 | 16 | 16 | 16 | 2 | 0 | 0 | 0 |
| | Load Ratio | 100% | 100% | 50% | 100% | 100% | 100% | 13% | 0% | 0% | 0% |

In this example, you make:

- Finished good item FG from subassembly item SA
- Subassembly item SA on Resource 2 at 20 units per hour
- Finished good item FG on Resource 1 at 10 units per hour

Since Resource 2 has a higher production rate, front loading it causes subassembly item SA to build up in inventory in anticipation of its use at Resource 1

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item: FG | Demand | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Supply (Planned Orders) | | 160 | 160 | 160 | 160 | 160 | 100 | | | |
| | | | | | | | | | | | |
| Item: SA | Demand | 160 | 160 | 160 | 160 | 160 | 100 | | | | |
| | Supply (Planned Orders) | 320 | 320 | 260 | | | | | | | |
| | | | | | | | | | | | |
| Resource: R1 | Available Capacity | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | Required Capacity | | 16 | 16 | 16 | 16 | 16 | 10 | | | |
| | Load Ratio | 0% | 100% | 100% | 100% | 100% | 100% | 63% | 0% | 0% | 0% |
| | | | | | | | | | | | |
| Resource: R2 | Available Capacity | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | Required Capacity | 16 | 16 | 13 | | | | | | | |
| | Load Ratio | 100% | 100% | 81% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |

In this example, you make:

- Finished good item FG from subassembly item SA
- Subassembly item SA on Resource 2 at 10 units per hour
- Finished good item FG on Resource 1 at 20 units per hour

Since Resource 2 has a lower production rate, even front loading it makes it impossible for the planning engine to fully front load Resource 1.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item: FG | Demand | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Supply (Planned Orders) | | 160 | 160 | 160 | 160 | 160 | 100 | | | |
| | | | | | | | | | | | |
| Item: SA | Demand | 160 | 160 | 160 | 160 | 160 | 100 | | | | |
| | Supply (Planned Orders) | 160 | 160 | 160 | 160 | 160 | 100 | | | | |
| | | | | | | | | | | | |
| Resource: R1 | Available Capacity | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | Required Capacity | | 8 | 8 | 8 | 8 | 8 | 5 | | | |
| | Load Ratio | 0% | 50% | 50% | 50% | 50% | 50% | 31% | 0% | 0% | 0% |
| | | | | | | | | | | | |
| Resource: R2 | Available Capacity | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | Required Capacity | 16 | 16 | 16 | 16 | 16 | 10 | | | | |
| | Load Ratio | 100% | 100% | 100% | 100% | 100% | 63% | 0% | 0% | 0% | 0% |

The planning engine uses these choices in its attempt to maximize resource utilization:

- Alternate resources
- Alternate bills of material and routings
- Alternate sources
- Substitute components

The objective of maximizing resource utilization takes priority over the objective of minimizing use of alternates.

When you produce multiple items on the same resource, the planning engine uses these priorities:

- Pull in work orders before planned orders.
- For multiples of the same order type on the same day, pull in the supply with the lowest standard cost first.

To maximize resource utilization, the planning engine:

- Does not use end item substitution
- Does not try to front load non-bottleneck resources
- Does not try to front load make items with no routings
- Does not use premium capacity to front load
- Violates sourcing splits for make items especially if they are for multiple source organizations that all make the item
- Violates sourcing splits for buy items. In the service of getting components to stock as early as possible, it may drive sourcing to the supplier with the shortest lead time.
- May cause the projected available balance to go higher than safety stock levels

- Does not violate firm orders and the planning time fence

## Process Effectivity

Process Effective Date Ranges coordinate supply start dates with process and routing start dates. During the optimization phase, the planning engine schedules supplies based on item processing lead time. During the Detailed Scheduling phase, it schedules supplies based on their processes or routings. If the duration is not the same, there can be a mismatch between the supply start date and process or routing effectivity start date. Process effectivity aligns supply timing. For example:

- Recipe 1 is in effect from Day 1 through Day 50.
- Recipe 2 is in effect from Day 51 through Day 200.
- Recipe 3 is in effect from Day 201 through Day 400.

If the supply is scheduled to start on:

- Day 30, it should be assigned Recipe 1;
- Day 100, it should be assigned Recipe 2;
- Day 300, it should be assigned Recipe 3.

A mismatch occurs when a supply is scheduled to start on Day 30 and assigned to Recipe 2. If they don't have the same duration, there can be a conflict between the supply start date and process or routing dates. The planning engine will then issue an exception message.

In this feature, the planning engine enforces the Process Effective Start Dates with respect to all other planning constraints including firm date, minimum start time, precedence, demand due date, required processing time, and others. You can enforce process effective dates for both Enforce Demand Due Date and Enforce Capacity Constraints plans in the modes Constrained (With Detailed Scheduling) and Constrained (Classic).

## Warehouse Capacity Constraint

Warehouse capacity constraint can be set to direct the planning engine to consider the capacity of warehouse space. You have the option to set the level of detail the planning calculations consider: organization or category in an organization. Constraints are shown for the projected available balance of all items in that level of granularity. When warehouse capacity is exceeded, an exception message is generated when Planning recommends actions regarding warehouse capacity constraints, see: Warehouse Capacity Exceeded, page 15-65

The following examples demonstrate how warehouse capacity constraints are

employed:

- On-hand items exceed the warehouse capacity.

  The sum of on hand inventory exceeds the available storage capacity in the organization's warehouse. The Advanced Supply Chain Planning engine recommends moving some inventory to a downstream organization warehouse to resolve the storage capacity constraint. A planned order that maximizes the impact on storage capacity consumption is selected, such as an order representing the maximum cubic volume.

- Order modifiers cause the inventory to exceed warehouse capacity.

  For a fixed order quantity, inventory can build up in an organization warehouse causing a violation of available storage capacity. Planning recommends shipping items earlier and moving to a downstream warehouse.

- Safety stock exceeds warehouse capacity.

  If there is too much safety stock inventory, the planning engine first attempts to move pre-built inventory, then it allows projected available balance to go below safety stock.

You set up warehouse capacity constraints in the following windows:

- Capacity region of the Inventory Organization Parameters window.
- Storage Capacity window.
- Constraints tabbed region of the Plan Options window.

> **Note:** Warehouse capacity constraints are only supported in the planning mode Constrained (Without Detailed Scheduling).

#### Setting Up Warehouse Capacity Constraints

### To specify capacity constraint values:

1. For the organization you want to set warehouse capacity constraints, navigate to the Inventory Organization Parameters window, see: Defining Default Inventory Parameters, *Oracle Inventory User's Guide*

2. In the Capacity region, enter values for:

   - Volume: The value is the storage capacity that will be respected in Planning.
   - Unit of Measure for the selected volume value.

3. Save your work.

### To set warehouse capacity at the category level:

1. Navigate to the Storage Capacity window, see: Defining Storage Capacity at the Category Level, *Oracle Inventory Optimization User's Guide*

2. For each appropriate Category Set, enter the following values:

   - Organization
   - Category: Code for grouping similar items
   - Capacity: The total storage capacity for the specified category.
   - UOM: Unit of measure

3. Save your work.

### To enable warehouse capacity constraints:

1. Navigate to the Constraints tabbed region of the Plan Options window, see: The Constraints Tabbed Region, page 3-62

2. Enable the Enforce Warehouse Capacity Constraints check box

   When enabled, Advanced Supply Chain Planning considers warehouse capacity constraints specified in the plan input data.

   > **Note:** For all other constraint modes other than Constrained without Detailed Scheduling, this plan option should be disabled.

3. In the Warehouse Capacity Granularity field, select the level to consider in capacity constraint calculations. Choices are:

   - Organization

     If set to Organization, the sum of projected available balance of all items in the organization is converted to the warehouse capacity unit of measure . less than or equal to warehouse capacity of the organization.

   - Category-Organization.

     If set to Category-Organization, the sum of projected available balance of all items in the specified category in the organization is converted to the warehouse capacity unit of measure - less than or equal to warehouse capacity of that category in the organization.

4. Save your work.

### Viewing plan warehouse capacity availability and consumption:

1. Navigate to the Planner Workbench and select the Material Plan tabbed region.

   You can view Organization, Category , Item, Time, and Plan warehouse capacity information in the following fields:

   - Warehouse Capacity Available (Volume)

     Displayed at the Organization level or Organization-Category level depending on the value of the plan option Warehouse Capacity Granularity.

   - Warehouse Capacity Consumed (Volume)

     Displayed at the Organization level, Organization-Category level, and Item-Organization level.

   - Warehouse Capacity Consumed (Percent)

     Displayed at the Organization level, Organization-Category level, and Item-Organization level.

     Calculation Formula: warehouse capacity consumed (volume) / warehouse capacity available (volume)

2. You can also see data in the Supply Chain Analyst Dashboard in the Oracle Advanced Planning Command Center, see:

   Understanding the Supply Chain Analyst Dashboard, *Oracle Advanced Planning Command Center*

3. View warehouse capacity constraints in the Warehouse Capacity Report in the following sections:

   - Capacity at Storage Type Level
   - Item Level / Capacity at Storage Type Level
   - Capacity at Organization Level
   - Item Level / Capacity at Organization Level

   See: Understanding the Seeded Report, *Oracle Advanced Planning Command Center*

## Enforce Capacity Constraints Scheduling

Supplies and resource requirements within supplies that are pegged to on time demands have their Earliest Allowable Completion Time (EACT) as the Plan Start Date.

## Enforce Demand Due Date Scheduling

Enforce demand due date plans require the planning engine to meet demand due dates. If it cannot meet the demand on time using existing capacity, it must overload resources and suppliers.

The planning engine backward schedules the activities from the demand due date. If there is not enough time to complete the supply order by the demand due date, the planning engine reaches the plan start date before it is finished scheduling the order. It then follows a certain process to reschedule the operations, see Identifying Root Causes of Late Demand, page 15-124.

The planning engine manage the slacks (overloads) as it schedules, so that it can overload the activities that are constraining the schedule the most and reasonably schedule the other activities. As planners can easily identify the actual constraining activities, they can work to improve the overall schedule.

To manage the slacks, it assigns each activity of a supply order a time window and only schedules the activity within that window. This allocates to each activity in a supply order its proportion of the slack. Otherwise, the full scheduling of beginning or ending activities in the routing can use up most of the time. Then, other activities appear compressed against the plan start date or demand due date with high slack even thought they are not necessarily the most constraining activities.

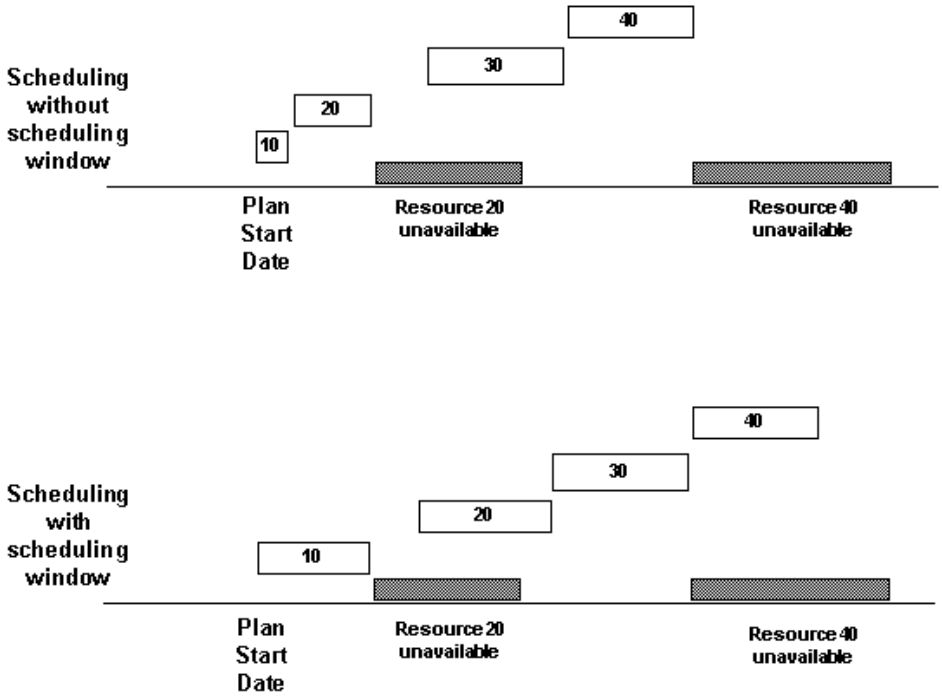
When faced with a need to overload, the planning engine:

- Does not compress operations beyond their minimum durations unless the demand is due very close to the plan start date
- Tends to overload resources at times when they are unavailable rather then compressing operations into small gaps of available time
- Attempts to create resource overloads evenly distributed in time rather than creating higher resource overloads closer to the plan start date

This diagram shows an example of scheduling a four operation (operation numbers 10, 20, 30, 40) supply order without using scheduling windows and with using scheduling windows. The filled in boxes represent times when a resource is unavailable.

- When not using scheduling windows, the planning engine schedules operations 40 and 30 for their complete times and during times when their resources are available and then severely compresses operations 20 and 10 to avoid their being past due.
- When using scheduling windows, the planning engine schedules all operations for their complete times; however, it schedules operations 20 and 40 during times when their resources are not available.

*Activity Scheduling and Scheduling Windows*




## Scheduling Requirements

The planning engine schedules every material and resource requirement in an enforce demand due date plan:

- Within an unconstrained scheduling window
- Within an actual scheduling time window
- According to the nature of the time window

## Unconstrained Scheduling Window

To schedule a supply order, the planning engine first finds the unconstrained scheduling window for each operation.

The unconstrained scheduling window of an operation occurs between these points:

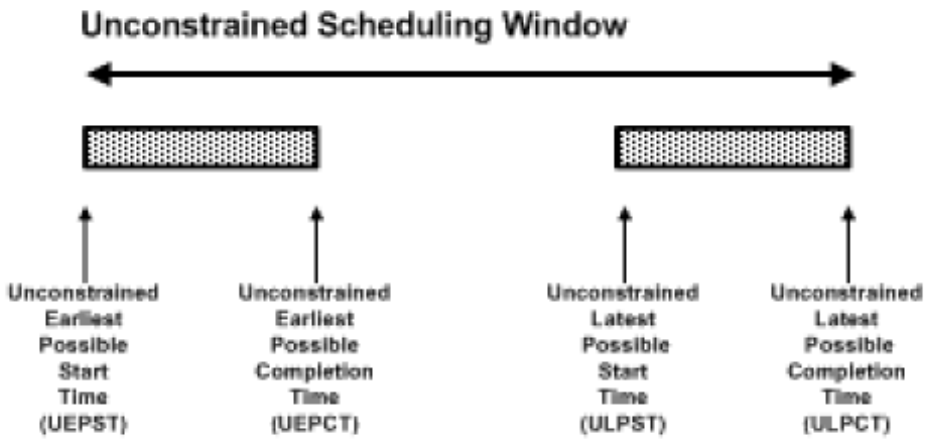
- Unconstrained Earliest Possible Start Time (UEPST): The planning engine never schedules an operation to start earlier than this time. If it did so, it would compress upstream operations beyond their minimum durations.

The Unconstrained Earliest Possible Completion Time (UEPCT) = UEPST + Minimum duration of operation

- Unconstrained Latest Possible Completion Time (ULPCT) : The planning engine never schedules an operation to end later than this time. If it did so, it would compress downstream operations beyond their minimum durations.

  Unconstrained Latest Possible Start Time (ULPST) = ULPCT - Minimum duration of operation

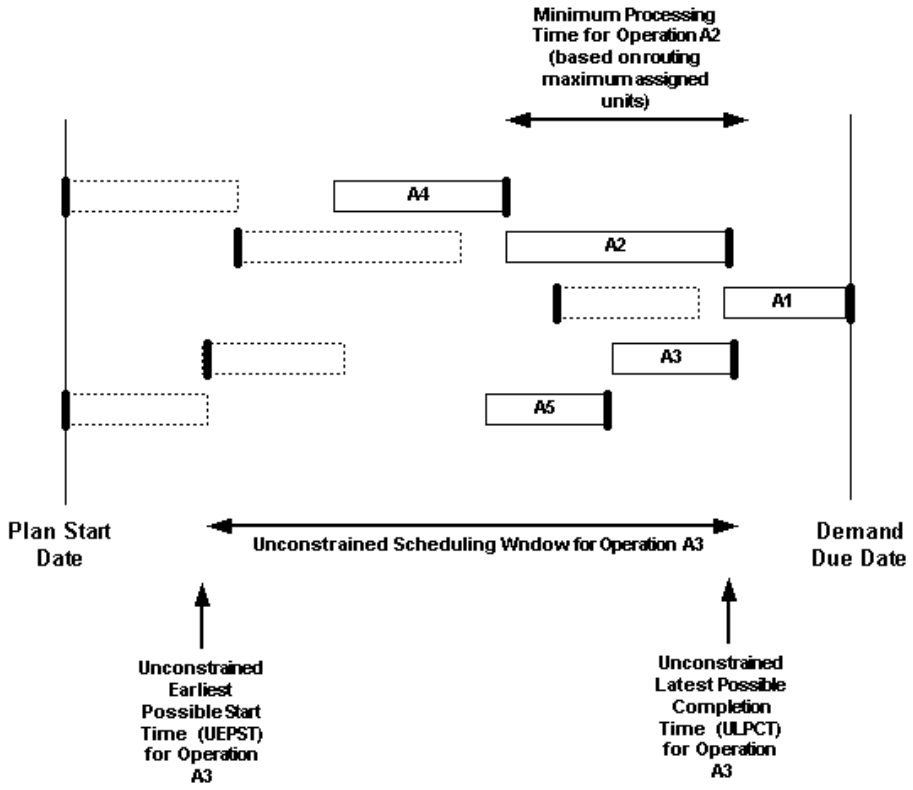
This diagram shows the unconstrained scheduling window for an operation.




The planning engine finds the UEPST and ULPCT by backward and forward scheduling all activities, considering resource availability and breaks (according to the setting of the profile option MSO: Use Breaks in Calculation of Unconstrained Scheduling Windows), maximum assigned units, precedence constraints, firming, minimum transfer quantity operations, and Next and Prior scheduled resources, but not minimum batch size constraints, resource batching, or organization receiving calendars . It backward schedules from the demand due date and forward schedules from the minimum start time for each operation. The minimum start time of each operation accounts for the plan start date, planning time fence, and preprocessing lead-time.

This diagram shows a number of operations with their unconstrained scheduling windows and the UEPSTs and ULPSTs highlighted.

*Routing Unconstrained Scheduling Windows*




If there is are firm activities, the planning engine first backward schedules the activities upstream of the earliest firmed activity and between them and then first forward schedules activities downstream of the latest firmed activity.

## Actual Scheduling Window

The planning engine uses the information from the unconstrained scheduling windows to find the total slack of a supply order and to distribute it among the activities in proportion their contribution to it. For each operation that uses a resource, the planning engine calculates a constrained window, the actual scheduling window, and schedules the operation within that window.

The slack of each operation is the maximum amount of "wiggle room" that each operation has. It assumes that each operation above it in the pegging tree is scheduled as late as possible with minimum processing time and that each operation below it in the pegging tree is scheduled as early as possible with minimum processing time. Slacks among the operations are interrelated. For example, if an operation higher in the pegging tree gets scheduled towards the earlier side of its unconstrained scheduling window, the planning engine is more likely to compress the windows of its operations lower in the pegging tree.

The actual scheduling window of an operation occurs between these points:

- Earliest Allowable Completion Time (EACT): The planning engine never schedules an operation to end earlier than this time. An earlier completion would take time from other activities and possibly cause them to have less slack than is proportional for them.

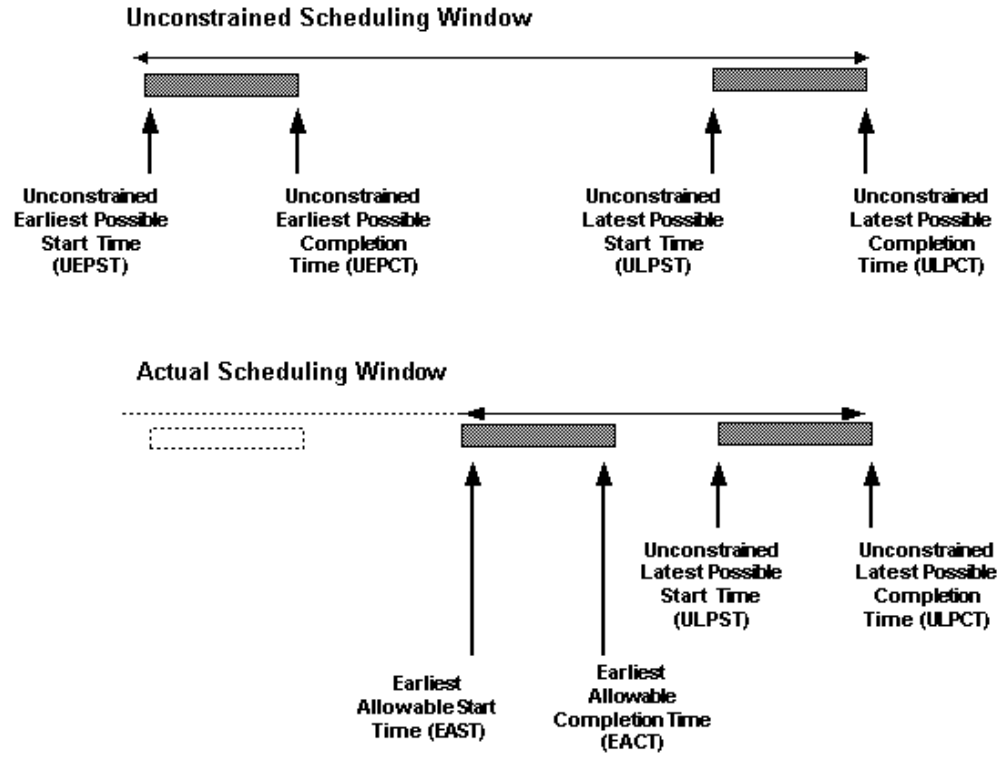
  The planning engine calculates it from information gathered while performing unconstrained scheduling. It is the ratio of the minimum processing time needed by the operation to the total minimum processing time along the path of minimum slack upstream from the operation. This ratio indicates how much of the slack we can allow the operation to use. You can influence the calculation of EACT and the length of the actual scheduling window by setting profile option MSO: EDD Scheduling Window Control.

  Earliest Allowable Start Time (EAST) = EACT - (UEPCT - UEPST)

- Unconstrained Latest Possible Completion Time (ULPCT) of the unconstrained scheduling window.

This diagram shows the unconstrained scheduling window and the actual scheduling window for an operation.

*Unconstrained and Actual Operation Scheduling Windows*




## Scheduling Window Nature

The action that the planning engine takes to schedule an operation depends on the nature of the scheduling window. The nature of scheduling window depends on:

- The time between the plan start date and the demand due date
- The cumulative duration of all supplies and operations that need scheduling to satisfy the demand on time

If the size of the actual scheduling window is the same as or longer then the operation minimum duration, the planning engine schedules it at its minimum duration within the actual scheduling window.

If the size of the actual scheduling window is shorter than the operation minimum duration, the planning engine may compress it and schedules it for the duration of the actual scheduling window. This usually occurs when the demand due date is close to the plan start date and depends on the profile option MSO: Lead Time Control.

If the operation would start or end in the past, the unconstrained scheduling window is nonexistent. The planning engine schedules the operations according to the setting of

profile option MSO: Lead Time Control.

## Scheduling Controls

You can control some functions of the planning engine operation scheduling in enforce demand due date plans.

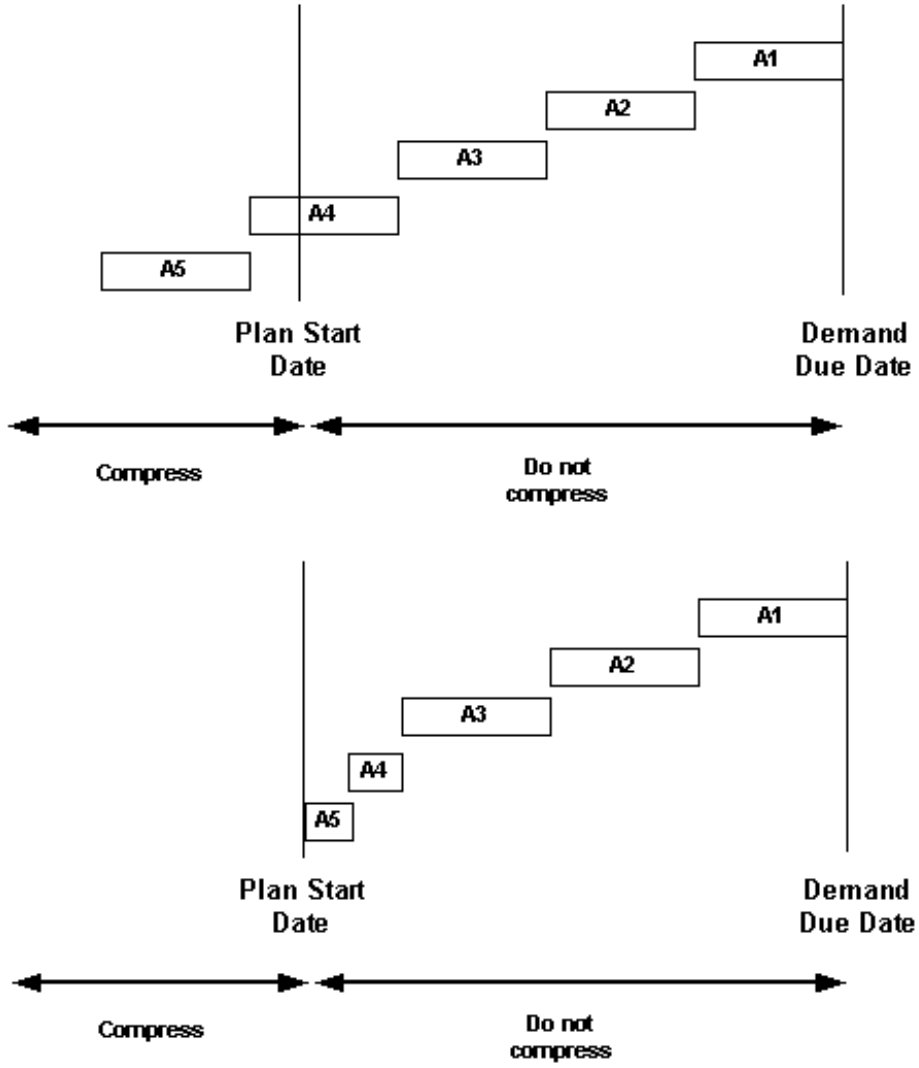
## Operation Compression

To instruct the planning engine how to proceed when it finds an operation would start or end in the past, set profile operation MSO: Lead Time Control. With either setting, there may be supplier and resource overloads.

If you select Violate minimum processing times to meet demand due date (the default), the planning engine compresses operations into less time than the maximum assigned units processing time to meet the demand due date. In addition, it issues an Order with insufficient lead time exception message and a Requirement with insufficient lead time exception message. It retains the schedules of the future operations within their actual scheduling windows.

This diagram shows a series of operations to be scheduled. Operations A4 and A5 are wholly or partially in the past. With option Violate minimum processing times to meet demand due date set, the planning engine compresses operations A4 and A5 to retain the demand due date.

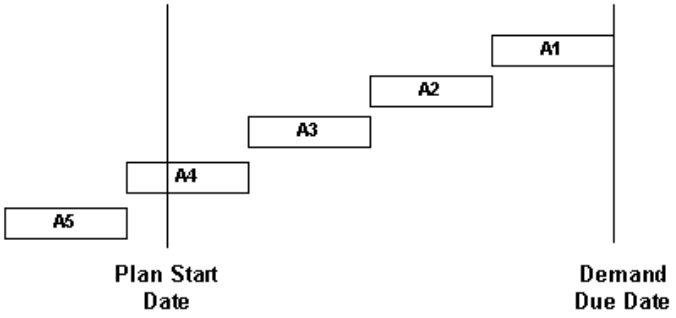
*Violate Minimum Processing Times Example*

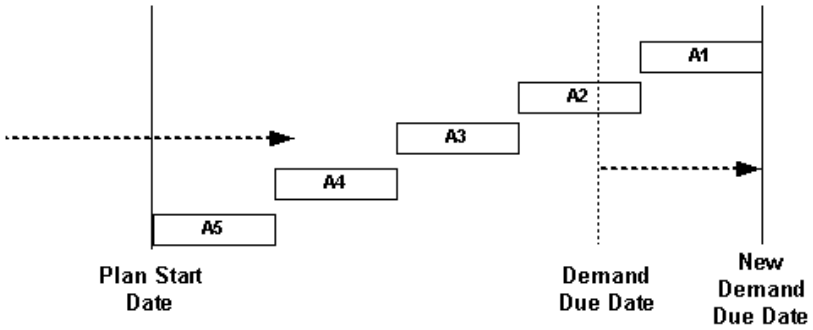



If you select Do not violate minimum processing times, the planning engine does not compress operations, calculates a new demand due date (the demand satisfied date), and reschedules the operations according to the new demand due date. The time between the original demand due date and the new demand due date is the minimum possible days late.

This diagram shows a series of operations to be scheduled. Operations A4 and A5 are wholly or partially in the past. With option Do not violate minimum processing times set, the planning engine calculates new demand due date and reschedules the operations for that date.

***Do Not Violate Minimum Processing Times Example***




## Capacity Breaks

To instruct the planning engine to make use of capacity breaks (non-work times), set profile option MSO: Use Breaks in Calculation of Unconstrained Scheduling Windows.

If you select Yes (the default), the planning engine calculates UEPST, UEPCT, ULPST and ULPCT taking capacity breaks into account. It does not include resource or supplier non-work time when laying out activity time and never sets any of these time points to a non-work time.

If you select No, the planning engine calculates UEPST, UEPCT, ULPST and ULPCT ignoring capacity breaks. It does include resource or supplier non-work time when laying out activity time and may set any of these time points to a non-work time.

Select No to encourage the planning engine to schedule work during resource breaks to meet demand due dates; select Yes to discourage it from this effort.

If set to Yes, the planning engine may schedule a downstream operation during a resource's non-working time. This results in more available time available for upstream operation scheduling; the planning engine could schedule upstream operations beyond their ULPCT.

## Earliest Allowable Completion Time

To control the planning engine calculation of Earliest Allowable Completion Time (EACT), set profile option MSO: EDD Scheduling Window Control. The planning engine calculates the optimal size for each operation's actual scheduling window as proportional to its minimum duration and whether or not it is in the critical path. You control the actual size of the actual scheduling window by entering a number between 0 and 1.

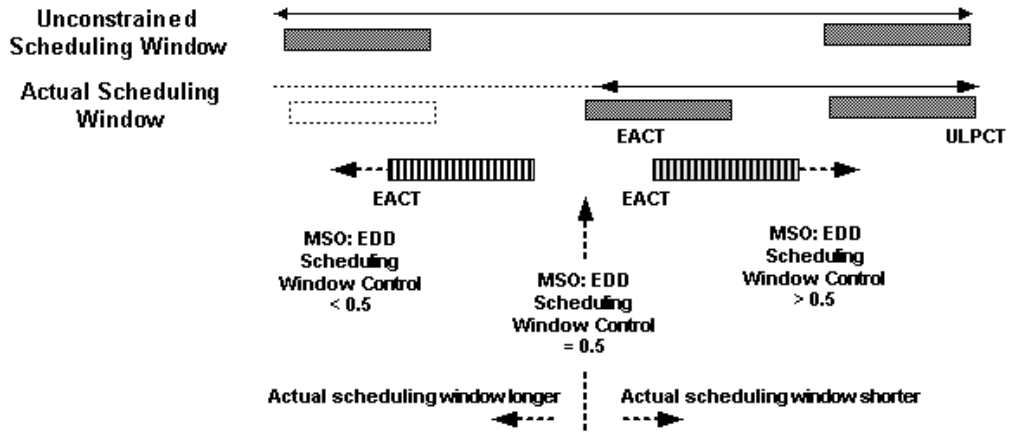
If you enter 0.5 (the default), the planning engine sets the actual scheduling window duration to the optimal size.

If you enter an number lower than 0.5, the actual scheduling window becomes larger than the optimal size. This could cause more resource overloads on upstream resources as compared to downstream resources.

If you enter an number higher than 0.5, the actual scheduling window becomes smaller than the optimal size. This could cause more resource overloads on downstream resources as compared to upstream resources.

This diagram shows the effect of different actual scheduling window sizes.

***Actual Scheduling Window Sizes***




## Analyzing the Plan

To see the results of the enforce due date planning, refer to the Planner Workbench.

- In the Supply window, view the UEPST and UEPCT for each supply calculated forward from the plan start date and the ULPST and ULPCT calculated backwards from the demand due date.

- In the Resource Requirements window, view the start and completion times and the

UEPST, UEPCT, ULPST, ULPCT, and EACT for each resource requirement. No resource requirement should show a completion time that is earlier than its EACT.

- In the Gantt Chart, right lower pane, the constrained resources should show as scheduled with an overload within its scheduling window.
- Resources that are overloaded may not show a corresponding exception message if the overload is within the exception set Over-utilization %.

Since scheduling method is not exact, you may see available capacity which appears not used. The planning engine does not reschedule firm activities and, once it begins scheduling, does not usually return to already scheduled operations and resources to look for further opportunities.

If profile option MSO: Use Breaks in Calculation of Unconstrained Scheduling Windows is Yes, the planning engine, in these cases, does not issue exception message Order lead time constraint:

- Operations and supplies that have negative unconstrained scheduling windows (unconstrained latest possible completion time is earlier than unconstrained earliest possible completion time)
- Compressed unconstrained scheduling windows (Unconstrained latest possible completion time - Unconstrained earliest possible completion time < Minimum processing time)

### Safety Stock

Safety stock requirements are hard requirements. The planning engine schedules supplies that peg to them to meet their due dates and overloads resources as necessary.

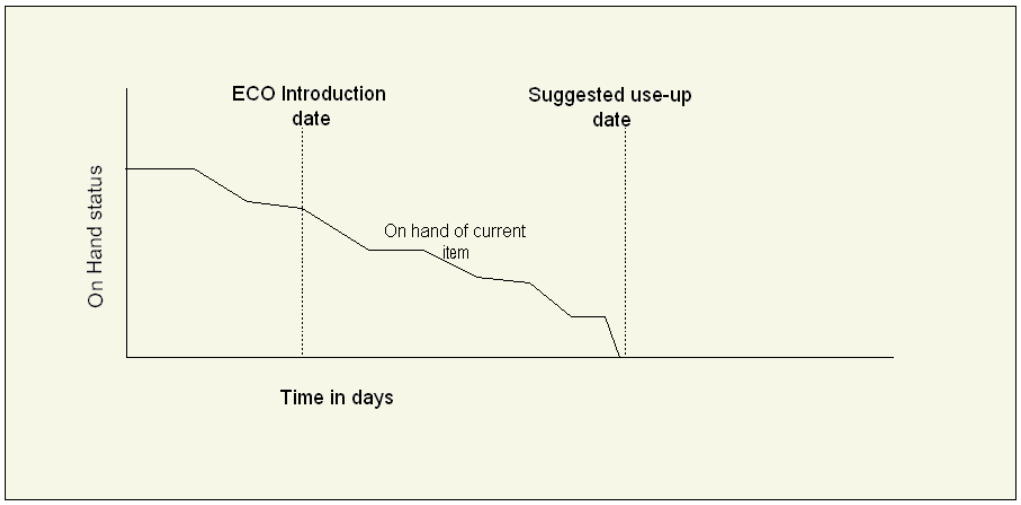
## Engineering Change Orders Use-Up Effectivity

Engineering changes to an item or modifications to bills of material are implemented through Engineering Change Orders (ECO). These planned changes affect the dependent demand calculations and the orders rescheduled or created by the planning process. The use-up date is the date when the on-hand quantity for an item will be exhausted based on projected gross requirements and receipts. You can plan to use up your current item before introducing engineering changes by accepting the use-up effectivity date recommended by ASCP.

When you define a revised item using an ECO, you can specify whether the planning process should recommend a suggested effective date for the revised item. If you do so, Oracle ASCP recommends a use-up date for the current item. The use-up date is calculated by applying on-hand quantity in inventory (supply) against gross requirements (demand). It is the date on which all supplies for the current item will be used up (on hand will be zero).

The ECO use-up effectivity date is calculated by adding one working day to this, as shown in the following figure.

***ECO Use-up Effectivity Date***




Oracle ASCP considers scheduled receipts in the use-up date calculation if the following profile option: Include Schd Rcpts in Use-up, is set to Yes.

If you typically have many engineering change orders with close dates, you can instruct the planning engine to align discrete jobs and engineering change orders but at the expense of finite capacity scheduling for the jobs suppliers and resources. To enable this, set profile option MSC: Release WIP Dtls if Order Date different then BOM Revision Date. As a result of this setting:

- The planning engine updates engineering change order revision date to the start date of the earliest affected discrete job.
- Oracle Work in Process ignores the job BOM Revision Date and explodes for the bill of material and routing details effective on the planning-recommended new order (start) date (instead of the existing order (start) date); this eliminates revision conflicts among multiple engineering change orders.

## To use the ECO Use-up effectivity date recommended by ASCP

1. Define your Engineering Change Orders. For information on how to do this, please refer to *Oracle Engineering User's Guide*.

   When you create an ECO, by default the MRP Active Flag is already checked. If you do not want this ECO to be subject to a use-up date calculation, you can uncheck this flag.

2. Bring the ECO to your planning system by running Collections.

3. Run an ASCP plan for the items to which ECOs apply.

4. After running your plan, you can verify that the ECO has been accounted for in the planning process by selecting the item in the left pane of the Planner Workbench, then right-clicking with the mouse and selecting Items from the menu that drops down.

   The Items window appears.

5. Select the Components button.

   The Components window appears.

   Effectivity dates for the components appear in this window.

6. Push the plan output to the source system by running the Push Plan Information concurrent program. (Navigation: Setup > Run Requests > Single Request. Select Push Plan Information from the list of values.)

7. You can find the system recommended use-up date for the item and components by navigating to Oracle Engineering and querying up the ECO. You can see the ECO details by selecting the Revised Items button in the Engineering Change Orders window.

   The Revised Items window appears.

8. You can override the recommended use-up date by manually changing the Effective Date field. You can also see use-up dates for all components, if the item is part of an assembly, and choose the use-up date of any component to be use-up date for the whole assembly.

   The following table illustrates how the use-up effectivity date is established.

| Day | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 |
|---|---|---|---|---|---|---|
| Gross Requirements | 0 | 200 | 200 | 300 | 300 | 0 |
| Projected On-Hand | 700 | 500 | 300 | 0 | 0 | 0 |

Oracle Advanced Supply Chain Planning calculates the use up date based on projected gross requirements for the item. In this example, the current on-hand quantity is exhausted on Day 4. Therefore, the planning process sets the use-up effectivity date for this item to be Day 5.

## Forecast Expiration

Forecast expiration instructs the planning engine not to plan supply to satisfy some types of unmet, past due demands (expire the demands). Use it to avoid build-up of these demands that consume current and future production capacity and make it more difficult to meet the current demands.

Forecast expiration applies to forecast lines and master demand schedule entries. It does not apply to sales order lines, safety stock demand, and dependent demand.

It works only for Optimized - Enforce capacity constraints plans with either:

- User-defined decision rules enabled (profile option MSC: Enable User Defined Decision Rules is Yes)
- Cost-based optimization enabled

The planning engine calculates late demands based on the capacity constraint options you select (Material, Resource, or Material and resource). For example, if you select Resource, material capacity constraints (other than the hard constraint material lead-time) does not cause late demands and therefore does not cause forecast expirations.

### Forecast Expiration Setup

To use it, specify the number of days that the planning engine should plan supply for these types of past due demand in the profile option MSO: Maximum Allowable Days Late before Forecast Expiration. The planning engine expires any of these types of demands that are unmet and past due for longer than the profile option value. If you want the planning engine to expire all of these types of demands that are unmet and past due, set the profile option to 0. Note that the profile option MSO: Maximum Allowable Days Late is different from this one.

For example:

- Profile option MSO: Maximum Allowable Days Late before Forecast Expiration is 4
- Original forecast: 1000 units
- Sales order: 100 units
- Unconsumed forecast: 900 units (1000 - 100). The consumption is the forecast consumption within the plan; it does not reflect forecast consumption that occurs on the source instance during the master demand schedule load.
- Forecast expiration (planning engine cannot meet demand within four days late): 200 units
- Net forecast: 700 units (900 - 200)

- Supply: 800 (100 sales order + 700 net forecast). If the item is lot controlled, you see one supply for 100 units pegged to the sales order and one supply for 700 units pegged to the forecast.

The planning engine calculates the actual cutoff date from the MSO: Maximum Allowable Days Late before Forecast Expiration value using the manufacturing organization calendar. If that date is within a weekly or period bucket, the planning engine uses the date at the end of the weekly or period bucket as the actual cutoff date. Therefore, all completed supplies within that weekly or period bucket are within the allowed window.

## Viewing Forecast Expiration Results

You can see the results of forecast expiration in these Planner Workbench fields in the Supply/Demand window:

- Original Order Quantity: The demand quantity before any forecast consumption or expired demand.
- Expired Demand: The quantity of the demand that has expired.
- Quantity/Rate: Original order quantity - Consumed quantity - Expired demand.
- Consumption Details: To see the Consumption Details window, right-click on the forecast line and select Consumption Details.

This table shows an example of plan results when the planning engine applies forecast expiration in this situation:

- There are forecast entries on 4 November for quantity 700 and on 11 November for quantity 1000.
- There are no sales orders.
- Profile option MSO: Maximum Allowable Days Late before Forecast Expiration: 4.
- Order modifier Maximum Order Size: 300.
- Both forecast entries are eligible for forecast expiration against their unmet quantities. The planning engine estimates that it cannot successfully schedule 100 units of the 4 November forecast by 8 November and 200 units of the 11 November forecast by 15 November.

  The planned order for quantity 200 due on 17 November is six days late despite the profile option value of four days. The detailed scheduling process for the planned orders may move supplies outside the allowable days late window.

| Entity | Due Date | Days Late | Original Forecast | Expired Demand | Qty/Rate |
|---|---|---|---|---|---|
| Forecast | 4 November | - | 700 | 100 | - 600 |
| Planned Order | 4 November | 0 | - | - | 300 |
| Planned Order | 4 November | 0 | - | - | 300 |
| Forecast | 11 November | - | 1000 | 200 | - 800 |
| Planned Order | 1 November | -10 | - | - | 300 |
| Planned Order | 11 November | 0 | - | - | 300 |
| Planned Order | 17 November | 6 | - | - | 200 |

## Forecast Expiration Exception Messages

Forecast expiration does not stop the planning engine from issuing Late replenishment for forecast exception messages. If you want to suppress those messages, set profile option MSO: Late Demands Exceptions Tolerance Minutes to the same length of time as you set profile option MSO: Maximum Allowable Days Late before Forecast Expiration. However, you can set it for any length of time; use quantity 1440 for each whole day.

Whether or not you suppress the exception message, you can sort on Days Late in the Late replenishments for forecast exception details. Sort on Days Late in descending order to review the exception messages outside of the MSO: Maximum Allowable Days Late before Forecast Expiration value.

## Implementing Forecast Expiration

Use this information to adjust profile options and settings for best forecast expiration performance.

## MSO: Maximum Allowable Days Late

This profile option interacts with MSO: Maximum Allowable Days Late before Forecast

Expiration. It limits the number of days that the planning engine can move out a demand or unfirmed scheduled receipt in an Optimized plan. You use it only to improve the performance of the optimization component of the memory based planner. Scheduling moves out demands and unfirmed scheduled receipts as long as necessary in the final plan output.

MSO: Maximum Allowable Days Late only applies to sales orders if MSO: Maximum Allowable Days Late before Forecast Expiration has a value. If MSO: Maximum Allowable Days Late before Forecast Expiration does not have a value, MSO: Maximum Allowable Days Late applies to all demands. For production planning purposes, MSO: Maximum Allowable Days Late limits how many days in the future that the planning engine considers alternate sources, end item substitutes, substitute components, alternate bills of material, and alternate routings when the primary method would result in a late supply. Typically, you should set the MSO: Maximum Allowable Days Late to the plan horizon for production plans to make alternate methods available for the entire plan duration. If it has a small value, for example 30, and the planning engine does not select an alternate method within the first 30 days, it selects the primary method. That typically moves the final supply date is pushed out beyond 30 days.

MSO: Maximum Allowable Days Late also impacts forecast expiration when MSO: Maximum Allowable Days Late before Forecast Expiration has a value. MSO: Maximum Allowable Days Late limits the number of days from the demand date that the planning engine reduces capacity for the supply if it is scheduled late. If MSO: Maximum Allowable Days Late has a small value, for example 30, and optimization cannot find capacity for the sales order within 30 days, then it stops looking at later dates. As a result, optimization may not expire forecasts when it should because it has not reduced capacity for sales orders. To avoid this, Oracle recommends that you set MSO: Maximum Allowable Days Late higher than the number of days in the plan horizon.

## MSO: Queue Time Factor

The optimization engine uses it to increase lead-time when calculating capacity and scheduling supplies. This allows you to produce a more conservative estimate of when capacity is required and raises the amount of expired forecast quantities. Too high a value leaves unused capacity and expires too much of the forecast quantity. This profile option does not affect scheduling.

## Controlling Late Replenishments

To control the number of late replenishments beyond the MSO: Maximum Allowable Days Late before Forecast Expiration value, ensure that all of the processing lead-time values are good representations of your actual lead-times. If there are many forecasts consistently late and information points to certain resource or material constraints, adjust the processing lead-time and retest forecast expiration. Oracle recommends that you complete this tip and monitor forecast expiration performance before considering the next tip.

In addition, you can tune the results by setting profile option MSO: Queue Time Factor to a fraction. For example, if the value is .10, then the planning engine increases all lead-times by 10% in all time buckets.

## Forecast Expiration and Demand Priority

The planning engine uses demand priority to decide which of these types of demand to expire first. If several eligible demands are in the same bucket with the same demand priority, the planning engine randomly selects the demand to expire first. A forecast entry and a sales order line can be in the same bucket and have the same demand priority. If the planning engine considers the forecast first, it may not post sufficient forecast expiration because it has not considered the sales order.

If you want forecast expiration to consider a certain demand before others, set its priority higher (a lower number) than the priority of the other demands. For proper forecast expiration, Oracle suggests that you use a demand priority rule that includes a date criteria first and then MDS/Sales Order Priority. This insures that:

- Sales orders in a bucket have a higher priority than forecasts in the same bucket.
- The planning engine performs forecast expiration in date sequence, properly balances demand and capacity in each bucket, and displays results that you can understand.

## Forecast Expiration with Online and Batch Replan

When running online or batch replan, the planning engine may reset expired demand to the quantity expired in that replan. When this happens, note the following:

- The Planner Workbench Qty/Rate field is not accurate.
- During the online or batch replan, the planning engine has not unexpired any expired forecast quantities. Once the forecast quantities have expired, they remain expired in all future online and batch replans.

  For example, during a regenerative plan run, 1000 units expires. A subsequent batch replan expires an additional 100 units. The value in the Expired Demand field is now 100 units, not 1100 units. Original Order Quantity does not change during online or batch replan.
- When you relaunching the plan, the planning engine considers the original order quantity and recalculates any forecast expiration.

With online and batch replans when MSO: Maximum Allowable Days Late before Forecast Expiration has a value, the planning engine never again considers expired forecast quantities.

To see the impact of changes on the expired forecast quantities, either change the source forecast quantity and launch a new plan or manually increase the forecast quantities in

the Planner Workbench. The next online replan expires additional forecast quantities as needed.

## Sequence Dependent Setups

To minimize resource setup times and maximize resource setup times, you can specify sequence dependent setup times. Sequence dependent setup times indicate how long it takes to set up a resource, depending on the jobs on the resource. For example, changing a paint sprayer from white paint to black paint could take loner than changing the sprayer from white paint to yellow paint.

Based on sequence dependent setup times, Oracle Advanced Supply Chain Planning can determine preferred activity sequences, or "setup rings," that minimize resource setup times. A setup ring is a sequence of changeovers that enables a resource to make each possible product at least once with a low amount of total changeover time. For example, based on sequence dependent setup times, Oracle Advanced Supply Chain Planning might determine that the best changeover pattern for a paint sprayer is from which to yellow, to blue, to black paint.

When a sequence dependent scheduling is enabled for a time bucket, Oracle Advanced Supply Chain Planning tries to schedule resource activities in the time bucket in accordance with the setup rings. The planning engine tries to minimize changeover times and associated penalties, while meeting demand on time.

If only some resource setup types are required in a time bucket, only the required activities are included and planned in accordance with the setup ring. For example, if a sprayer setup ring is from white to yellow to blue to black paint, and the sprayer does not require blue paint during a bucket, the remaining activities follow the setup ring: white to yellow to black.

Oracle Advanced Supply Chain Planning (ASCP) schedules sequence dependent setup resources to the level of the resource instance. Rather than stating that a job requires three units of a resource, ASCP specifies the sequence dependent setup resource instances where the job must run. Sequence dependent setup for batch resources are also scheduled to the resource instance level.

If you do not enable sequence dependent scheduling, ASCP increases activity durations according to the utilization percentage on each resource, without determining how to minimize setup times.

### Sequence Dependent Setups for Discrete Manufacturing

You can set up date required for sequence dependent scheduling for discrete manufacturing in Oracle Bill of Materials. You can then run collections to populate the data in Oracle Advanced Supply Chain Planning.

To specify sequence dependent setup data for discrete manufacturing, you must:

- Define setup types.

- Assign setup types to resources.
- Specify changeover times between setup types on resources.
- Specify setup types for routing steps.
- Enable instance-level scheduling.
- Specify initial resource state.
- Specify sequencing window sizes.

#### To Define Setup Types

You must create a setup type for every sequence dependent resource setup. For example, you could create white paint, yellow paint, and black paint setup types.

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Bills of Materials > Routings > Setup Types.
3. For each sequence dependent setup type, enter a code and description.

For more information on setting up resource information for bills of materials, see Defining Resource Setup Information, *Oracle Bills of Material User's Guide*

#### To Assign Setup Types to Resources

After defining setup types, you must assign the setup types to resources. For example, you could assign the paint setups to a paint sprayer.

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Bills of Materials > Routings > Resources.
3. In the Resources window, find a sequence dependent setup resource.
4. Click Setups.
5. In the Setups window, move all setup types for the resource from the Available area to the Selected area.

For more information on setting up resource information for bills of materials, see Defining Resource Setup Information, *Oracle Bills of Material User's Guide*

#### To Specify Changeover Times Between Setup Types on Resources

After assigning setup types to resources, you must specify the amount of time that it takes to change between possible setups on a resource. For example, you could specify how long it takes to change a paint sprayer from:

- White paint to yellow paint.
- White paint to black paint.
- Yellow paint to white paint.
- Yellow paint to black paint.
- Black paint to white paint.
- Black paint to yellow paint.

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Bills or Materials > Routings > Resources.
3. In the Resources window, find a sequence dependent setup resource.
4. Click Setups.
5. In the Setups window, click Changeovers.
6. In the Changeover Times window, do one of the following:
   - To select a set of records to perform an edit of changeover times, select a list of From Setup Types and a list of To Setup Types, and click Refresh Changeover Times.

     This populates all possible combinations on the bottom portion of the screen. You can then perform a mass update of changeover times for a subset of the records or for all of the records displayed.

   - To enter information for one changeover, complete these fields for a changeover row:

| Field | Description |
|---|---|
| From | The setup from which the resource is changing. The value can be null, meaning a changeover from any resource. |
| To | The setup to which the resource is changing. |
| Duration | The time it takes to perform the changeover. |

| Field | Description |
| --- | --- |
| UOM | The unit of measure for the duration. |
| Penalty | The penalty incurred if this changeover is performed. The planning engine balances this penalty with the demand lateness penalty that might be incurred if the changeover is not performed and the activity is scheduled for a later date. |
| Standard Operation | The standard operation needed for the changeover. The standard operation can specify resources used in performing the changeover. These resources are considered simultaneous resources with the machine where the changeover is performed. Simultaneous resources on the changeovers are not scheduled as constrained resources and ma have overloads after planning. |

- To update information for multiple changeovers, select the changeover rows, enter information in the Perform Mass Update fields, and click Update.

  To exclude changeovers from the update if the From setup is the same as the To setup, select Unselect Records where From equals To.

### To Specify Setup Types for Routing Steps

You must specify which setup types are associated with which routing operations.

> **Note:** You cannot mark both principal and other resources as sequence dependent.

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Bills of Materials > Routings > Routings.
3. In the Routings window, select an operation in a routing.
4. Click Operation Resources.
5. In the Operation Resources window, on the Scheduling tab, enter the setup type in the Setup Type field.

#### To Enable Instance-level Scheduling

If a resource has more than one unit, you must specify the resource instances and enable instance-level scheduling for the resource.

> **Note:** Instance level scheduling is relevant only for sequence dependent setup resources. Instance level scheduling is not supported in Advanced Supply Chain Planning for non-sequence dependent setup resources.

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Bills of Materials > Routings > Departments.
3. In the Departments window, click Resources.
4. In the Resources window, select Schedule by Instance for each sequence dependent setup resource.

#### To Specify Initial Resource State

You can specify the initial setup state of each sequence dependent setup resource. The initial setup state determines whether the first activity scheduled on the resource requires a changeover.

1. Select the Advanced Supply Chain Planner responsibility.
2. Navigate to Collections > View Collected Data > Resources.
3. In the Resources window, click Instances.
4. In the Resource Instances window, specify the initial setup for each resource instance.

#### To Specify Sequencing Window Sizes

For each sequence dependent setup resource, you must specify the time required to cycle through all setup types. The system uses this value to estimate setup cycle lengths.

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Bill of Materials > Department > Departments.
3. In the Resources window, click the Planning tab.
4. For each resource, enter the number of days to cycle through all setup types.

## Sequence Dependent Setups for Process Manufacturing

You can specify sequence dependent setup data for process manufacturing in Oracle manufacturing models and run collections to populate the data in Oracle Advanced Supply Chain Planning. To specify sequence dependent setup data for process manufacturing, you must:

- Classify items as sequence dependent.
- Specify changeover times and penalties.
- Specify resources with sequence dependent setup.
- Specify sequencing window sizes.

### To Classify Items as Sequence Dependent

To classify items with sequence dependent setups you must assign the item to a category in the Sequence Dependency Class category set. For more information on assigning an item to a category set, see Assigning Items to Categories, *Oracle Inventory User's Guide*.

### To Specify Changeover Times and Penalties

In Oracle Process Manufacturing, you must specify changeover times and penalties between Operation and Item class combinations. When this data is collected into the planning server, it becomes Setup Types and appears in the planner workbench.

1. Select the Oracle Process Manufacturing responsibility.
2. Navigate to Process Planning > Scheduling > Setup > Sequence Dependent Setup.
3. In the Sequence Dependent Setup window, specify setup times and penalties for operation and item class combinations.

   The item classes that are displayed are the ones defined under the category set of Sequence Dependency Class.

### To Specify Resources with Sequence Dependent Setups

Resources used in sequence dependent setup operations are scheduled as sequence dependent setup resources in Oracle Advanced Supply Chain Planning. Only the principal resource is scheduled as a sequence dependent setup resource. Simultaneous resources are not considered to have sequence dependent setups.

1. Select Oracle Process Manufacturing responsibility.
2. Navigate to Process Engineer > Process Operations.

3. In the Process Operation Details: Activities window, select the Sequence Dependency option for sequence dependent resources.

#### To Specify Sequencing Window Sizes

For each sequence dependent resource enter the value of the sequencing window in days. the planning engine uses this value to estimate the time required to cycle once through all possible setup types.

If you do not specify a sequencing window for a resource, the planning engine uses the number of days specified by the MSO: Default Resource Sequencing Window (Days).

1. Select the Oracle Process Manufacturing responsibility.
2. Navigate to Process Engineer > Setup > Plant Resources.
3. Enter the sequencing window (SDS window) for each sequence dependent resource.

## Planning with Sequence Dependent Setups

After setting up data in your discrete or process manufacturing system and collecting the data into Oracle Advanced Supply Chain Planning, you must set plan and profile options that control sequence dependent scheduling.

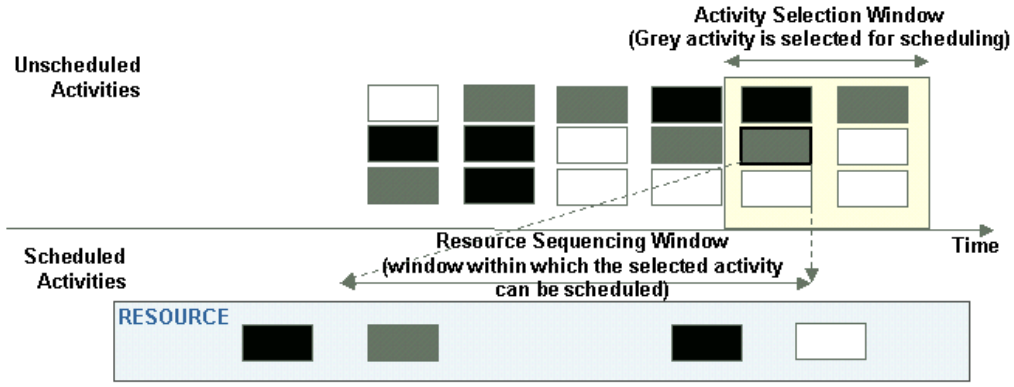
There are two values that you must specify:

- Activity selection window: the number of days from which activities can be chosen for scheduling.
- Resource sequencing window: the number of days to find another activity, or set of activities, of the same setup type to slot this activity along with.

  This value can be specified for each resource or specified as a default value from the profile option.

This diagram illustrates that when Oracle Advanced Supply Planning schedules sequence dependent activities, the planning engine first chooses an unscheduled activity from the activity window. From this group of activities, the planning engine chooses an activity that best fits with the activities that are already scheduled so that a new changeover can be avoided.

*Selecting Activities*




After choosing the activity, the planning engine looks for another activity with the same setup type in the resource sequencing window. The window ends at the latest possible time for running the activity and filling the demand. The activity is then scheduled at a time that best balances the objectives of minimizing changeovers and minimizing demand lateness.

The length of the resource sequencing window affects the length of the cycle for each setup type. The larger the resource sequencing window, the longer the time spent by the resource on each setup type before changing to another setup type. Making the resource sequencing window too large might result in demand priorities not being fully respected while scheduling,

While this example refers to "backward" scheduling, the same principle applies when forward scheduling when demands are late.

### To Plan with Sequence Dependent Setups

1. Navigate to Supply Chain Plan > Options > Constraints tab and set the following plan options:
   - Sequence Dependent Setups: set this option to Yes for every planning bucket that you want to consider sequence dependent setups.

     **Note:** You need to set this to Yes in earlier planning buckets in order to be able to set this to Yes in later buckets.

   - Demand Lateness Penalty: (Optional) Specify a demand lateness penalty.
2. Set the following profile options:
   - MSO: Activity Selection Window (Days)
   - MSO: Default Resource Sequencing Window (Days)

- MSO: Maximum Demands per Group for Advanced Scheduling
- MSO: Use Sequencing Template
- MSO: Setup Pattern Calculation Window
- MSO: Alternate Resource Selection Method
- MSO: Penalty Basis for Changeovers

For more information on profile options, see Profile Options, page A-1

## Viewing Changeover Times and Preferred Sequence

You can view the changeover times and the preferred activity sequence determined by Oracle Advanced Supply Chain Planning (ASCP) by using the ASCP Changeover Times screen. Changeover times are adjusted when necessary to ensure that the planning engine does not recommend interim unused setups. For example, on a paint machine, you might specify that it takes:

- Two hours to change a machine from white paint to cream paint.
- Two hours to change from cream paint to yellow paint.
- Five hours to change from white paint to yellow paint.

In this case, it appears that the quickest way to change the machine from white paint to yellow paint is to change from white paint to cream paint, and then from cream paint to yellow paint. To prevent this problem, the system calculates an adjusted changeover time for the white to yellow paint changeover that equals the sum of the first two changeover times: four hours. The value of five hours will appear in the Original Changeover Times column within the Changeover Times screen. To ensure that ASCP does not perform these types of adjustments to the changeover times, your entries should respect the following rule: Changeover (A to B) < Changeover (A to X) + Changeover (X to B) for any setup types A, B, X on the resource.

### To View Changeover Times and Preferred Sequences

1. Select the Advanced Supply Chain Planner responsibility.
2. Navigate to Supply Chain Plan > Workbench.
3. Right-click a plan and choose Resources > Resources from the menu.
4. Select a resource and click Changeovers.

The Changeover Times screen shows the preferred activity sequence. The preferred sequence is represented by the ascending order of the Setup Ring Sequence Number.

Changeovers at the bottom of the screen are not part of the preferred sequence, when the records are sorted on setup ring sequence number, and are avoided as much as possible.

## Viewing Plan Results

You can view results using sequence dependent setups in the horizontal plan and in the Gantt chart.

These row types are available on the horizontal plan:

- Setup Hours
- Setup Hour Ratio = Setup Hours / Available Hours
- Run Hours
- Run Hour Ration = Run Hours / Available Hours

The setup hours include both sequence dependent hours and fixed setups. These resource requirements can be distinguished by the fact that the schedule flag will be **Prior**.

A changeover canspan a break even if profile option MSO: Schedule Across Breaks is No or rven if the Oracle Process Manufacturing activity is breakable.

For more information on the Gantt chart, see Interactive Scheduling Using the Gantt Chart, page 16-161

### To View Plan Results

1. Select the Advanced Supply Chain Planner responsibility.
2. Navigate to Supply Chain Plan > Workbench.
3. Right-click a resource and choose a horizontal plan from the menu.

# Planned Inventory Points

One of the major functions of production control is to release work to the shop floor and monitor its progress. Once you release the work to the shop floor, the normal path is to complete the work as planned. If the demand pegged to the work being performed disappears, you may end up with excess supply. In some manufacturing environments, work can be stopped right after you realize that the demand no longer exists. However, work cannot be always stopped after demand cancellations due to practical reasons. The most important reasons are the possibility of loosing materials to scrap, needing to reprocess some of the steps at enormous cost, and the need to control the production process and corresponding yields. It is not desirable to leave the discrete jobs on the floor for excessive amount of time as it adds to confusion, occupies precious space, and

increases work in process value. Therefore, the need is to continue processing until the product reaches a stage in the Bills of Material where it can be safely stored until the next demand comes along. These stages in the Bills of Material can be visualized as major staging or stocking points. These stages will be referred to as Planned Inventory Points (PIPs).

The following are some examples of work that cannot be stopped for various reasons:

- In semiconductor manufacturing, if wafers are left alone for a long period of time after they are processed in the furnace, they oxidize and run the risk of being scrapped.
- In certain semiconductor fabrication processes such as Ion Implantation, Diffusion, and Photo Lithography, acid clean activity is involved. If you leave the parts alone for a long time after they are acid cleaned, they have to be recleaned before they are passed on to the next process.
- In semi-conductor operations, between fabrication and testing, a critical closed loop exists to measure performance and adjust production processes based on tests. There is a need to provide timely test results and act on corrective actions. If work orders spend too much time without generating results, it affects process control and yields.
- In Consumer Product Goods manufacturing, bottling fluids such as food supplements need to happen after certain number of hours following an extraction and condensation process. If you fail to bottle within a specified amount of time, you will have to destroy the product as it will not be suitable for consumption.

The following list summarizes some of ways in which PIP functions:

- Tries to allocate supplies that are not pegged to a demand to a different sales order or a forecast
- Recognizes an item attribute called Planned Inventory Point
- Continues to process the work until you reach a PIP even if the demand driving the supply in work in process does not materialize
- Works on the jobs that are not pegged to a demand at a much slower pace than the jobs that are satisfying other valid demands

## PIP Capability

This section contains examples of how the PIP features work.

### Specify Inventory Point at Item Level

You can specify if the item can be stocked by specifying it as an Inventory Point. You choose the PIP Attribute for an item at Item-Organization level.

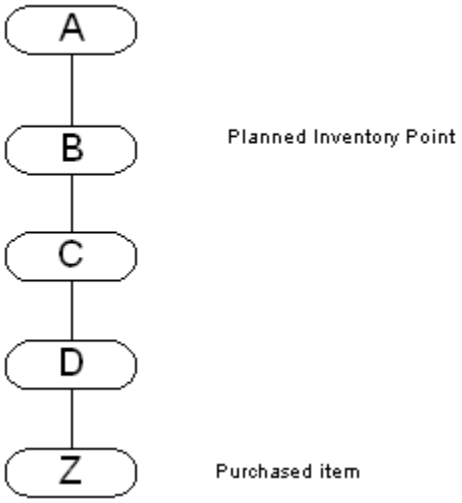
If you designate the item as an Inventory Point item, it suggests that the material can be stored at this item level without the fear of loosing the materials or loosing quality characteristics of the materials. PIPs generally point to major stocking phases in manufacturing cycle.

### Move Jobs to PIP Level

If you have an existing job and it does not have any demands to peg to, you can move the job to the next PIP level. For example, the figure below shows a BOM, where item Z is a purchased item that gets processed to become item A. It goes through several stages of manufacturing, changing the item number several items as mentioned on the BOM.

Assume that you have demand for item A, you have purchased item Z, and are working on creating item D using a discrete job. If for some reason, the end demand for A disappears, you can continue scheduling the discrete job for D instead of recommending a cancellation. You can allocate the discrete job to other valid demands (sales orders, forecasts, order modifiers) if they exist. Please note that allocating unconsumed supplies to other valid demands is the standard Oracle APS behavior.

***Bill with Inventory Point***




Once you start a job, your goal is to reach the next Inventory Point, that is (referring to the previous figure), you need to generate and schedule orders for items C and B. If you fail to do so, you run the risk of scrapping or reworking the discrete job for item D. This means that you would have to introduce fictitious demand at a PIP so that the system would generate and schedule planned orders for item C and B.

### Order Modifiers and Planned Inventory Points

If the item at the PIP has an order modifier, you can add demand at the PIP that honors the order modifiers. In the previous example, you have a Discrete Job for 15 units at item D, you do not have a committed end demand for it, and item B has an the

following order modifier: the Minimum Order Quantity is set to 30 units. For this example, Oracle APS will add a fictitious demand of 30 units for Item B, which is a PIP. If you have order modifiers for an item, you will have excess supplies, and therefore, you can expect excess supplies at lower levels in the Bills of Material.

#### Addition of Fictitious Demand

Oracle APS adds the necessary amount of fictitious demand so that the jobs and planned orders are scheduled with their normal lead-times (cumulative lead-time). If orders need to be created at different levels (items), the cumulative lead-times are added for all such items. If the lead-times for item Z and D are 4 and 3 days respectively, the fictitious demand is added 7 days from the due date of the job assuming that the job is for item D.

#### Pegged Jobs at Different Levels on the BOM

You may have jobs opened at two or more levels that peg to each other. In such cases, the amount of fictitious demand added is equal to the maximum quantity of the jobs that needs to be moved to PIPs. The fictitious demand is not just a sum total of all the open unpegged jobs. For example, using Figure Bill with Inventory Point, page 7-85 as a template, you could have two jobs pegged to each other: a job for item D for 10 units and a job for item C for 5 units. If there is a cancellation of end item demand from item A, the fictitious demand would be for 10 units. This means there would be extra supplies (planned orders) created at item C for 5 units. You can analyze item excess exceptions to figure out any excess.

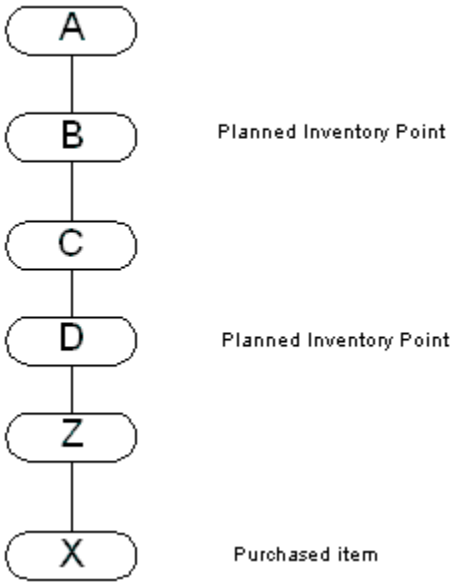
#### On-Hand Quantities

On-hand quantities for items below a PIP may affect the logic of moving unpegged jobs to a PIP. Assume that you have 10 units on hand for Item C and you have an unpegged job for Item D for 5 units. The normal logic for PIP is to add 5 units of fictitious demand at Item B, which is the next PIP. Because 5 units of fictitious demand is smaller than the 10 units that are on-hand at Item C, you will not be able to pass the demand to the job at Item D. This affects the movement of the job to the next PIP.

Oracle APS assumes that you will issue any on- hand material present at levels below a PIP to jobs at higher levels. This is logical as you do not want to have any inventories sitting below a PIP.

It is possible to have multiple Inventory Points in a BOM as shown in the next diagram:

***Bill with Multiple Inventory Points***




If you have a job started at item Z and loose the demand, Oracle APS generates and schedules orders to reach Item D including item D. If you have started a discrete job for item C and loose the end demand, Oracle APS generates and schedules orders to reach item B including item B.

### Job Properties: Firm and Status

PIP logic schedules jobs to the next PIP even without a valid demand for it instead of canceling it. The idea is to reach a point in the bill of materials where materials could be stored without the fear of loosing them. Firm jobs are also scheduled similar to non-firm jobs in order to aid the process of scheduling materials to reach a PIP.

Firm jobs by nature are not open to rescheduling; hence, any scheduling of higher level items to reach the next PIP need to work around the scheduling that is done for firm jobs. For example, you might have a firm job for item Z due on day 25 and the demand that the firm job was pegged to does not materialize. This leaves you with the task of moving materials being processed by the firm job to the next PIP. Because you cannot change the scheduling already done for firm job, you must work around the firm job schedule. The planned order generated for item D to help the process of moving materials from firm job to the next PIP is scheduled such that it starts on D25. If item D has a lead-time of 5 days, the planned order start for item C is scheduled on D30.

Oracle ASCP treats jobs with statuses of Released and Unreleased in the same manner. Jobs with both these statuses are subject to rescheduling to aid the process of scheduling materials to reach the next PIP.

#### Generate PIP Orders Exception

Scheduling of jobs even after cancellation of committed demand is an exception condition. In the application, you can see scheduling of such orders as exceptions. The exception Orders Moved to Next PIP Level is generated for each order moved to the next PIP. Please note that this exception is created only for orders that are completely pegged to the fictitious demand.

## Using PIP

The following procedures show how to use PIP.

#### To specify that an item should be treated as a PIP

1. Sign in using the Manufacturing and Distribution Manager responsibility.
2. From the Navigator, select Inventory > Items > Master Items.

   The Master Item screen appears.
3. Define an item and specify the item attributes.
4. Select the MPS/MRP Planning tab.
5. Select the Planned Inventory Point checkbox.
6. Save your work.

#### To choose a plan level option to enable PIP

1. Sign in using the Advanced Supply Chain Planner responsibility.
2. From the Navigator, select Supply Chain Plan > Names.

   The SCP Names screen appears.
3. Define a plan name.
4. Select the Options button.

   The Plan Options screen appears.
5. Select the Move Jobs to PIP checkbox.

   By checking this checkbox, if you have discrete jobs, lot-based jobs or nonstandard jobs with no end demand, Oracle APS will create and schedule supplies for all items between the item which has discrete jobs and the Planned Inventory Point.
6. Save your work.

7. After completing Steps A and B, run the plan.

#### To review and analyze scheduling of orders

1. Sign in using the Advanced Supply Chain Planner responsibility.
2. From the Navigator, select Supply Chain Plan > Workbench.

   The Planner Workbench appears.
3. Access either the Resource Requirement window or the Gantt chart to review scheduling for the supply. See steps D and E below.

#### To access the Resource Requirement window

1. From the Planner Workbench, select a plan and an item.
2. Select the item and select Supply from the Tools menu.

   The Supply window appears.
3. Select and item, then right click and select Resource Requirements.

   The Resource Requirements screen appears.
4. Review scheduling for the supply.

#### To access the Gantt Chart

1. From the Planner Workbench, select a plan and an item.
2. Select Supply/Demand from the Tools menu.

   The Supply/Demand window appears.
3. Select an item, then right click and select Gantt chart.

   The Gantt chart appears.
4. Review scheduling for the supply.

#### To analyze exceptions

1. Sign in using the Advanced Supply Chain Planner responsibility.
2. From the Navigator, select Supply Chain Plan > Workbench.

   The Planner Workbench appears.
3. Select a plan and then select the Actions tab on the right pane.

   A list of action types appears.

4. Double-click Reschedules (this is a type of exception summary).

   A list of exceptions appears.

5. Select Orders scheduled to next inventory point.

   The Exception Details screen appears.

6. Review the exceptions.

# 8

# Supply Chain Plan Configure to Order

This chapter covers the following topics:

- Configure to Order Models
- Configure to Order Multi-organization Models
- Configure to Order Sales Orders
- Configure to Order Order Promising
- Configure to Order Forecast Control
- Configure to Order Forecast Explosion
- Configure to Order Multi-organization Forecast Explosion
- Configure to Order Forecast Consumption
- Configure to Order Multi-organization Forecast Consumption
- Configure to Order Collections
- Configure to Order Planning Process

## Configure to Order Models

A model is an item with some configurable components. A configurable component is a component that different customers may order differently, for example, a color of paint.

There are these types of models:

- Assemble-to-order: The manufacturer or distributor assembles the components and ships the configured item, for example, an automobile.

- Pick-to-order: The components are shipped separately and assembled by the recipient, for example, a childrens' outdoor play set. Oracle Advanced Supply Chain Planning uses the pick-to-order model item for forecast explosion; it does not plan it.

The components of a model are:

- Option classes: A bill of material structure whose components are the options that the customer can select, for example, paint color.
- Standard items: The options from which the customer chooses, for example, red, green, and blue. They are components of the option classes.
- Included items (also known as mandatory components): A standard item that the customer receives regardless of options selected, for example, an instruction brochure. They are components of the model item.
- Another model: For example, a personal computer. The customer chooses the main components and the manufacturer assembles them into a case (assemble-to-order). The customer also chooses peripheral items that the manufacturer or distributor ships separately from the main unit and that the recipient attaches to the main unit. The personal computer is a pick-to-order model, the main unit is an assemble-to-order model component under the pick-to-order model, and the peripherals are option class components under the pick-to-order model.

Oracle does not recommend placing an assemble-to-order model as a member of a product family.

The following table illustrates a model bill for Laptop Computer, a model that includes two mandatory components and three option classes. The planning percent assigned to optional option classes represents anticipated demand for the option class. In this example, 90% of Laptop Computers are expected to be sold with an operating system, and the remaining 10% are expected to be sold without.

| Level | Item | BOM Item Type | Optional | Planning % |
|---|---|---|---|---|
| . 2 | . Laptop Computer | Model | No | 60% |
| . . 3 | . . Carrying Case | Standard | No | 100% |
| . . 3 | . . Keyboard | Standard | No | 100% |
| . . 3 | . . CPU | Option Class | No | 100% |
| . . 3 | . . Monitor | Option Class | No | 100% |
| . . 3 | . . Operating System | Option Class | Yes | 90% |

### Option Class Bills

The following example illustrates the option class bills for the Monitor, VGA, and EGA

option classes. The planning percent assigned to each option within each option class represents anticipated demand for the option. In this example, 70% of all Laptop Computers are expected to be sold with a VGA monitor, and the remaining 30% are expected to be sold with an EGA monitor. Notice that the Monitor option class is not optional. This means that customers must always choose one of the Monitor options when ordering Laptop Computer. Of the 70% of Laptop Computers sold with a VGA monitor, 50% are expected to be sold with the VGA1 monitor and 50% are expected to be sold with the VGA2 monitor. The VGA option class also includes a mandatory component, VGA Manual, that is always shipped with Laptop Computer if the VGA monitor option class is chosen, regardless of the VGA option.

| Level | Item | BOM Item Type | Optional | Planning % |
|---|---|---|---|---|
| . . 3 | . . Monitor | Option Class | No | 100% |
| . . . 4 | . . . VGA | Option Class | Yes | 70% |
| . . . . 5 | . . . . VGA Manual | Standard | No | 100% |
| . . . . 5 | . . . . VGA1 | Standard | Yes | 50% |
| . . . . 5 | . . . . VGA2 | Standard | Yes | 50% |
| . . . 4 | . . . EGA | Option Class | Yes | 30% |
| . . . . 5 | . . . . EGA1 | Standard | No | 55% |
| . . . . 5 | . . . . EGA2 | Standard | Yes | 45% |

### Forecasting Predefined Configurations

Predefined configurations are configurations that you have defined as standard items, with standard bills and standard routings. You might define a predefined configuration because you often use the configuration in sales promotions, or the configuration is one of your most commonly ordered configurations, and you want to build it to stock to reduce delivery lead times and improve customer service levels. Your customers can order predefined configurations by item number, just as they order any other standard item.

Forecast consumption, forecast explosion, master scheduling, planning, production relief, and shipment relief for predefined configurations behave as they do for any other standard item.

## Configure to Order Multi-organization Models

There are several assemble-to-order model structure types:

- Single Level Single Organization (SLSO): A single level model in which the components are standard items.
- Multi level Single Organization (MLSO): An assemble-to-order model with one or more assemble-to-order models as components.
- Multi-Level Multi-Organization (MLMO): An assemble-to-order model with one or more assemble-to-order models as components and some lower-level models are transferred from organizations. If you have multi-organization models you must use global forecasting for forecast consumption to be correct. To conduct global forecasting, you must use Oracle Demand Planning. See Global Forecasting, page 3-119.

If a model in an organization can be sourced from another organization, the sourcing rule needs to be set up. Sourcing rule at the model level means that all configurations derived from that model will be manufactured in the sourcing organization and finally be shipped in the shipping organization.

## Configure to Order Sales Orders

Configuring an order is the process of selecting options against a model item. You can configure your orders using Oracle Configurator and Oracle Order Management CTO Workbench. Regardless of the organization from which you want to ship the orders, you can source the configuration in your source organizations.

Later in the sales order processing, concurrent process Auto-create Configuration creates a unique configured item for each configured model based on your selection at order entry. Configured items are standard items that have as their components the options selected for the particular order and the included items. The configured items replace the model item on the sales order.

Your sales order workflow must progress the order to create the configuration item at the point that you want this demand to be visible to planning. The order does not need to be booked, but the configured item must be linked to the order.

Use the assignment set specified in profile option MRP: Default Sourcing Assignment as the assignment set in the plan options. This is because if the models are sourced, Oracle Order Management selects sources for configurations for ATP purposes and it uses the assignment set from this profile option. If the plan uses an assignment set that is different than the one mentioned in this profile option, you run the risk of inconsistent sources.

See Call CTO Workbench, Choosing Options Using the Oracle Configurator, and Configuration Date Effectivity in *Oracle Order Management User's Guide*.

## Configure to Order Order Promising

You can use Oracle Advanced Supply Chain Planning and plans with Oracle Global Order Promising to quote configure-to-order promise dates for your customers. Oracle Advanced Planning and Scheduling automatically places sales order demands for configurations, evaluates the best possible promise dates, and schedules supplies.

Set profile option INV: Capable to Promise to ATP/CTP Based on Planning Output to perform order promising.

See "Multi-Level Supply Chain ATP" and "Functional Setup for ATP Based on Planning Output". Also see "Global Order Promising for ATO Configurations" in *Oracle Order Management User's Guide*.

## Configure to Order Forecast Control

Use item attribute Forecast Control to specify the types of demand that you place for models, option classes, options, and mandatory components. The configure to order processes uses the Forecast Control value that you assign to each assemble-to-order and pick-to-order item to guide the behavior of those processes.

The following section discusses the four types of demand that you can place for an item, and identifies the appropriate Forecast Control attribute value for each type of demand.

### Choosing a Value for Forecast Control

There are the types of demand that you can place for your models, option classes, options, and mandatory components:

- Independent forecast demand
- Exploded forecast demand
- Sales order demand
- Derived sales order demand

**Independent Forecast Demand**

Independent forecast demand is demand that you place for an item by entering forecasts for the item directly, rather than exploding forecast to the item using forecast explosion. You typically define direct forecasts for items, such as a planning items or models, whose demand is independent of any other item. Define direct forecasts by entering them manually, or by loading them from other products or systems.

If you forecast demand directly for an item, then set Forecast Control to *Consume*.

**Exploded Forecast Demand**

Exploded forecast demand is demand that you generate for an item when you explode forecasts to the item using forecast explosion. You typically generate exploded forecast demand for items, such as option classes and options, whose demand is directly related to or derived from the bill of material structure for other items.

If you forecast demand for an item by exploding demand from a higher level item in a bill of material, set Forecast Control to *Consume and Derive*.

In some cases, you may have items that are subject to both types of forecast demand. For example, the keyboard that is forecast and sold as a mandatory component with a Laptop Computer may also be forecast and sold separately as a spare or service part.

You use Forecast Control to control which models, option classes, options, and mandatory components in a model bill receive exploded forecasts, since forecast explosion only generates exploded forecast demand for items where you have set Forecast Control to *Consume and Derive*.

> **Important:** Set Forecast Control to None to identify items that have dependent demand that should be calculated by the planning process, using standard planning logic, rather than through forecast explosion. An example of this type of item is a user manual that is either gross-to-net or minmax planned and replenished.

If you forecast demand for an item directly, and explode forecast demand to the item, set Forecast Control to *Consume and Derive*.

**Sales Order Demand**

Sales order demand is demand that you place when your customers order configurations. As your customers order configurations, Oracle Order Management automatically places sales order demand for each model, option class, and option selected by your customer when they place the order.

If you place sales order demand for an item, but do not forecast the item, set Forecast Control to None.

**Derived Sales Order Demand**

Under normal circumstances, Oracle Order Management does not place sales order demand for mandatory components when your customers order configurations. If you are forecasting key mandatory components, however, you will usually want to maintain your forecasts by generating sales order demand for the mandatory components and consuming the forecasts as your customers place sales orders.

You can set the Forecast Control attribute to *Consume* or *Consume and Derive* to automatically place demand and consume forecasts for mandatory components when you place sales orders demand for configurations that include the mandatory components.

If you forecast demand for a mandatory component, either directly or through forecast explosion, set Forecast Control to *Consume* or *Consume and Derive*.

**Summary**

The following table summarizes, for each type of item, the types of demand that configure to order assumes you place for different values of Forecast Control.

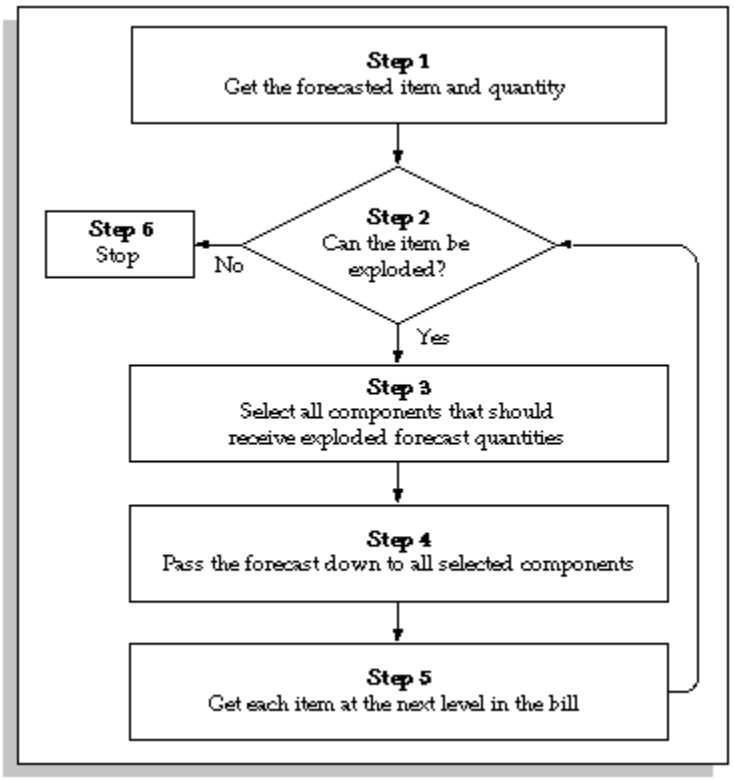
| Item Type | Forecast Control | Forecast | Exploded Forecast | Exploded Sales Order | Derived Sales Order |
|---|---|---|---|---|---|
| Models and Option Classes | Consume | Yes | - | Yes | - |
| Models and Option Classes | Consume and Derive | Yes | Yes | Yes | - |
| Option | Consume | Yes | - | Yes | - |
| Option | Consume and Derive | Yes | Yes | Yes | - |
| Option | None | | - | - | - |
| Mandatory Component | Consume | Yes | - | - | Yes |
| Mandatory Component | Consume and Derive | Yes | Yes | - | Yes |
| Mandatory Component | None | | - | - | |
| Product Family | Consume | Yes | - | - | Yes |
| Product Family | Consume and Derive | Yes | - | - | Yes |

## Configure to Order Forecast Explosion

You can use the Bills of Material window in Oracle Bills of Material to define model and option class bills with multiple levels of option classes, options, and mandatory components to represent your complex configure-to-order products. You can then use forecast explosion to explode model and option class forecasts the same way you explode forecasts for planning items.

The logic for exploding models and option classes is the same as the logic used to explode planning items. You can choose to explode model and option class forecasts, just as you can choose to explode planning item forecasts when loading forecasts into other forecasts or master schedules.

The following diagram illustrates the forecast explosion logic.




### Exploding Forecasts from Using Assemblies

The following table illustrates when forecast explosion explodes forecast *from* a parent item to its components. 'Always' means 'Always explode forecasts from this item', and 'Never' means 'Never explode forecasts from this item.'

| Planning Item | ATO Model | ATO Option Class | ATO Std. Item | PTO Model | PTO Option Class | PTO Std. Item | Std. Item |
|---|---|---|---|---|---|---|---|
| Always | Always | Always | Never | Never | Never | Never | Never |

### Exploding Forecasts to Components

The following table illustrates when forecast explosion explodes forecast *to* a component from its parent item. 'Always' means 'Always explode forecasts from this item', 'Check' means 'Explode forecasts to this item if Forecast Control is set to *Consume*

*and Derive*', and 'Never' means 'Never explode forecasts from this item.'

| Product Family | Planning Item | ATO Model | ATO Option Class | ATO Std. Item | PTO Model | PTO Option Class | PTO Std. Item | Std. Item |
|---|---|---|---|---|---|---|---|---|
| Check | Check | Check | Check | Check | Check | Check | Check | Check |

**Forecast Explosion Example**

The following table illustrates how forecast explosion explodes a forecast for 100 Laptop Computers. The FC column shows forecast quantities.

| Level | Item | BOM Item Type | Forecast Control | Optional | Plan % | FC |
|---|---|---|---|---|---|---|
| . 2 | . Laptop Computer | Model | Consume | No | | 100 |
| . . 3 | . . Carrying Case | Standard | Consume and Derive | No | 100% | 100 |
| . . 3 | . . Keyboard | Standard | Consume and Derive | No | 100% | 100 |
| . . 3 | . . CPU | Option Class | Consume and Derive | No | 100% | 100 |
| . . . 4 | . . . 386 Processor | Standard | Consume and Derive | Yes | 65% | 65 |
| . . . 4 | . . . 486 Processor | Standard | Consume and Derive | Yes | 35% | 35 |

## Configure to Order Multi-organization Forecast Explosion

See Forecast Explosion, page 3-115.

You can create and maintain forecasts for any item at any level in the model bill of material

For single organization models, you can maintain and explode forecasts either in the source instance or in Oracle Demand Planning. For multiple organization models, you can use Oracle Demand Planning and Oracle Demantra.

- With Oracle Demand Planning, you maintain model forecasts and planning percentages and explode the model forecasts in Oracle Demand Planning. The exploded results pass to Oracle Advanced Supply Chain Planning.

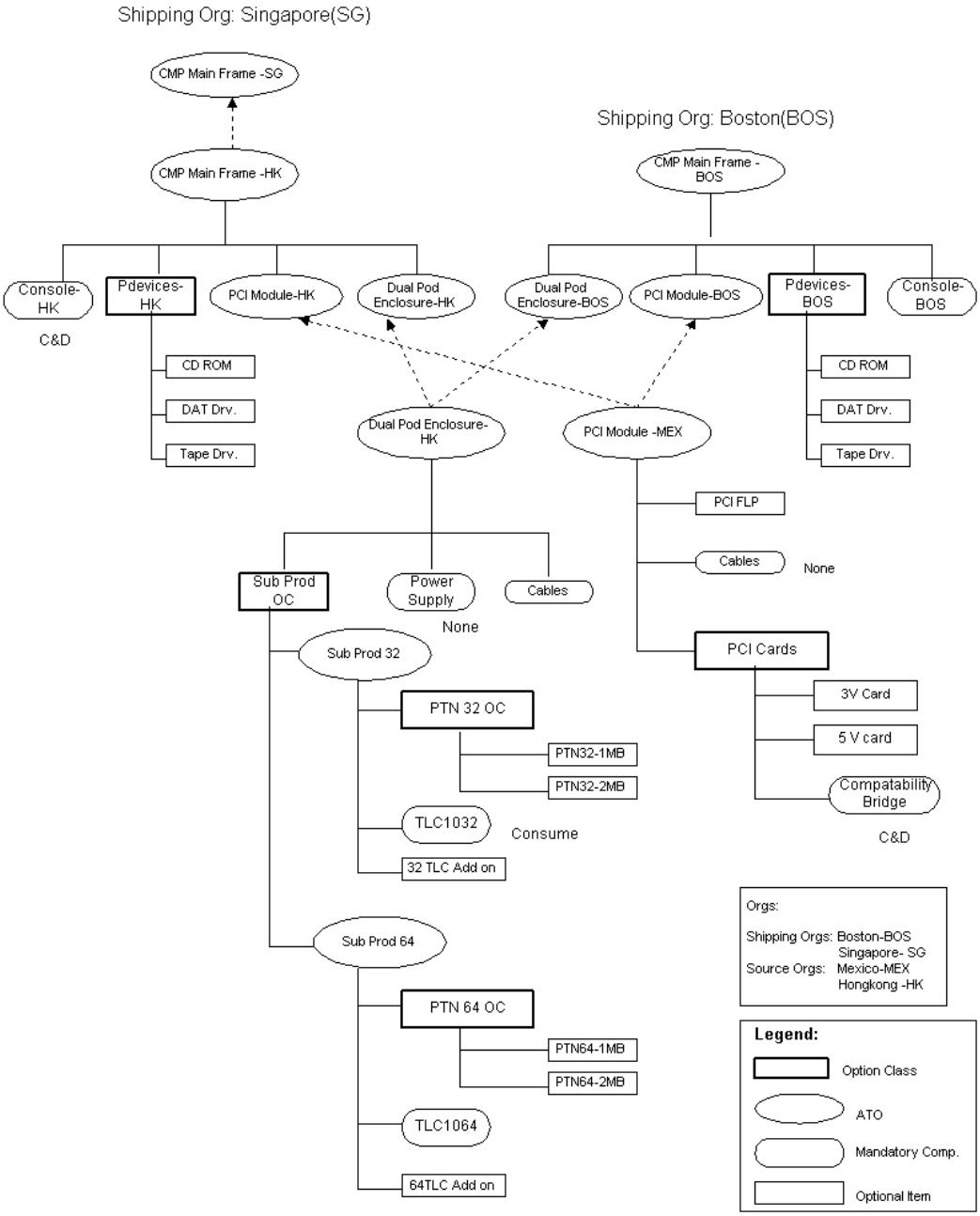
- With Oracle Demantra, you maintain model forecasts and time-phased planning percentages in Oracle Demantra and explode the model forecasts using Oracle Advanced Supply Chain Planning inline forecast explosion process. Set item attribute Forecast Control to Consume and derive and set plan option Explode Forecast to Yes

If you are forecasting single organization models in the source instance, Oracle recommends that you consider exploding your forecasts using Oracle Advanced Supply Chain Planning inline forecast explosion process (Form Plan Option > tab Main > field Explode Forecast). It is more efficient and reduces the load on your source instance concurrent process Planning Manager load.

### Multilevel ATO Example

This diagram shows a multi-level supply chain bill of materials.

***Supply Chain Bill***




Please refer to the legends on the figure for an explanation of item types. Sourcing relationships are shown in dotted lines and the BOM relationship are shown in continuous lines. You can find the item names within each of the nodes. The item name is followed by a two-letter code to identify the organizations.

CMP mainframe has four configurable assemblies (ATO models): PCI module, Dual Pod Enclosure, Sub Prod 32, and Sub Prod 64. The company sells CMP mainframes

from shipping organizations in Boston, USA and Singapore. It has manufacturing sites in Hong Kong SAR, China; Mexico City, Mexico; and Boston, USA. CMP mainframes are assembled in Boston and Hong Kong. The PCI module is manufactured and sourced at the Mexico City facility. Dual Pod Enclosures are manufactured and sourced at Hong Kong along with the components Sub prod32 and Sub prod64. Optional items CD ROMs, DAT Drives, and Tape Drives can be sold as spares from either Boston or Hong Kong.

Forecasts maintained for CMP mainframe at the Hong Kong organization can be exploded down to its models, sub-models, option classes, options and mandatory components within the Hong Kong organization as independent demand.

Console, Pdevices, PCI Module, Dual Pod Enclosure, Sub Prod OC, Sub Prod 32, Sub Prod 64, PTN32-1MB, etc. have exploded forecasts. Independent forecasts maintained for CD-ROM, DAT Drv, Tape Drv can be consolidated with the exploded forecasts from its parents.

Similarly, any independent forecasts maintained for Sub Prod 32 or Sub Prod 64 can be consolidated with the exploded forecasts from its parents and exploded to its component forecasts.

## Configure to Order Forecast Consumption

Forecast consumption is the process that replaces forecast demand with sales order demand. Each time you place a sales order, you create actual demand. If the actual demand is forecasted, you typically want to reduce the forecast demand by the sales order quantity to avoid overstating demand.

For source instance forecasts, the consumption occurs against forecasts for product families, configurations, models, option classes, and options when you place sales order demand for configurations. By default, forecast consumption consumes forecasts by item.

If you want to consume your forecasts by distribution channel, customer type, or order type, use demand classes to control forecast consumption. You can also choose to consume your forecasts by one of the following forecast consumption levels:

- Item
- Customer
- Customer bill-to address
- Customer ship-to address

With inline forecast consumption, toe consumption occurs at the beginning of the planning run, using the forecasts and sales orders that you use to drive the plan.

## Consumption of Models

Forecast consumption takes place both before and after the AutoCreate Configuration process creates a configuration item, bill, and routing for a configuration. The configure to order process ensures that forecast consumption is consistent before and after the creation of the configuration item.

> **Note:** The fact that forecast consumption takes place twice, both before and after the creation of the configuration item, is transparent to the user. The purpose of this section is only to provide detailed information.

## Forecast Consumption: Before AutoCreate Configuration

When your customers order configurations, Oracle Order Management places sales order demand for all ordered models, option classes, and options.

> **Note:** Under normal circumstances, no sales order demand is placed for mandatory components. You can also generate derived sales order demand for selected mandatory components, since forecast consumption generates derived sales order demand for all items where you have set Forecast Control to *Consume* or *Consume and Derive*. This lets you define and maintain forecasts for key mandatory components as well as models, option classes, and options.

Before you run the AutoCreate Configuration process, forecast consumption uses actual sales order demand for models, option classes, options, and derived sales order demand for selected mandatory components, to consume your forecasts.

**Example: Before AutoCreate Configuration**

The following example illustrates how forecast consumption consumes an exploded forecast for 100 Laptop Computers when a customer places a sales order for 10 Laptop Computers with 486 processors, VGA1 monitors, and DOS operating system. The SO column shows sales order quantities. Notice that forecast consumption generates and consumes derived sales order demand for each mandatory component where you have set Forecast Control to *Consume* or *Consume and Derive*.

***Forecast Consumption (1 of 2)***

| Level | Item | BOM Item Type | Forecast Control | Optional | Plan % | FC/ SO |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| . 2 | . Laptop Computer | Model | Consume | | | 90 10 |
| . . 3 | . . Carrying Case | Standard | Consume and Derive | No | 100% | 90 10 |
| . . 3 | . . Keyboard | Standard | Consume and Derive | No | 100% | 90 10 |

***Forecast Consumption (2 of 2)***

| Level | Item | BOM Item Type | Forecast Control | Optional | Plan % | FC/ SO |
|---|---|---|---|---|---|---|
| . . 3 | . . CPU | Option Class | Consume and Derive | No | 100% | 90 10 |
| . . . 4 | . . . 386 Processor | Standard | Consume and Derive | Yes | 65% | 65 |
| . . . 4 | . . . 486 Processor | Standard | Consume and Derive | Yes | 35% | 25 10 |
| . . 3 | . . Monitor | Option Class | Consume and Derive | No | 100% | 90 10 |
| . . . 4 | . . . VGA | Option Class | Consume and Derive | Yes | 70% | 60 10 |
| . . . . 5 | . . . . VGA Manual | Standard | Consume and Derive | No | 100% | 60 10 |
| . . . . 5 | . . . . VGA1 | Standard | Consume and Derive | Yes | 50% | 25 10 |
| . . . . 5 | . . . . VGA2 | Standard | Consume and Derive | Yes | 50% | 35 |
| . . . 4 | . . . EGA | Option Class | Consume and Derive | Yes | 30% | 30 |

| | | | | | | |
|---|---|---|---|---|---|---|
| . . . . 5 | . . . . EGA1 | Standard | Consume and Derive | Yes | 55% | 16.5 |
| . . . . 5 | . . . . EGA2 | Standard | Consume and Derive | Yes | 45% | 13.5 |
| . . . 4 | . . . Monitor Manual | Standard | None | No | 100% | |
| . . 3 | . . Operating System | Option Class | Consume and Derive | Yes | 90% | 80 10 |
| . . . 4 | . . DOS | Standard | Consume and Derive | Yes | 80% | 62 10 |
| . . 4 | . . UNIX | Standard | Consume and Derive | Yes | 20% | 18 |

## Forecast Consumption: After AutoCreate Configuration

The AutoCreate Configuration process replaces sales order demand for ordered models, option classes, and options with sales order demand for the newly created configuration item. This prompts forecast consumption to unconsume forecasts for the models, option classes, options, and selected mandatory components, and consume forecasts for the new configuration item and its components.

When creating the configuration item, the AutoCreate Configuration process also creates a single level bill of material for the configuration item. The single level bill includes all ordered options, all mandatory components of all ordered models and options classes, and each ordered model and option class. The models and option classes appear on the configuration bill as phantoms, and are only there to consume forecasts and relieve master schedules. They are not used by the planning process or Oracle Work in Process since all mandatory components from the model and option class bills are also included directly on the single level bill.

The following table illustrates the single level configuration bill created by the AutoCreate Configuration process in response to the sales order for 10 Laptop Computers with 486 processors, VGA1 monitors, and DOS operating system.

***Single Level Bill for Laptop Configuration***

| Level | Item | BOM Item Type | Optional |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1 | Laptop Computer001 | Standard | No |
| 2 | Laptop Computer | Model | No |
| 2 | Carrying Case | Standard | No |
| 2 | Keyboard | Standard | No |
| 2 | CPU | Option Class | No |
| 2 | 486 Processor | Standard | No |
| 2 | Monitor | Option Class | No |
| 2 | VGA | Option Class | No |
| 2 | VGA Manual | Standard | No |
| 2 | VGA1 | Standard | No |
| 2 | Monitor Manual | Standard | No |
| 2 | Operating System | Option Class | No |
| 2 | DOS | Standard | No |

In the post configuration stage, forecast consumption uses the sales order demand for the new configuration item to consume forecasts. Typically, you do not have any forecasts defined for unique configurations. Therefore, forecast consumption does not find any forecasts to consume. If forecast explosion cannot find any forecasts to consume, it explodes the configuration bill and consumes forecasts for each model and option class on the bill. It also consumes forecasts for each standard item on the configuration bill where Forecast Control is set to *Consume* or *Consume and Derive*.

To ensure that forecast consumption is consistent before and after the AutoCreate Configuration process, forecast consumption only consumes forecasts for standard items on configuration bills where Forecast Control is set to *Consume* or *Consume and Derive*.

> **Note:** If you set Forecast Control to None for an option, and then define forecasts for the option, you get inconsistent forecast consumption before and after the AutoCreate Configuration process. Before the AutoCreate Configuration process, forecast consumption uses actual

sales order demand to consume any existing forecasts. After the AutoCreate Configuration process, forecast consumption does not consume those same forecasts since it only consumes forecasts for standard items on configuration bills where Forecast Control is set to *Consume* or *Consume and Derive*.

**Example: After AutoCreate Configuration**

The following table shows how forecast consumption consumes the exploded forecast for 100 Laptop Computers *after* the AutoCreate Configuration process replaces sales order demand for the model, option classes, and options with sales order demand for the newly created configuration item.

***Sales Order Demand for the Configuration Item***

| Level | Item | BOM Item Type | Forecast Control | Optional | Plan % | FC/ SO |
|---|---|---|---|---|---|---|
| 1 | Laptop Computer0 01 | Standard | Consume | | | 10 |

***Forecast Consumption (1 of 2)***

| Level | Item | BOM Item Type | Forecast Control | Optional | Plan % | FC/ SO |
|---|---|---|---|---|---|---|
| 2 | Laptop Computer | Model | Consume | | | 90 |
| . 3 | . Carrying Case | Standard | Consume and Derive | No | 100% | 90 |

***Forecast Consumption (2 of 2)***

| Level | Item | BOM Item Type | Forecast Control | Optional | Plan % | FC/ SO |
|---|---|---|---|---|---|---|
| . 3 | . Keyboard | Standard | Consume and Derive | No | 100% | 90 |

| | | | | | | |
|---|---|---|---|---|---|---|
| . 3 | . CPU | Option Class | Consume and Derive | No | 100% | 90 |
| . . 4 | . . 386 Processor | Standard | Consume and Derive | Yes | 65% | 65 |
| . . 4 | . . 486 Processor | Standard | Consume and Derive | Yes | 35% | 25 |
| . 3 | . Monitor | Option Class | Consume and Derive | No | 100% | 90 |
| . . 4 | . . VGA | Option Class | Consume and Derive | Yes | 70% | 60 |
| . . . . 5 | . . . . VGA Manual | Standard | Consume and Derive | No | 100% | 60 |
| . . . . 5 | . . . . VGA1 | Standard | Consume and Derive | Yes | 50% | 25 |
| . . . . 5 | . . . . VGA2 | Standard | Consume and Derive | Yes | 50% | 35 |
| . . . 4 | . . . EGA | Option Class | Consume and Derive | Yes | 30% | 30 |
| . . . . 5 | . . . . EGA1 | Standard | Consume and Derive | Yes | 55% | 16.5 |
| . . . . 5 | . . . . EGA2 | Standard | Consume and Derive | Yes | 45% | 13.5 |
| . . . 4 | . . . Monitor Manual | Standard | None | No | 100% | |
| . . 3 | . . Operating System | Option Class | Consume and Derive | Yes | 90% | 80 |
| . . . 4 | . . . DOS | Standard | Consume and Derive | Yes | 80% | 62 |

| | | | | | | |
|---|---|---|---|---|---|---|
| . . . 4 | . . . UNIX | Standard | Consume and Derive | Yes | 20% | 18 |

## Consumption of Predefined Configurations

Forecast consumption for predefined configurations is exactly the same as forecast consumption for configuration items created automatically from sales orders for ATO models. Typically, if you have created a predefined configuration, you have also defined forecasts for it. If so, forecast consumption finds and consumes forecasts for the predefined configuration. If you have *not* defined forecasts for the predefined configuration item, then forecast consumption explodes the configuration bill and consumes forecasts for each model and option class on the bill. It also consumes forecasts for each standard item on the configuration bill where Forecast Control is set to *Consume* or *Consume and Derive*.

The following table illustrates a predefined configuration for a commonly ordered version of Laptop Computer called Laptop Basic.

***Predefined Configuration***

| Level | Item | BOM Item Type | Optional |
|---|---|---|---|
| 1 | Laptop Basic | Standard | No |
| . 2 | . Laptop Computer | Model | No |
| . 2 | . Carrying Case | Standard | No |
| . 2 | . Keyboard | Standard | No |
| . 2 | . CPU | Option Class | No |
| . 2 | . 486 Processor | Standard | No |
| . 2 | . Monitor | Option Class | No |
| . 2 | . VGA | Option Class | No |
| . 2 | . VGA Manual | Standard | No |
| . 2 | . VGA1 | Standard | No |

| | | | |
|---|---|---|---|
| . 2 | . Monitor Manual | Standard | No |
| . 2 | . Operating System | Option Class | No |
| . 2 | . DOS | Standard | No |

The following table illustrates consumption of a forecast for 100 Laptop Basics after a customer places a sales order for 10 units.

***Forecast Consumption***

| Item | Original Forecast | Current Forecast |
|---|---|---|
| Laptop Basic | 100 | 90 |

If you have not defined forecasts for the predefined configuration, forecast consumption explodes the configuration bill and consumes forecasts for each model and option class. Forecast consumption also consumes forecasts for each standard item on the configuration bill where Forecast Control is set to *Consume* or *Consume and Derive*.

The following table illustrates consumption of the same sales order for 10 Laptop Basics when you have *not* defined a forecast for Laptop Basic. Note that the original forecast quantities for Laptop Basic's components have not been exploded from Laptop Basic, since you cannot explode forecasts from a standard item. Any forecasts that do exist for Laptop Basic's components must have been entered manually or exploded from a planning item, model, or option class forecast. This example assumes that Forecast Control is set to *Consume* or *Consume and Derive* for all standard components on Laptop Basic's configuration bill.

***Forecast Consumption***

| Item | Original Forecast | Current Forecast |
|---|---|---|
| Laptop Computer | 20 | 10 |
| Carrying Case | 20 | 10 |
| Keyboard | 20 | 10 |
| CPU | 30 | 20 |

| | | |
|---|---|---|
| 486 Processor | 50 | 40 |
| Monitor | 40 | 30 |
| VGA | 40 | 20 |
| VGA Manual | 50 | 40 |
| VGA1 | 20 | 10 |
| Monitor Manual | 30 | 20 |
| Operating System | 30 | 20 |
| DOS | 30 | 20 |

## Configure to Order Multi-organization Forecast Consumption

If you have multi-organization models you must use global forecasting for forecast consumption to be correct. To conduct global forecasting, you must use Oracle Demand Planning or Oracle Demantra.

The planning engine can perform inline forecast consumption both for Oracle Demand Planning forecasts, Oracle Demantra forecasts, and source instance forecasts in the same plan run. However, you must use the same source to consume a configuration's forecast and then consume any remaining sales order demand in the base assemble-to-order model.

When it consumes a forecast with a sales order for a top-level configuration, the forecast consumption process may consume configured items at different levels. For example:

- The bill of material for model M1 contains model M2
- You create a sales order for model M1 for quantity 120
- After you create the configuration, the bill of material for configuration C*1 contains configuration C*2
- Configuration C*1 has a forecast of quantity 100
- Configuration C*2 has a forecast of quantity 50
- The forecast consumption process first consumes the C*1 forecast for quantity 100 and then consumes the C*2 forecast for quantity 20

- The C*1 forecast has current quantity 0 and the C*2 forecast has current quantity 30

## Configure to Order Collections

The data collection process collects sales order demand for configured and scheduled items; it does not collect sales order demand for models and option classes. The planning engine then schedules the configured item in the same way that it schedules standard items.

Your sales order workflow must progress the order to create the unique configuration item at the point that you want this demand to be visible to planning. The order does not need to be booked, but the configured item must be linked to the order.

After the configuration item is created, you can run collections .See Overview of Running Collections for ASCP, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

For example, you accept an order at the Singapore organization and select the following options for your configuration:

- CMP Main Frame,
- CD-ROM,
- PTN32-2MB,
- 32TLC Add On,
- 5V Card;

After collections, you see a sales order line for the configuration item at the Singapore organization. You also see configuration items for each of the assemble-to-order models in your selection--CMP Main Frame, PCI Module, Dual Pod Enclosure, and Sub Prod 32 at Hong Kong. In addition, you see a configuration item for PCI Module at Mexico City. You also see bills of material for each of the configuration items based on your selection. The planning engine uses these to pass dependent demand to the components. Forecast consumption now reflects the configuration item instead of the model item.

This table represents the demand picture in planning after creating the Configuration Item. The configuration item is created for each ATO model shown as *1 appended to the item.

| Item | Org | Type of Demand |
|---|---|---|
| CMP Main Frame*1 | SG | Sales Order |

| Item | Org | Type of Demand |
|---|---|---|
| CMP Main Frame*1 | HK | Planned Order |
| Console | HK | Planned Order |
| CD-ROM | HK | Planned Order |
| PCI Module*1 | HK | Planned Order |
| PCI Module*1 | MEX | Planned Order |
| Cables | MEX | Planned Order |
| 5V card | MEX | Planned Order |
| Compatibility Bridge | MEX | Planned Order |
| Dual Pod Enclosure*1 | HK | Planned Order |
| Power Supply | HK | Planned Order |
| Sub Prod 32*1 | HK | Planned Order |
| PTN-32 OC | HK | Planned Order |
| PTN32-2MB | HK | Planned Order |
| TLC1032 | HK | Planned Order |
| 32TLC Add On | HK | Planned Order |

## Configure to Order Planning Process

After the configuration item is created, you have run collections, and you have run the plan, you see a sales order line for the configuration item at its shipping organization.

For example, you accept an order at the Singapore organization and select the following options for your configuration:

- CMP Main Frame,
- CD-ROM,

- PTN32-2MB,
- 32TLC Add On,
- 5V Card;

The planning engine explodes the sub-models, option classes, optional items, and mandatory components as dependent demand from the Model so that it can schedule and reschedule their supplies as a unit. (For forecasts, it explodes this demand as independent demand.) The planning process further explodes the demand down from Standard Items and plans for components below if there are any.

The planning engine bases its material scheduling on the start of the order rather than on the start of the operation. When the planning engine encounters sales order delay in an option supply:

- In a Constrained - Enforce capacity constraints plan, it pushes the option class and the model demand out.
- In a Constrained - Enforce demand due dates plan, it raises exceptions as needed as the assumption for meeting the demand due dates changes. The sales order and sales order lines are demand constraints. The option item sales order lines and the option class item sales order lines constrain the model item sales order demand and the model item sales order demand constrains the option item sales order lines and the option class item sales order lines.

After you collect your configured and scheduled order into the APS server and run a plan, you will get the demand picture shown in the following table in your APS plan:

| Item | Org | Demands |
|---|---|---|
| CMP Main Frame | SG | None |
| CMP Main Frame | HK | Sales Order |
| Console | HK | Sales Order |
| P devices | HK | Sales Order |
| CD-ROM | HK | Sales Order |
| PCI Module | HK | None |
| PCI Module | MEX | Sales Order |

| Item | Org | Demands |
|---|---|---|
| Cables | MEX | Sales Order |
| PCI Cards | MEX | Sales Order |
| 5V card | MEX | Sales Order |
| Compatibility Bridge | MEX | Sales Order |
| Dual Pod Enclosure | HK | Sales Order |
| Sub Prod OC | HK | Sales Order |
| Power Supply | HK | Sales Order |
| Sub Prod 32 | HK | Sales Order |
| PTN-32 OC | HK | Sales Order |
| PTN32-2MB | HK | Sales Order |
| TLC1032 | HK | Sales Order |
| 32TLC Add On | HK | Sales Order |

The planning engine creates appropriate planned supplies that you can convert to actual supplies and follow standard replenishment cycle to ship the sales orders between internal Organizations and finally to the customer.

## Supplier Capacity for Procured Models

You can constrain procured configurations based on the aggregate capacity available for the base model. That is, you state the capacity for the supplier-supplier site in terms of how many of the base assemble-to-order model can be built. The planning engine constrains all planned orders, requisitions, and purchase orders for all configurations of this base model to the aggregate capacity value. Planned orders for the assemble-to-order model also consume this same capacity.

The supplier capacity for the assemble-to-order model is consumed by the assemble-to-order items that are created based on this model. You can view this capacity consumption in Planner Workbench Horizontal Plan window. The planning engine uses only the:

- Capacity defined on the approved supplier list for the assemble-to-order model. It ignores any supplier capacity defined for any of its configuration items.
- Specific order modifiers and lead times from the approved supplier list for the configuration items

To set up supplier capacity for procured models:

- Navigate to Purchasing > Supply Base > Approved Supplier List
- Query the assemble-to-order model item, select Global, then click Attributes to enter the planning attributes
- Define the supplier capacity for the assemble-to-order model. This is the total capacity for all configurations of the base model that the supplier can produce.

To view supplier capacity for procured models:

- Navigate to Supply Chain Plan > Workbench > View by suppliers
- Select the supplier site, then select any of the configured items or the base model and view the same horizontal plan information. Oracle Advanced Supply Chain Planning provides an aggregate view of supply and demand information for all configurations of this base assemble-to-order model in the horizontal plan.

# 9

# Supply Chain Plan Cross-Instance Planning

This chapter covers the following topics:

- Overview of Cross-Instance Planning
- Instances
- Collections
- Cross-Instance Supply Chain Modeling
- Cross-Instance Planning
- Global Available to Promise
- Cross-Instance Execution
- Cross-Instance Data Considerations
- Purchase Orders and Sales Orders Across Instances

## Overview of Cross-Instance Planning

This explains cross-instance planning and available-to-promise in Oracle Advanced Planning. Cross-instance planning is defining, running, and executing a single plan across multiple source instances. It is a key feature for companies that use a hub-and-spoke planning model.

## Instances

The Oracle Advanced Planning can plan a single instance or multiple instances. An instance is a database and a set of applications.

There are several types of instances:

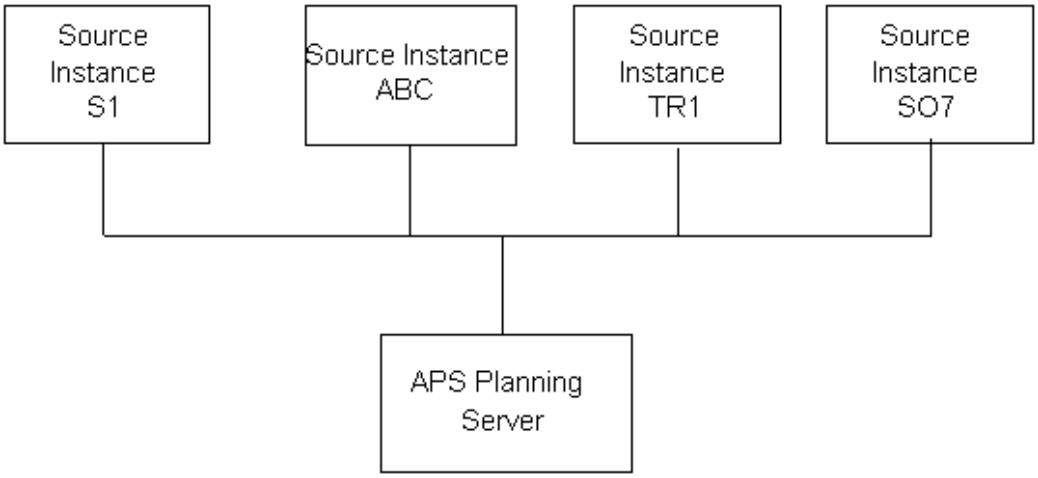
- Source instances hold source information, for example, items, bill of materials, orders. Source instances are Oracle Applications instances and legacy systems.

- The destination instance (APS planning server) holds planning information. Planners use the planning server to store information collected from the source instances; run, analyze, and simulate plans; and implement planned orders.

Collection from an Oracle Applications source instance are standard functionality; from legacy systems, develop a customized collection.

The diagram shows four source instances (S11, ABC, TR1, and S07) feeding a planning server.

***Instance example***




To set up cross-instance planning, the system administrator:

- Establishes a database link between the source instances and the APS planning server.

- Registers the source instances: Use the Application Instances form (Setup > Instances) to set parameters about each source instance that planning should consider, for example, base currency and time difference.

## Collections

Before running plans on the planning server, you collect the source data (planning related data and transactional data). In the situation depicted in the instance example, you run a collections concurrent process to collect from each source instances. You can run the collections concurrent processes in parallel.

You can process collections in any of the following methods:

- Complete: Use this method to collect all data and overwrite the data from previous collections.

- Net change: Use this method to collect only new and changed data since the previous collection.
- Targeted: Use this method to collect selected data in a complete refresh.

For more information, see Collection Methods, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

## Cross-Instance Supply Chain Modeling

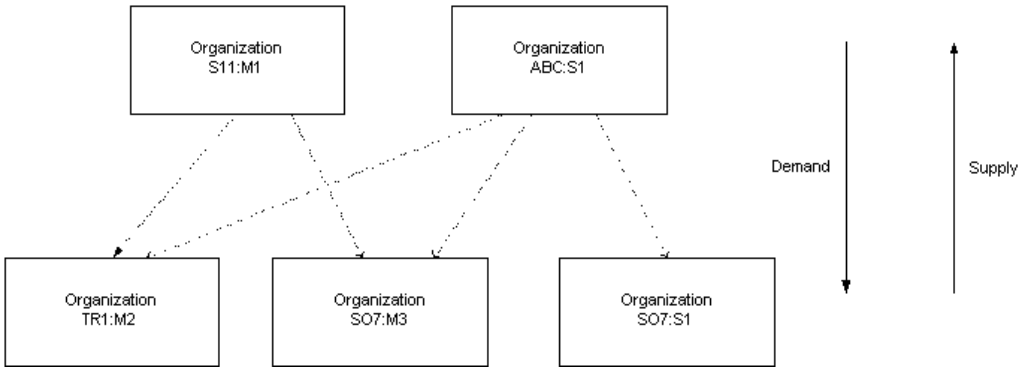
Cross-instance supply chain planning involves planning organizations that are in different instances in one planning process. The organization are:

- Shipping organizations: Organizations that ship material
- Receiving organizations: Organizations that receive material

Sourcing rules, bills of distribution, and assignment sets specify how the planning engine should source across instances.

The rectangles in this diagram shows five instance-organization combinations that share material. The characters before the colon of each instance-organization represent the instance and the letters after the colon of each instance-organization represent the organization within the instance. For example, for instance-organization ABC:S1, the instance is ABC and the organization is S1.

***Sourcing rules example***




To model a cross instance supply chain, model cross-instance:

- Lead-times
- Sourcing relationships
- Customers and suppliers

## Modeling Cross-Instance In-transit Lead-times

You define cross-instance intransit lead-times on the planning server in the Transit Times form (Setup > Transit Times).

Use this form to set up transit times between two organizations in the following cases:

- One organization is an Oracle Process Manufacturing (OPM) organization and the other is a discrete manufacturing organization.
- The two organizations are in different instances.

To set transit times between two discrete manufacturing organizations that are in the same instance, use the Oracle Inventory Shipping Networks form (Setup > Organizations > Shipping Networks). Populate the From Org and To Org fields there, then navigate Tools > Ship Methods and populate the ship method. Then, collect the information to the destination instance.

#### To view, create, and maintain cross-instance lead times

1. Navigate to the Transit Times form (Setup > Transit Times).
2. In Organization, select an instance-organization.
3. To see the existing shipping network, in Scope, select a value and click Find. View information in the Shipping Networks and Ship Methods regions.

   In the From Org query, you can see all of your organizations. In the To Org query, you can see only organizations that are from another instance.
4. In the Shipping Networks region, select a From Org (shipping organization) and To Org (receiving organization) pair.
5. In the Ship Methods region, enter or change the shipping methods that you use between the two locations. Click Ship Methods Lookup to view the available shipping methods.

   For each shipping method, enter or change Transit Time in calendar days.

   For the shipping method that you use most often, click Default Method.
6. Save your work.

## Defining Cross-Instance Sourcing Relationships

To set up sourcing rules:

- Specify the sourcing for cross-instance planning on the planning server; use the Sourcing Rule window (Sourcing > Sourcing Rules) and the Bills of Distribution

window (Sourcing > Bills of Distribution)

This table shows the sourcing rules needed to set up a sourcing rules example.

| Sourcing Rule/Bill of Distribution | Receiving Org | Shipping Org | Allocation % | Intransit lead-times |
|---|---|---|---|---|
| SR100 | S11:M1 | TR1:M2 | 25% | 3 |
| SR100 | S11:M1 | S07:M3 | 75% | 10 |
| SR200 | ABC:S1 | TR1:M2 | 60% | 1 |
| SR200 | ABC:S1 | S07:M3 | 15% | 5 |
| SR200 | ABC:S1 | S07:S1 | 25% | 10 |

- Assign sourcing rules in an assignment set; use the Sourcing Rule/Bill of Distribution Assignments window (Sourcing > Assign Sourcing Rules) to assign sourcing rules and bills of distribution to:
  - Items
  - Item in an organization
  - Categories of items in organizations
  - Organization
  - Instances

    For more information, see Setting Up the Supply Chain, page 4-2.

## Modeling Cross-Instance Customers and Suppliers

In each shipping organization, set up each receiving organization that it ships to as a customer. The customer appears on sales orders between the two. For example:

- Instance-organization TR1:M2 supplies instance-organization S11:M1.
- In TR1:M2, set up a supplier CUST_S11_M1. CUST_S11_M1 represents instance-organization S11:M1.

In each receiving organization, set up each shipping organization that supplies it as a supplier and supplier site. The supplier appears on purchase orders between the two. If

a supplying organization supplies multiple receiving organizations, set up the same supplier name in all the receiving organizations. For example:

- Instance-organization S11:M1 receives from instance-organization TR1:M2.
- In S11:M1, set up supplier SUP_TR1_M2 and supplier site Hong Kong. Supplier SUP_TR1_M2 represents instance-organization TR1:M2.

After setting up suppliers that represent cross-instance shipping organizations:

- Collect the suppliers to the planning server. This relates the shipping organizations and their supplier names for all instance-organizations.
- Run concurrent process Create Instance-Org Supplier Association in each shipping organization.

  See Create Instance-Org Supplier Association, page 22-22.

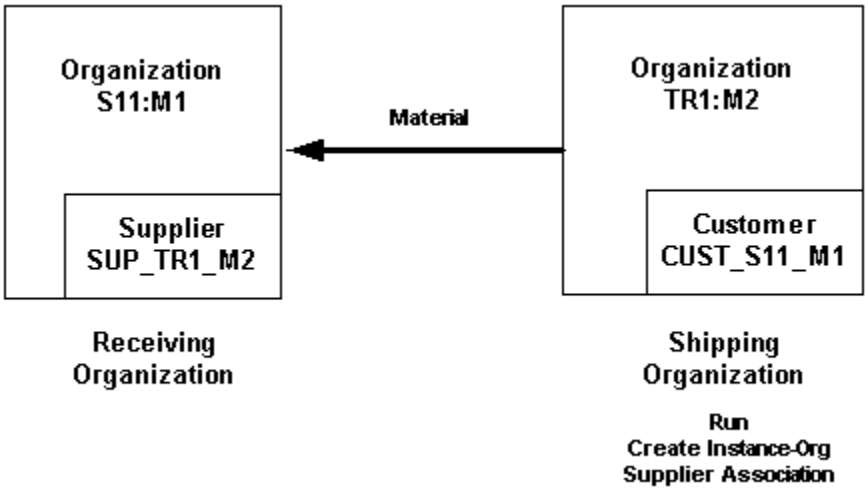
For example, in shipping organization TR1:M2, run concurrent process Create Instance-Org Supplier Association with parameter values:

- Instance Code: TR1
- Organization: Instance: TR1:M2
- Modeled Supplier: SUP_TR1_M2
- Modeled Supplier Site: Hong Kong
- Accept demands from Unmet PO: No

When you release planned orders in receiving organizations for items sourced from cross-instance shipping organization, TR1:M2, Planner Workbench creates an external purchase requisition against supplier SUP_TR1_M2, supplier site Hong Kong.

This diagram shows the cross-instance supplier-customer modeling process just described.

*Cross-Instance Customer-Supplier Modeling*




To delete an instance-organization supplier association, run concurrent process Create Instance-Org Supplier Association with only parameters Instance Code and Organization: Instance.

You can also use the concurrent process with the same steps to create an instance-org supplier relationship for an organization that models a supplier. When you release a planned order for this organization, the planning engine creates an external purchase requisition, not an internal requisition.

## Cross-Instance Planning

To define a plan that spans multiple instances, specify the following in the plan options (Supply Chain Plan > Options):

- All instance-organizations. For the instance example, select the five instance-org combinations along with their demand and supply schedules.
- The assignment set with the cross-instance sourcing relationships.

For more information on defining plans, see Overview of Defining Plans, page 3-1.

The combination of sourcing rules/bill of distribution, bills of material, and routings create a supply chain bill. The planning engine:

- Explodes independent demand through the entire cross-instance supply chain
- Creates planned supply for each component at each level of the supply chain bill, if needed.

For example, as the instance example plan runs, the planned orders generated in

instance-organization S11:M1 and instance-organization ABC:S1 may have instance-organization sources TR1:M2, S07:M3, or S07:S1 according to the sourcing rules and bill of distribution that you defined and assigned to the plan.

The planning engine creates planned orders and recommendations for all instances and organizations in the day and time scheme of the plan owning organization.

## Global Available to Promise

The available-to-promise calculation uses the supplies generated in a cross-instance plan to evaluate availability. If there is a need for more supply, the capable-to-promise calculation uses the supply chain bill from cross-instance sourcing to evaluate the capability and returns a valid availability date.

## Cross-Instance Execution

After a cross-instance plan completes, you see planned orders and reschedule/cancel recommendations in the planner workbench with sources from different instances-organizations. If you act on these, the APS planning server passes the information to the source instances.

Before releasing planned orders from the plan owning organization to multiple instances, perform the following set up:

- Set up the same user name in both source instances
- Tie the user name in each source instance to a manufacturing responsibility

The troubleshooting indication for this setup is that planned orders for make at items in the non-owning organization instance show in Planner Workbench with Imp Qty = 0.

This table shows the assignment set for the instances example. The:

- Receiving organization is the organization with the planned order (the ship-to organization)
- Shipping organization is the organization that supplies the planned order (the ship-from organization)

| Item | Receiving Organization | Shipping Organization |
|---|---|---|
| A | S11:M1 | TR1:M2 |
| B | S11:M1 | S07:M3 |
| C | ABC:S1 | TR1:M2 |

| Item | Receiving Organization | Shipping Organization |
|---|---|---|
| D | ABC:S1 | S07:M3 |

As you release a cross-instance planned order or recommendations in the receiving organization, the Planner Workbench creates an external purchase requisition there and references the supplier that represents the shipping organization. For example:

- A planned order in the receiving organization S11:M1 shows supply source TR1:M2 in Planner Workbench.
- The release process creates the external purchase requisition with supplier SUP_TR1_M2.

You:

- Create a purchase order in the receiving organization.
- Create an external sales order in the shipping organization and reference both the purchase order number in the receiving organization and the customer that represents the receiving organization, for example, CUST_S11_M1. If you do not reference the purchase order number, the purchase order and sales order do not peg. You can use the Order Import concurrent process to create sales orders against purchase requisitions that need them.

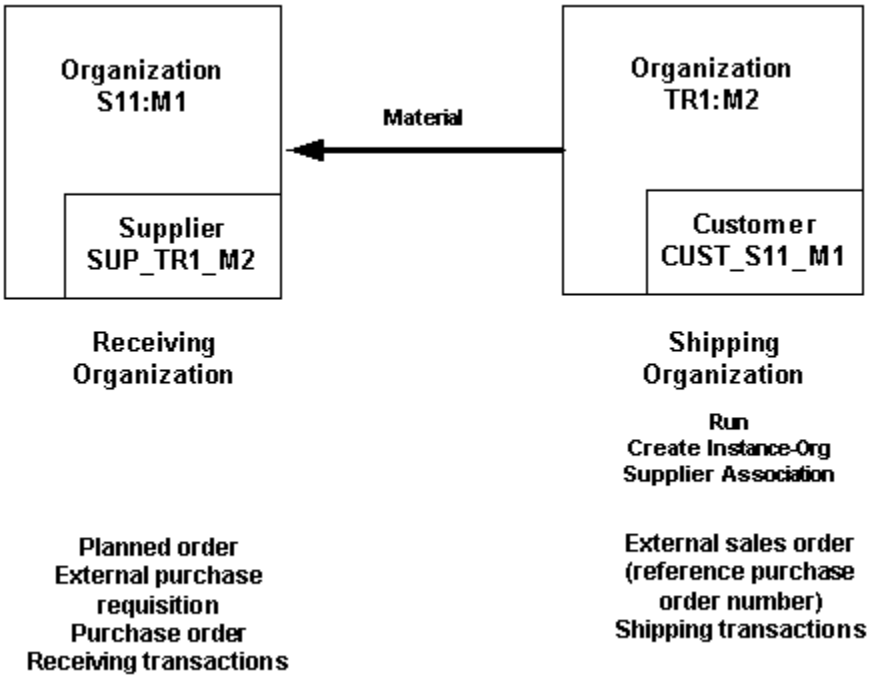
The collections process brings the sales orders into the planning server for display, including pegging.

You:

- Perform shipment transactions in the shipping organization.
- Perform receiving transactions in the receiving organization.

This diagram shows the cross-instance execution process.

*Cross-Instance Execution*




Oracle Applications does not convert financial data to the base currency of each organization.

## Cross-Instance Data Considerations

In the example of multi-instance data collection, there are four source instances. Oracle recommends that you pay detailed attention to data values. The collection process must collect data entities from the four source instances, eliminate duplicate values, and produce a combined, consistent set of values (data cleansing or data scrubbing).

Data cleansing involves:

- Eliminating duplicate values that are common in the source instances
- Adjusting source values ensuring consistent values for the same business entities (such as the same item) across instances.

For more information on data cleansing techniques, see My Oracle Support.

### Constraint Violations

Duplicate data values do not affect the behavior of the planning process. However, the collection process may issue warnings. This often occurs with data that is not instance

specific, such as unit of measure codes.

For example, the collection process:

- Collects unit of measure code EA from instance S1
- Collects unit of measure code EA from instance ABC
- Issues ORA-00001: Unique Constraint Violation

Since unit of measure EA is collected, you can safely ignore this warning; it does not cause collections or planning to fail. To eliminate it, delete the duplicate data from the staging tables for the remaining instances. Data types affected by the unique constraint include:

- Unit of measure code
- Unit of measure class
- Unit of measure conversions
- Category set name

## Text Differences with Conversions

Data with the same meaning may be in different source instances with similar codes and Oracle Applications provides conversions.

For example, these source instances have these unit of measure codes that all represent the unit of measure each:

- S1: EA
- ABC: ea
- TR1: Ea
- S07: EA

After collections, the planning server contains unit of measure codes EA, ea, and Ea. The planning process considers these as different units of measure. Before launching the planning process, you should make sure to have unit of measure conversions among these unit of measure codes

## Text Differences without Conversions

Typically, Oracle Applications achieves unique data values in the operational data store for data entities through data entity ID's--internally generated numeric values. However, there are exceptions in which Oracle Applications uses text unique indices to

achieve unique data values.

In these cases, data with the same meaning may be in different source instances with similar text and Oracle Applications does not provide conversions.

For example, these source instances have these item codes that all represent the item Oak Desk:

- S1: Oak Desk
- ABC: OAK Desk
- TR1: OAK DESK
- S07: oak desk

After collections, the planning server contains item codes Oak Desk, OAK Desk, OAK DESK, and oak desk. The planning process considers these as different items. Before launching the planning process, you should make sure to develop a data cleansing process to eliminate the conflicts by adjusting the different values to reflect the same value. You can:

- Pull items from instance S1 to staging tables
- Load items from the staging tables to the operational data store
- Pull items from instance ABC to staging tables
- Run a SQL script to update OAK Desk to Oak Desk in the staging tables.
- Load items from the staging tables to the operational data store
- Repeat the pull to staging tables, SQL script, and load to operational data store for source instances TR1 and SO7.

These are the data entities in which Oracle Applications uses text unique indices:

- Item name
- Item category
- Customer
- Customer site
- Vendor
- Vendor site
- Bottleneck resource group

- ABC class
- Demand class
- End item substitution set
- Global approved supplier list
- Currency
- Product family

## Purchase Orders and Sales Orders Across Instances

In a multi-organization structure, the supplier in the source instance provides supplies to the destination instance against a purchase order. When you release a purchase order from the destination instance to the source instance, the supplier creates a sales order and releases it from the destination instance to the source instance.

The planning engine treats transactions across instances as external requisitions. Variations in demand within the destination instance influence the sales order demand in the source instance. The planning engine plans to supply schedule across instances. When you run collections, the planning engine pegs the external purchase order to the external sales order.

### Cross Instance Pegging Logic

In specific situations, this is how pegging works:

- If the quantity in the sales order is same as the quantity in the purchase order, the sales order is pegged to the purchase order.
- If the quantity in the sales order is less than the quantity in the purchase order, the purchase order creates a planned order demand with quantity equal to the difference of quantities in purchase order and sales order in the supplier's organization. The supplier can accept the excess demand as a planned order demand in the organization and later convert the planned orders to sales order manually. This behavior is determined by the value set for the flag Accept Demands from Unmet PO (set while mapping a supplier to an organization). If the value for this flag is set to Yes, the supplier has an option to accept demands from unmet purchase orders. The supplier should be modeled as the organization that is included in the plan. However, if the value for this flag is set to No, the excess demand is not pushed to the supplier's organization.
- If multiple lines in the sales order map to a single line in the purchase order, each line in the sales order is pegged to the same purchase order line.

- If the quantity in the sales order exceeds the quantity specified in the purchase order, the sales order is pegged to the amount specified in the purchase order. The rest of the quantity is pegged to In-Excess.

- If inaccurate purchase order details or item details are specified in the sales order, the sales order is not pegged to the purchase order.

## Cross Instances Pegging Criteria

Pegging works when specific conditions are fulfilled:

- Sales orders across instances can be pegged against purchase orders having a single shipment per line. Purchase orders having multiple shipments per line are not considered.

- A single sales order line cannot be pegged to multiple purchase order line numbers because a single purchase order number is associated with a sales order.

## Cross Instances Pegging Process

Perform these steps to peg purchase orders and sales orders across instances:

1. Ensure that you have defined cross instance sourcing in the destination organization instance.

2. Run the Create instance-org Supplier Association concurrent program to designate the supplier organization as an external supplier organization. This results in creating sourcing rules.

3. Generate a cross instance supply chain plan.

4. Release a purchase order from the destination instance to the source instance.

5. Supplier needs to manually create an external sales order against the purchase order and specify the purchase order number and the purchase order line number in the source organization instance.

6. After you run data collections and launch and launch the supply chain plan, navigate to the Planner Workbench to view whether or not the purchase order in the destination instance is pegged to the sales order in the source organization instance.

## Designating Supplier Organization As External Supplier Organization

If you want a supplier in an organization to be available to other organizations, you need to designate the supplier organization as external. This enables the planning engine to peg across instances. As part of the setup for designating a supplier

organization, you need to run the Create instance-org Supplier Association concurrent program. Perform these steps to run the concurrent program:

1. Navigate to the Submit Request window.
2. In the Name field, select Create Instance-Org Supplier Association.

   The Parameters window appears.
3. In the Instance Code field, specify the user-defined 3-character short-form for the instance to be planned.
4. To associate the supplier with the specified instance, specify the supplier in the Modeled Supplier field.
5. Select a specific supplier site in the Modeled Supplier Site field and click OK.
6. Click Submit in the Submit Request window to submit the concurrent program.

# 10

# Supply Chain Plan Business Topics

This chapter covers the following topics:

- End-Item-Level Substitution
- User-Defined Alternate Decision Rules
- Organization Security
- Key Performance Indicators
- Supplier Acknowledgement for a Rescheduled Purchase Order
- Setting Demand to Supply Planning Automation
- Setting Supplier Collaboration Automation

## End-Item-Level Substitution

Oracle ASCP supports two types of substitution: component substitution and end-item-level substitution. This section describes end-item-level substitution.

You cannot use end-item-level substitution in unconstrained plans.

The term end-item refers to the finished good or saleable product. End-item-level substitution is an acceptable business practice in many industries. It is often possible to fulfill customer demand on time when the requested item is not available by substituting a more functionally rich product. Substitution is also done to use up existing inventory of older, functionally equivalent items.

End-item substitution provides the following capabilities:

- Enable substitution based on user-defined rules that can be effective either in one direction or in both directions; defining a chain of substitution relationships can be simplified by inferring existing relationships

- Consider substitution rules in the order promising process and suggest substitution similar to planning; this is important because promising orders based on a logic which does not consider substitution may lead to inaccurate promise dates and

over promising

- Consider the customer/customer site ordering the item; for example, some customers ordering a specific item might not accept substitutions; on the other hand other customers ordering the same item will accept substitutions
- Consider the effective dates of substitution rules prior to performing substitution
- Evaluate the effects of possible substitution rules by performing plan simulations
- Define whether orders may be fulfilled using a combination of requested and substitute items or only one item

You cannot use end item substitution with project planning.

## User Procedures Overview

This section lists the general procedures that are used to define and use end-item substitution:

Define substitution relationship between items at Oracle Inventory, optionally establish substitution chain, directionality and effectivity for substitution, and optionally establish customer and customer site for each substitution relationship

1. Set item attributes to control the generation of supplies
2. Set Item attribute to establish a window for substitution
3. Collect data
4. Run plans and analyze substitution decisions
5. Follow work flow procedure to enable execution
6. Optionally initiate ATP queries to quote promise dates based on substitution logic

## Define a Substitution Relationship

This section describes what you need to do to define a substitution rule or relationship at the item level. In general, you must define the following:

- A substitute From and a substitute To item
- The direction in which substitution is effective
- Effective dates for substitution (optional)
- Partial Order Fulfillment flag for each substitution relationship (optional)

- Substitution Set to enable simulation of substitutions (optional)
- Customer and customer site for a substitution relationship (optional)

You can define substitution rules or relationships via item relationships in Oracle Inventory using the Item Relationship form. You can use the form to define all the characteristics mentioned above. You can infer chaining and highest-level item in a substitution chain.

You can create unidirectional and bi-directional (reciprocal) relationships, for example, A > B (not reciprocal) or A <> B (reciprocal). However, once you create A > B (not reciprocal), you cannot create B > A (not reciprocal). You can simulate A <> B (reciprocal) by creating unidirectional relationships A > B, then B > C (item C is a dummy item), and then C > A.

If you define the end item-level substitution rule, it is applicable in all organizations in which the items are enabled.

These substitution rules are collected in Targeted collection mode and Complete refresh mode and not in Net change mode.

Although Item relationships are defined at the operating unit level, the planning engine applies them at the global level to all organizations within a plan.

**Substitution Chain Priorities**

You can instruct the planning engine how to decide the priorities of multiple items in a substitution chain--either by substitution distance or by effectivity date.

If the planning engine decides by substitution distance, it looks at the distance of each item from the demanded item in the substitution chain. The closer a potential substitute item is to the demanded item, the higher its priority is in the substitution chain. Set profile option MSO: Use Effectivity Dates to Infer End Item Substitute Priority to No.

For example, you set up this substitution chain:

| From Item | To Item | Type |
|---|---|---|
| A | B | Reciprocal |
| B | C | Reciprocal |
| C | D | Reciprocal |

Graphically, the substitution chain is A <> B <> C >< D.

For a demand on item C, the priorities are, from highest to lowest:

- C: Substitution distance from C is 0

- B: Substitution distance from C is 1 and it is higher in the substitution chain
- D: Substitution distance from C is 1 and it is lower in the substitution chain
- A: Substitution distance from C is 2

If the planning engine decides by effectivity date, you must enter effective and disable dates for each relationship. The earlier a potential substitute item's effectivity date, the higher its priority is in the substitution chain. If more than one substitute item has the same effective date, those substitute items have the same priority. Set profile option MSO: Use Effectivity Dates to Infer End Item Substitute Priority to Yes.

Use this method if you want to use up older substitutes before newer substitutes.

For example, you set up a substitution chain as follows:

| From Item | To Item | Type | Effective Date | Disable Date |
|---|---|---|---|---|
| A' dummy | A | Unidirectional | December 30, 2006 | - |
| A | B | Reciprocal | January 1, 2007 | - |
| B | C | Reciprocal | January 10, 2008 | - |
| C | D | Reciprocal | January 20, 2008 | - |

For effectivity dates, you must also include a dummy from item in the substitution chain, link it to your preferred substitute item, and set its effective date earlier that all of the actual substitute items.

Graphically, the substitution chain is [A' dummy] > A <> B <> C >< D.

For a demand on item C, the priorities are, from highest to lowest:

- A: Priority 1, earliest of the effectivity dates
- B: Priority 2, second earliest of the effectivity dates
- C: Priority 3, third earliest of the effectivity dates
- D: Priority 4, latest of the effectivity dates

**Substitution Chain Inferences**

The planning engine can infer additional substitution relationships if profile option MSO: Disable Inference of Item Substitution Relationship is No.

This diagram lists the Reciprocal substitution relationships that you might make as well

as the Reciprocal (inferred) substitution relationships that the planning engine infers

| From Item | To Item | Type |
|---|---|---|
| A | B | Reciprocal |
| B | C | Reciprocal |
| A | C | Reciprocal (inferred) |
| C | D | Reciprocal |
| A | D | Reciprocal (inferred) |
| B | D | Reciprocal (inferred) |

**To define a substitution relationship**

1. From the Navigator, select Inventory > Items > Item Relationships.

   The Find Item Relationships window appears.

2. Either select a previously defined item or search for an item.

   The Item Relationships window appears.

3. You can use this window to create a substitute relationship between two items and to indicate if the relationship is reciprocal. Please note that you cannot enter multiple Effective Dates for a substitution relationship in this window. This is done in the Planning Details window.

   If profile option MSO: Use Effectivity Dates to Infer End Item Substitute Priority is Yes, enter a value in field Effective Dates From. You can also enter a value in field Effective Dates To. If an entry has Effectivity Dates To and the date has passed, that substitute item cannot be in the substitution chain.

4. To further define details about the substitute relationship, select an item row and select the Planning Details button.

   The Planning Details - Substitute window appears.

5. Use the information in the following table to fill out the fields in this screen.

   .

| Field | Description |
| --- | --- |
| Substitution Set | You can specify one or more substitution sets for a substitution relations ship. You can use a set of substitution relationships to be effective for a given plan by selecting the substitution set as an option for the plan. This allows you to run simulations of possible substitutions and evaluate performance indicators given possible future substitutions. For additional information, please see Simulate Possible Substitutions, page 10-24. |
| Partial Fulfillment | If you select this check box, the entire order can be satisfied with supplies from both items. If you do not select this checkbox, Oracle APS must satisfy the entire order with supplies from one item or the other item, but not both. |
| Effective Dates | The substitution relationship can be made effective between a range of dates or multiple ranges of dates. If you specify range of dates in this window, the effective dates in the Item Relationship window will be ignored.<br><br>If profile option MSO: Use Effectivity Dates to Infer End Item Substitute Priority is Yes, enter a value in field Effective Dates From. You can also enter a value in field Effective Dates To.<br><br>Oracle APS will consider substitution relationship with different effective dates and will substitute only during the valid range of dates. |
| All Customers | When this box is checked, any substitution set or range of effective dates is made applicable to all customers. If you need to make it specific to a customer, then unselect this checkbox and navigate to the Customer field where you will have a chance to enter a customer or multiple customers. |

| Field | Description |
| --- | --- |
| Customer | You can set up customer site-specific substitution rules by defining customers and customer sites here. This allows you to maintain customer-specific substitutions as your customers accept or decline specific substitution relationships. Please note that you can associate multiple customers to the same substitute relationships.<br><br>You may have a need to enter both customer-specific and non-customer-specific substitution relationships for the same set of items. You can do so by entering one record in the Item Relationship window, entering the effective dates for the first rule in the first row of the Planning Detail window and deselecting All Customers, and entering multiple customer-specific associations in the Customer Reference section. Then, you enter effective dates for the generic rule in the Planning Details window and leave All Customers selected. One of the records can be applicable to all customers and the other record will be a customer-specific record.<br><br>NOTE: Once you enter customer-specific substitution rule for any item, you will have to specify all the relationships applicable to that customer explicitly because no generic rules will be applied to that customer. |
| Address | Choose the address for the customer location. |
| Type | View only field that shows the type of location (currently, only shows Ship to). |
| From and To | You can specify effective dates for substitution at a customer level. If you specify effective dates at customer level for a substitution relationship, the effective dates you might have specified at the in the Planning Details window and the Item Relationship window will be ignored. |

### Substitution Set-Up Examples

Use the following information to set up various substitution scenarios.

**To set up substitution across many dates/effectivities**

1. Fill out the Item Relationships window as shown in the following table:

| From Item | To Item | Relationship type | Reciprocal |
|---|---|---|---|
| A | B | Substitute | <cleared> |

2. Fill out the Planning Details window as shown in the following table:

| Substitution Set | Partial Fulfillment | From Date | To Date | All Customers |
|---|---|---|---|---|
| <null> | <cleared> | Day 1 | Day 50 | <selected> |
| <null> | <cleared> | Day 65 | Day 80 | <selected> |
| <null> | <cleared> | Day 101 | <null> | <selected> |

**To set up substitution relationships with multiple substitution sets**

1. Fill out the Item Relationships window as shown in the following table:

| From Item | To Item | Relationship type | Reciprocal |
|---|---|---|---|
| A | B | Substitute | <cleared> |

2. For the item relationship A --> B, fill out the Planning Details window as shown in the following table:

| Substitution Set | Partial Fulfillment | From Date | To Date | All Customers |
|---|---|---|---|---|
| <null> (default) | <cleared> | <null> | <null> | <selected> |
| SSET1 | <cleared> | <null> | <null> | <selected> |

| Substitution Set | Partial Fulfillment | From Date | To Date | All Customers |
|---|---|---|---|---|
| SSET2 | <cleared> | <null> | <null> | <selected> |

You may now run plans using any of the substitution sets defined in this window as a plan option.

**To set up customer-specific and non-customer-specific substitution rules**

1. Fill out the Item Relationships window as shown in the following table:

| From Item | To Item | Relationship type | Reciprocal |
|---|---|---|---|
| A | B | Substitute | <cleared> |

2. Fill out the Planning Details section of the Planning Details window as shown in the following table:

| Substitution Set | Partial Fulfillment | From Date | To Date | All Customers |
|---|---|---|---|---|
| <null> | <selected> | <null> | <null> | <cleared> |
| <null> | <selected> | <null> | <null> | <selected> |

3. Fill out the Customer References section of the Planning Details window for the first row as shown in the following table:

| Customer | Customer Site | From Date | To Date |
|---|---|---|---|
| Customer 1 | Site 1 | <null> | <null> |
| Customer 2 | Site 2 | <null> | <null> |

Please note that in order to enter a customer-specific rule, All Customers must be unselected.

**To set up multiple substitution effective dates for a customer**

1. Fill out the Item Relationships window as shown in the following table:

| From Item | To Item | Relationship Type | Reciprocal |
|---|---|---|---|
| A | B | Substitute | <cleared> |

2. Fill out the Planning Details section of the Planning Details window as shown in the following table:

| Substitution Set | Partial Fulfillment | From Date | To Date | All Customers |
|---|---|---|---|---|
| <null> | Selected | <null> | <null> | <cleared> |

3. Fill out the Customer References section of the Planning Details window as shown in the following table:

| Customer | Customer Site | From Date | To Date |
|---|---|---|---|
| Customer 1 | Site 1 | Day 1 | Day 50 |
| Customer 1 | Site 1 | Day 100 | <null> |

## Viewing Substitution Display

### To view substitution display

1. From the Navigator, select Supply Chain Plan > Workbench.

   The Supply Chain Planner Workbench appears.

2. In the Navigator, select View By Items.

3. Select the item you wish to view and right-click.

4. From the menu that appears, select Items.

   The Items window appears.

5. Select an item.

6. Select the Substitutes button. Please note that multiselects are not allowed. If you select several items, the Substitutes button will be greyed out.

The Substitution Chain window appears.

7. The following list provides an explanation of the features of this window:
   - The item you selected in the Items window is highlighted.
   - The color of the arrows between each item signify whether the relationship is predecessor, parallel, or successor.
   - You can see the item and the substitution chain along with the direction, and the type of substitution relationship (i.e. one-way/two-way).
   - Each node in the window refers to an item and has expansion capabilities.
   - Double-clicking on an item will show any existing expanded relationships.
   - If you can expand the chain upwards, the item in question can use higher level item as a substitute.
   - If you can expand the chain lower the item in question can be substituted for the lower level item.
   - If you can expand the tree sideways, the item in question and the parallel item can be substituted for each other.
   - If you double click on a node which is a two-way substitute item, the tree will refresh itself and start from the node you double-clicked rather than showing multiple trees at the same time.
   - The highest level item is the one to which all the arrows point.
   - The highest-level item is usually the item with most capabilities and it is the item that is in active production in certain industries.
   - If you select an item and right-click, two menu options appear: Properties and Horizontal Plan. If you select Properties, the Substitution Properties window appears. If you select Horizontal Plan, the Horizontal Plan appears.

There are three tabs: Predecessor, Successor, and Parallel. Each tab shows you the properties of substitution relationship and other possible substitutes as shown below. If you do not have a Predecessor, Successor, or a Parallel substitution, the appropriate tabs are disabled. The default enabled tab when you open the window is the Predecessor tab.

The following information appears in the Substitution Properties window:

- From and To substitute items
- Implied Substitution - whether the item relationship is implied or directly specified

- Highest level item in the substitution chain
- Effective date for the relationship
- Disable date for the relationship
- Customer and Customer sites which accept the substitution
- Substitution set if specified
- Partial Fulfillment is allowed

## Substitution Logic

The section contains description of how substitution logic functions. It contains information about:

- Searching the supply chain
- Chaining

### Search the Supply Chain for Substitution

A demanded item or a substitute item could be available within the same organization or in a different organization within the supply chain. You can take advantage of availability of supply (both requested item and substitute items) across the supply chain and use up the inventory effectively before placing orders to make or buy the item. To search for demanded item or substitute items, the planning engine looks for demanded and substitute items within the same organization before looking in other organizations to find them.

The following figure show you this search method:

With this method, the emphasis is on use up. The availability picture of original item and substitutes guides the search. The emphasis of the search is to seek supplies from demanded item or substitute item and use it up as effectively as you can before creating supplies for the item requested. This means Oracle APS looks for on hand and scheduled receipts of demanded items and substitutes within one organization before proceeding to the next organization to repeat the same search.

If profile option MSC: Choice of item for which to create supplies in substitute relationship is Follow Item Attribute, the planning engine respects capacity on the demanded items. It can create planned orders for any item within the chain as long as flag Create Supply is Yes and there is available capacity. The planning engine does not consider order modifiers.

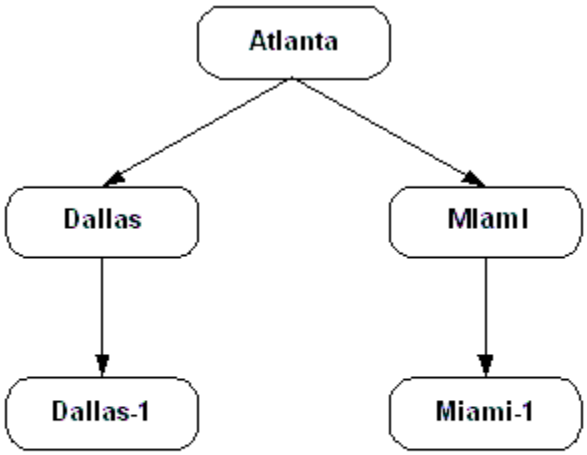
If you do not want the planning engine to recommend orders for a particular item in the substitution chain:

- Set profile option MSC: Choice of item for which to create supplies in substitute relationship to Follow Item Attribute
- In item attributes for item-organization, set Create Supply Flag to No

**Breadth-First Search**

An important point to note here is the direction of search when multiple levels of sources are involved. If you consider the following diagram, the Atlanta facility sources from Dallas and Miami, Dallas sources from Dallas-1, and Miami sources from Miami-1.

***Supply Chain for Substitution***




**Supply Chain for Substitution**

If you have item A and a substitute item A1 in all the organizations in the supply chain and if you have demand in Atlanta, the search follows the sequence mentioned below:

- Look for on hand and scheduled receipts of item A and substitute A1 at Atlanta
- Look for on hand and scheduled receipts of item A and substitute A1 at Dallas
- Look for on hand and scheduled receipts of item A and substitute A1 at Miami
- Look for on hand and scheduled receipts of item A and substitute A1 at Dallas-1
- Look for on hand and scheduled receipts of item A and substitute A1 at Miami-1

The search across organizations is guided strictly by sourcing rules, bills of distribution, and the corresponding ranks for the sources. Summarizing the search process, Oracle APS looks for the demanded item (requested item) and all its possible substitutes within a facility and it continues to look for demanded item (requested item) and its

substitutes in other facilities searching breadth first. Referring to the diagram, the search will follow:

Atlanta, Dallas, Miami, Dallas-1, and Miami-1

It is very important to note that the breadth-first search method is used in constrained plans. In optimized plans, the search is entirely driven by costs i.e., item costs, penalty costs for satisfying demand late, transportation costs etc. An optimized plan suggests transfers and substitutes based on the overall objective of the plan and costs mentioned above.

**Enforce Sourcing Splits and Substitute Supply Across Supply Chain**

Oracle APS supports enforcing sourcing splits in optimized plans. This means that you can have the system adhere to the sourcing splits (while allocating supply to various sources) you mention on the sourcing rules or bills of distribution even though the splits may not be cost effective.

Supplies that you may find for demanded or substitute items across the supply chain with the intention of use up may violate the enforce sourcing splits logic. If you need the use up functionality, sourcing splits will not be enforced at least for the sources where you would expect to use up the supply efficiently. Enforce sourcing splits is enabled at the sourcing rule or the bill of distribution level; therefore, it is easy to apply the sourcing splits only to the sources you may need and not for the ones that you do not need.

#### Example 1

There may be times where enforce sourcing splits conflicts with the substitution use up rule. For example, the following table shows the sourcing splits and supply for Org1 and Org2.

| Org | Sourcing Split | Supply |
|---|---|---|
| Org 1 | 50% | 100 of item A |
| Org 2 | 50% | 0 of item A |

If the demand for item A is 100, according to sourcing splits, 50 of item A should come from Org 1 and 50 of item A should come from Org 2. However, since there is no supply of item A at Org 2, this cannot be accomplished. In the substitution process, the use up will override enforce sourcing splits and will take all 100 from Org 1 to meet the demand for 100 of item A.

#### Chaining - Multiple Levels of Substitution

If multiple items are involved in substitution, you can establish a chain of substitutions that is valid.

**Example 2**

If item A can be substituted for item B and item B can be substituted for item C, you can infer that item A can be substituted for item C, if profile option MSO: Disable Inference of Item Substitution Relationship is No.

Establishing and maintaining substitution relationships amongst items in a large substitution chain; for example, up to 80 items, can be very tedious and time consuming. Therefore, you might prefer to infer certain substitutions, such as in the above example in which A --> C is inferred given the first two relationships.

If such a relationship is established and if item A is requested, you can satisfy it with supplies from A, B, or C. If item B is requested, you can satisfy it with either B or C. If C is requested, you can satisfy it with only C's supply.

If you add effectivities as suggested in the Define a Substitution Relationship section and if profile option MSO: Disable Inference of Item Substitution Relationship is No, the substitution inference is made effective based either on the effective dates of all relationships or on the intersection of all the dates. The following table shows that the substitution rule between item A and B is effective between Day 2 and Day 10. A second substitution rule between item B and C is effective between Day 6 and Day 22. Therefore, the inferred substitution rule between item A and C is effective between Day 6 and Day 10.

| From Item | To Item | From Date | To Date | Inferred |
|---|---|---|---|---|
| A | B | Day 2 | Day 10 | No |
| B | C | Day 6 | Day 22 | No |
| A | C | Day 6 | Day 10 | Yes |

## End-Item Substitution Features

This section contains descriptions of substitution features available in Oracle ASCP. It contains information for the following features:

- Reciprocal - unidirectional and bidirectional substitution
- Preference for generating planned orders
- Window for substitution
- Partial order fulfillment
- Effectivity (time phasing)

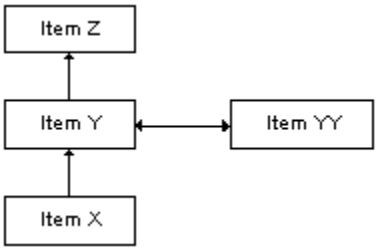
- Customer-specific substitution rules
- Simulate possible substitutions
- Transfer of demands on to substitute supplies

### Reciprocal - Unidirectional and Bidirectional Substitution

As shown in an earlier example, while you can satisfy A's demand with B's supply, you cannot satisfy B's demand with A's supply. This is referred to as unidirectional substitution. In some cases you can satisfy B's demand with A's supply. This is referred to as bidirectional substitution or reciprocal substitution.

Referring to the diagram below, items X, Y and Z are in a unidirectional relationship, and items Y and YY are in a bidirectional relationship. Because item Y has two relationships, Oracle APS will allocate supply from item Z or item YY if you have a demand for item Y.

***Figure title***




### Preference for Generating Planned Orders

Given a group of substitutable items, there is considerable variation in how the supplies are to be created for the substitute items. This depends on the type of industry.

**Field Service Repair/Replacement Business**

In this business, the emphasis is more on locating original item supplies or substitute supplies and distributing items across a defined distribution channel. The demand for the item may be for any one of the items in the substitution chain. If the supplies are not found in your distribution network, you can purchase needed items, but you cannot buy older items as the manufacturer might no longer produce them. In such cases you are forced to buy the current item. This translates to creating supplies only for the highest level item in the substitution chain.

### Example 3

In this example, there are four items in the substitution chain: items A1, A2, A3, and A4. The highest revision in this pool is A4 (referred to as the highest level item). You may get demand for any of the four items mentioned. If you get demand for A2, you will evaluate supply availability for A2, A3, and A4 assuming chaining and direction as A1

--> A2 --> A3 --> A4. If you do not find any supply for the demanded item, you can generate supply for highest level item which is A4.

To achieve this, set the profile option MSC: Choice of Items for which to Create Supplies in a Substitute Relationship equal to Highest Level Item.

**Semiconductor Business**

In semiconductor business, substitutable items are typically co-products. Even in this scenario, the demand can be for any one of the items in the substitution relationship. In contrast to the previous scenario, here you can produce the item the customer has requested. Given that the products are going to be co-produced, you may need to create co-product supplies for the rest of the items in the co-product relationship.

Oracle APS plans for the capacity to produce all the co-products for a given order because you cannot produce only one item that is part of the co-product.

**Example 4**

In this example, there are four items in the substitution chain: items A1, A2, A3, and A4. The highest revision in this pool is also A4 (referred to as the highest level item). If you get a demand for A2, you will evaluate supply availability for A2, A3, and A4 assuming chaining and direction as A1 --> A2 --> A3 --> A4. If you do not find any supply, you can generate supply for the demanded item which is A2.

If items A1, A2, A3, and A4 are in a co-product relationship, Oracle ASCP generates co-product supplies for items A1, A3, and A4.

In addition to the two modes of generating supplies as mentioned above (being forced to buy the current item and needing to create co-product supplies), a general requirement is to have an item attribute that controls whether you want to create new planned supplies. This may be helpful in scenarios where you have existing supplies that you may want to plan and potentially sell, but you do not want to produce the item anymore.

All of these requirements are addressed by a combination of profile options and item attributes. You can choose one of the following methods to generate supplies using profile option MSC: Choice of Items for Which to Create Supplies in Substitute Relationship:

- Demanded Item
- Highest Level Item
- Follow Item Attributes

If you set the profile option to Follow Item Attributes, Oracle ASCP will follow the Create Supply item attribute established at the item-organization level.

For more details on profile options, see Profile Options, page A-13.

Resolving Conflict Between Item Attributes and Profile Options

If you employ a combination of profile options and item attributes, you may set up contradicting values.

#### Example 5

In this example, there are three items: A, B, and C. Item C is the highest level item in the substitution chain. This example shows you may set up a conflict between your item attribute and profile option with unexpected results.

The profile option Choice of Item for Which to Create Supplies in Substitute Relationship can be set to:

- Demanded Item
- Highest Level Item
- Follow Item Attribute

The item attribute Create Supply for each item can be set to either Yes or No.

If you select Demand Item or Highest Level item, Oracle APS ignores any item attributes.

The following table shows you what to expect when you set the Profile Option to Follow Item Attribute.

**Conflicts Related to Enforce Demand Due Dates Plan:**

Running your plans using the plan option Enforce Demand Due Dates means that you must satisfy the demand on time. However, if you set the profile option Choice of Item for Which to Create Supplies in Substitute Relationship to Follow Item Attribute and the item attribute Create Supply for all the substitute items in the substitution chain is set to No, no supplies will be created and Enforce Demand Due Dates will be violated.

**Conflict Between Choice to Create Supplies and Enabling Item in an Organization:**

If you have a substitution chain A --> B --> C and you have set the profile option Choice of Item for Which to Create Supplies in Substitute Relationship to Highest Level Item, the expectation is that Oracle APS will create supply for item C. However, item C must be enabled in the organization in which you are trying to create a supply. If item C is not enabled in the organization, Oracle APS will create supply for item B (the next highest level item in the substitution chain) and not create supply for item C.

#### Window for Substitution

While substitutions are part of regular business process, substitutions done too far ahead of demand might not be appropriate. For example, if you find a substitute supply four weeks away from demand, you may not want to substitute as you may have a good chance of producing supply for the demanded item in the next three weeks.

A substitution window allows you to limit the time frame for the substitution. You can define the substitute window for an item using item attribute form in Oracle Inventory. The substitution window is effective in the forward direction from every demand. All

substitute supplies prior to demand are eligible for substitution. Please note that the substitution window is applicable only for substitution; if you are netting supply and demand from the same item, the substitution window does not apply

If you do not set substitution window, the planning engine uses default of zero days, so it will not do end-item substitutions.

**Example 6**

In the time-phased supply picture shown in the following table, item A is being substituted for item B. You get a demand for 30 units of item B in time bucket 1. If substitution must happen right away, you can use A's supply for B's demand and satisfy it on time. If you can wait for two more time buckets, you will find the supply for B in time period 3; therefore, you can avoid substitution. The assumption here is you will get a demand for item A and you do not have to give up on the amount of money you could make by shipping A for A's demand.

| Item | Time Bucket 1 | Time Bucket 2 | Time Bucket 3 | Time Bucket 4 | Time Bucket 5 | Time Bucket 6 |
|---|---|---|---|---|---|---|
| Item A | 25 | 2 | 3 | 4 | 5 | 6 |
| Item B | 5 | 0 | 25 | 0 | 0 | 25 |

At the same time, if supply of 25 units in time period 3 was not available, you may not be able to wait until time period 6 to pick up the supply for item B, as delivery performance might drive you to use substitution right away.

Another aspect of substitution window might be to evaluate all native demands and supplies within a specified amount of time, and to consider only excess supply from each item as possible substitution supplies.

Continuing our example from above, you may also have demand for 20 units of item A in time period 1. In this case, you may not want to satisfy B's demand using A's supply. You may want to find out the excess after satisfying the native demand before you apply substitutions. Therefore, the demand for Item B can satisfied only as follows: 5 units of its own supply in time period 1, 5 units of item A's supply in time period 1, and its own supply of 20 units in time period 3.

Satisfying native demand may run contrary to prioritized demand in constrained plans. The following table shows the supply/demand picture where demand for item B can be satisfied with a supply for item A. The substitute window for both items is 3 days.

| Item | Time Bucket 1 | Time Bucket 2 | Time Bucket 3 | Time Bucket 4 | Time Bucket 5 | Time Bucket 6 |
|---|---|---|---|---|---|---|
| Item A (Demand) | 20 (Priority 10) | 10 (Priority 20) | 0 | 0 | 0 | 0 |
| Item A (Supply) | 0 | 20 | 5 | 0 | 0 | 0 |
| Item B (Demand) | 50 (Priority 1) | 0 | 0 | 0 | 0 | 0 |
| Item B (Supply) | 5 | 10 | 0 | 0 | 0 | 25 |

Given the logic of constrained plans, you will try to satisfy every demand based on its associated demand priority. In the above scenario, satisfying native demand and following demand priorities are at odds. Going by priority, you will consume all the supplies for item B and substitute 10 units from item A to satisfy B's demand. This means demand from item A may not be satisfied on time because it needs to be manufactured or bought.

If your business scenario needs to give preference to native demand satisfaction within the substitute window, you can do so by setting up system level profile options. If you set up the profile option to give preference to native demand satisfaction, item B will not be able to substitute any supply from item A in the previous example. You can achieve native demand satisfaction by setting up system level profile options. Please see Profile Options, page A-1 for details.

Substitution window is not applicable in optimized plans because the end item substitution is purely based on cost in an optimized plans

Enforced Demand due date plans (both constrained and optimized) do not consider substitution window

Maximum allowable days late overrides the substitution window. Demands go unmet or move to the planning horizon rather being assigned a substitute.

Partial Order fulfillment In this type of substitution, the demand must be satisfied with only one type of item. If item A and item A1 are substitute items, you cannot, for example, satisfy a demand for 100 units of A with 50 units of A and 50 units of A1. You must either supply 100 units of A or 100 units of A1.

This feature is available in the Planning Details window.

**Example 7**

You can specify Partial Order fulfillment attribute for a substitute relationship in Oracle Inventory using the Planning Details form (this form is accessible through the Item

Relationship form)

In this example, items A and A1 are substitute items. Based on the supply demand view in the following table, you would substitute and satisfy the demand by allocating supply from item A1. This is enforced because the supply for item A by itself could not have satisfied the demand, and in addition, the entire demand must be satisfied by either item A or A1.

| Record Type | Day 2 | Day 15 | Day 18 |
|---|---|---|---|
| Demand for A | 0 | 50 | 0 |
| Supply for A | 0 | 40 | 0 |
| Supply for A1 | 0 | 0 | 60 |

If the supply for A1 is inadequate to meet the demand, you can satisfy the demand by using 40 units of existing supply of item A and new supply of 10 units for A.

### Effectivity (Time Phasing)

It is common to see an effective time period for substitution. This is typically used to model restrictions on use up of inventory, time phase product qualifications and engineering changes etc. You can specify substitution Effective From and To dates along with definition of substitution.

You can specify effective dates for substitution in the Planning Details form.

The effective dates for the substitution will be validated against the demand due date (Suggested Due Date) to derive the valid substitutions. Let us consider the following substitution table:

| From Item | To Item | Customer | Ship-to Address | From Date | To Date |
|---|---|---|---|---|---|
| X1 | X2 | Company A | 75 Hill Street | 3/1/2002 | 9/30/2002 |
| X1 | X3 | Company B | 219 Revere Blvd. | 4/1/2002 | 10/30/2002 |
| X2 | X3 | Company B | 219 Revere Blvd. | 6/1/2002 | <null> |

If you get demand from Company A/75 Hill Street on 4/1/2002 for item X1, you can substitute with item X2. If your demand is beyond 9/30/2002, the substitution between X1 and X2 is not possible. Similarly, if you get a demand from Company B/219 Revere

Blvd. for item X1 on 6/1/2002 you can substitute with item X3. If you get a demand for item X2 after 6/1/2002, you can substitute with item X3.

Please note that if you run a constrained plan, your demand satisfied date may be different from suggested due date. The validity of the substitution is derived by comparing the suggested due date with the effective dates, not the demand satisfied date.

#### Customer-Specific Substitution Rules

Substitution rules can sometimes change depending on which customer site is ordering the item. Often customers qualify the plants producing the items. In a typical set up you will issue a different item number based on the origin of the item even if it is the same item. Item numbers issued to represent the item origin will form a basis to specify customer-specific substitution.

You will be able to set up substitutions specific to a single customer or all customers.

#### Example 8

There are three customers; Customer A, B, and C. Assume that they buy Integrated Circuits with varying degrees of capability, namely IC200, IC300, and IC400. Restrictions posed by the customers are as follows:

- Customer A can accept IC200 and IC300 but not IC400
- Customer B can accept IC200 and IC400 but not IC300
- Customer C can accept all the three items

You can set up the above substitutions in the following way:

| From | To | Customer | Address |
|---|---|---|---|
| IC200 | IC400 | Customer B | Address B |
| IC200 | IC300 | Customer C | Address C |
| IC200 | IC400 | Customer C | Address C |
| IC200 | IC300 | Customer A | Address A |

Oracle Inventory allows you to specify customer and customer ship-to address specific substitutions.

**Substitution Definition With and Without Customer and Customer Site**

It is possible to have customer-specific and generic substitution relationships for the same set of items. However, if you record a customer-specific rule, then the generic

rules no longer apply to that customer. You will have to define an item relationship for each substitution that the customer will accept.

**Example 9**

Given the above understanding, let us look at an example to clarify the intended behavior.

**Customer-Specific Substitution Relationships**

| From Item | To Item | All Customers | Customer | Address |
|---|---|---|---|---|
| X1 | X2 | Y | <blank> | <blank> |
| X2 | X3 | Y | <blank> | <blank> |
| X1 | X3 | Y | <blank> | <blank> |
| X1 | X4 | Y | <blank> | <blank> |
| X1 | X2 | N | Company 1 | Company 1 address |
| X1 | X3 | N | Company 2 | Company 2 address |
| X2 | X3 | N | Company 2 | Company 2 address |
| X1 | DUMMY | N | Company 3 | Company 3 address |

The first four rows of the table show generic substitution relationships. That is, X1 can substitute for X2, etc. The next four rows show company-specific substitutions. Company 1 will not accept any substitutions other than X1 for X2. Company 2 will not accept any substitutions other than the X1 for X3 and X2 for X3. So even though there are generic substitution relationships, customer-specific rules overrides all other rules for that customer.

The last line of the table shows a customer that does not accept any substitutions. For this customer, you must create a dummy item that forces the system not to consider any substitutions for any items for that customer.

All other customers will accept all the generic rules in the first 4 rows of the substitution table.

If you find any substitution rule tied to a customer, the only substitutions which are

valid for the customer are the rules that are specific to a customer.

**Example 10**

In this example, effective dates are added on top of the definition in Example 8:

| From Item | To Item | Customer | Customer Address | From Date | To Date |
|---|---|---|---|---|---|
| X1 | X2 | <blank> | <blank> | <null> | <null> |
| X2 | X3 | <blank> | <blank> | <null> | <null> |
| X1 | X3 | <blank> | <blank> | <null> | <null> |
| X1 | X4 | <blank> | <blank> | <null> | <null> |
| X1 | X2 | Company 1 | Company 1 address | 3/1/2002 | <blank> |
| X1 | X3 | Company 2 | Company 2 address | 4/1/2002 | 4/1/2003 |
| X2 | X3 | Company 2 | Company 2 address | 6/1/2002 | <blank> |
| X1 | DUMMY | Company 3 | Company 3 address | <null> | <null> |

Given the above substitution table, Company 1 will not accept any substitution prior to 3/1/2002. Company 2 will not accept any substitution prior to 4/1/2002, and then will accept X1 for X3 from 4/1/2002 to 4/1/2003, and then will accept X2 to X3 from 6/1/2002. As before, Company 3 will accept no substitutions.

**Simulate Possible Substitutions**

Once you run a plan with a given set of substitution definitions, you may realize that more substitution definitions are possible in the near future. You will need to run the plan with possible substitutions and evaluate delivery performance and other key performance indicators.

You can associate a Substitution Set with each substitution definition in Oracle Inventory. A Substitution Set is an alphanumeric field value that you can establish to make up a set of substitutions. Substitution Set is a global entity meaning that you can establish the same Substitution Set across different instances. The following table gives examples of substitution definitions. The From and To column of the table are defined in the Item Relationship window. The rest of the columns are defined in the Planning

Details window.

| From | To | Substitution Set | Customer |
|---|---|---|---|
| X1 | X2 | <null> | Company X |
| X1 | X2 | <null> | Company Y |
| X1 | X3 | SIM1 | Company X |
| X1 | X4 | SIM2 | Company X |
| X1 | X3 | SIM1 | Company Y |
| X1 | X5 | SIM2 | Company Y |

If you run your plan without a Substitution Set, item X1 can be substituted for X2 for both Company X and Company Y. If you want to evaluate the results of substituting item X1 for item X3, you can choose Substitution Set SIM1 in the plan option and run the plan. Similarly, you can run a plan with Substitution Set SIM2 to evaluate the possibility of substituting item X1 for X4 for Company X and substituting item X1 for X5 for Company Y.

As explained above, you can choose a Substitution Set for a plan at plan option level. Oracle APS will plan using the substitution definitions tied to a Substitution Set. If you need to simulate with other possible substitutions, you can associate a different Substitution Set with a plan and run the plan. If you do not choose a Substitution Set, only the substitution relationships without a Substitution Set defined in Oracle Inventory will be considered in the plan.

> **Note:** You must run a batch plan (as opposed to an online plan) to use substitution sets.

#### Transfer of Demands on to Substitute Supplies

The ability to show pegging and supply/demand details if you have substitution supply identified for a demand is important because the items that bear supply and demand are different.

One of the ways the display can be clearly shown is when you transfer the demand from original item to the substitute item for all substitutions.

#### Example 11

The following table shows the supply and demand for items A and B. In this example, 30 units of item B can use 25 units of item A and 5 units of its own supply to satisfy this

demand.

| Record Type | Item | Day 1 |
|---|---|---|
| Demand | A | 0 |
| Demand | B | 30 |
| Supply | A | 25 |
| Supply | B | 5 |

Since substitution is involved between item B and item A, Oracle APS will transfer the demand from item B to item A for 25 units to account for substitution. If there are multiple items with which item B can be substituted, you will see demands on all such items. In other words, the original demand will be split into possibly multiple demands if substitutions are involved.

### Examples Illustrating Substitution Logic

**Example for customer-specific substitution, partial order fulfillment, time phasing**

This example uses three customers. None of these customers accept a mix of original items and substitute items in any one shipment (i.e., partial orders fulfillment is not allowed); therefore, the entire shipment needs to be made up of either original items or one of the substitute items allowed based on acceptance rules described below. The substitution direction is always from higher level to a lower level i.e., supply from A1 can be used to satisfy A demand.

The following profile options and item relationship rules have been set in the following example:

**Profile Options:**

- MSC: Choice of item for which to create supplies in substitute relationship = Demanded Item.
- MSO: Choice of supply for substitution = All supplies

**Item relationship rules:**

- Partial Fulfillment = No
- Reciprocal relationship = No

**Company S Example**

A customer-specific item relationship is defined to substitute A1 for A effective until Day 6. The item attribute Substitution Window = 4 days.

As shown in the following table, the demand for product A on Day 1 can be met with on hand (qty = 5), supply (qty = 10) on Day 4, and a new planned order of 5 units for A. The supply from substitute item A1 is not enough to make up the entire order, and the supply on Day 6 is out of reach due to the 4-day substitution window. The demand on Day 7 can be met with supply of 10 units on Day 8 and a planned supply of 40 units for A, because substitution of item A1 is not valid after 6 days. Substitution did not occur because the substitute supply was not adequate to meet the order demand.

| Record Type | Item | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Demand | A | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 |
| Supply | A | 5 (on-hand) | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 10 | 0 |
| Supply | A1 | 0 | 2 | 0 | 10 | 0 | 0 | 8 | 50 | 0 | 0 |

**Company R Example**

A customer-specific item relationship is defined to substitute D for C, and B for A effective until Day 6. The item attribute Substitution Window = 1 day.

As shown in the following table, the demand on Day 1 for item A (qty = 20) cannot be satisfied by substitution because partial order fulfillment is not allowed. The inventory of item B (qty = 15) is inadequate to meet this demand and the supply of 5 units on Day 3 is outside the substitution window of 1 day. Therefore, it will be satisfied by 5 units of on hand, 10 units of supply from Day 8, and 5 units of planned supply.

Demand on Day 6 for item A for 30 units can be satisfied by substitution; i.e., 15 units of on hand, 5 units of supplies from Day 3, and 10 units out of 50 units from Day 6.

The demand for item C, qty = 10, on Day 2 can be satisfied by 8 units of on hand and a supply of 2 units for D scheduled on Day 2. Demand of 60 units for item C on Day 7 can be satisfied with an existing scheduled supply of 60 units on Day 7 for item D. Note that with a 1-day substitution window, the supply must be available on the same day as the demand. Future scheduled receipts will not be utilized.

| Record Type | Item | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Demand | A | 0 | 20 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 |

| Record Type | Item | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Supply | A | 5 (on-hand) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| Supply | B | 15 (on-hand) | 0 | 0 | 5 | 0 | 0 | 50 | 0 | 0 | 0 |
| Demand | C | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 60 | 0 | 0 |
| Supply | C | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| Supply | D | 8 (on-hand) | 0 | 2 | 0 | 0 | 0 | 0 | 60 | 0 | 0 |

**Company Q Example**

A customer specific item relationship is defined to substitute B for A for the next 5 days and D for C for the next 10. The item attribute Substitution Window = 2 days.

As shown in the following table, demand for 20 units of item A on Day 1 can be satisfied completely by substituting the two scheduled supplies of item B, 10 units on Day 1 and Day 3. The demand for item A on Day 7 can be satisfied using 10 units of supply on Day 8 and a new planned supply of 40 units on Day 7 as the substitution rule is not effective after Day 6. The demand for item C can be satisfied with substitution for both demands, because it's substitution rule is effective until Day 10.

| Record Type | Item | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Demand | A | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 |
| Supply | A | 8 (on-hand) | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |

| Record Type | Item | Day 0 | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Supply | B | 0 | 10 | 0 | 10 | 0 | 0 | 0 | 50 | 0 | 0 |
| Demand | C | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 60 | 0 | 0 |
| Supply | C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Supply | D | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 60 | 0 | 0 |

**Example for Native Demand Fulfillment, Substitution Window, Partial Order fulfillment**

In the following example, A2 supply can be substituted with A1 demand. Substitution window is 2 days.

As shown in the following table, on Day 1, you have demand for both A1 and A2. Because of native demand fulfillment rule, only excess supply after fulfilling native demand can be used for substitution. Therefore, demand for A1 will not be satisfied by supply for A2 on Day 1. The situation is the same on Day 2; you do not have excess supply of A2 to satisfy A1's demand. The demand for A1 on Day 1 will be met with supply for A1 on Day 3 and a planned supply of 3 units for A1. This is due to the Partial Order fulfillment rule.

The demand for A1 on Day 2 will be satisfied with 3 units of A2 (which is excess supply of A2 from Day 3) and a planned supply of A2 for 2 units. The planned supply has to be for A2 because the rule is Partial Order fulfillment. The supply of A2 on Day 6 is not open because of substitution window.

| Record Type | Item | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 |
|---|---|---|---|---|---|---|---|
| Demand | A1 | 5 | 5 | | | | |
| Demand | A2 | 15 | 10 | 5 | | 10 | 5 |
| Supply | A1 | | | 2 | | | |
| Supply | A2 | 15 | 10 | 8 | | | 20 |

**Example for Search the Supply Chain for Substitution, Substitution Window, Use Up**

In this example there are three facilities: Facility 1, 2, and 3. The transfer times between facilities is 2 days; the window for substitution is 2 days. The supply and demand

picture for 3 items A1, A2, A3 is shown in the following tables. A3 is the lowest level and it can accept either A1 or A2 supply. A2 can accept A1 supply, but A1 cannot accept any substitutions.

The search rules are to search Facility 1 first, Facility 2 second, and Facility 3 third.

**Facility 1**

| Record Type | Item | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10 | Day 11 | Day 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Demand | A3 | | | 10 | | | 3 | | | | | | |
| Supply | A2 | | | | | | 3 | | | | | | |

**Facility 2**

| Record Type | Item | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10 | Day 11 | Day 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Demand | A2 | | | 10 | | | | | | | | | |
| Supply | A1 | 2 | | | | | | | 5 | | | | |
| Supply | A2 | 5 | | | | | | | | | | | |

**Facility 3**

| Record Type | Item | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10 | Day 11 | Day 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Demand | A1 | | | | | | | | 10 | | | | |
| Supply | A1 | | | | 10 | | | | | | 5 | | |

| Record Type | Item | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10 | Day 11 | Day 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Supply | A3 | 3 | | | 3 | | | | | | | | |

Demand on Day 3 for A3 in Facility 1 will be satisfied with 2 units of supply of A1 and 5 units of supply at Facility 2, and 3 units of supply of A3 at Facility 3. Facility 2 is the next logical facility to search based on our rules.

The 10 units of demand on Day 3 for A2 at Facility 2 will be satisfied with transferring 10 units of A1 from Facility 3, i.e., you will get a recommendation to reschedule the order to Day 1 so that you can transfer it in time to make the substitution. Notice that the 5 units of supply for A1 is outside the substitution window.

The 3 units of demand on Day 6 for A3 can be met by transferring supply of A3 from Facility 3. The 10 units of demand on Day 8 for A1 can be satisfied by transferring 5 units of A1 from Facility 2 and using the 5 units of supply available in Facility 3. In both cases, you will get recommendations to reschedule the order so that you will satisfy demand on time.

### General Substitution Examples

**Tie between Demanded and Substitute Item Supply**

Item A and A1 are substitute items. Item A can use A1's supply to satisfy the demand. This is a one-way substitution. Substitution window is set to 5 days.

As shown in the following table, the demand on Day 2 has two supplies to consider: 60 units of its own supply on Day 50 and supply of a substitute item on Day 2. The preference is to substitute right away, i.e., apply substitute supply of 60 units on Day 2 to satisfy the demand for 60 units of item A. This goes contrary to regular planning logic of planning item by item where you would pick up supply on Day 50.

If the supply for A1 were to be on Day 15, you would not pick up substitute supply as it is outside the substitution window. If there is no time advantage and both demanded item and substitute item are available on the same day, you pick up demanded item's supply (i.e., A1's supply)

| Record Type | Item | Day 2 | Day 15 | Between Day 16 and Day 49 | Day 50 |
|---|---|---|---|---|---|
| Demand | A | 60 | 0 | 0 | 0 |
| Supply | A | 0 | 0 | 0 | 60 |

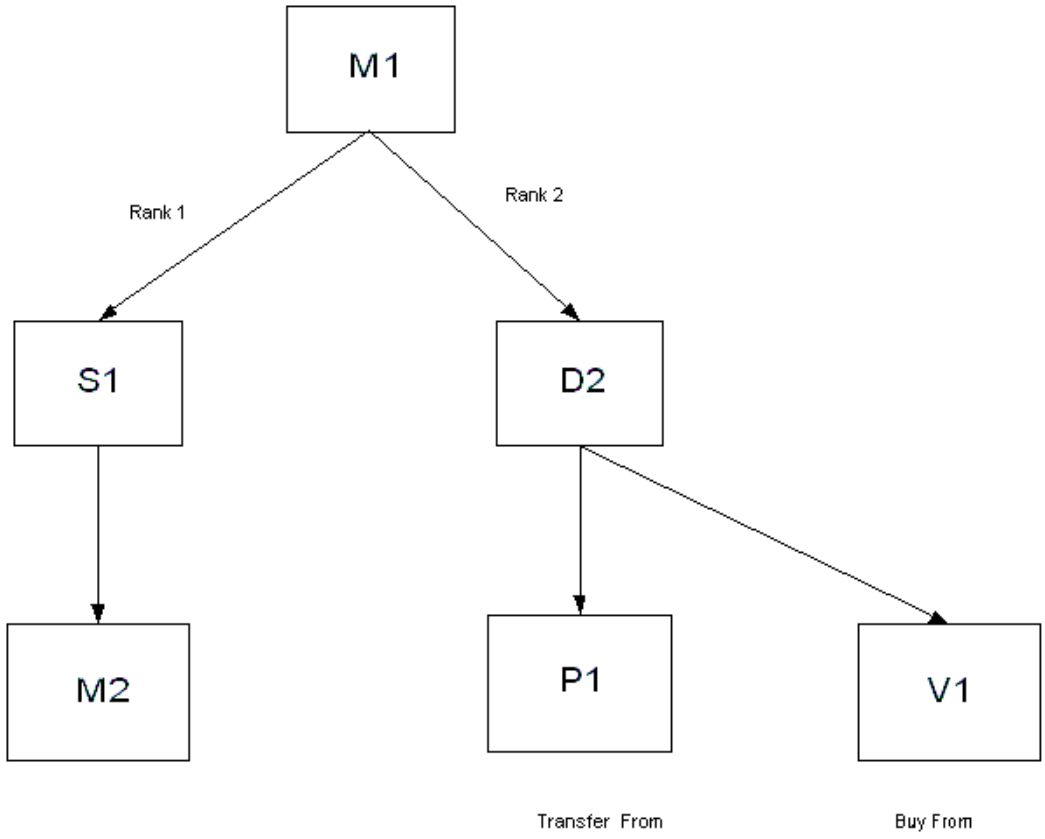
| Record Type | Item | Day 2 | Day 15 | Between Day 16 and Day 49 | Day 50 |
|---|---|---|---|---|---|
| Supply | A1 | 60 | 0 | 0 | 0 |

### Search Direction and Transferring Demands

#### Example 11

A supply chain is shown in the diagram below. In the diagram M1, S1, D2, M2, D2, and P1 are Organizations. V1 is a supplier. Organization M1 sources from S1 and D2 in a ranked order. Organization D2 sources from three different sources. (Make at, Transfer from, Buy From). Your desired search sequence is M1, S1, D2, M2, P1 and V1.

*Figure title*




**Searching Direction and transfer of demands**

The following tables show supply and demand for the organizations in the diagram.

In this example, you have two items; A and A1. A can use A1 supply due to substitution rules. Both item A and A1 are enabled in all organizations. Assume that you do not have any supplies at Organization M2, P1 and supplier V1.

**Org: M1**

| Record Type | Item | Day 2 | Day 5 | Day 10 | Day 20 |
|---|---|---|---|---|---|
| Demand | A | 100 | 0 | 0 | 0 |

| Record Type | Item | Day 2 | Day 5 | Day 10 | Day 20 |
|---|---|---|---|---|---|
| Supply | A | 0 | 5 | 0 | 10 |
| Supply | A1 | 0 | 0 | 15 | 0 |

**Org:S1**

| Record Type | Item | Day 2 | Day 5 | Day 10 | Day 20 |
|---|---|---|---|---|---|
| Demand | A | 0 | 0 | 0 | 0 |
| Supply | A | 20 | 0 | 0 | 0 |
| Supply | A1 | 10 | 0 | 0 | 0 |

**Org. D2**

| Record Type | Item | Day 2 | Day 5 | Day 10 | Day 20 |
|---|---|---|---|---|---|
| Demand | A | 0 | 0 | 0 | 0 |
| Supply | A | 0 | 10 | 0 | 0 |
| Supply | A1 | 0 | 0 | 10 | 0 |

Starting with a demand for 100 units of Item A in Organization M1 on Day 2, you consume 30 units of supply from A and A1 leaving you with a net demand of 70 units. A planned order demand for item A is created and pushed down to Org S1, where you will consume 20 units of supply from Item A and 10 units of supply from item A1. (Notice that the demand is pushed down for A instead of A1. If you push down the demand on A1, you run a risk of not using supply from item A). Now you are left with a net demand of 40, for which you create a planned order demand for item A and push it down to Org D2. You consume 10 units of supply from both A and A1 leaving you a net deficit of 20 units.

Now that you have exhausted all original item supplies and substitute supplies in the supply chain, you need to still produce 20 units. The creation of 20 units of supply follows the normal planning logic.

### Optimization

So far we have seen how rules-based substitution works in Oracle APS. The logic is driven by set of rules rather than various costs that play a role in substitution decisions in an optimized plan. If you want your substitution logic to be driven purely by costs, you can run optimized plans based on costs. Substitution definition remains the same, but many of the rules described above may not be followed. Standard cost of items, carrying costs, penalty costs for satisfying the demand late, objectives chosen at the plan will affect the logic of substitution.

## Exception Messages

When substitution occurs in Planning, an exception message is generated. A typical planning process may consist of analyzing exceptions generated by the plan, drilling into the details of exceptions, analyzing supply demand records using the Supply/Demand window, vertical plan and pegging. In this process you may access substitution definition and characteristics several times. Users may access the horizontal plan to get a detailed understanding of the demands placed by the substitution, supplies received as a part of substitution logic, and analyze possibilities of improving the solution based on their knowledge.

### Exception Display

When the system performs a substitution, the following exception message is generated: Demand satisfied using end item substitution. These exceptions are summarized in the Substitutes and Alternates Used exception group.

### Exception Details

Oracle APS converts the demand from the original item to substitute items if substitute supply is found. Access the Exception Details window to view the demand that has been satisfied by the substitute item.

Use the information in the following table to specify the fields and options.

| Field | Description |
|---|---|
| Org. | Organization in which the exceptions occurred |
| Item | The item for which you received the demand, the exception is for this item. |
| Quantity | The quantity on the original order |

| Field | Description |
|---|---|
| Order number | Sales Order Number or MDS/Forecast name for the From item |
| Substitute items | This is the item to which the demand was transferred. |
| Substitute Qty. | The demand transferred quantity. |
| Substitute Org. | The organization at which you found the supply |

From the end item exception, you can select either the Items or the Supply/Demand window.

If you right-mouse click from the exception detail, the following menu appears: Demand, Sources, Destination, Horizontal plan, and Vertical plan.

To view these demands, select the exceptions message and select the Supply/Demand button. The Demand window shows you each demand for that record.

You can look at pegging for each record from the Demand window to analyze replenishment for each demand. The Original Item and the Original Quantity are fields that are available in the Demand window that may be helpful in understanding substitute exceptions. These are optional fields that can be added to the window by selecting Folder > Show Fields.

If substitute supply is found in another organization, you will be able to see the original organization in the pegging details for that demand.

You can release the substitute item to the sales order through Planner Workbench. See Substitutes and Alternates Used Exception Group, page 15-99, exception message Demand satisfied using end item substitution.

#### Exception Details Example

Oracle ASCP converts the demand from the original item to substitute item/s if substitute supply is found. In the following example, Plug in Card 100 can be substituted for Plug in Card 150 and Plug in Card 200. You have 50 units of Plug in Cards 150 and 200 in stock and you receive 100 units of demand for Plug in Card 100. Oracle ASCP splits the original demand (for Plug in Card 100) of 100 units into two pieces; the first will be demand for 50 units of Plug in Card 150, the second demand will be for 50 units of Plug in Cards 200. The demand has been transferred to the substitute item. The rest of this section explains how review the exception details.

Once you identify that demands have been satisfied by substitute items from exceptions, you can navigate to the Demand window from the Exception Details

window. Select the record and right-click. Select Demand from the drop-down menu. This is available for each line of the exception message Demand Satisfied by Substitute End Items. The Demand window shows you all the demand splits associated with the original demand.

If you navigate to the Demands screen from the exception message Demand Satisfied by Substituting End Items for item Plug in Card 100, you will see two records in Demands window; the first will be demand for 50 units of Plug in Card 150; the second demand will be for 50 units of Plug in Cards 200. If you happen to have 10 units of Plug in Card 100 in stock you will see three records as follows:

- 10 units of demand for Plug in Card 100
- 40 units of demand for Plug in Card 150
- 50 units of demand for Plug in Card 200

### End Item Substitution Workflow for Planning

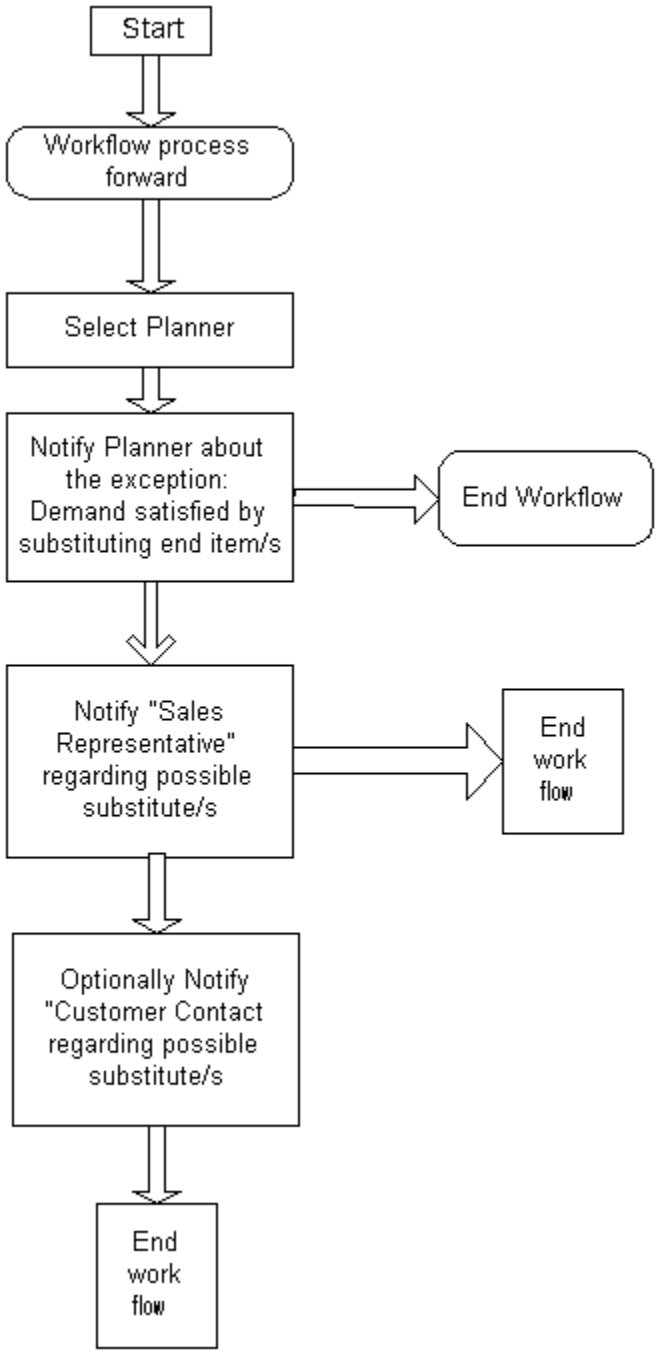
If you plan for substitution, it is only logical to initiate the execution of the substitution from Planning. A general workflow is initiated by the Planning engine to notify relevant people in your organization of substitution decisions.

You can also release the substitute item to the sales order through Planner Workbench. See Substitutes and Alternates Used Exception Group, page 15-99, exception message Demand satisfied using end item substitution.

For each occurrence of the exception message: Demand Satisfied by Using End Item Substitution, a workflow is initiated and sent to the planner associated with the original item. At this point you can end the workflow or notify the Sales Representative or the Customer Contact of the substitution.

Following is a diagram of the workflow initiated by the planning engine. You will notice that there is not an alternative to change the line item based on the workflow. Users can manually change the line items as long as the orders are in a pre-booking stage.

***Workflow Initiated by the Planning Engine***




The heading of the workflow is Demand Satisfied by Substituting End Items. The following details are shown in the workflow:

- From item: The item for which you received the demand, the exception is for this item.

- Plan name: Name of the plan
- Order Number: Optional based on the type of demand
- Line Number: Optional based on the type of demand
- Original Quantity: The requested quantity
- Substitute item: Substitute item, this is the item to which the demand was transferred. These could be multiple items.
- Organization: Organization at which the exceptions happened.
- Substituted Quantity: The demand transferred quantity.
- Substitute Supply Organization: The organization at which you found the supply.

### End Item Substitution and Oracle Global Order Promising

Substituting supply of a higher level item (in a substitution chain) for a demand from lower level item (in a substitution chain) demand is a decision that needs to begin with Oracle Global Order Promising. Since both ASCP and Oracle Global Order Promising processes are analyzing the same data, the logic with which the substitutions are done needs to be consistent. Oracle Global Order Promising supports almost all the features mentioned in the End Item Substitution Features section. In some cases, the way Oracle Global Order Promising supports the product substitution features is slightly different from the planning engine.

For more information, see End Item Substitution in *Oracle Global Order Promising Implementation and User's Guide*.

## User-Defined Alternate Decision Rules

This section discusses the following topics:

- User defined alternate decision rules for constrained plans
- User-defined alternate decision rules for optimized plans
- Planning search logic

### User-Defined Alternate Decision Rules for Constrained Plans

This feature allows you to automatically select alternate routings, resources, bills of material, items, and sources.

It does this by providing decision rules giving you the ability to do the following:

- Intelligently select alternatives with the minimum data input prerequisites possible. You can run a supply chain plan that automatically selects alternate routings, BOM, resources, suppliers, internal sources, end-items and components with the minimum amount of input.

- Enforce a specified sequence of decision-making actions (which may mimic a planner's problem resolution thought process.) The sequence in which the planning engine looks for supply using standard Oracle Application functions is transparent to the user. (For example you may specify substitutes for a given component but not alternate sources.). You can specify a global decision rule when more than one supply source can satisfy the demand. (For example if you have specified both substitutes and alternate sources, you can choose one over the other.)

- Make easier APS planning decisions because the decision-making process is more transparent. You can select alternates when the primary source of supply is unable to satisfy the demand. In doing so, you can express your preference as business rules, such as: the alternate resource should be used before looking for alternate supply and substitute components.

- Restrict planning to a universe of authorized decision-making actions (for example, permit exploration of alternate routings and substitute items but not of sourcing or permit substitute components but do not permit end item substitution, even though rules are specified for the given items at the source level.

If you opt to use the User Defined Decision Rules for constrained plans, you do not have to setup the complete cost data and cost penalty factors for end item substitutes, substitute components, alternate bills of material (BOM)/routings, and alternate sources of supply. While optimization requires accurate costing of all entities to arrive at useful results, User Defined Decision Rules do not consider costs. The selections are done based on the priorities you enter in the source instance. For example, for substitute components, if the primary component that you selected is not available, then the planning engine considers the priority 2 substitute. If the priority 2 substitute is not available, then the planning engine considers the priority 3 substitute, and so on.

### User Procedures

Constrained Plans and Alternate Rules - Two Methods

Please note that there are two different methods of constrained planning and the method to be used is determined by the site profile option MSO: Enable Decision Rules. If MSO: Enable Decision Rules is set to No (this is the default), you cannot use any alternate rule except for alternate resources, and to some extent, alternate suppliers. If MSO: Enable Decision Rules is set to Yes, you can select and define alternate rules. The rules are used by the planning engine according to the order in which they appear in the Decision Rules tab of the Plan Options window. For additional details, please refer to Constraint-Based Planning, page 7-1.

The following steps and diagrams outlines the procedures used to select alternates for a

constrained plan. The steps provide a more in-depth explanation for the procedures shown in the diagrams.

**To select alternates using a constrained plan**

1. Perform your source data setups.
2. Define or open the Plan Options window.
3. Set up the desired plan options using all the appropriate tabs from this window.
4. If you have set the profile option MSO: Enable Decision Rules to No, none of the following steps apply. Go to step 7.
5. If you have set the profile option to Yes, you can select the Decision Rules tab if you want to change the default settings, which are shown in the following table:

| Decision Rule | Status |
|---|---|
| Use End Item Substitution | <cleared> |
| Use Alternate Resources | <selected> |
| Use Substitute Components | <selected> |
| Use Alternate BOM/Routing | <selected> |
| Use Alternate Sources | <selected> |

6. Enable or disable decision rules.

   You can enable and disable the decision rules for constrained plans. These decision rules are used to derive the constrained plan, while honoring your preferences. If any of the rules are disabled, then the planning engine will not have the ability to look for supply pertaining to these rules.

   The meanings of the decision rules are shown in the following table:

| Decision Rule | Status | Meaning |
|---|---|---|
| Use alternate sources | <selected> | Use primary sources as far as possible and use alternate sources only if necessary. |

| Decision Rule | Status | Meaning |
|---|---|---|
| Use alternate sources | <cleared> | Use primary sources only. Alternate sources (sources of rank 2 or higher) will not be used as a source of supply. |
| Use alternate BOM/routings | <selected> | Use primary routing as far as possible and use alternate only if necessary. |
| Use alternate BOM/routings | <cleared> | Use only primary BOM/Routing |
| Use alternate resources | <selected> | Use primary resource as far as possible and use alternate resource only if necessary. |
| Use alternate resources | <cleared> | Use only primary resources |
| Use end item substitutions | <selected> | Use primary item and end item substitute, when enabled, prior to creating new planned orders. |
| Use end item substitutions | <cleared> | Use only the demanded item. Do not use the end item substitute. |
| Use substitute components | <selected> | Use primary items as far as possible and use substitute component only if necessary. |
| Use substitute components | <cleared> | Use primary items/components only. |

7. If you want the planning engine to use more alternate resources, routings, and sources from the user-defined decision rules, set profile option MSO: Resource Adjustment Factor For Improved Offloading to Alternates. Use a number between and including 0 and 1.

   The factor adds a resource constraint which reduces resource availability; for example, if you enter 0.8, the planning engine reduces the resource availabilities by 20%. The planning engine offloads more work to alternate supply methods.

This factor affects how the planning engine decides to select alternates. It does not affect the final scheduling and resource loading process.

#### Features

The major features include:

- Data setup for decision rules
- Site level profile option, MSO: Enable Decision Rules
- Constrained plans based on user-enabled decision rules
- Support for current APS engine's logic and behavior for constrained plans.

**Profile Option**MSO: Enable Decision Rules

The site level profile option MSO: Enable Decision Rules enables or disables the Decision Rules tab in the Plan Options window. If this profile option is set to Yes, the Decision Rules tab is enabled and the decision rules you set using this tab are used; if it is set to No, the Decision Rules tab is disabled and the APS engine uses the current engine logic for planning.

The default display status of the Decision Rules tab depends on the status of the tab in the plan's previous run. If in the previous run, this profile option was set to No, then the Decision Rules tab displays the default status (all decision rules checked) of the Decision Rules tab. If in the previous run, the profile option was set to Yes, then the Decision Rules tab displays the status of the tab as it was in the last plan run.

**Decision Rules Implementation for Constrained Plans**

The main objective of the constrained plan is to meet demand in time. There are two options in the constraint planning mode: Enforce Demand Due Dates and Enforce Capacity. You can choose these in the Constraints tab of the Plan Options window. These are used to describe the objective of the constraint plan.

You can define the various constraints (material or resources or both) using the Constraints tab in the Plan Options window.

To invoke this option of using the decision rules for constrained plan, you set the site profile option MSO: Enable Decision Rules to Yes. The default for this profile is No. When this profile option is set to No, constrained plans will be based on the current constrained planning engine.

**Criteria for Selection of Alternates**

It is possible to have multiple alternates for sourcing, substitute components, resources and BOM/Routing. This section deals with the use of source data setup for selection of alternates.

#### Alternate Sources:

You can define the priority of the sources in the sourcing rule. By default, the planning engine tries to minimize the use of alternate sources. But if it necessary to use the

alternate sources, then the planning engine uses the rank that you have assigned to the source for selecting the alternates. An example of such a situation is if you would like to use and exhaust the supply from the sources with a higher rank before you select one with lower rank. When there is more than one source set at the same rank, planning searches for supply in the following order

1. Make
2. Transfer
3. Buy

If you have specified more than one source of supply of the same type, planning uses the supply at its discretion. (For example you have two make sources and both are at priority 1).

The above search assumes that you have not enforced sourcing splits. You can define ranks for Alternate Sources using the Sourcing Rules and Bill of Distribution screens. For additional information, see Setting Up the Supply Chain, page 4-2.

Substitute component:

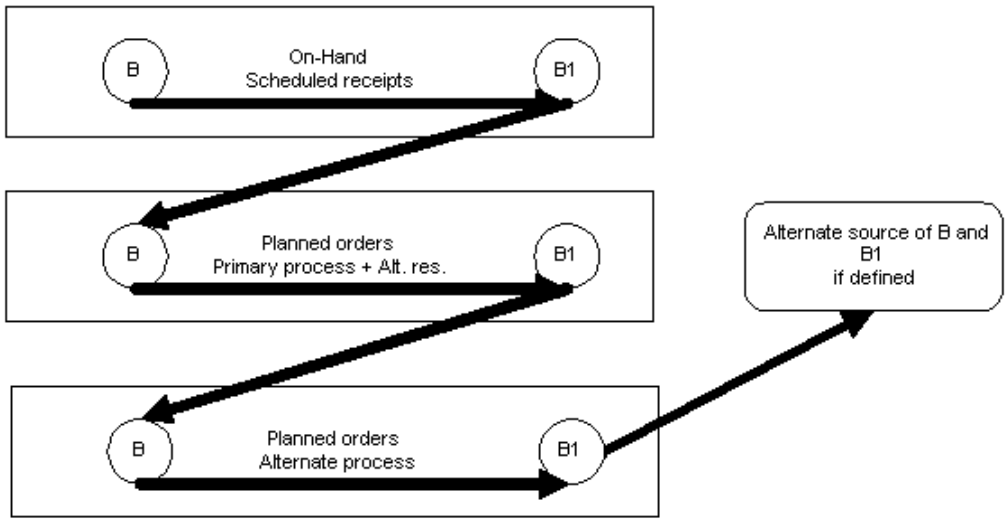
You can define the priority of the substitute component. By default, planning tries to minimize the use of substitutes. Also, the planning engine has an built-in logic that tries to use substitutes at a lower level in your BOM than close to product completion in the BOM. Planning will honor the priority that you have defined while searching for supply from the various substitutes.

You can define priorities for Substitute Components in the Substitute Component Information screen.

For additional information on this screen, please refer to the *Oracle Bills of Material User's Guide*.

The diagram below indicates the planning logic for a component B with B1 as the substitute component. As shown in the diagram, Planning will look for projected available supply of item B (on hand and existing supplies) and then projected available supply for item B1. After that, Planning will recommend creating a planned order for item B using primary BOM/Routing and alternate resources. Planning will then generate planned orders for item B1 using primary BOM/Routing and alternate resources. If additional supply is needed, Planning will use the alternate BOM/Routing for item B and then for item B1 before looking to source items B and B1 from an alternate source/facility.

***Planning Logic for Substitute Component***




Alternate Resources:

By default, the planning engine tries to minimize the use of alternate resources. But if it has to use the alternates, it uses the priority you have assigned to the alternate resource while using the capacity from this resource to build supply. If more than one resource is specified at the same rank, then the planning search is at its discretion for constrained plans.

You can define priorities for Alternate Resources using the Operation Alternate Resources screen.

The rank that you specify for Replacement Group in the Operation Alternate Resources screen is the priority of the alternate resources.

Alternate BOM/Routing:

Planning uses the combination of Bill of Material definition and the routing of a particular item to define the process. If the planning engine selects an alternate bill of material that does not have a corresponding routing, it uses the primary routing. If the planning engine selects an alternate routing that does not have a corresponding alternate bill of material, the planning engine uses the primary bill of material.

By default, the planning process tries to minimize the use of lower priority BOM/Routing. You can specify the priority in the Routing Details form.

> **Note:** In the Routing Details form, priorities for routings are unique, so you cannot assign the same priority to two different routings for a different item. However, internally you may get the same priority for two different routings. How this happens is explained in the next

section.

You can define priorities for Alternate BOM/Routing using the Routing Details screen.

Default BOM/Routing Priority

If you do not specify any priority for the BOM/Routing in the Routing Details form, the following rule will apply for calculating the default priority:

- If the alternate designator is NULL, then default priority will be internally assumed to be 1
- If you specify an alternate designator for the BOM/Routing, then the default priority will be internally assumed to be 2

User-Specified BOM/Routing Priority

You have the ability to specify any priority to a particular BOM/Routing. Planning uses the priority to load the particular BOM/Routing for supply derivation. The ability to specify any priority to any BOM/Routing gives you the flexibility to assign a higher priority to an alternate BOM/Routing.

For example, you can designate a BOM/Routing whose alternate designator is NULL to 2 and specify a priority of 1 to BOM/Routing that has a valid alternate designator of ALT_ROUTE_2. Planning will honor the priority and suggest BOM/Routing as defined by alternate designator ALT_ROUTE_2 before using the BOM/Routing with the alternate designator as Null.

Note: When there is more than one alternate of the same rank, then planning will use the supply at its discretion. For example for a given item A:

- BOM/Routing1: alternate designator = NULL, priority = 1
- BOM/Routing2: alternate designator = ALT_ROUTE_2, priority = 1
- BOM/Routing3: alternate designator = ALT_ROUTE_3, priority = 2

In this case, the planning engine will try to use either Routing1 or Routing2 first. Then, if necessary, it will try to use Routing2 or Routing1. Then, if necessary, it will move on to Routing3.

> **Note:** For information on End-Item Substitutions, please refer to End-Item-Level Substitution, page 10-1.

### Examples of How Alternate Decision Rules are Used

This section contains three scenarios that describe how alternate decision rules are used.

The following tables provide background information for the three scenarios.

Day 0 Demand Information

| Product | Demand | Due Date | Capacity |
|---|---|---|---|
| A | 60 units | 1 | 100 units/day |
| A | 120 units | 2 | 100 units/day |
| A | 80 units | 3 | 100 units/day |

Bill of Material for Item A

| Component (Make/Buy) | Op sequence | Quantity | Substitute |
|---|---|---|---|
| B (Make) | 10 | 1 | D (Make) |
| C (Buy) | 20 | 2 | E (Make) |

Routing for Item A

| OP Sequence | Operation | Resource | Alternate |
|---|---|---|---|
| 10 | Milling | M10 | M20 |
| 20 | Grinding | G10 | G20 |

Capacity information:

| Resource | Capacity |
|---|---|
| M10 | 60 units/day |
| M20 | 60 units/day |
| G10 | 100 units/day |
| G20 | 100 units/day |

Project available on Day 2:

| Type | Units |
|---|---|
| Item A | 0 |
| Component B | 90 |
| Component C | 200 |
| Sub. Component D | 30 |
| Sub. Component E | 100 |

Sourcing rule for Item A:

| Rule | Org | % | Priority | Capacity |
|---|---|---|---|---|
| Make at org M | M | 100 | 1 (Primary) | 100/day |
| Source from org S | S | 100 | 2 (Alternate) | 60/day (lead-time 1 day) |

Suppliers and capacity:

| Supplier | Item | Capacity | Priority | Sourcing % |
|---|---|---|---|---|
| Test 1 | C | 50 | 1 (Primary) | 50 |
| Test 2 | C | 100 | 2 (Primary) | 50 |

**Scenario I:**

The default ranking is shown in the following table:

| Rank | Objective |
|---|---|
| 1 | Use end item substitutions |
| 2 | Use alternate resources |
| 3 | Use substitute components |

| Rank | Objective |
|---|---|
| 4 | Use alternate BOM/Routing |
| 5 | Use alternate sources |

The planning engine plans for the 120 units of Item A on Day 2 by combining the following two actions:

1. Use alternate resource (M2/G10) along with primary (M10/G10)
2. Use component substitutions for B (B 90 + D 30) and C (C 200 + E 40)

If the demand on Day 2 is only 90, then the solution is achieved by selecting only alternate resources (alternate resource (M20/G10) along with primary (M10/G10).

**Scenario II:**

The decision rule Use Substitute Components is unchecked. This makes the default ranking:

| Rank | Objective |
|---|---|
| 1 | Use end item substitutions |
| 2 | Use alternate resources |
| 3 | Use alternate BOM/Routing |
| 4 | Use alternate sources |

The planning engine plans for 120 units of Item A on Day 2 by combining the following two actions:

1. Use alternate resource (M20/G10) along with primary (M10/G10) to make 90
2. Source 30 of Item A from Org S.

The planning engine completely ignored the opportunity of available supply from the component substitutes.

**Scenario III:**

The information in the following table helps to illustrate the role of Enforce sourcing splits and Enforce capacity constraints. The net demand for Item C is 200

| Supplier | Capacity | Enforce Demand Due Dates and Enforce Sourcing Splits on | Enforce Capacity Constraints on and Enforce Sourcing Splits off | Enforce Capacity Constraints on and Enforce Sourcing Splits on |
|---|---|---|---|---|
| Test 1 | 50 units | Supplies 100 | Supplies 50 | Supplies 50 |
| Test 2 | 100 units | Supplies 100 | Supplies 100 | Supplies 100 |

Assume that Supplier Test1 has a capacity of 50 units of Item C and Supplier Test2 has a capacity of 100 units of Item C. Also, assume the net demand for item C is 200 units. If we enforce sourcing splits, then Test1 would have to supply 100 units and Test2 would also have to supply 100 units. (Assuming Enforce Demand Due Dates is enabled)

If Enforce Capacity Constraints is enabled, then Supplier Test1 would have to supply 50 units and Supplier Test2 would have to supply 100 units. Supply for 50 units would be on a different day. (Assuming Enforce sourcing splits is disabled.)

If both Enforce Capacity Constraint and Enforce Sourcing Split are enabled then Supplier Test1 would supply 50 units, Supplier Test2 would supply 100 units and the remaining 50 units would be on a different day. Please note that the Enforce Demand Due Dates and the Enforce Capacity Constraints takes precedence over Enforce Sourcing Splits. The sourcing splits are valid only for rank 1 sources and are enabled by default for a constrained plan.

#### Selection of Alternates for OSFM

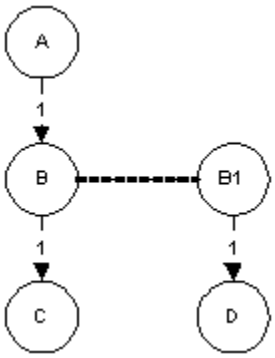
This section contains two scenarios that describe the selection of alternates for network routing based on:

- Primary Path
- Planned Percentage

(For additional information, please seeNetwork Routings, page 18-90). The optimize scheduling method is not supported for constrained plans that use user-defined decision rules. The following diagrams and the first table provides background information for the two scenarios.

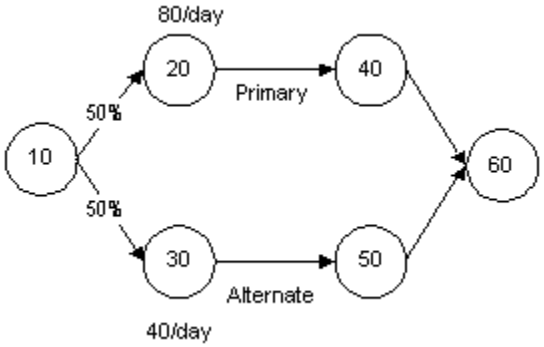
The following diagram shows the BOM for Item A where B1 is the substitute for B.

***Bill of Material***



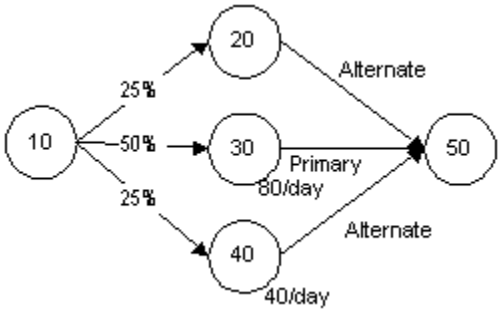

The next diagram shows network routing for Item B. The capacity at Operation 20 is 80 per day and the capacity at Operation 30 is 40 per day. The percentage split at Operation 10 is 50% each for Operation 20 and 30.

***Network Routing for Item B***




The following diagram shows network routing for Item B1. The capacity at Operation 30 is 80 per day, and the capacity at Operation 40 is 40 per day. The percentage split at Operation 10 is 25% for Operation 20, 50% for Operation 30, and 25% for Operation 40.

***Network Routing for Item B1***



The following table shows the demand for Item A.

| Demand | Date | Quantity |
|---|---|---|
| A | 1 | 80 |
| A | 2 | 120 |
| A | 3 | 160 |

**Scenario I**

The following table shows how supply would be affected if the scheduling method was Primary Path.

| Item | Date | Supply |
|---|---|---|
| A | 1 | 80 |
| A | 2 | 120 |
| A | 3 | 160 |
| B | 1 | 80 |
| B | 2 | 80 |
| B | 3 | 80 |
| B1 | 2 | 40 |
| B1 | 3 | 80 |

All the demand for Item A will be met on time. To meet the demand on Days 2 and 3, substitute item B1 is selected. On Day 2, the demand for 120 is satisfied with a supply of 80 units of item B and 40 units of items B1, whereas on Day 3 the demand for 160 units of item A requires 80 units of item B and 80 units of item B1, all using only the Primary operation sequences.

Note that there is no supply available from the alternate path when the planning method is based on the primary path.

**Scenario II**

The following table shows how supply would be affected if the scheduling method was Planned Percentage.

| Item | Date | Supply | Alternate |
|---|---|---|---|
| B | 1 | 40 | 10-20 |
| B | 1 | 40 | 10-30 |
| B | 2 | 40 | 10-20 |
| B | 2 | 40 | 10-30 |
| B1 | 2 | 10 | 10-20 |
| B1 | 2 | 20 | 10-30 |
| B1 | 2 | 20 | 10-40 |

All the demand for item A is met on time, but since the network scheduling method is based on Planned Percentage, both the Primary and the Alternate nodes are used to meet the demand in time. For example, item B is produced on both nodes 10-20 and 10-30 by placing a demand of 40 units per each node.

Note that the maximum capacity is constrained by the most-capacity-constraining node of the network routing.

## Simulations and User-Defined Decision Rules

When simulating constrained ASCP plans, do not toggle the site level profile option MSO: Enable Decision Rules. Switching the profile option values and running online plans may lead to erroneous results.

When simulating the changes in demand priorities, keep the priorities contiguous. For example, if the original demand priority for Demand1, Demand2 and Demand3 for a demanded item were 1, 2, and 3 respectively, you can change the demand priority for Demand1, Demand2 and Demand3 to 2, 1, and 3 but not 2, 1, and 18.

For further details on plan simulations, please refer to Simulations, page 5-1.

## User-Defined Alternate Decision Rules for Optimized Plans

This feature allows you to automatically select alternate routings, resources, bills of material, items, and sources. Optimized plans provide the most cost-effective planning solution.

It does this by providing decision rules giving you the ability to do the following:

- Intelligently select alternatives with the minimum data input prerequisites possible.

You can run a supply chain plan that automatically selects alternate routings, BOM, resources, suppliers, internal sources, end-items and components with the minimum amount of input.

- Enforce a specified sequence of decision-making actions (which may mimic a planner's problem resolution thought process.) The sequence in which the planning engine looks for the most cost-effective supply using standard Oracle Application functions is transparent to the user. (For example you may specify substitutes for a given component but not alternate sources.). You can specify a global decision rule when more than one supply source can satisfy the demand. (For example if you have specified both substitutes and alternate sources, ASCP will select the most optimal solution. In case of multiple cost-effective solutions, ASCP will use the decision rule sequence to arrive at the solution.)

- Restrict planning to a universe of authorized decision-making actions (for example, permit exploration of alternate routings and substitute items but not of sourcing or permit substitute components but do not permit end item substitution, even though rules are specified for the given items at the source level.)

> **Note:** The site level profile option MSO: Enable Decision Rules has no bearing on an optimized plan. The Decision Rules tab in the Plan Options window is always available for an optimized plan.

### User Procedures

The following steps and diagram outline the procedures used to select alternates for an optimized plan. The steps provide a more in-depth explanation for the procedures shown in the diagrams.

#### To select alternates using a constrained plan

1. Define cost and penalty factors at various levels to model required behavior.
2. Perform data setups.
3. Define or open Plan Options window.
4. Set up your plan parameters using all the appropriate tabs.
5. Choose the Constraints tab and select the Constrained Plan checkbox.
6. Choose the Optimization tab and select the Optimize checkbox.
7. Set up the required parameters for plan objectives and penalty factors.
8. If you want to make changes to the default decision rule, choose the Decision Rules tab. If not, skip to step 10.

9. Enable or disable decision rules.

   You can enable and disable the decision rules. These decision rules are used to derive the optimized plan, while honoring your preferences. If any of the rules are disabled, then the planning engine will not look for supply pertaining to these rules.

   The meanings of the decision rules are shown in the following table:

| Decision Rule | Status | Meaning |
|---|---|---|
| Use alternate sources | <selected> | Use primary sources as far as possible and use alternate sources only if necessary. |
| Use alternate sources | <cleared> | Use primary sources only and alternate sources (sources of rank 2 or higher) will not be used as a source of supply. |
| Use alternate BOM/routings | <selected> | Use primary routing as far as possible and use alternate only if necessary. |
| Use alternate BOM/routings | <cleared> | Use only primary BOM/Routing |
| Use alternate resources | <selected> | Use primary resource as far as possible and use alternate resource only if necessary. |
| Use alternate resources | <cleared> | Use only primary resources |
| Use end item substitutions | <selected> | Use primary item and end item substitute, when enabled, prior to creating new planned orders. |
| Use end item substitutions | <cleared> | Use only the demanded item. Do not use the end item substitute. |

| Decision Rule | Status | Meaning |
|---|---|---|
| Use substitute components | <selected> | Use primary items as far as possible and use substitute component only if necessary. |
| Use substitute components | <cleared> | Use primary items/components only. |

10. If you want the planning engine to use more alternate resources, routings, and sources from the user-defined decision rules, set profile option MSO: Resource Adjustment Factor For Improved Offloading to Alternates. Use a number between and including 0 and 1.

    The factor adds a resource constraint which reduces resource availability; for example, if you enter 0.8, the planning engine reduces the resource availabilities by 20%. The planning engine offloads more work to alternate supply methods.

    This factor affects how the planning engine decides to select alternates. It does not affect the final scheduling and resource loading process.

#### Features

The major features include:

- Setup for the weighted objectives for optimization
- Data setup for decision rules
- Optimization based on user-defined weights for the objectives and user-enabled decision rules

Define Plan Objectives

You can prioritize the plan objectives as weights. The list of plan objectives is provided in the following table. You can define and set the weight for the objectives for each optimized plan.

| Objective | Weight |
|---|---|
| Maximize inventory turns | 0 to 1 |
| Maximize plan profit | 0 to 1 |
| Maximize On-time delivery | 0 to 1 |

For additional information, please refer to Optimization, page 6-1.

Optimization Based on User-Defined Priority for Decision Rules

You have the ability to disable any decision rules for a particular plan prior to launching the plan.

The base data setup like items, bill of materials and sourcing rules are used to recommend the most optimized plan based on the objectives you have specified. User-defined decision rules and the priority of the decision rules will be honored for tie breaking amongst various cost-effective solution possibilities. For example, ASCP may suggest the use of alternate resource instead of the primary resource, if alternate resource is more cost effective than the primary resource. This is shown in the following example:

First, use the examples in the section Examples of How Alternate Decision Rules are Used, page 10-46 section starting and then also assume that the cost of making item A in Org M is $100 and the cost of buying from Supplier S is only $60. The demand for 120 units on day 2 would be satisfied by procuring 60 units from Supplier 1 and then 60 more from making 60 units of item A using resources M10 and G10 and using 60 units of item B and 120 units of item C.

The constrained plan would recommend the use of a higher ranked source (Org M) before using a lower ranked source (Supplier S); however, the optimized plan would recommend using the most cost-effective source.

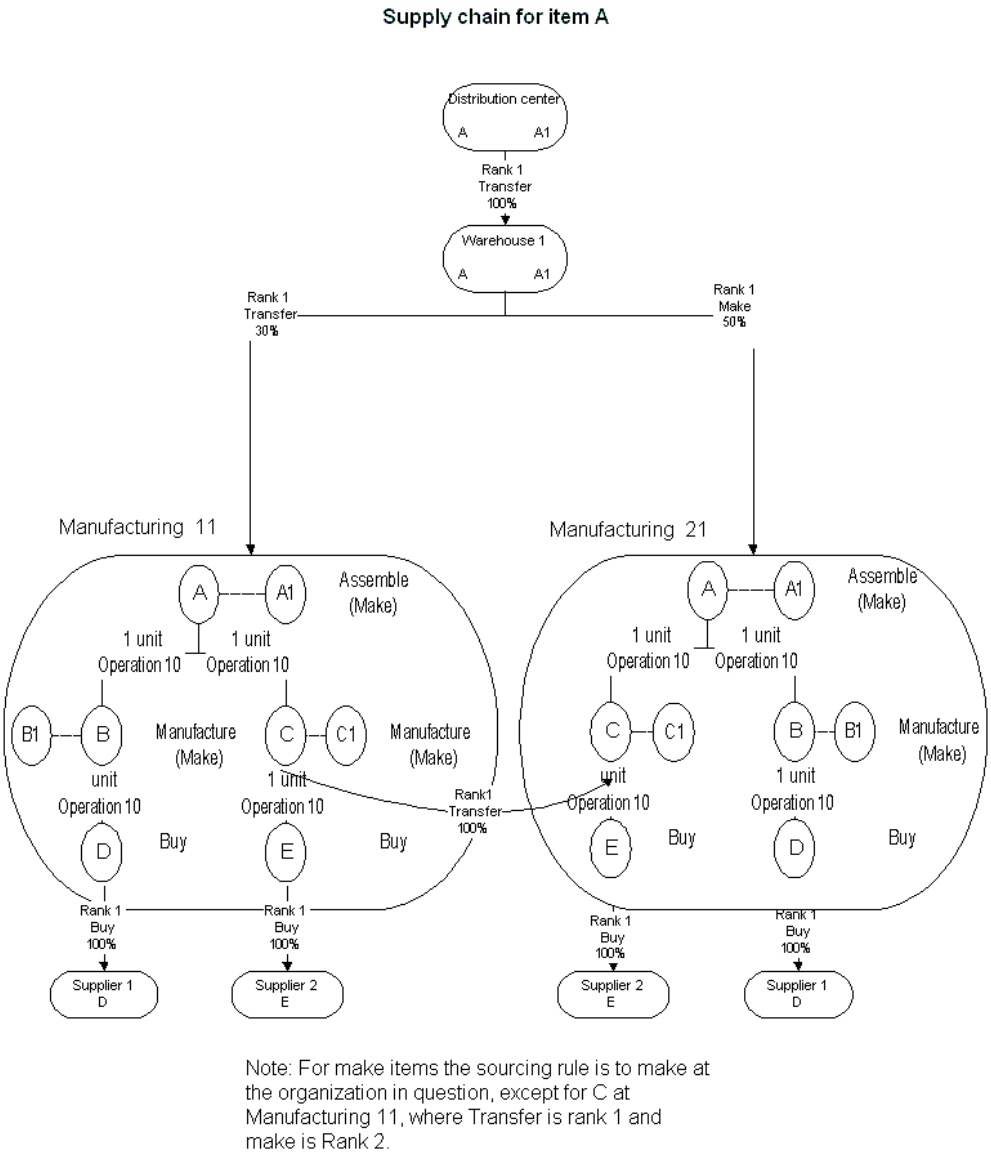
However, if both making at Org M and buying from Supplier S were $100, the optimized plan would recommend the use of Org M because it is a higher ranked source.

## Planning Search Logic

This section describes the planning search logic for user-defined alternate decision rules for both optimized and constrained plans. The planning logic uses a series of steps depending on the constraints used for the plan. The planning search logic is illustrated below using the supply chain for assembly item A with end-item substitute item A1. Item A is made of B and C with B1 and C1 as the substitute components. B and C in turn need items D and E respectively. To simplify the search we will not expand the substitute component B1 and C1 and also assume the same BOM and routing for All items across Manufacturing 11 and Manufacturing 21. In addition, we have made the following two assumptions:

- There is high demand placed on the distribution center
- For optimized plans, cost effectiveness at each node across the given supply-chain is the same

***Supply Chain for Item A***




The planning engine searches on-hand quantity and schedules receipts (item A and end item substitute A1) across each tier before creating new planned orders for the demanded item. (Please refer to End Item Substitution chapter). To look for on-hand quantity and scheduled receipts of the demanded item and the end-item substitute, ASCP uses the search logic as specified below.

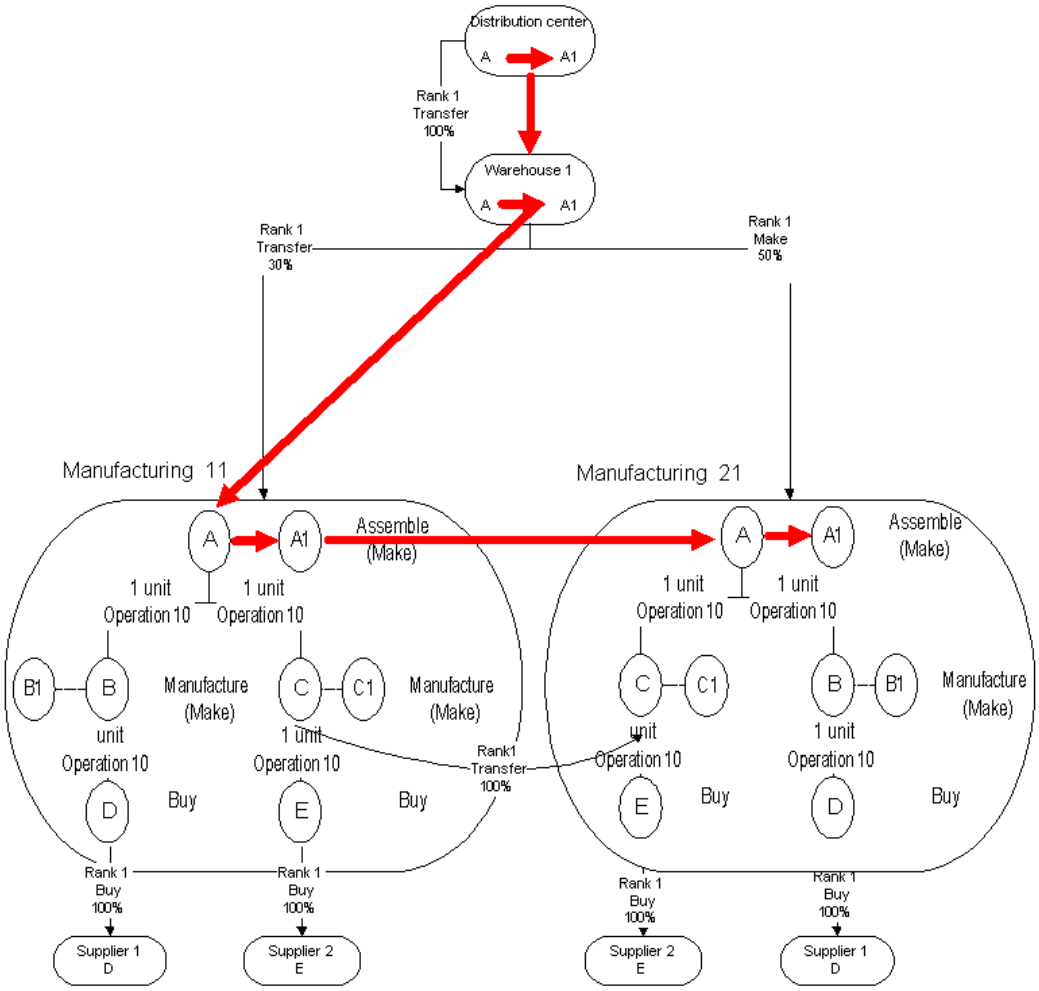
1. Distribution center for item A
2. Distribution center for item A1

3. Warehouse 1 for item A
4. Warehouse 1 for item A1
5. Manufacturing 11 for item A
6. Manufacturing 11 for item A1
7. Manufacturing 21 for item A
8. Manufacturing 21 for item A1

The following diagram illustrates the tier-by-tier search logic for on-hand quantity and scheduled receipts for end items.

*Figure title*

**End Item: On-hand and scheduled receipts search**




Note: For make items the sourcing rule is to make at the organization in question, except for C at Manufacturing 11, where Transfer is rank 1 and make is Rank 2.

If there is no on-hand/scheduled receipts for either A and A1 or on-hand quantity is not adequate to satisfy demand, then ASCP will create the planned orders to satisfy net demand for A, B, C, D and E in the following method:

When creating planned orders for A:

1. Transfer A from Warehouse 1 to Distribution Center
2. Make A at Manufacturing 11 using primary resource and primary BOM/Routing

and Primary components B (Refer to Planning for B at Manufacturing 11, page 10-61), C (Refer to Planning for C at Manufacturing 11, page 10-62), D (Refer to Planning for D at Manufacturing 11, page 10-63), and E (Refer to Planning for E at Manufacturing 11, page 10-63)

3. Make A at Manufacturing 11 additionally using alternate resource

4. Make A at Manufacturing 11 additionally using substitute components (B1, C1 if needed)

5. Make A at Manufacturing 11 using Alternate routings/BOM

6. Make A at Manufacturing 21 using primary resource and primary BOM/Routing and Primary components (B (Refer to Planning for B at Manufacturing 21, page 10-62), C (Refer to Planning for C at Manufacturing 21, page 10-63), D (Refer to Planning for D at Manufacturing 21, page 10-63), E (Refer to Planning for E at Manufacturing 21, page 10-64)

7. Make A at Manufacturing 21 using alternate resource

8. Make A at Manufacturing 21 using substitute components (B1, C1)

9. Make A at Manufacturing 21 using Alternate routings/BOM

#### Planning for B at Manufacturing 11

1. Use on-hand/scheduled receipts for B in Manufacturing 11

2. Use on-hand/scheduled receipts for B1 in Manufacturing 11

3. Make B at Manufacturing 11 using primary Resources, BOM/Routing and component D (Refer to Planning for D at Manufacturing 11, page 10-63)

4. Make B at Manufacturing 11 using alternate resources

5. Make B1 at Manufacturing 11 using primary Resources, BOM/Routing and components

6. Make B1 at Manufacturing 11 using alternate resources

7. Make B at Manufacturing 11 using alternate BOM/Routing

8. Make B1 at Manufacturing 11 using substitute components

9. Make B1 at Manufacturing 11 using alternate BOM/Routing

**Planning for B at Manufacturing 21**

1. Use on-hand for B in Manufacturing 21
2. Use on-hand for B1 in Manufacturing 21
3. Make B at Manufacturing 21 using primary Resources, BOM/Routing and component D (Refer to Planning for D at Manufacturing 21, page 10-63)
4. Make B at Manufacturing 21 using alternate resources
5. Make B1 at Manufacturing 21 using primary Resources, BOM/Routing and components
6. Make B1 at Manufacturing 21 using alternate resources
7. Make B at Manufacturing 21 using alternate BOM/Routing
8. Make B1 at Manufacturing 21 using substitute components
9. Make B1 at Manufacturing 21 using alternate BOM/Routing

**Planning for C at Manufacturing 11**

1. Transfer from Manufacturing 21
2. Use on-hand for C in Manufacturing 11
3. Use on-hand for C1 in Manufacturing 11
4. Make C at Manufacturing 11 using primary Resources BOM/Routing and component E (Refer to Planning for E at Manufacturing 11, page 10-63)
5. Make C at Manufacturing 11 using alternate resources
6. Make C1 at Manufacturing 11 using primary Resources BOM/Routing and components (E)
7. Make C1 at Manufacturing 11 using alternate resources
8. Make C at Manufacturing 11 using alternate BOM/Routing
9. Make C1 at Manufacturing 11 substitute component
10. Make C1 at Manufacturing 11 using alternate BOM/Routing

**Planning for C at Manufacturing 21**

1. Use on-hand for C in Manufacturing 21
2. Use on-hand for C1 in Manufacturing 21
3. Make C at Manufacturing 21 using primary Resources BOM/Routing and component E (Refer to Planning for E at Manufacturing 21, page 10-64)
4. Make C at Manufacturing 21 using alternate resources
5. Make C1 at Manufacturing 21 using primary Resources BOM/Routing and components (E)
6. Make C1 at Manufacturing 21 using alternate resources
7. Make C at Manufacturing 21 using alternate BOM/Routing
8. Make C1 at Manufacturing 21 substitute component
9. Make C1 at Manufacturing 21 using alternate BOM/Routing

**Planning for D at Manufacturing 11**

1. Use on-hand/scheduled receipts of D at Manufacturing 11
2. Buy D from supplier 1
3. Look for alternate source of supply

**Planning for D at Manufacturing 21**

1. Use on-hand/scheduled receipts of D at Manufacturing 21
2. Buy D from supplier 1
3. Look for alternate source of supply

**Planning for E at Manufacturing 11**

1. Use on-hand/scheduled receipts of E at Manufacturing 11
2. Buy E from supplier 2
3. Look for alternate source of supply (none defined)

#### Planning for E at Manufacturing 21

1. Use on-hand/scheduled receipts of E at Manufacturing 21
2. Buy E from supplier 2
3. Look for alternate source of supply (none defined)

## Lead-times and User-Defined Decision Rules

When running a constrained plan with the site level profile option MSO: Enable Decision Rules set to Yes, ASCP uses the following:

- Item lead-times that are defined as item attributes
- In-transit lead-times defined between organizations
- Resource availability and usages as defined by the resources and the assembly's routing

The lead-time item attribute is composed of preprocessing, processing, postprocessing, fixed, and variable lead-times.

The following shows how total processing lead-time and cumulative lead-times for make and buy items are calculated for user-define decision rules:

#### Make Item

Total processing lead-time = ((1 + Queue time factor) * Processing lead-time) --then rounded--

where Queue time factor is the site level profile option value for MSO: Queue Time Factor.

If routing for the make item is not defined, Cumulative lead-time = Fixed lead-time + (Scheduled quantity * Variable lead-time).

#### Buy Item

For a buy item, the processing lead time is based on the most specific definition. If there is a processing lead time assigned to the item supplier relationship, then ASCP uses that as the processing lead time. If not, it will use the item attribute for the processing lead time.

Total processing lead time = Preprocessing lead-time + Postprocessing lead time + Processing lead time.

Cumulative lead time = Preprocessing + Fixed lead time + (Scheduled quantity * Variable lead time) + Postprocessing lead times.

If the fixed and variable lead times are not set, fixed lead time assumes the value of the processing lead time defined at the item attribute.

In transit lead times are used for all transfers between the sourcing and destination organizations.

For the planning engine to follow the predefined sequence of selecting alternates, the derived value of the total processing lead time and the cumulative lead times should be the same. Any discrepancies between the total value of the two lead times may result in ASCP not following the predefined sequence of selecting alternates.

### Pegging and User-Defined Decision Rules

Looking at pegging may not be the method you should use to determine the sequence of selection of alternates. This is because the sequence of selection of alternates is more apparent when looking at total demand and total supply across the time bucket where there is a constraint.

For example, suppose there are two demands, D1 (150 units) and D2 (50 units) on day 1 and day 2 for item B, and the only way to satisfy this demand is by making 100 units with primary resource/routing/BOM and 50 units using substitute component B1 and 50 units of B with alternate BOM/routing. Then, day 1 demand will peg to 100 units of item B using primary resource/routing/BOM and 50 units of item B using alternate BOM/routing. Day 2 demand will peg to 50 units of substitute component B1.

If you look at just the pegging for D1, 50 units of the substitute component is not used. Instead, 50 units of the alternate BOM/routing is pegged to D1. Therefore, it looks as if ASCP has broken the user-defined sequence. But, if the demand was for only 150 units, then the supply would be 100 units of item B and 150 units of substitute component B1, which follows the user-defined sequence.

### Exception Messages

Once the planning engine runs, you may find several instances where the engine has recommended alternates. When this happens, an exception message is generated. Typical flow may consist of analyzing exceptions generated by the plan, drilling into the details of exceptions, analyzing supply demand records using Supply/Demand window, vertical plan and pegging. Users may access the horizontal plan to get a detailed understanding of the demands placed on the alternates, supplies received as a part of the user-defined decision rule, and analyze possibilities of improving the solution based on their knowledge.

#### Exception Display

When the system suggests the use of alternates, it also generates required exception messages referencing the type of alternates used. These exceptions are summarized in the Substitutes and Alternates Used exception group.

## Organization Security

This feature restricts plan information access to authorized individuals. Oracle ASCP

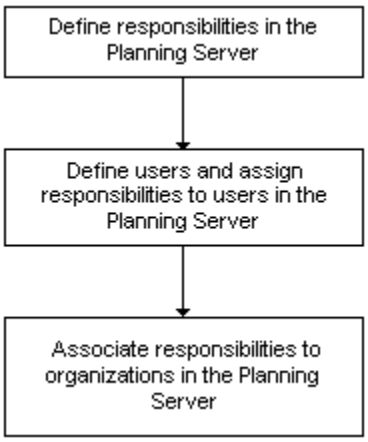
allow users to associate job responsibilities to organizations for security purposes. This ensures that you see/change planning data in an organization only if you have a job responsibility associated with the organization.

Examples:

- User 1 is restricted to organization M2
- User 2 has global authorization to access all organizations including organizations M1 and M2.
- User 2 creates a plan for organizations M1 and M2 (owning organization is M1). User 1 can access this plan and view and execute only the portion of this plan related to organization M2.

## User Procedure Flow

The following diagram illustrates the procedure flow for assigning users and job responsibilities to organizations:




#### To assign users and job responsibilities to organizations

1. Define custom responsibility in the Planning Server. To do this, sign in using the System Administrator responsibility. From the Navigator, select Security > Responsibility > Define. Fill in the appropriate fields with the appropriate information.
2. Define users and assign responsibilities. To do this, from the Navigator, select Security > User > Define. Fill in the appropriate fields.
3. Sign on using the Advanced Planning Administrator responsibility.

   **Note:** Only users with APS Administration responsibility can

access and view Organization Security.

4. From the Navigator, select Admin > Organization Security.

   The Assign Organizations to Responsibilities page appears.

5. In the Responsibility field, select the responsibility that you want to associate to organizations. The list of values for the Responsibility field includes all responsibilities defined in the Responsibilities form in the Planning Server. (limited to Oracle ASCP responsibilities).

6. From the Available Organizations column, select and move any organization to the Assigned Organizations column using the Move button. You can use the Move All button to select all organizations for the specified responsibility. You can use the Remove button to remove any selected organization from the Assigned Organizations column. You can also use the Remove All button to remove all selected organizations.

7. Select the Save button.

## Organization Validation

Oracle ASCP restricts users to their authorized inventory organizations. The Organizations Find form displays only the authorized organizations when users attempt to open a form in Oracle ASCP for the first time:

**Note:** You are also restricted to the authorized organizations when you select the Change Instance/Organization menu item.

## Supply Chain Plan Names Form

For the selected instance/organization, you can view and create plan names in the Supply Chain Plan Names form. The system restricts accessing and viewing plans to authorized users of the owning organization.

## Plan Options Form

You can select organizations for planning in the Org field. The list of values for this field is restricted to authorized organizations which can be accessed by user. This implies that the Plan Organizations Find form list of values is restricted to organizations associated to user.

> **Note:** In general, the Plan Options form can be viewed and updated only if user has access to the owning organization of the plan.

## Example

Plan1 has been created in M1 (owning organization) for planning organizations M1 and M2. This means the Plan Names form in M1 includes Plan1, but the Plan Names form in M2 does not include Plan1.

The Organization Security behavior for Plan Names, Plan Options, and the Planner Workbench is summarized for different user authorizations in the following tables.

| User | Authorized To... | Plan Names | Plan Options | Workbench |
|---|---|---|---|---|
| User 1 | M2 | User 1 cannot view and access Plan1 in the Plan Names form | User1 cannot access Plan Options via the Plan Options menu entry in the Navigator. | User1 can view Plan1 in the left pane of the Planner Workbench, but restricted to Organization M2. However, User1 can view all planned Organizations (M1 and M2) in the Organization tab of the Plan Options form via the Plan menu entry from the tool bar in the Planner Workbench. |
| User2 | M1 and M2 | User2 can view and access Plan1 in the Plan Names form from organization M1. User2 can copy and launch Plan1. | User2 can access Plan Options via the Plan Options menu entry in the Navigator window. | User2 can view Plan1 in the left pane of the Planner Workbench with both organizations M1 and M2 displayed. |

| User | Authorized To... | Plan Names | Plan Options | Workbench |
|---|---|---|---|---|
| User3 | M1 | User3 can view and access Plan1 in the Plan Names form from organization M1. User3 can copy and launch Plan1. | User3 can view and access Plan1 in the Plan Options form.<br>User3 can delete planned organization M2 but cannot add organization M2.<br>User3 can only add organization M1 to the Plan Options form. | User3 can view Plan1 in the left pane of the Planner Workbench with both organizations M1 and M2 displayed. |

## Key Performance Indicators

Oracle ASCP is integrated with the Oracle Business Intelligence System (BIS) performance management system. BIS lets you set the organizational objectives. These objectives, known as Performance Measures in BIS, are referred to as Key Performance Indicators (KPIs) in Oracle ASCP.

KPIs are used to drive continuous improvement in your enterprise. You can set performance targets and exception tolerances by business units or by period and automatically notify the appropriate people when exceptions arise. For information on setting targets, see *Oracle Business Intelligence System Implementation Guide*.

You can also compare the KPIs for multiple plan simulations using the Planner Workbench.

Oracle Advanced Supply Chain Planning displays these key performance indicators:

- Inventory turns
- Margin percentage
- Planned utilization
- On-time delivery
- Margin
- Inventory value: This key performance indicator is available only for inventory optimization plans.

- Utilization by Weight/Volume: This key performance indicator is available only for distribution plans.
- Cost breakdown
- Service level

Following are descriptions of various KPIs.

Key performance indicator displays for periods group their information for uniformity across organizations in the supply chain plan. They group according to the financial calendar. Many of the Planner Workbench context windows group their information using manufacturing calendars. If you see results that appear not to matc, it may be due to different grouping.

## Inventory Turns

Inventory turns for a given plan between time periods $t_1$ and $t_2$are calculated as follows:

- Annual inventory turns = {Value of MDS demand in period [$t_1$,$t_2$] / Value of average inventory in period [$t_1$,$t_2$]} * 365 / ($t_2$- $t_1$)

  Value of average inventory in period [$t_1$, $t_2$] = (Inventory at $t_1$ + Inventory at $t_2$)/2

  where $t_1$ and $t_1$ are in days

  Inventory at time $t_2$ = Inventory at time $t_1$ + Purchase orders during period [$t_1$,$t_2$] + Purchase requisitions during period [$t_1$,$t_2$] + Planned orders during period [$t_1$,$t_2$] + Discrete jobs during period [$t_1$,$t_2$] + Repetitive schedules during period [$t_1$,$t_2$] + Master schedule demand during period [$t_1$,$t_2$]

  > **Note:** These calculations use standard costs of items. Standard cost systems use a single value to cost all material and resource transactions in inventory and work in process systems.

To set the value for the target, use profile option MSC: Performance target for Inventory Turns.

## Margin Percentage

Margin percentage is the net difference between planned revenues and planned production costs.

The calculation for margin percentage objective is

- Margin percentage = (Plan revenue) - (Plan cost)

  Plan revenue = {(Sales order line price) * (Sales order quantity)} + {(Item list price)* Iitem discount) * (Forecast quantity)

Plan revenue is calculated and summed up for all items with independent demand in all time buckets.

- Plan cost = Item cost + Transportation cost + Inventory carrying cost

Plan cost is calculated and summed up for all items, resources, and ship methods in all time buckets.

- Item cost = (Resource cost * Resource quantity used) + (Buy item cost * Buy item quantity) + (Process cost * Quantity using process)

  Transportation cost = (Transfer quantity * Item weight * Shipping cost per unit weight) + (Buy quantity * Item weight * Shipping cost per unit weight)

  Inventory carrying cost = Average inventory per bucket * Carrying cost percent * Item cost

Margin percentage is the most aggregate of objectives in the sense that it combines multiple costs.

## Planned utilization

Planned utilization for a resource or supplier for a planning time bucket is calculated as follows:

Planned utilization = (Hours of capacity actually used / Available hours of capacity) * 100

> **Note:** For production lines and supplier capacities, substitute units for hours.

Aggregate level utilizations for all hierarchy levels are based on average utilization. For example, Planned utilization for a resource is calculated as follows:

Resource Planned utilization = Sum of [Planned utilization for all Planning time buckets] / Number of Planning time buckets

Plan level Planned utilization does not include supplier utilization.

To set the value for the target, use profile option MSC: Performance target for Resource Utilization Percent.

## On-Time Delivery

Customer service level or delivery performance are calculated as follows:

((Total number of orders - Number of late orders) * 100) / Total number of orders

To set the value for the target, use profile option MSC: Performance target for Ontime Delivery Percent.

## Margin

Margin is calculated as follows:

- Top assembly margin = (Total shipment units * Standard price) - (Total shipment units * Standard cost)

  Aggregate level margin = Sum of margin of top assemblies

You can drill down to plan/org level KPI (revenue vs. cost vs. profit) or to KPI trend. No target is available for Margin KPI.

Margin KPI does not consider discounts.

To set the value of the target, use profile option Performance target for Margin Percent

## Cost Breakdown

Cost breakdown KPI is composed of these costs:

- Production cost
- Inventory carrying cost
- Penalty cost
- Purchasing cost

Production cost is calculated based on the required resource time and its corresponding cost. Product cost is calculated as follows:

- Production cost = Sum of (Resource time needed * Resource cost) for all resources in the organization.

Inventory carrying cost is calculated based on average inventory level in each time bucket. Inventory carrying is calculated as follows:

- Inventory carrying cost (period i) = Average inventory of period i * Carrying cost percent

Penalty cost is calculated as follows:

- Penalty cost = Demand lateness cost * (Demand satisfied date - Requirement date) * Demand quantity * Item list price

Standard item cost is used in the penalty cost equation in the absence of item list price.

Purchasing cost is calculated based on the standard item cost and the supply quantity.

- Purchasing cost = Sum of [Item list price * Supply quantity] for all items

Standard item cost is used in the purchasing cost equation in the absence of item list

price.

You can drill down to plan/org KPI or to KPI trend. No target is available for the Cost Breakdown KPI.

## Service Level

Aggregate service level is calculated for constrained and optimized plans. The calculation process groups all independent demands (except safety stock) by item and then by demand due date into BIS periods. It calculates service level for each item in each BIS period and then rolls the service level up to:

- The item
- All items in an organization
- All organizations in a plan

The calculation is (Demand quantity satisfied by due date / Demand quantity) * 100.

This table shows a calculation for item A independent demands for each BIS period and the rollup to item A.

| Item | BIS period | Demand Due Date | Demand Quantity | Demand Quantity Satisfied by Demand Due Date | Service Level |
|---|---|---|---|---|---|
| A | - | - | - | - | 95% [(100 + 90 + 100 +190 + 280) / (100 + 100 + 100 + 200 + 300)] * 100 = (470 / 500) * 100 |
| - | 1 January - 31 January | - | - | - | 97% [(100 + 90 + 100) / (100 + 100 + 100)] * 100 = (290 / 300) * 100 |
| - | - | 10 January | 100 | 100 | - |
| - | - | 15 January | 100 | 90 | - |

| Item | BIS period | Demand Due Date | Demand Quantity | Demand Quantity Satisfied by Demand Due Date | Service Level |
|---|---|---|---|---|---|
| - | - | 20 January | 100 | 100 | - |
| - | 1 February - 28 February | - | - | - | 94% [(190 + 280) / (200 + 300)] * 100 = (470 / 500) * 100 |
| - | - | 10 February | 200 | 190 | - |
| - | - | 20 February | 300 | 280 | - |

You can:

- Display planned service level vs. target service level for plans, organizations, and items
- Drill down to a graph showing service level trend

If there is no demand, the service level is 100%; service level 0% would raise an unnecessary exception.

In an unconstrained plan, the service level is always 100%.

## Inventory Value

A graphical representation of the least risk inventory values at the intersection of the levels in the hierarchies that you have selected for inventory planning (e.g., item or product family and organization by month) are displayed in a time-phased view.

This key performance indicator is available only for inventory optimization plans.

> **Note:** For more information on using KPIs, refer to Planner Workbench, page 16-1.

## KPI Setup

For these key indicators, use a profile option to set the targets:

- Inventory turns: MSC: Performance target for Inventory Turns

- Ontime delivery: MSC: Performance target for Ontime Delivery Percent
- Margin: MSC: Performance target for Margin Percent
- Planned utilization: MSC: Performance target for Resource Utilization Percent

## Tracking Plan Performance Using KPIs

Oracle ASCP lets you track plan performance against KPIs. For more information, see Planner Workbench., page 16-1

## Making Improvements Based on KPIs

### Increasing Inventory Turns

- Decrease the penalty factor for safety stock violation.
- Increase weight given to the maximize inventory turns objective, decrease weight given to other objectives by choosing Plan Options > Optimization tab.
- Change sourcing rules used by the plan to reflect material sources (for example, inventory stocks) that are controlled by the planner or the organization being planned. For example, if a plan is run with many inventory sources specified in the sourcing rules, inventory turns will be lower than if only a few inventory sources are used.

### Increasing Planned Utilization

- Decrease penalty factor for exceeding resource capacity.
- Increase weight given to the maximize resource utilization objective, decrease weight given to other objectives.
- Increase the demand that is being planned. Note that increasing demand can have adverse impact to other KPIs (for example, On-time Delivery) if material capacity is not sufficient to support the demand.

### Increasing Margin Percentage

- Decrease penalty factors considered in the margin percentage calculation.
- Increase weight given to the maximize margin percentage objective, decrease weight given to other objectives.
- If material and/or resource capacity is constrained, demand will not be fulfilled by the request date and sales will either be lost of penalty costs will be incurred for late demand. See actions described in Increasing On-time Delivery.

#### Increasing On-time Delivery

- On-time Delivery will suffer if material capacity and/or resource capacity are not sufficient to meet requested delivery dates. By looking at the exceptions that occur after a plan is run, you can determine whether material or resource capacity is the gating factor.

- To determine material and resource capacities required to meet all requested delivery dates for demand, run the plan unconstrained by material and capacity to determine total resource and material capacity requirements. (Choose Plan Options > Constraints tab to specify material and resource constraints.)

  If material capacity is insufficient:

  - Add capacity at the bottleneck supplier(s)

  - Specify alternate components that can be used if the primary (constrained) component is not available

  - Add capacity at feeder plants supplying sub assemblies

    If resource capacity is insufficient:

  - Add capacity at the bottleneck resource. For example, add shifts, add outsourcing providers, add labor

  - Specify alternate resources that can be used

    If material and resource capacities are not constrained:

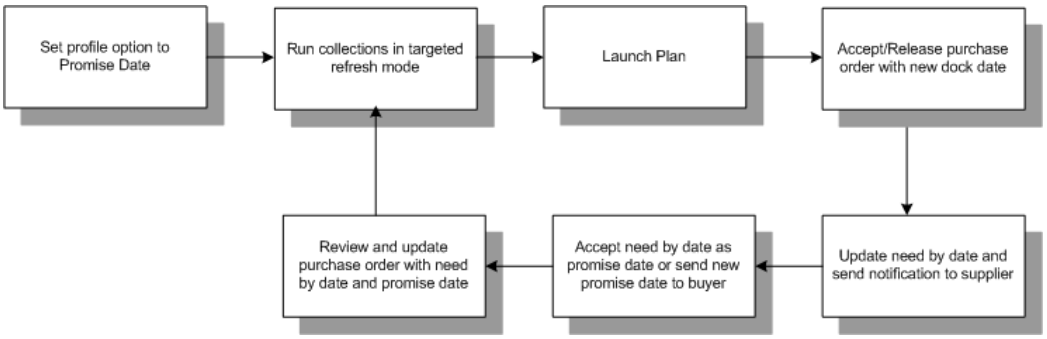
  - Increase penalty factor for unmet demand and late demand

Increase weight given to the maximize on-time delivery objective, decrease weight given to other objectives.

## Supplier Acknowledgement for a Rescheduled Purchase Order

Your material requirement date might be different from the material availability date as provided by the supplier. The planning engine can consider either of the dates while generating a plan. Usually, you use the promise date in the purchase order as the date when the supplier supplies the material. However, in absence of the promise date, the planning engine uses the need by date as specified in the purchase order. If a supplier always meets the need by date irrespective of the promise date, you can set the MSC: Purchase Order Dock Date Calculation Preference profile option value to need by date.

This diagram illustrates the supplier acknowledgement cycle.




To instruct the planning engine which date to use for the arrival of a purchase order delivery (dock date):

- Set the MSC: Purchase Order Dock Date Calculation Preference profile option. The valid values for this profile option are Need by Date or Promise Date. If you set the profile option to Promise Date, the planning engine considers the promise date from the supplier as the material arrival date. If you set this profile option value to Need by Date, the planning engine considers the need by date specified in the purchase order as the date of material availability. See MSC Profile Options, page A-84 for more information.

- Run collections in the targeted refresh mode

- Run the plan on the collected purchase orders to view the promise date and original need by date in the Planner Workbench.

The following steps detail the flow of information:

- If you accept the calculated dock date and release the purchase order to Oracle Purchasing, Oracle Purchasing uses the suggested dock date as the new need by date. Oracle Purchasing leaves the original promise date unchanged. It sends a PO change notification to the supplier to acknowledge the rescheduled purchase order.

- Using Oracle *i*Supplier Portal, the supplier can either accept the need by date as the promise date or specify a different promise date. If the supplier accepts the need by date, Oracle *i*Supplier Portal uses it as the promise date. If the supplier specifies a new promise date, Oracle *i*Supplier Portal sends a change request notification to the buyer.

- The buyer can review and update the need by date and promise date for the purchase order in Oracle Purchasing.

- After the next plan run, you can view the suggested dock date, the original need by date, and the new promise date in the Planner Workbench.

- If the supplier provides a sales order number at the time of acknowledging the purchase order, Oracle Collaborative Planning creates a sales order that is pegged

to the purchase order. The promise date is set as the delivery date. If the supplier changes the promise date or the quantity, an exception is created in Oracle Collaborative Planning.

If the purchase order is not firm or within the planning time fence, Oracle Advanced Planning and Scheduling can recommend rescheduling of the purchase order when the plan is run again.

### Change Requests from Suppliers Resulting in Exceptions

This table displays the exception messages that Oracle Collaborative Planning generates in specific scenarios:

| Exception Message | Scenario |
|---|---|
| Late replenishment from supplier | This exception is generated when the supplier requests a change in the need by date or splits lines. |
| Early replenishment from supplier | This exception is generated when the supplier requests a change in the need by date, quantity or splits lines. |
| Short supply from supplier | This exception is generated when the supplier requests a change in the quantity or splits lines. |
| Excess replenishment from supplier | This exception is generated when the supplier requests a change in the quantity or splits lines. |

## Setting Demand to Supply Planning Automation

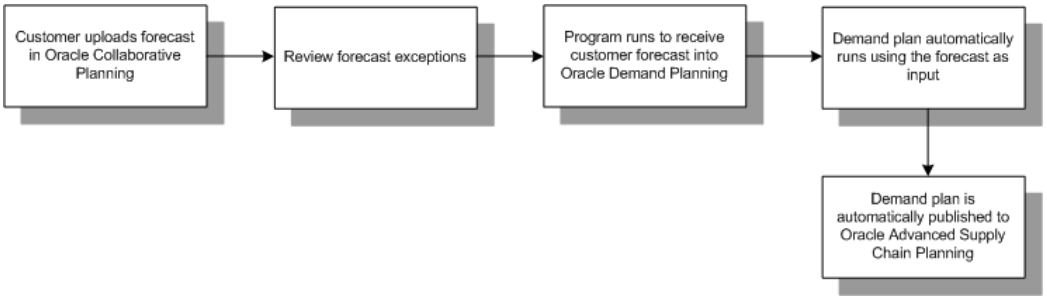
You can set up collaboration between Oracle Advanced Supply Chain Planning and Oracle Demand Planning to automatically launch an unconstrained supply chain plan based on forecast scenarios that you publish.

### Demand to Supply Planning Automation Setup

- Set the profile option MSD: Default DP Scenario to a valid demand plan scenario.
- Set the profile option MSC: New Forecast Auto Plan to an unconstrained supply chain plan. When the demand plan scenario mentioned in the profile option MSD: Default DP Scenario is published, the unconstrained supply chain plan specified in the profile option MSC: New Forecast Auto Plan starts running.

The following figure illustrates the activities that are performed after the customer uploads the forecast in Oracle Collaborative Planning.

***Demand to Supply Planning Automation Cycle***




After the customer uploads an order forecast using flat files or the user interface, you can review the exceptions to address the mismatch between the forecast you generated and the customer forecast. The Receive Forecast From Customer program automatically runs to receive the forecast into Oracle Demand Planning. Oracle Demand Planning Engine publishes the new demand plan scenario to Oracle Demand Planning Engine Server. This action automatically launches the unconstrained supply chain plan specified in the profile option.

## Setting Supplier Collaboration Automation

Using Oracle Advanced Planning and Scheduling, you can collaborate with suppliers, track exceptions arising out of supplies, issue notifications to suppliers and receive notifications from suppliers.

### Supplier Collaboration Setup

You and your suppliers need to perform the following list of tasks to enable the collaboration between Oracle Advanced Supply Chain Planning and Oracle Collaborative Planning:

- Set the profile option MSC: SCEM Engine Launch Events to All to automatically start Supply Chain Event Manager (SCEM) when a supplier loads an order forecast or when you publish an order forecast from the planning server. If you set the profile option to Publish, Supply Chain Event Manager starts only when plans are published from Oracle Advanced Supply Chain Planning. If you set the profile option to Load, Supply Chain Event Manager starts only when data is loaded using flat files.

- Ensure that the value of the profile option MSC: Configuration is set to APS & CP. This enables collaboration between Oracle Advanced Supply Chain Planning and Oracle Collaborative Planning.

- Specify the name of the plan that you want to launch automatically in the profile option MSC: New Supply Commit Auto Plan. It is recommended that you specify a constrained plan.

### Triggering Launch of Plan

- Publish an order forecast from the Planner Workbench to the supplier. This launches Supply Chain Event Manager to compute material excess and generate shortage exceptions.

- Suppliers need to upload supply and demand information in Oracle Collaborative Planning. This launches Supply Chain Event Manager to compute material excess and generate shortage exceptions. Supply Chain Event Manager also generates a notification.

- Suppliers can upload or enter forecasts into Oracle Collaborative Planning. When the supplier clicks the Send Supply Commit to customer link in the Admin tabbed region, the Receive Supplier Capacity concurrent process runs. This process updates the supplier capacity information on the planning server. If the profile option MSC: New Supply Commit Auto Plan points to a valid plan, the plan is automatically launched.

# 11

# Setting Up Distribution Planning

This chapter covers the following topics:

- Overview of Setting Up Distribution Planning
- Prerequisites for Distribution Planning
- Defining Items as Distribution Planned
- Defining Bills of Material for Kitting
- Defining Demand Priority Rules
- Daily Load Consolidation
- Defining Trip Limits for Ship Methods by Lane
- Defining Sourcing Rules
- Multiple Inventory Policies
- Inventory Rebalancing
- Setting Up Supply Allocation Rules
- Setting Up High Volume Distribution Planning
- Order Modifiers
- Distribution Requirements Planning
- Minimum Remaining Shelf Life

## Overview of Setting Up Distribution Planning

This section outlines the steps required to set up Distribution Planning. You begin by setting up organizations, ship methods, shipping lanes, and calendars the same as in other Oracle Advanced Supply Chain Planning plan types. You then define the following:

- Distribution planned items and key attributes

- Safety stock, target, and maximum inventory levels
- BOMs for kitting
- Demand priority rule
- Trip limits for ship methods by lane
- The assignment of sourcing and supply allocation rules to items
- Organization and customer selection lists
- Distribution plan preferences

The set up steps detailed in this section are specific for distribution plans and assume that the user has completed all of the usual source instance set up tasks such as enabling Oracle Bills of Material, Oracle Work in Process, Oracle Order Management, and Oracle Purchasing.

## Prerequisites for Distribution Planning

To run Distribution Planning, the following prerequisites are required:

- Define organizations and inter-organization relationships.

  Receiving organizations must be associated as customers of shipping organizations.

- Define carriers and associate with them with ship methods.

  This facilitates the release of inter-organization shipments.

- Define inter-organization shipping lanes.

  Shipping networks should be defined and assigned ship methods.

- Define shipping, receiving, and carrier calendars.

Please see Setting Shipping, Receiving, Carrier, and Supplier Capacity Calendars, page 4-139 for more details.

These steps are the same as in other Oracle Advanced Supply Chain Planning plan types, such as MRP, MPS, and MPP.

## Defining Items as Distribution Planned

When setting up Distribution Planning, the first step you need to take is to define which items to include in your distribution plans.

### To define items as distribution planned:

1. On the MPS/MRP item attributes tab, select the Distribution Planned check box.

   Distribution Planning selects items to include in a distribution plan based on the following plan options for planned items.

| Planned Item | Description |
|---|---|
| All planned items | All Distribution Planned items are included. |
| Demand schedule items only | Only Distribution Planned items in the demand schedule are included in the distribution plan. |
| Supply schedule items only | Only Distribution Planned items in the supply schedule are included in the distribution plan. |
| Demand and Supply schedule items | Only Distribution Planned items in the demand and supply schedules are included in the distribution plan. |
| Demand schedule and WIP components | Distribution Planned items in the demand schedule and WIP jobs, as defined by the MSC: DPP Discrete Job Cutoff Window (Days) profile option, are included in the distribution plan. |
| Demand schedule items and all sales orders | Only Distribution Planned items in the demand schedule and all sales orders are included in the distribution plan. |
| Demand schedule items/WIP components/all sales orders | Only Distribution Planned items in the demand schedule, all sales orders and all WIP jobs are included in the distribution plan. |

   In each case, an item between two included Distribution Planned items is also included.

## Defining Bills of Material for Kitting

Oracle Bills of Material is used to define Bills of Material for kitting. Distribution Planning plans components of kitting planned orders the same way MPS/MRP/MPP

explodes Bills of Materials and plans lower level components. Routings and resources are not considered by distribution plans and kit assembly is constrained by component availability.

## Lead-time

When planning a discrete job, distribution planning calculates the start and complete times based on the item-organization fixed lead-time attribute.

- Variable lead-time is not considered.
- Calculation of start date, completion date and duration consider the organization manufacturing calendar for valid work days and shifts.
- All components are required at the job start time.

**Example**

If the supply is due for 24 units at 10:00 AM on Day 5, the fixed lead-time is 1 day, and there is one 24 hour shift, the job start time is at 10:00 AM on Day 4.

## Order Size

For discrete jobs, the size of planned orders is the value of item attribute Fixed Lot Multiplier. If this attribute is null, no order size modifiers are applied and each discrete job is the size of the associated demand. The item attributes Fixed Lot Multiplier, Rounding Control and the Fixed Lead-time should be considered together during the data setup.

## Releasing Kit Jobs to Oracle WIP

Distribution Planning can release a planned order for a discrete job to Oracle WIP. If substitute components are selected, these will be released and appear as component requirements in the WIP job. If substitute components are not selected, the planned order header is released. The WIP job explodes and creates the component and resource requirements based on the BOM and routing. The planned order header includes the completion date and the primary or alternate BOM/routing designation. If a routing exists in the source instance, the start date of the released WIP job may be different from the start date in distribution planning.

Since distribution planning treats Oracle Work in Process jobs as firm supplies, it does not recommend their reschedule. For these jobs, distribution planning:

- Considers component requirements
- Does not show resource requirements

To control which of these jobs the distribution planning engine considers, set profile option MSC: DPP Discrete Job Cutoff Window (Days).

## Defining Demand Priority Rules

Distribution plans consider demand type priorities and you can set priorities based on demand class within each demand type. There are six demand types:

- Sales orders
- Over-consumption sales orders (the sales order represents quantities in addition to the forecasted quantities)
- Forecasts
- Safety stock level demands
- Target inventory level demands
- Excess demand (caused by order modifiers)

With the first three demand types, you can define additional priorities by demand class. If a sales order or forecast has an associated demand class, it gets the priority of the demand class. However, this is only within the demand type. Priorities for safety stock, target, and excess always default to the lowest three priorities in that order.

### To define demand priority rules:

1. From the Navigator, select Distribution Planning > Setup > Demand Priorities

   The Define Priority Rules window appears.

2. In Name and Description, enter information for the new demand priority rule.

3. To enable the demand priority rule, click the Enabled check box. To set the demand priority rule as a default, click the Default check box.

   A rule must be completely defined before it can be enabled.

4. Specify a demand priority by selecting a level from the Priority Specified For drop-down list.

5. In the Demand Type field, enter one of the following:

   - Sales Orders
   - Over-Consumption Sales Orders
   - Forecasts

   This priority is applied to all demands of the demand type, unless the demand class or demand type - demand class has been specified. An entry must be made in this

field.

6. Enter any demand class in the Demand Class field. This priority is used to rank demands within each of the demand types. If no demand class is specified, it is set to the lowest priority within the demand type. You can also select All Other Demand Classes which allows you to set this priority directly. An entry must be made in this field.

7. Enter a numeric value in the Priority field.

8. Click the Save button.

When the form is saved, the read-only Calculated Demand Priorities area of the form is populated with the resulting calculated demand priorities. A row is created for each demand type and demand class combination and one additional row is created for the demand type and all other demands.

For demands in a distribution plan that use the above demand priority rule, any sales order line with a specific demand class will have that priority. For example, a sales order line with demand class RS-B will have priority 2.

## Daily Load Consolidation

Distribution planning performs load consolidation and distribution by the minute. If supplies are available at 10:03 AM then you can create an outbound shipment with shipment time at 10:03 AM. Available supplies at 3:12 PM may lead to another outbound shipment to the same organization then. If you prefer to consolidate transfers consolidated by days, use one of these daily load consolidation.

For the first approach, adjust your supply schedules so that your supplies are available at the same time of day. If you use an ASCP plan as a supply schedule, run it in daily buckets so all supplies have the same timestamp.

For the second approach, use a calendar with shift duration at least one minute as the shipping calendar of your source organization. For example, set the shift to start at 10:59 and to end at 11:00. Distribution planning creates outbound shipments with timestamp 10:59. Supplies ready before 10:59 ship today and supplies ready after 11:00 ship tomorrow. You can change times as you manage actual shipments in your shipping and transportation management products.

Oracle recommends not to use this calendar for any other purpose. Define your transit calendars and receiving calendars appropriately.

## Defining Trip Limits for Ship Methods by Lane

For the truckload (TL) ship methods, the concept of a trip limit is used in Distribution Planning. The trip limit is a weight maximum, a volume maximum, or both. You must define trip limits for TL ship methods for each shipping lane. The shipping network

must be defined in the source instance before the user can access the trip limits on the planning servers.

You define trip limits on the Transit Times window by setting weight and volume trip limits for in the Shipment Limit area of this window. To access the Transit Times from the Navigator, the Transit Times form, select Setup > Transit Times.

When planning trips between organizations, distribution plans:

- Select a ship method to use for inter-organization trips between each from and to organization pair.
- For the selected ship method, attempt to respect the trip maximum weight and volume constraints or report violations.
- LTL and parcel ship method should be used when a trip must be scheduled and the trip is less than the TL ship method constraints permit based on the plan utilization targets. It assumes that you have defined a sourcing with rank 1 ship methods as TL and lower rank ship methods that are not TL.

Only Maximum Trip Weight and Maximum Trip Volume can be edited and only when the Ship Method mode is TL Shipment limit fields cannot be edited for other Ship Methods. Distribution Planning uses the following rules when deciding what to ship and when, and how to consolidate shipments:

- Safety Stock Level: Distribution Planning will always ship available supplies on time to meet safety stock demands. Minimum Trip Capacity can be violated.
- Target Level: During trip consolidation, Distribution Planning will only ship available supplies on time to meet target inventory levels if there is a trip that the supply can be added to without violating the trip capacity.
- If no trip is available to move the supplies for target inventory levels during trip consolidation, these supplies are not shipped even if available in the source.
- If the ship method has no limits, target supplies are not shipped during the trip consolidation window. Because of this approach, you might find a number of supplies for target inventory levels that are shipping immediately after the end of the trip consolidation window. You may not want to firm or release these planned shipments. The next distribution planning run may pull these supplies in if there are now trips that can move them efficiently.

## Trip Limit Constraints

When a Shipping Method is used on a Sourcing Rule, Bill or Distribution or Inventory Distribution Rule, the Shipping Method can be a constraint on the plan output. The following constraints are created by Shipping Methods:

- Intransit time: if the intransit lead-time is not null,, the intransit lead-time of the

selected ship method is a constraint.

- If not null, Trip Size limits are based on the Maximum Trip Weight and Volume Constraints for the Ship Method.

Distribution Planning considers the minimum and maximum weight and volume limits for each Ship Method. You can specify new constraint plan options for the following trip limits for the distribution plan:

- **Maximum Trip Utilization:** This parameter is the upper limit for loading a truck. For example, if you set this parameter to 90%, any truck is not loaded over 90 % of the maximum weight and volume capacities. If null, 100% is used.

- **Minimum Trip Utilization:** The planning engine generates different TL trips with various levels of capacity utilization. Distribution Planning plans attempt to create trips that have capacity utilization greater than the minimum TL utilization. If null, 0 is used.

Distribution Planning uses the plan option utilization targets combined with the ship method maximum trip limits.

- Maximum Trip Weight = Maximum Trip Utilization * Maximum Trip Weight

- Maximum Trip Volume = Maximum Trip Utilization * Maximum Trip Volume

- Minimum Trip Weight = Minimum Trip Utilization * Maximum Trip Weight

- Minimum Trip Volume = Minimum Trip Utilization * Maximum Trip Volume

  Both weight and volume maximum and minimum are considered if not null. If both the weight and volume maximum are null, then the ship method is treated as non-TL.

Distribution Planning uses the targets and minimums as follows:

- Trips are not loaded in excess of the Maximum Trip Weight or Volume.

- Trips are loaded up to the Maximum Trip Weight or the Maximum Trip Volume.

- Trips are loaded over the Minimum Trip Weight or Minimum Trip Volume. If the Minimum Trip Weight or Maximum Trip Volume cannot be met, the trip is planned for other ship methods. If the internal transfers are pegged to demands other than target inventory level demands, an LTL or parcel ship method is used. If there are no LTL ship methods, then a trip is planned on a TL ship method which can violate the Minimum Trip Weight and Minimum Trip Volume. Trips may be less than the Minimum Trip Weight and Minimum Trip Volume if the trip is a scheduled trip, with routing or routing and contents firm.

## Defining Sourcing Rules

Sourcing rules are defined the same as for MRP/MPS/MPP. Inter-organization sourcing relationships are defined and ship methods are selected. Multiple ship methods can be specified for the same supply source with differing percentages but the percentages are not necessarily respected for the same supply source with different ship methods.

If the sourcing rule is global, ship method is allowed but no transit time is specified as the shipping lane is not known.

- During planning, if no ship method is specified on the global sourcing rule, the default ship method from the shipping methods form is used.
- If no ship method is marked as default on the shipping methods form, no ship method is selected and intransit lead-time is 0.

If the sourcing rule is local, you can optionally specify a shipping method for a particular source organization. If no shipping method is specified, the default shipping method is used from the inter-organization relationships form. You can specify multiple ship methods for the same source organization on the sourcing rule or bill of distribution, giving each ship method a different rank.

You can specify multiple ship methods on the sourcing rule or bill of distribution, giving each ship method the same rank but different percentages. The requested inbound shipments for Rank 1 ship methods will respect the percentages by ship method if decision rules are not used. However, the final plan output might not respect the percentages because Distribution Planning will select the best ship method from among the Rank 1 ship methods. This means that you can specify two ship methods with differing costs, lead-times or maximum trip limits, and they are considered based on trip dates and sizes.

Please see the section Ship Method Selection, page 13-2 for more details.

## Multiple Inventory Policies

Distribution planning uses three values to create bands of inventory for items:

- Safety stock
- Target inventory level
- Maximum inventory level

The inventory level varies among these values depending on the timing of economical trips that are moving on or before the date that is needed to keep the inventory level at the safety stock level.

## Safety Stock

Distribution Planning uses the same profile options as Oracle Advanced Supply Chain Planning safety stock process. See Safety Stock, page 4-129

Even if safety stock smoothing is turned off, distribution planning uses the safety stock level of the last day of an allocation bucket as the safety level for the entire bucket. If the allocation buckets are weekly or larger, this gives the output a smoothed appearance. Even if no smoothing is selected, we display a constant safety stock level across the entire allocation bucket, since distribution planning allocation only considers the safety stock on the last day of an allocation bucket.

Smoothing occurs in two stages:

- Smoothing within allocation buckets: Controlled by profile options MSC: Safety Stock Change Interval and MSC: Smoothing Method
- Smoothing across Allocation Buckets: Controlled by profile options MSC: Maximum Percentage Variation in Safety Stock Values and MSC: Minimum Percentage Variation in Safety Stock Values

The planning engine uses profile option MSC: Safety stock change interval (Days) as follows:

- Value is Null or 0: distribution planning does not smooth within an allocation bucket
- Value > 0 (without regard to the actual value): distribution planning smoothes within the allocation bucket

The smoothing method within an allocation bucket considers the profile option MSC: Smoothing method to calculate safety stock within change interval:

- Minimum: Set safety stock to the minimum value found within the bucket
- Maximum: Set safety stock to the maximum value found within the bucket
- Average: Set safety stock to the average value within the bucket (based on working days)
- Null: Use the Average method by default

The other profile options control safety stock smoothing behavior across allocation buckets:

- MSC: Maximum Percentage variation in safety stock values
- MSC: Minimum Percentage variation in safety stock values

To turn smoothing off across allocation buckets, set:

- MSC: Maximum Percentage variation in safety stock values = Null
- MSC: Minimum Percentage variation in safety stock values = 0

Distribution planning does not distinguish between transient and non-transient safety stock levels when creating planned orders. This concept is used in Oracle Advanced Supply Chain Planning for pegging but does not apply to distribution planning.

### Entering Target and Maximum Inventory Levels

You enter target and maximum inventory level information in these places:

- Oracle Inventory Items form, MPS/MRP Planning tab: Enter Target Inventory Days of Supply, Target Inventory Window, Maximum Inventory Days of Supply, Maximum Inventory Window
- Enter Inventory Levels form on the Distribution Planning setup menu: There are areas Target and Maximum. For either level, you can enter either the quantity or days of supply.
- Profile Options form: If you want your maximum and target inventory levels to default to a percentage of safety stock, on the profile options form, enter percent values for profile options MSO: Target Inventory Level % of Safety Stock and MSO: Maximum Inventory Level % of Safety Stock.

The defaulting hierarchy for target and maximum inventory levels, from first used to last used, is:

- Entries in the Oracle Inventory Optimization Enter Inventory levels form. If you enter days of supply, that becomes the value in the Oracle Inventory Items form, MPS/MRP Planning tab, fields Target Inventory Window and Maximum Inventory Window.
- Entries in the Oracle Inventory Items form, MPS/MRP Planning tab. You must enter both Days of Supply and Window.
- For target inventory level, profile option MSO: Target Inventory Level % of Safety Stock. For maximum inventory level, profile option MSO: Maximum Inventory Level % of Safety Stock.
- For target inventory level, use safety stock inventory level. For maximum inventory level, item-organization attribute Vendor Managed Maximum Inventory
- Do not use the inventory level as a constraint

The planning engine smooths target inventory levels and maximum inventory levels in the same was as it smooths safety stock levels.

### Calculating Target and Maximum Inventory Levels

For target inventory level:

- You enter Target Inventory Level Days of Supply and Target Inventory Level Window
- For each day, Target inventory level = Target inventory level days of supply * Average daily requirements
- Average daily requirements = Gross requirements for the next number of days in Target Inventory Level Window / Target Inventory Level Window.

For maximum inventory level:

- You enter Maximum Inventory Level Days of Supply and Maximum Inventory Level Window
- For each day, Maximum inventory level = Maximum inventory level days of supply * Average daily requirements
- Average daily requirements = Gross requirements for the next number of days in Maximum Inventory Level Window / Maximum Inventory Level Window

Both inventory levels change on days where there is no demand since the planning engine calculates them for every day.

For both inventory levels, the day count starts with the current day. If the current day is not a workday, it starts with the next workday.

For weekly planning buckets, the planning engine adds up the demands in the buckets until it reaches Target Inventory Level Window or Maximum Inventory Level Window. For both levels, if it reaches the end of the window in the middle of a bucket, it prorates the demand in that bucket to calculate a smoother inventory level profile (that is not influenced by the position of the demands in the bucket).

For example:

- Target Inventory Level Days of Supply is 10
- Target Inventory Level Window is 10
- There are four weekly buckets of seven days each
  - Week 22 demand = 700
  - Week 23 demand = 350
  - Week 24 demand = 525

- Week 25 (last week of plan) demand = 700

- The target inventory level for week 22 is 600 [(700 / 7) + 350 + ((525 / 7) * 2)]. This is the demand on the final day of week 22, the demand on all seven days of week 23, and the demand on two days of week 24.

- The target inventory level for week 23 is 775 [(350 / 7) + 525 + ((700 /7) * 2))]

- The target inventory level for week 24 is 875 [(525 / 7) + 700 + ((1400 / 28) * 2)]

- The target inventory level for week 25 is 70 [700 / 7]

### Distribution Planning Using Multiple Inventory Policies

Distribution requirements plans consider the replenishment window as decisions are made about when an item is to be shipped. The maximum, target, and safety stock inventory levels give the plan the flexibility to accelerate or delay trips for the sake of economical trip sizes. They are applied to projected inventory on hand without regard to pegging relationships or inventory reservations.

The planning engine calculates supply and demand to the minute. While the safety stock and target levels are only calculated on a daily basis, the planning engine tries to keep the inventory balance always at the safety stock and target levels. For example, if a sales order is due to ship at 11:00 am, the planning engine creates a planned order due at 1100 am to maintain the safety stock or target inventory level after the sales order ships.

The maximum inventory level is an enforced constraint. If demand is greater than maximum, the planning engine plans to satisfy the maximum rather than the actual demand.

The planning engine uses the following rules to decide what to ship, when to ship, and how to consolidate shipments:

- Safety stock level: The planning engine always recommends shipment on time to meet safety stock levels, even if it violates minimum trip capacity.

- Target level: During trip consolidation, the planning engine recommends shipment on time to meet target inventory level only if it does not violate trip capacity. Load consolidation uses target inventory level demands to improve overall trip utilization both by shipping early when space on a trip is available and by delaying shipments for target demands when there are no trips scheduled. If the ship method has no limits, target supplies are not recommended for shipment during the trip consolidation window. Therefore, you may find a number of shipments for target inventory levels immediately after the end of the trip consolidation window. If you do not firm or release these planned shipments, the next distribution planing run may pull these supplies in if there are trips available earlier to move them.

- Early shipments:
  - To use available ship capacity, the planning engine can recommend shipment early using a truckload ship method for either safety stock or target inventory levels. These supplies are sequenced last on the shipment.
  - The planning engine can recommend shipment early to meet any demand with a higher priority than target level when the shipping, transit, or receiving calendars prevent on-time shipment. It may violate maximum inventory level.
- Non-truckload ship methods:
  - The planning engine never recommends early shipment using a less-than-truckload ship method, except when the shipping, transit, or receiving calendars prevent on-time shipment.
  - The planning engine recommends less-than-truckload ship methods only when it predicts an organization's on-hand will drop below safety stock. It does not recommend less-than-truckload ship methods to meet a target inventory method as it assumes that it is not reasonable to use a more expensive method in this case.

The planning engine uses these rules to break ties to fill an available trip:

- If one supply has to ship early: If two supplies take for the same shipping capacity, have the same inventory maximums, and are due on the same date, the supply pegged to the higher priority demand is recommended to ship early.
- If one supply has to ship late: If two supplies take the same shipping capacity, have the same inventory maximums, and are due on the same date, the supply pegged to the lower priority demand is recommended to ship late.

**Example 1**

Safety stock levels are calculated by Oracle Inventory Optimization and the two percent of safety stock profile option values are 300% and 200%. This table shows sample maximum, target, and safety stock levels and projected available balance.

| Entity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum | 15 | 15 | 15 | 15 | 15 | 21 | 21 | 21 | 21 | 21 | 30 | 30 | 30 | 30 | 30 |
| Target | 10 | 10 | 10 | 10 | 10 | 14 | 14 | 14 | 14 | 14 | 20 | 20 | 20 | 20 | 20 |

| Entity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Safety stock | 5 | 5 | 5 | 5 | 5 | 7 | 7 | 7 | 7 | 7 | 10 | 10 | 10 | 10 | 10 |
| Projected available balance | 10 | 10 | 10 | 15 | 15 | 14 | 14 | 14 | 14 | 7 | 10 | 10 | 20 | 20 | 30 |
| Projected available balance +/- Target | - | - | - | 5 | 5 | - | - | - | - | -7 | -10 | -10 | - | - | 10 |
| Projected available balance +/- safety stock | 5 | 5 | 5 | 10 | 10 | 7 | 7 | 7 | 7 | - | - | - | 10 | 10 | 20 |

If the percentage for target is 150% of safety stock, then target inventory level is 10.5 [150% * 7]. The planning engine rounds the target and maximum inventory level values

up if the item attribute enabling rounding control is selected.

If distribution planning does not have to consider optimum use of shipping capacity and there is sufficient supply, it maintains an inventory level equal to the target level. If there are opportunities to optimize the use of shipping capacity because of multiple shipment in a given time period moving into a facility, the actual on hand might fluctuate within the range of the maximum and safety stock and occasionally hitting the target level. Order modifiers can also cause inventory level fluctuations between safety stock and maximum. In the example:

- Projected available balance is greater than target on days 4 and 5. This shows that five units were planned to be shipped early, possibly due to order modifiers. The levels shown in the table are for the destination organization. Early shipments can also occur if there is a maximum inventory defined in the source organization and the supply in the source exceeds maximum. Supplies ship early to avoid inventory violations in the source organization as long as they do not violate maximum inventory in the destination.
- Projected available balance on day 6 is at target level
- Projected available balance on days 10, 11, and 12 show that some units were planned to be shipped late for the target inventory level but the safety stock inventory level is not violated.

**Example 2**

In this more complex example, safety stocks are actually very low relative to demand. From Example 1, there might be a demand for 100 units on Day 10. The 100 unit supply could never arrive even one day early using the profile options as specified. The user would have to set the profile options maximum percentage of safety stock to a much higher value.

In cases like this, it may be better of you select the item attributes method and set maximums that allow more flexibility so the planning engine can recommend shipment of supplies early.

In this example, the same safety stock levels are the same. You enter these values:

- Maximum Inventory Level Days of Supply: 1
- Maximum Inventory Level Window: 2
- Target Inventory Level Days of Supply and Window: <null>
- MSO: Target Inventory Level % of Safety Stock: 200%

The demand on day 16 is also 400 units. The effect of the Maximum Inventory Level Days of Supply and Maximum Inventory Level Window values is that demands are allowed to arrive at the destination one day early.

| Entity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Demand | 70 | 70 | 80 | 80 | 100 | 100 | 100 | 150 | 100 | 200 | 200 | 200 | 200 | 200 | 400 |
| Maximum | 70 | 75 | 80 | 90 | 100 | 100 | 125 | 125 | 150 | 200 | 200 | 200 | 200 | 300 | 400 |
| Target | 10 | 10 | 10 | 10 | 10 | 14 | 14 | 14 | 14 | 14 | 20 | 20 | 20 | 20 | 20 |
| Safety stock | 5 | 5 | 5 | 5 | 5 | 7 | 7 | 7 | 7 | 7 | 10 | 10 | 10 | 10 | 10 |
| Projected available balance | 10 | 10 | 80 | 50 | 50 | 7 | 14 | 14 | 150 | 200 | 75 | 10 | 10 | 400 | 400 |
| +/- safety stock | - | - | 70 | 40 | 40 | -7 | - | - | 136 | 186 | 55 | -10 | -10 | 380 | 380 |

The maximum value for day 1 is 70, the average of day 1 and day 2 demands [(70 + 70) / 2].

The maximum inventory level bears little resemblance to the safety stock level. Instead, you have chosen to let the maximum inventory level fluctuate based on the average of the next two days supply. In other words, the amount of inventory that can arrive early in the warehouse is the average demand for two days.

## Distribution Planning for Early Shipments

If there are supplies that are available early, the planing engine may decide to ship the supplies early.

- Distribution planning netting logic is used. It respects allocation buckets and demand priorities. Supplies are rescheduled and planned orders are created based on demands (sales orders, forecasts, and safety stock levels) and all available supplies (including expected receipts).

- All supplies are pegged to demands or to excess

Maximum inventory level in the destination organization places a limit on how early supplies can be shipped since inventory level cannot exceed the maximum. However, the maximum is sometimes violated in the destination organization if this organization is in the middle of a distribution network.

For Example:

- Org2 is sourced from Org1 at no lead time

- Org1 is sourced from Org0 at 1 day lead time

- Org2 has demand of quantity 100 due on day 3

- This places outbound demand on Org1 on day 3 and requests outbound shipment from Org0 on day 2

- Org1 can only ship once a week on, for example, day 3 and day 10, but can receive on any day

- The demand in Org0 was satisfied late on day 4 and ships on day 4.

- When Org1 gets the shipment from Org0 on day 5, it must carry this inventory until day 10 when it ships to Org2. If the Org2 maximum inventory level is less than 100, this planned transaction violates it.

The distribution planning engine determines how early a supply can be shipped based on the maximum inventory level. It then considers trip consolidation constraints and profile option MSC: Distribution Planning Ship Date to determine if the item should be shipped early.

There can be supplies available from two different sources and both are available early. If both cannot arrive at the destination organization early because of its maximum inventory level but one supply could arrive early:

- If the maximum inventory level at a source organization would be violated, the planning engine recommends shipment from that organization

- Otherwise, it recommends to ship the supply that has the shortest in-transit time to minimize the amount of material in transit.

### Distribution Planning for Min-Max Simulation

Distribution planning replenishes to the target level. You might want to prevent the distribution engine from ordering small quantities when the projected available balance is close to the maximum, you can set a fixed order quantity as he minimum value for supply orders. For example:

- Safety Stock: 10
- Target: 15
- Maximum: 15
- Fixed Order Quantity: 4

The distribution planning engine does not create a supply order that violates the maximum. If projected available balance is 14, the projected available balance will be 18 (14 projected available balance + 4 fixed order quantity). It does not recommend a supply order.

The distribution planning engine does violate the maximum if projected available balance is below safety stock. For example:

- Safety Stock: 10
- Target: 15
- Maximum: 15
- Fixed Order Quantity: 12

If projected available balance is 9, it is below safety stock. The distribution planning engine recommends a supply order for 12. The projected available balance becomes 17 (9 projected available balance + 12 fixed order quantity).

## Inventory Rebalancing

You use inventory rebalancing if you want distribution planning to resolve an expected shortage in one organization by planning to transfer inventory from a related organization and vice versa. For example, you have two regional distribution centers that are geographically close. If there is a shortage in either distribution center, the planning engine plans to use the other organization as a supply source. The planning engine does not create bidirectional transfers within the same bucket or across several close-in-time buckets to prevent inventory from continually circling back and forth between sites.

To specify your inventory balancing relationships, use the sourcing rules and bills of distribution of both of the organizations. To indicate an inventory balancing relation, you select Inventory Rebalance. You must use the sourcing rules and bills of

distribution from the Distribution Planner responsibility. The sourcing rules and bills of distribution in Oracle Purchasing do not have the inventory rebalance fields.

This example shows rebalancing set up between an east organization (R1) and a central organization (R2). You must specify the inventory rebalance relationship between R1 and R2 on both the R1 local sourcing rule and on the R2 local sourcing rule for the inventory rebalancing relationship to be established. Both distribution centers normally source from the central distribution center D2.

This table shows the sourcing rules for organization R1 East.

| Type | Org | Supplier | Supplier Site | Inventory Rebalance | Allocation % | Rank | Shipping Method | Intransit Time |
|---|---|---|---|---|---|---|---|---|
| Transfer from | D2 | - | - | Clear | 100 | 1 | Truck | 2 |
| Transfer from | R2 | - | - | Selected | - | <blank> | Acme | 2 |

This table shows the sourcing rules for organization R2 Central.

| Type | Org | Supplier | Supplier Site | Inventory Rebalance | Allocation % | Rank | Shipping Method | Intransit Time |
|---|---|---|---|---|---|---|---|---|
| Transfer from | D2 | - | - | Clear | 100 | 1 | Truck | 2 |
| Transfer from | R1 | - | - | Selected | - | <blank> | Ace | 2 |

These are the rules that apply to specifying inventory rebalancing relationships:

- Use local sourcing rules and bills of distribution, not global ones, to specify an inventory rebalancing relationship.
- Rank and Allocation % default to blank. You cannot change them. If either Rank or Allocation % contains a value, you cannot select Inventory Rebalance.
- If ship method is left blank, then the default ship method is used.
- You can specify multiple inventory rebalance sources. Use field Inventory

Rebalance Rank to control the order in which the planning engine sources; it sources from the highest rank source (lowest number rank) first.

- You can only use one ship method for each inventory rebalancing relationship on a sourcing rule or bill of distribution entry. You cannot have multiple sourcing rule or bill of distribution lines with Inventory Balancing selected and the same Org.
- MPP, MPS, and MRP plans do not use inventory rebalancing relationships.
- The two-way inventory rebalancing relationship needs to be specified for both directions or it is not complete.

  If one of the inventory rebalancing sources has a supply schedule for an item, no inventory rebalancing is done in any direction for that item; the planning engine cannot create planned orders for an organization-item with a supply schedule.

This example shows rebalancing set up among an east organization (R1), a central organization (R2), and a west organization (R3). You must specify the inventory rebalance relationship among R1, R2, and R3 on the R1 local sourcing rule, on the R2 local sourcing rule, and on the R3 local sourcing rule for the inventory rebalancing relationship to be established. You need to mention each pair at least once.

This table shows the sourcing rules for organization R1 East.

| Type | Org | Supplier | Supplier Site | Inventory Rebalance | Allocation % | Rank | Rebalance Rank | Shipping Method | Intransit Time |
|---|---|---|---|---|---|---|---|---|---|
| Transfer from | D2 | - | - | Clear | 100 | 1 | <blank> | Truck | 2 |
| Transfer from | R2 | - | - | Selected | - | <blank> | 0 | Acme | 2 |
| Transfer from | R3 | - | - | Selected | - | <blank> | 1 | Truck | 2 |

This table shows the sourcing rules for organization R2 Central.

| Type | Org | Supplier | Supplier Site | Inventory Rebalance | Allocation % | Rank | Rebalance Rank | Shipping Method | Intransit Time |
|---|---|---|---|---|---|---|---|---|---|
| Transfer from | D2 | - | - | Clear | 100 | 1 | <blank> | Truck | 2 |
| Transfer from | R1 | - | - | Selected | - | <blank> | 0 | Ace | 2 |
| Transfer from | R3 | - | - | Selected | - | <blank> | 1 | Truck | 2 |

This table shows the sourcing rules for organization R3 West.

| Type | Org | Supplier | Supplier Site | Inventory Rebalance | Allocation % | Rank | Rebalance Rank | Shipping Method | Intransit Time |
|---|---|---|---|---|---|---|---|---|---|
| Transfer from | D2 | - | - | Clear | 100 | 1 | <blank> | Truck | 2 |
| Transfer from | R1 | - | - | Selected | - | <blank> | 0 | Truck | 2 |
| Transfer from | R2 | - | - | Selected | - | <blank> | 1 | Truck | 2 |

Inventory rebalancing relationships create a use up first relationship. That is, the supplies in the inventory rebalance relationship are used first before additional supplies are sourced from other locations. For example, distribution center DC1 has both an inventory rebalancing relationship with distribution center DC2 and a non-inventory rebalancing, transfer from relationship with manufacturing facility M1. The planning engine tries to resolve expected shortages at DC1 with expected inventory from DC2 before it tries to resolve expected shortages with inventory from M1.

Inventory rebalancing logic respects demand priority. If inventory rebalancing is specified between organization DC1 and organization DC2, the planning engine only plans to transfer the part of supply from DC2 to DC1 that is not needed to allocate to DC2 demands that are higher priority than the demand in DC1 that needs the supply. The planning engine does this by only considering the notion of a surplus projected available balance and a number of days that the surplus must exist.

The sources of supply that the planning engine considers for inventory rebalancing are:

- Firm supplies: On hand, firm scheduled receipts and firm planned orders)
- Surplus projected available balance: This is the quantity of projected available balance that is higher than target inventory level or safety stock inventory level, depending on the value of profile option MSC: Inventory Rebalancing Surplus Inventory Basis

Load consolidation is not done for inventory rebalancing relationships and trips are not created. The internal requisitions and internal sales orders are created and can be released.

Use plan option Inventory Rebalancing Surplus Days to specify the number of additional days that the surplus must exist before it can be used as a supply for a inventory rebalancing demand. This prevents the surplus from being used on one day when it might be needed for a demand tomorrow If it is zero, the surplus only has to exist at the end of each day. . For example, this table shows the inventory, supply, and demand position of an item, that uses inventory rebalancing:

- Plan option Inventory Rebalancing Surplus Days = 3 days and profile option MSC: Inventory rebalancing Surplus Inventory Basis = Safety Stock.
- There are three units of surplus supply on day 3. There is no surplus supply beginning on day 6 because of the demands on day 9.

| Entity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Demand | - | - | 3 | 5 | - | - | - | - | 15 | - |
| Supply | - | 1 | - | 4 | 7 | - | - | 5 | - | 10 |
| Projected available balance | 16 | 17 | 14 | 13 | 20 | 20 | 20 | 25 | 10 | 20 |
| Safety stock | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Surplus | 3 | 3 | 3 | 3 | 10 | - | - | - | - | - |

If inventory is planned to be shipped early because of trip consolidation and is firmed prior to the current plan run, the current plan run may create a surplus at the destination organization

Inventory rebalancing is designed to resolve short term inventory shortages; it is not intended to resolve ongoing supply shortages. Inventory rebalance sources are considered in the first planning bucket where there is demand. If the first demand is on Day 2 in organization A, inventory rebalance transfers may be recommended to meet the demand on Day 2. However, inventory rebalancing assumes that by day 3, the demands on day 2 have been met, and only considers the new demands on day 3. In other words, inventory rebalancing does not carry over unmet demands from one bucket to the next, and does not attempt to meet the total shortages over time.

Inventory rebalancing is considered in both the daily and weekly planning buckets. If the value of the inventory rebalancing surplus days calculated date falls on any day other than the end of the week in the source organization, the planning engine takes a conservative approach and extends it to the end of that weekly planning bucket. For example,

- The destination organization does not work on Friday and Saturday
- Surplus days is five
- A demand is due in the destination organization on Wednesday.
- The inventory rebalancing surplus date is the next Wednesday (the demand due Wednesday + Thursday, Sunday, Monday, Tuesday, Wednesday)
- If the next Wednesday is in a bucket that ends on Friday, the planning engine moves the inventory rebalancing surplus date from the next Wednesday to the next Friday.

When evaluating inventory rebalancing results in weekly buckets, past due demands are not carried forward during the inventory rebalancing calculations, and so, inventory rebalancing may not be useful in the weekly buckets which are typically later in a plan horizon

Supply allocation rules:

- Are not used to allocate inventory between competing inventory rebalancing demands
- Are used to apply order modifiers to inventory rebalancing transfers. Distribution plans use only item attribute order modifiers Fixed Lot Multiple and Round Order Quantities.

The order modifiers are used for inventory rebalancing as defined on the Supply Allocation Rule, and if null then the item attribute order modifier Fixed Lot Multiplier is used. When defining a supply allocation rule for a inventory rebalancing relationship, only define the order modifiers as the demand priority override and fair share

allocation selections are ignored by the planning engine.

Inventory rebalancing rules do not consider end item substitution relationships.

## Setting Up Supply Allocation Rules

The Supply Allocation Rule form is used to define allocations for multiple destinations from a single shipping organization and determine how supply is allocated outwards from more central locations. Supply allocation rules are assigned to items and organizations within an existing assignment set, and are only assigned to organizations, not customer sites. They define:

- Methods to allocation supply among competing demands when supply is insufficient in a time bucket
- Methods to override the demand priorities for inter-organization demands

### To set up Supply Allocation Rules

1. From the Navigator, select Distribution Planning > Sourcing > Supply Allocation Rules.

   The Supply Allocation Rule form appears.

2. Enter the Name and Description for the supply allocation rule. To import this information from another supply allocation rule, click the Copy From button.

3. In the Org fields, enter at least one organization. Organizations listed here are considered for both the Demand Priority Override and fair share allocation, even if no values are specified in either zone for that organization.

4. Set the Fixed Lot Multiplier to be used by the supply allocation process by entering an integer greater than zero. The Fixed Lot Multiplier is used as the order modifier for assigned organization items.

   This step is optional and is only used for inter-organization transfers. If the Fixed Lot Multiplier is not defined by the supply allocation rule, Distribution Planning uses the destination organization Fixed Lot Multiplier for transfer order sizing.

5. Set the Fair Share Allocation method to one of the following:.

   - Current Demand: Fair share of supplies is based on the ratio of demands in the allocation bucket. You can optionally enter a percent for one or more organizations. The percent overrides the safety stock ratio for that organization and the remaining organizations are apportioned the remaining percentages based on demand ratios.
   - Safety Stock Ratio: For an organization, fair share is calculated as follows:,

Fair Share Percent = Organization Safety Stock / Total of All Organization Safety Stock Levels

You can optionally enter a percent for one or more organizations. The percent overrides the safety stock ratio for that organization and the remaining organizations are apportioned the remaining percentages based on demand ratios.

- Fixed Percent: Fixed percentages of supplies are allocated to each destination organization.

  The entered percents are used during the allocation process and define the minimum amount of the available supplies that an organization should receive. During allocation, the organization with the highest percent is considered first and is allocated up to that percent of the supply before the next organization is considered. After all organizations with defined percents are considered, any remaining supply is allocated on a first come first serve basis.

- Order Size Method: Fair share is allocated by order size.

- None: There is no fair share, supplies are allocated to demands on a first come first served basis.

  Fair Share Allocation methods are assigned in the assignments sets form.

Please see the section Fair Share Allocation, page 14-28 for more details.

6. Enter required Percent values for the selected Fair Share Allocation method. The form validates Percent depending on the selected Fair Share Allocation method as follows:

   - Fixed Percent Method: Percent can be entered for each organization.

   - Safety Stock Ratio Method: Percent can be entered for each organization.

   - Current Demand Ratio Method: Percent can be entered for each organization.

   - Order Size Method: Percent is disabled.

   - None: Percent is disabled.

7. Optionally, you can set the Demand Priority Override to establish priorities by organization by choosing Select Organization from the drop-down and specifying a priority for each destination organization.

8. To specify how you want to planning engine to allocate external sales orders and internal sales orders, see profile option MSC: DPP allocates to existing ISO's before other demands with the same priority

### Setting Up Assignment Sets

#### To set up assignment sets:

1. From the Navigator, select Distribution Planning > Sourcing > Assign Sourcing Rules
2. Assign sourcing rules and bills of distribution.
3. Assign supply allocation rules at the organization, organization category, or organization-item level.

Supply allocation rules are assigned to the shipping organization and specify how the shipping organization allocates when supply is short.

For supply allocation rules, the Assigned to list of values is:

- Organization
- Category - Organization
- Item - Organization

Supply allocation rules cannot be assigned at the item or global levels. The context is always specific to the shipping or source organization. You must enter the organization which becomes the shipping organization context for the supply allocation rule.

## Setting Up High Volume Distribution Planning

Use profile option MSC: Enable DPP Multitasking to enable high volume distribution planning.

System administrators set these profile options together for performance tuning depending on the plan structure and hardware available:

- MSC: DPP Multitasking Max Concurrent Processes
- MSC: DPP Multitasking Group ID's per Process

These profile options work together to affect performance. For example:

- There are 103 group IDs in a plan and profile option MSC: DPP Multitasking Group ID's per Process is 4. The plan needs 26 (103 / 4) netting and allocation children processes for the entire model. The first 25 children processes will process 4 group IDs each, and the 26th child will process the remaining 3 group IDs.

  After the netting and allocation phase, the load consolidation processes run. Since load consolidation does not use a group ID based filtering it does not use this profile option.

- Profile option MSC: DPP Multitasking Max Concurrent Processes is 6. The planning process starts six concurrent processes and does not exceed this number during the processing but it does process all 26

## Order Modifiers

You can use these order modifiers with distribution plans:

- Fixed Lot Multiplier
- Minimum Order Quantity
- Maximum Order Quantity
- Round Order Quantity

See also Items, page 7-3 > Order Modifiers.

You can set:

- All of these as item-organization item attributes
- All except Round Order Quantity as part of the supplier allocation rules
- Minimum Order Quantity and Fixed Lot Multiplier as part of the approved supplier list

### Order Modifiers and Transfer Orders

The planning engine does not use, approved supplier list order modifiers.

It first uses supply allocation rule order modifiers that are effective on the plan run date, regardless of the transfer due date

Otherwise, it uses the item-organization item attribute order modifiers from the destination organization.

When there are multiple order modifiers, it uses these procedures to decide on the order size.

Use supplier allocation rule order modifier Fixed Lot Multiplier, or item attribute order modifier Fixed Lot Multiplier. Set order size to the smallest multiple of the fixed lot multiplier that is more than the suggested order.

For example, demand quantity is 100, fixed lot multiplier is 30, order size is 120

Use supplier allocation rule order modifier Minimum Order Quantity, or item attribute order modifier Minimum Order Quantity. Set order size:

- Higher than the minimum order quantity

- Higher than the demand quantity
- In a multiple of the fixed lot multiplier

For example:

- Demand quantity is 100, minimum order quantity is 200, fixed lot multiplier is 0, order size is 200
- Demand quantity is 100, minimum order quantity is 200, fixed lot multiplier is 30, order size is 210

Use supplier allocation rule order modifier Maximum Order Quantity, or item attribute order modifier Maximum Order Quantity. Set order size:

- At the maximum order quantity or lower
- Higher than the minimum order quantity
- At the demand quantity or higher
- In a multiple of the fixed lot multiplier

For example:

- Demand quantity is 100, maximum order quantity is 200, fixed lot multiplier is 0, order size is 100
- Demand quantity is 200, maximum order quantity is 200, fixed lot multiplier is 30, two orders with order size is 180 and 30
- Demand quantity is 200, maximum order quantity is 200, minimum order quantity is 50, fixed lot multiplier is 30, two orders with order size is 180 and 60

If Maximum Order Quantity is the same or lower than Minimum Order Quantity, use Maximum Order Quantity as the order size and ignore Minimum Order Quantity.

If Maximum Order Quantity is lower than Fixed Lot Multiplier, use Maximum Order Quantity as the order size and ignore Fixed Lot Multiplier.

Round order quantities.

## Order Modifiers and Buy Orders

The planning engine does not pay attention to supplier allocation rule order modifiers.

It first uses approved supplier list order modifiers

Otherwise, it uses the item-organization item attribute order modifiers from the destination organization.

When there are multiple order modifiers, it uses these procedures to decide on the

order size

Use approved supplier list order modifier Fixed Lot Multiplier, or item attribute order modifier Fixed Lot Multiplier. Set order size to the smallest multiple of the fixed lot multiplier that is more than the suggested order.

For example, demand quantity is 100, fixed lot multiplier is 30, order size is 120

Use approved supplier list order modifier Minimum Order Quantity, or item attribute order modifier Minimum Order Quantity. Set order size:

- Higher than the minimum order quantity
- Higher than the demand quantity
- In a multiple of the fixed lot multiplier

For example:

- Demand quantity is 100, minimum order quantity is 200, fixed lot multiplier is 0, order size is 200
- Demand quantity is 100, minimum order quantity is 200, fixed lot multiplier is 30, order size is 210

Use item attribute order modifier Maximum Order Quantity. Set order size:

- At the maximum order quantity or lower
- Higher than the minimum order quantity
- At the demand quantity or higher
- In a multiple of the fixed lot multiplier

For example:

- Demand quantity is 100, maximum order quantity is 200, fixed lot multiplier is 0, order size is 100
- Demand quantity is 200, maximum order quantity is 200, fixed lot multiplier is 30, two orders with order size is 180 and 30
- Demand quantity is 200, maximum order quantity is 200, minimum order quantity is 50, fixed lot multiplier is 30, two orders with order size is 180 and 60

If Maximum Order Quantity is the same or lower than Minimum Order Quantity, use Maximum Order Quantity as the order size and ignore Minimum Order Quantity.

If Maximum Order Quantity is lower than Fixed Lot Multiplier, use Maximum Order Quantity as the order size and ignore Fixed Lot Multiplier.

Round order quantities.

## Order Modifiers and Make Orders

The planning engine does not pay attention to supplier allocation rule or approved supplier list order modifiers.

It only uses the item-organization item attribute order modifiers from the destination organization.

When there are multiple order modifiers, it uses these procedures to decide on the order size.

Use item attribute order modifier Fixed Lot Multiplier. Set order size to the smallest multiple of the fixed lot multiplier that is more than the suggested order.

For example, demand quantity is 100, fixed lot multiplier is 30, order size is 120

Use item attribute order modifier Minimum Order Quantity. Set order size:

- Higher than the minimum order quantity
- Higher than the demand quantity
- In a multiple of the fixed lot multiplier

For example:

- Demand quantity is 100, minimum order quantity is 200, fixed lot multiplier is 0, order size is 200
- Demand quantity is 100, minimum order quantity is 200, fixed lot multiplier is 30, order size is 210

Use item attribute order modifier Maximum Order Quantity. Set order size:

- At the maximum order quantity or lower
- Higher than the minimum order quantity
- At the demand quantity or higher
- In a multiple of the fixed lot multiplier

For example:

- Demand quantity is 100, maximum order quantity is 200, fixed lot multiplier is 0, order size is 100
- Demand quantity is 200, maximum order quantity is 200, fixed lot multiplier is 30, two orders with order size is 180 and 30
- Demand quantity is 200, maximum order quantity is 200, minimum order quantity

is 50, fixed lot multiplier is 30, two orders with order size is 180 and 60

- Maximum order quantity is 200, minimum order quantity is 200, fixed lot multiplier is 30, all orders have order size is 210

If Maximum Order Quantity is the same or lower than Minimum Order Quantity, use Maximum Order Quantity as the order size and ignore Minimum Order Quantity.

If Maximum Order Quantity is lower than Fixed Lot Multiplier, use Maximum Order Quantity as the order size and ignore Fixed Lot Multiplier.

Round order quantities.

## Order Modifiers and Partial Cancellations

When the planning engine recommends a quantity reduction to a scheduled receipt, it considers most modifiers. It does not consider order modifier Maximum Order Quantity; an order above the maximum order quantity can remain above the maximum order quantity.

It first checks for and uses the:

- Supply allocation rule modifiers for internal transfer orders
- Approved supplier list order modifiers for purchase requisitions and purchase orders

For example:

- There is an internal transfer order quantity 80.
- Supplier allocation rule order modifier Minimum Order Quantity is 50
- The planning solver can suggest reducing the internal transfer order as low as quantity 50

For example:

- There is an internal transfer order quantity 80
- Supplier allocation rule order modifier Minimum Order Quantity is 50
- Supplier allocation rule order modifier Fixed Lot Multiplier is 20
- The planning solver can suggest reducing the internal transfer order as low as quantity 60

## Order Modifiers and Inventory Rebalance Transfers

To override item-organization item attribute order modifiers, set up one supplier

allocation rule for all inventory rebalance organizations and assign it to an organization.

The planning solver uses the supply allocation rule order modifiers for transfers from that assigned organization to any organization with an inventory rebalance relationship.

For example:

- Organizations RW1, RW2, RW3, RW4, and RW5 are regional warehouses with one or more inventory rebalance relationships.
- Organization DC is the central distribution center.
- You want to use the same order modifiers for all inventory rebalance transfers.
- Create one supply allocation rule, list the five organizations, and set the order modifiers for each destination organization.
- In the assignment set, assign the supply allocation rule to each of the five organizations.

## Distribution Requirements Planning

**MRSL Fields in the DRP Workbench**

- **Expiry Date** – This field displays the expiration date of supply. This field is valid for the supply records. Null means no expiration date.
- **MRSL Days** – This field displays the minimum remaining shelf life days of demand. This field is valid for the demand records. Null means no MRSL has been defined.
- **MRSL Date** – This field displays the corresponding date for minimum remaining shelf life days of demand. The MRSL constraint is respected if the demand is satisfied before this date. This field is valid for the demand records. Null means no MRSL has been defined.

**Consideration of inventory rebalancing with MRSL**

Any supply used for inventory rebalancing must have sufficient MRSL to meet the destination org demand MRSL value when the supply arrives at the destination org.

**MRSL and Fair Share Logic**

DRP performs supply allocation among competing demands when supply is short. Within a bucket, demands are grouped by priority, and supplies are allocated to the top level demand priority group.

Allocations are made using supplies which can satisfy the MRSL requirement of the demand. DRP selects supplies for which the (Shelf Life – MRSL) exceeds the Demand

Date by a minimum amount.

If a supply cannot satisfy any MRSL demand requirement in the current allocation bucket and priority, it is not used in the current allocation process. The total supply to be allocated is reduced by the unusable supply. This supply will be considered for allocation to demands in lower priorities in case it can be used for those demands.

Within the demands, if there is any demand where no supply can satisfy the demand MRSL requirement, then the demand is not included. Other demand allocations are adjusted to use up the supply. The adjusted supply and demand quantities are then used for the allocation process.

**MRSL Consideration of Kitting**

If the model is setup for kitting then the first phase of allocation is to create the kit item supplies. At this point all kit components are processed and the constrained supplies picture for kit components is finalized. Regarding MRSL functionality, there are no special requirements that could affect DRP kitting logic.

> **Note:** Lot expired supplies cannot be used for a kit supply after their lot expiration date.

The only addition in DRP kitting is to calculate the expiry date (shelf life date) for each new Make Planned Order. Shelf life date calculation logic for kit item is performed as follows:

- If at least one component supply has a valid shelf life date, then the kit shelf life date is set to the most constraining (the earliest) shelf life date of all component supplies.
- If there is no component supply with a valid shelf life date, then the kit shelf life date is calculated based on the item attribute shelf life days.
- Otherwise, the kit expiration date is null.

**MSC: Distribution Planning Respects Minimum Remaining Shelf Life**

This profile option enables DRP to plan supplies with respect to the shelf life, including the minimum remaining shelf life days.

| Value | Description |
|---|---|
| No | DRP plans supplies without enforcing minimum remaining shelf life days. This is the default value. |

| | |
|---|---|
| Yes | DRP plans supplies with respect to minimum remaining shelf life days. This is the recommended setting. |

**Note:** The profile option "MSC: Respect Minimum Remaining Shelf Life Days" is not used by DRP.

## Minimum Remaining Shelf Life

For perishable items, the Distribution Plan can be configured to consider the Minimum Remaining Shelf Life (MRSL). (For information about incorporating MRSL when modeling the Supply Chain, see Setting Up Minimum Remaining Shelf Life in the chapter Supply Chain Plan Modeling).

**Consideration of MRSL when Pegging In-transit Supplies**

Shelf life is the time between a product's Creation Date and Expiration Date. The Minimum Remaining Shelf Life (MRSL) is the number of days of remaining shelf life as of the Arrival Date (when the product arrives at the final destination). The MRSL is typically a requirement of the Sales Order.

The Minimum Remaining Shelf Life Days can be specified in the Item Attributes Mass Maintenance window at the item/customer/customer site level, and also at the org/org level.

**Note:** The following 2 steps are prerequisites to populating the MRSL column in ODS:

1. The user needs to enter the sales order line specific MRSL in a DFF in the source instance.
2. The user needs to develop a load program that brings this sales order line specific MRSL to the planning server (ODS). This program should be added to a data collections request set.

**Hierarchy**

The following hierarchy is used to determine the MRSL value for each demand:

- Sales order line specific
- Item-customer-customer site specific
- Item-org specific

- DRP overrides the item-customer-customer site specific MRSL defined in the Item Attributes Mass Maintenance window with the sales order line specific MRSL if the latter is not null
- DRP overrides the item-org specific MRSL defined in the Item Attributes Mass Maintenance window with the item-customer-customer site specific MRSL if the latter is not null

**Maximum Time Offset**

In order to prioritize moving items with near expiration dates, DRP selects supplies for which the Remaining Shelf Life (at the time of the planned delivery date), minus the MRSL, will equal the least number of days. In the example below, both items satisfy the MRSL requirement. Item A arrives with 6 days of remaining shelf life (10 - 4) and Item B arrives with 4 days of remaining shelf life (8 - 4). So in this situation, Item B would be selected, because 4 is less than 6.

| Item | Remaining Shelf Life (as of today) | In-transit Days | Remaining Shelf Life (as of Arrival Date) | MRSL Requirement |
|---|---|---|---|---|
| A | 10 | 4 | 6 | 3 |
| B | 8 | 4 | 4 | 3 |

The Max Time Offset is essentially the maximum allowable number of days for the product to reach the customer's site before expiring. It is calculated as (Expiration Date - Today) - MRSL.

For Item A above, since it starts with 10 days of remaining shelf life, it must reach the customer site no later than the 7th day. Any later and its shelf life would be less than the MRSL.

The Planning Engine enforces the Max Time Offset based on the item's remaining shelf life, the in-transit days, the customer's Demand Date, and the MRSL. It will not allow the item to reach the customer with less than the required MRSL.

**Anchor Date**

You can tell the planning engine to calculate remaining shelf life based on the Arrival Date or the Ship Date. This is accomplished by the profile option "MSC: Anchor date for calculating remaining shelf life". The allowable values for this profile option are:

| Value | Description |
|---|---|

| | |
|---|---|
| Arrival Date | The remaining shelf life is calculated based on the arrival date at customer site - This is the default value. |
| Ship Date | The remaining shelf life is calculated based on the ship date. |

**Note:** In both cases DRP considers the latest of Requested or Scheduled Dates to calculate the remaining shelf life.

**Consideration of MRSL for Sourcing Decisions**

For perishable items, the Distribution Plan can be configured to consider the Minimum Remaining Shelf Life (MRSL). (For information about incorporating MRSL when modeling the Supply Chain, see Setting Up Minimum Remaining Shelf Life in the chapter Supply Chain Plan Modeling).

**Consideration of MRSL when Pegging In-transit Supplies**

Shelf life is the time between a product's Creation Date and Expiration Date. The Minimum Remaining Shelf Life (MRSL) is the number of days of remaining shelf life as of the Arrival Date (when the product arrives at the final destination). The MRSL is typically a requirement of the Sales Order.

The Minimum Remaining Shelf Life Days can be specified in the Item Attributes Mass Maintenance window at the item/customer/customer site level, and also at the org/org level.

DRP also allows you to specify the MRSL at the sales order line level. The user accomplishes this by populating the column called "MINIMUM_REMAINING_SHELF_LIFE" in the "MSC_SALES_ORDERS" table in the planning server (ODS).

The following 2 steps are prerequisites to populating the MRSL column in ODS:

1. The user needs to enter the sales order line specific MRSL in a DFF in the source instance.
2. The user needs to develop a load program that brings this sales order line specific MRSL to the planning server (ODS). This program should be added to a data collections request set.

**Hierarchy**

The following hierarchy is used to determine the MRSL value for each demand:

Sales order line specific

Item-customer-customer site specific

Item-org specific

DRP overrides the item-customer-customer site specific MRSL defined in the Item Attributes Mass Maintenance window with the sales order line specific MRSL if the latter is not null

DRP overrides the item-org specific MRSL defined in the Item Attributes Mass Maintenance window with the item-customer-customer site specific MRSL if the latter is not null

**Maximum Time Offset**

In order to prioritize moving items with near expiration dates, DRP selects supplies for which the Remaining Shelf Life (at the time of the planned delivery date), minus the MRSL, will equal the least number of days. In the example below, both items satisfy the MRSL requirement. Item A arrives with 6 days of remaining shelf life (10 - 4) and Item B arrives with 4 days of remaining shelf life (8 - 4). So in this situation, Item B would be selected, because 4 is less than 6.

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| A | 10 | 4 | 6 | 3 |
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The Planning Engine enforces the Max Time Offset based on the item's remaining shelf life, the in-transit days, the customer's Demand Date, and the MRSL. It will not allow the item to reach the customer with less than the required MRSL.

**Anchor Date**

You can tell the planning engine to calculate remaining shelf life based on the Arrival Date or the Ship Date. This is accomplished by the profile option "MSC: Anchor date for calculating remaining shelf life". The allowable values for this profile option are:

| Value | Description |
|---|---|

| | |
|---|---|
| Arrival Date | The remaining shelf life is calculated based on the arrival date at customer site - This is the default value. |
| Ship Date | The remaining shelf life is calculated based on the ship date. |

**Note:** In both cases DRP considers the latest of Requested or Scheduled Dates to calculate the remaining shelf life.

### Consideration of MRSL for Sourcing Decisions

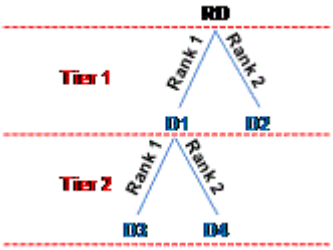
Oracle ASCP selects sources and their associated supplies such that MRSL constraints are satisfied.

DRP prioritizes shelf life above the following sourcing and end item decision factors (For example, if there are no rank 1 supplies with the required shelf life days, then DRP searches lower ranked sources to find a supply which meets the MRSL constraint):

1. Source Rank
2. Source Tier

   Tier represents the breadth vs. Rank which represents the depth.

   For example there are two sources, a Rank 1 source and a Rank 2 source. The Rank 1 source has 2 sources as well, A Rank 1 and a Rank 2:




3. Sourcing Split Percentage
4. End Item Substitute Distance from Demanded Item

This means ASCP chooses supplies so that the maximum number of demands are satisfied with respect to shelf life requirements regardless of the above 4 decision factors. These decision factors are only used as tie breakers.

### MRSL Support for Multi Echelon Supply Chain

DRP considers the expiration date of the on hand lot upon transfer to the destination

organization with respect to in-transit time.

When transferring between organizations, DRP considers the shelf life days in the source org and does not reset shelf life days in the destination org.

> **Note:** Oracle Inventory has a profile option in 12.2 "INV: Enable Global Attributes for Lot". When set to yes, the inventory lot has the same expiration date in all organizations. If Yes, then collections can get the lot expiration date of the supplies in the shipment. Users should set this profile to Yes.

**Example of Multi Echelon Support**

**Assumptions:**

Product P is shipped from organization M2 to customer. This item is sourced from organization M1.

Item Shelf Life = 21 days

In-transit Time from M1 to M2 = 5 days

In-transit Time from M2 to Customer Site = 2 days

MRSL = 13 days

Demand = 100 units

Ship Date = January 26

Arrival Date = January 28

Arrival Date is selected as the MRSL Anchor Date.

**There are two possible lots to fill this order:**

Product P On hand Lot 1.1 = 100 units

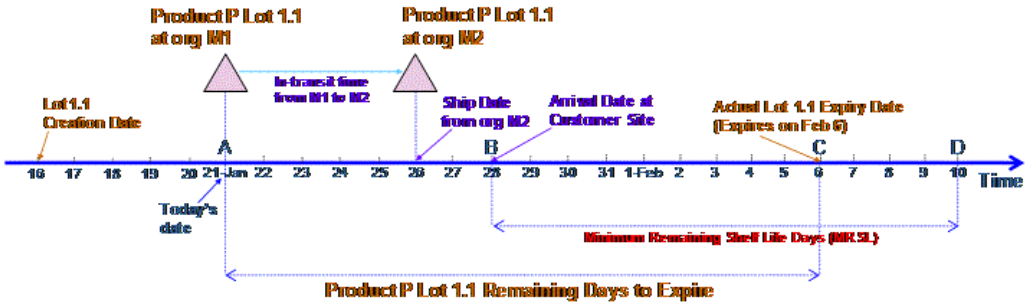
Product P Lot 1.1 Remaining Days to Expire = 16 days

Product P On hand Lot 1.2 = 100 units

Product P Lot 1.2 Remaining Days to Expire = 21 days

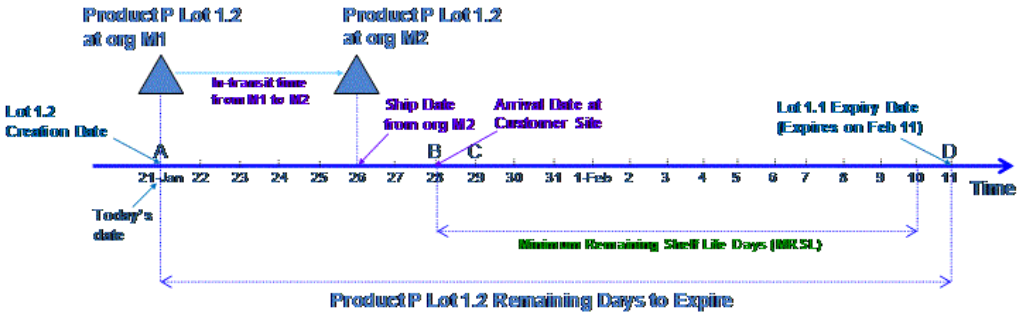
The diagram below shows why Lot 1.1 will NOT be allowed to satisfy this order. The product has a 16 remaining days to expire from the time the order is received ("Today's Date"). However, it will take 7 days to reach the customer, and would arrive with 9 remaining days to expire, which is less than the MRSL requirement of 13 days.

Remaining Shelf Life – In-transit Times = 16 – 5 – 2 = 9




This next diagram shows why Lot 1.2 WILL satisfy this order. The product has a 21 remaining days to expire from the time the order is received ("Today's Date"). It takes 7 days to reach the customer, and will arrive with 14 remaining days to expire, which satisfies the MRSL requirement of 13 days.

Remaining Shelf Life – In-transit Time6 = 21 – 5 – 2 = 14




### Consideration of MRSL for Calculation of Safety Stock

The attribute "Safety Stock MRSL" in the Item Attributes Mass Maintenance form configures the planning engine to consider MRSL when calculating safety stock. This attribute represents the minimum number of days of required shelf life for the safety stock when it is used for a customer demand. The value specified for this attribute is a judgment call by management based on all customer's MRSL for the item.

This attribute may be set to:

- the maximum of the customer MRSL's that the safety stock needs to protect for
- somewhat below the maximum (a more typical value)
- above the maximum in order to minimize MRSL violations for demands that are satisfied with safety stock

The following table illustrates ASCP behavior with regards to safety stock without shelf life and MRSL consideration:

- On Hand Remaining Shelf Life: 3Days (Expiry Date: D3)

- Item Shelf Life: 10 Days
- Item MRSL: 7 Days

| | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 | D12 | D13 | D14 | D15 | D16 | D17 | D18 | D19 | D20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Forecast | | | | | 1000 | | | | | 1000 | | | | | 1000 | | | | | 1000 |
| Sales Order | | | 40 | | | | | 20 | | | | | | | | 30 | | | | |
| Safety Stock Demand | 50 | | | | | | | | | | | | | | | | | | | |
| Safety Stock Target Level | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| On Hand Supply | 20 | | | | | | | | | | | | | | | | | | | |
| Planned Order Supply | 30 | | 40 | | 1000 | | | 20 | | 1000 | | | | | 1000 | 30 | | | | 1000 |
| PAB | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |

**Safety Stock MRSL**

The attribute Safety Stock MRSL represents the minimum days of required shelf life for the safety stock when it is used for a customer demand. The value specified for this attribute is a judgment call by management based on all customers MRSL for the item.

Typically this attribute can be set to the maximum of the customer MRSL's that the safety stock needs to protect for, somewhat below the maximum (a more typical value), or above the maximum in order to minimize MRSL violations for demands that are satisfied with safety stock.

ASCP validates the remaining shelf life of transfer and on hand supplies against Safety Stock MRSL. ASCP creates additional new supplies for any transfer or on hand supply that does not respect the following constraint:

Remaining Shelf Life of Supply > or = Safety Stock MRSL

Example:

Item is shipped from organization M1 to customer.

Item is made at M1.

Item can also be sourced from organization M2 to organization M1 (Alternate Source).

On Hand Quantity (Lot 1.1) at M1: 20

Lot 1.1 Remaining Shelf Life: 9 Days (Expiry Date: D9)

On Hand Quantity (Lot 1.2) at M2: 20

Lot 1.2 Remaining Shelf Life: 10 Days (Expiry Date: D10)

On Hand Quantity (Lot 1.3) at M2: 20

Lot 1.3 Remaining Shelf Life: 9 Days (Expiry Date: D8)

In-transit Time from M2 to M1: 2 Days

Item Shelf Life at M1: 10 Days

Item MRSL at M1: 7 Days

Safety Stock MRSL at M1: 8 Days

On hand Lot 1.1 at M1 with can be used as a valid supply at M1 since its remaining shelf life of 9 days is greater than the required Safety Stock MRSL of 8 days.

On hand Lot 1.2 at M2 with the remaining shelf life of 10 days at M2 can be used as a valid supply at M1 since its remaining shelf life when it arrives at M1 is 8 days (Remaining Shelf Life – In-transit Time = 10 – 2 = 8) which is equal to the required Safety Stock MRSL.

On hand Lot 1.3 at M2 with the remaining shelf life of 8 days at M2 cannot be used as a valid supply at M1 since its remaining shelf life when it arrives at M1 is 7 days (Remaining Shelf Life – In-transit Time = 9 – 2 = 7) which less than the required Safety Stock MRSL of 8 days.

The following table displays the supply and demand picture at M1:

| | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 | D12 | D13 | D14 | D15 | D16 | D17 | D18 | D19 | D20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Forecast | | | | | 1000 | | | | | 1000 | | | | | 1000 | | | | | 1000 |
| Sales Order | | | 40 | | | | | 20 | | | | | | | | 30 | | | | |
| Safety Stock Demand | 50 | | | | | | | | | | | | | | | | | | | |
| Safety Stock Target Level | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| On Hand Supply (Lot 1.1) | 20 | | | | | | | | | | | | | | | | | | | |
| Transfer Order from M2 (Lot 1.2) | | | 20 | | | | | | | | | | | | | | | | | |
| Planned Order Supply | 30 | | 20 | | 1000 | | | 20 | | 1000 | | | | | 1000 | 30 | | | | 1000 |
| PAB | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |

In the above scenario, the PAB drops below the Safety Stock Target Level on D3. Then ASCP creates a planned order to satisfy demand (20) in addition to the transfer order of 20 from M2. Similarly ASCP creates planned orders of 20 and 30 on D8 and D16 respectively.

**Note:** The arrows show the safety stock pegging.

**Note:** Satisfying safety stock levels and the MRSL for safety stock levels have a lower priority compared to satisfying end demands and the MRSL for end demands.

# 12

# Defining Distribution Plans

This chapter covers the following topics:

- Setting Distribution Plan Options
- The Main Tabbed Region
- The Aggregation Tabbed Region
- The Organizations Tabbed Region
- The Decision Rules Tabbed Region

## Setting Distribution Plan Options

This section describes how to set distribution plan options. The distribution plan options appear in the following tabbed regions:

- Main
- Aggregation
- Organizations
- Decision Rules

To access the distribution plan options:

- If the plan name is defined: Navigate to Distribution Plans > Options
- If the plan name is not defined: Navigate to Distribution Planner > Distribution Plans > Names. Choose your organization if prompted, define a plan name, and save your work. To access the plan options, click button Plan Options.

## The Main Tabbed Region

This table describes the fields and options of the Main tabbed region:

| Object | Description |
|---|---|
| Demand Priority Rule Set | Use this option to set the Demand Priority Rule for each plan. Demand priorities are set by demand class and demand type. Priorities are assigned to sales orders and forecasts.<br><br>End demand priorities are passed down the supply chain network on the dependent demands.<br><br>If you prefer, you can enter priorities for each demand in the source instance or load priorities for each demand into the ODS using SQL tools. When you select the demand priority rule set in the plan options form, one of the choices is user defined priorities. If user defined priorities is selected, Distribution Planning uses the demand priorities entered for each demand. |
| Assignment Set | Use this option to select assignment set for the distribution plan. Assignment sets include the Supply Allocation rule assignment tab.<br><br>• MRP/MPS/MPP plans can use the same assignment sets but these plans will ignore the supply allocation rules.<br><br>• The Supply Allocation tab is only available on assignment sets on the planning server. |

| Object | Description |
| --- | --- |
| Use Organization Priority Overrides | The Use Organization Priority Overrides check box is optional. However, if Use Organization Priority Overrides is checked, a demand priority rule cannot be used.<br><br>Priorities are based on the organization override priorities set in the supply allocation rule for each organization-item. Allocation from a source organization to the destination organizations are based on the assigned destination organization priority.<br><br>• If no priorities are assigned for an organization-item, allocations are performed on an equal priority basis.<br><br>• Priorities assigned to end demands (forecasts and sales orders), safety stock and target are the same priority as the assigned organization priority.<br><br>Assign organization override priorities to the source organization to control the relative priority level of the source organization independent demands versus the dependent demands from other organizations.<br><br>On demand priority override region, in supply allocation rules, you can select:<br><br>• Use Organization Priorities: For all demands against this organization, the demand priorities are set to the values specified for each organization. You can set the relative priorities of all demands from several organizations.<br><br>• None or Null: Demand priorities are not over-written.<br><br>You can also include the source or shipping organization and specify a priority for the shipping organization. This allows you to specify priorities for the shipping organization when you specify priorities for the receiving organizations. If Organization Priority is selected, all unspecified warehouses are set at the same priority which is one less than any specified warehouses. |

| Object | Description |
| --- | --- |
| | For example, Organizations R1, R2 and R3 source from D2. A demand priority override is specified for R1 as 1, R2 as 2. and D2 as 2 No priority is specified for R3. The default demand priority override for R3 is 3.<br><br>If no organization priority override rule is specified, then all destinations and source are treated as having the same priority.<br><br>When organization priority override is used, then within an organization all demands are given the same priority. Supplies are fair shared within this priority based on the plan option customer fair share allocation method. |
| Fair Share Allocation Method: Default | For each plan, set default fair share allocation method from any source organization to the destination organizations if no supply allocation rule is specified. The three plan option choices are:<br><br>• Current Demand Ratio<br><br>• Safety Stock Ratio<br><br>• None<br><br>Use the default method to reduce the number of user entered fair share allocation rules. The default method is applied to all item-organizations except where a Supply Allocation Rule has been explicitly defined and assigned to the item-source organization.<br><br>When the default fair share allocation method is applied to an item-destination organization, you cannot specify ranks and percents, so standard defaulting logic is used. |

| Object | Description |
| --- | --- |
| Fair Share Allocation Method: Supplier | For each plan, set the supplier fair share allocation method used for all suppliers to organizations allocation. The three plan option choices are:<br>• Current Demand Ratio: Fair share based on the ratio of the demands from each destination organization for the bucket.<br>• Safety Stock Ratio: Fair share based on the ratio of the destination organization safety stock levels at the end of the allocation bucket<br>• None: First-come first-serve basis.<br>Fair share allocation methods are not assigned directly to individual suppliers.<br>The fair share allocation logic is called when supplier capacity is defined and demand exceeds available supplier capacity in an allocation bucket.<br>Supplier capacity is fair shared to multiple organizations based on the net capacity available at the end of an allocation bucket.<br>The total supply that is allocated is the net supply available by the end of the allocation bucket. This is based on the supplier capacity. Load consolidation for shipments from suppliers to organizations is not done. Distribution Planning uses a defaulting hierarchy for the order size multiplier for suppliers:<br>• Approved Supply List (ASL) Fixed Lot Multiplier on the plan run date if defined<br>• If ASL Fixed Lot Multiplier is null, then use the destination organization item attribute Fixed Lot Multiplier for internal transfers from and to this organization.<br>• If destination organization item attribute Fixed Lot Multiplier is Null, then use one as the fixed lot multiplier if item attribute Round Order Quantities is checked.<br>• Otherwise, use fractional quantities up to six |

| Object | Description |
| --- | --- |
| | decimal places. |
| Fair Share Allocation Method: Customer | For each plan, set customer fair share allocation method. The four plan option choices are:<br>• Demand Class: Fair share allocation is performed by demand class. Below demand class, supplies allocated on a first come first serve basis.<br>• Customer: Fair share allocation is performed by customer. At the customer site level, supplies are allocated on a first come first serve basis.<br>• Customer Site: Fair share allocation is performed by customer site.<br>• None: Supplies are allocated on first-come first-serve basis.<br>Highest priority demands are allocated supplies first. When supply runs short for a particular priority, fair share allocation is performed for all demands with that priority. |

| Object | Description |
| --- | --- |
| Enable Sales Order Split | If Enable Sales Order Split is checked, and the sales order line quantity cannot be met on the suggested due date, split it into two lines as:<br>• 1st line: Sales order quantity reduced to the quantity available on the suggested due date.<br>• 2nd line: New suggested ship date when remaining quantity is available.<br><br>Sales order line splits are not preserved from one plan run to the next. Sales order line splits cannot be directly released to Oracle Order Management. You need to establish a process to update and split the sales order lines in Oracle Order Management.<br>• Distribution Planning issues sales order line allocation split exception messages.<br>• Ship line complete sales order lines and internal sales order lines are not split.<br>• If no part of the sales order line can be satisfied on time, then the sales order line is not split. The only order modifier considered when determining line splits for sales orders is the Round Order Quantity item attribute for the shipping organization. Any sales order line that is marked order ship line complete cannot be split. Any sales order line that is part of a ship set cannot be split.<br>• Firm sales order lines can still be split, as the firm flag only indicates that the source organization is firm.<br>• If the sales order line split and fill or kill features are both enabled, sales order lines are only split into two lines when the late quantity can be filled before or on the latest acceptable date. |

| Object | Description |
| --- | --- |
| Enforce Supplier Capacity Constraints | If Enforce Supplier Capacity Constraints is checked, supplier capacity constraints are respected and Material Shortage exceptions are issued when supplier capacity constrains planned orders.<br><br>If Enforce Supplier Capacity Constraints is not checked, supplier capacity constraints can be violated and supplier capacity overload exception messages are reported. |
| Minimum Trip Utilization % and Maximum Trip Utilization % | Use this option to set Minimum Trip Utilization % and Maximum Trip Utilization %. This option only applies to truckload ship methods.<br><br>Maximum Trip Utilization: This parameter is upper limit for loading a truck. For example, if the user specifies this parameter to be 90%, then no truck is loaded over 90% of the maximum weight and cube capacities. If null, 100% is used.<br><br>Minimum Trip Utilization: The planning engine generates different truckload trips with various levels of capacity utilization. Distribution plans attempt to create trips that have capacity utilization greater than the minimum truckload utilization. If null, 0 is used.<br><br>• Both weight and cube trip limits are considered by distribution planning.<br><br>• Trips are not loaded in excess of the maximum trip utilization %.<br><br>Under-utilized trip exceptions reported for trips below the minimum trip utilization %:<br><br>• Under-utilized trips are not scheduled until one of the supplies on the trip is required to prevent safety stock inventory violations or required for higher priority demands.<br><br>• If the trip is scheduled because of one supply, additional supplies may be loaded to improve trip utilization even though not required on the scheduled dock date in the destination. |

Other fields on the main tab are similar to MRP and MPS plan options. Please see the section The Main Tabbed Region, page 3-47 for more details.

## Enable Sales Order Split

In the following example, the upper table shows the sales orders before splitting and the lower table shows the Distribution Planning split of the sales orders based on supply of 100 units on Day 1 and 100 units on Day 3. Customer fair share allocation is enabled.

| Customer | Priority | Demand Quantity | Qty by Due Date | Ship Date | Due Date |
|---|---|---|---|---|---|
| Customer A | 1 | 100 | | | Day 1 |
| Customer B | 1 | 100 | | | Day 1 |

| Customer | Priority | Demand Quantity | Qty by Due Date | Ship Date | Due Date |
|---|---|---|---|---|---|
| Customer A | 1 | 50 | 50 | Day 1 | Day 1 |
| Customer B | 1 | 50 | 50 | Day 1 | Day 1 |
| Customer A | 1 | 50 | 0 | Day 3 | Day 1 |
| Customer B | 1 | 50 | 0 | Day 3 | Day 1 |

In this example, each sales order line is split into two lines. The Distribution Planning output shows the two lines on Day 1 have a smaller quantity and the remainder of each original sales order demand is now a new sales order line with a ship date of day 3.

These sales orders cannot be released back to Oracle Order Management. You should enable a process that allows the planner to communicate the splits to the customer service department, who can then notify the customer when the sales orders will be shipped.

# The Aggregation Tabbed Region

Distribution Planning provides controls for several functional time intervals as:

- Daily and weekly planning buckets
- Load consolidation horizons
- Allocation time buckets

- Inventory rebalancing surplus days
- Infinite time fence days

**Infinite Time Fence**

Infinite Time Fence, abbreviated as "ITF", refers to a moment in time after which there are no supplies constraints. The planning engine assumes from that point forward that all demands can be satisfied. For more information see the entry for "Infinite Time Fence Horizon Days" in the table below.

During daily planning buckets, Distribution Planning calculates supplies and demands down to the minute level. During the weekly planning buckets, Distribution Planning aggregates demands and supplies by week. Period buckets are not used in Distribution Planning.

This table describes the fields and options of the Aggregation tabbed region:

| Object | Description |
|---|---|
| Trip Consolidation Days | Trip consolidation days are days from the plan start date that trips are created, scheduled and consolidated.<br>• Days are measured in working days based on the plan calendar as defined by owning organization or calendar profile.<br>• Must be less than or equal to daily buckets.<br>• Internal transfers are consolidated onto trips if the ship date is inside the trip consolidation window even though the dock date may be after the trip consolidation end date. |
| Trip Consolidation End Date | The Trip Consolidation End Date field is display only. It displays the end date of the trip consolidation horizon. The time stamp of the trip consolidation end date is 23:59. |
| Period Allocation Bucket | Check to enable period allocation based on the plan calendar. When checked, Daily Allocation Buckets and Weeks per Aggregate Allocation Bucket are grayed out. |

| Object | Description |
| --- | --- |
| Daily Allocation Bucket | The number of days during which the allocation bucket size is one day. Daily allocation buckets are counted against working days on the plan calendar. |
| Weekly Allocation Bucket Start Date | This field is display only and shows the start date for a weekly allocation bucket. |
| Weeks per Weekly Allocation Bucket | The number of weeks contained in each aggregate allocation bucket. |
| Inventory Rebalancing Days | The number of days that surplus inventory must be available before it can be used as supply for a demand from an inventory rebalancing relationship. Only firm supplies are considered for inventory rebalancing.<br><br>Inventory rebalancing relationships are defined in the sourcing rules.<br><br>Inventory rebalancing rules define a use up first relationship. Inventory is transferred from inventory rebalance sources first, thereby using up the surplus at another organization before sourcing through the usual channels. |

| Object | Description |
| --- | --- |
| Infinite Time Fence Horizon Days | Infinite time fence (infinite time fence) horizon days is the number of days from the plan start date that the supply schedule is a constraint. It is calculated based on working days in the planning calendar. If the infinite time fence start date is later than the plan horizon end date, the first day after the plan horizon end date is displayed as the infinite time fence date.<br><br>After the infinite time fence start date, the distribution planning engine behaves as follows:<br><br>• The infinite time fence applies to the lowest level organization in the supply chain where there is a supply schedule.<br><br>• Internal transfers are generated even if supply is not available.<br><br>• After the infinite time fence, projected stockout exceptions are issued if there is a supply and demand mismatch. Constraint exceptions and demand quantity is not satisfied exceptions are not issued in the lowest level organization.<br><br>• Ship Method selection is still done after the infinite time fence.<br><br>• Fair share allocation of supplies does not occur after the infinite time fence in the lowest-level organization.<br><br>• The infinite time fence does not apply to supplier capacity.<br><br>• Load consolidation is not performed after the infinite time fence.<br><br>• Pegging is not calculated for supplies outside the infinite time fence. There is a placeholder in the pegging tree for the lowest level organization. |

| Object | Description |
| --- | --- |
| Infinite Time Fence Start Date | The first date of the Infinite Time Fence. |

Please see the section Inventory Rebalancing, page 11-19 for more details.

## Daily Allocation Buckets

Daily allocation buckets are the number of buckets during which the allocation bucket size is one day.

Null or zero value means that there are no daily allocation buckets. For example, if the plan start date is on a Wednesday and week ending date is Sunday, the first weekly allocation bucket is short two days.

You must specify that the number of daily allocation buckets is less than or equal to the number of daily planning buckets.

Weeks per aggregate allocation bucket is the number of weeks contained in each aggregate allocation bucket. It can be an integer only. If the weeks per aggregate allocation bucket is two or more, then the last allocation bucket may not contain that number of weeks (depending on how many weeks are left before the plan horizon end date). For example, if weeks per allocation bucket is two, but the plan horizon only allows one week in the last allocation bucket, only one week is used.

The plan horizon is not extended because of the allocation buckets. If there are daily allocation buckets, the aggregate buckets start on the next week start date and additional daily allocation buckets may be used. For example, if the daily allocation buckets end on a Thursday and the week start date is Monday, one additional daily allocation bucket is used (assuming that Saturday and Sunday are non-working days).

Supply allocation proceeds bucket by bucket. Demands in the first bucket (daily, weekly or period) are sorted by priority and firm demands are given the highest priority. Within the bucket, for each demand of a priority:

- Demands are allocated supplies on or before the demand date
- Or if not available by the demand date, then by the bucket end date
- Or if a shortage occurs for a demand priority within an allocation bucket, the supplies are fair shared based on the supply allocation rules and plan options

Unsatisfied demands are carried forward to the next allocation bucket

## Trip Consolidation Days

Trip consolidation days sets the trip scheduling horizon. Trips consist of internal sales orders and internal transfers that are scheduled with the same ship date, dock date, and

ship method.

Distribution Planning selects ship methods by working through the list of available ship methods. The list is sorted by rank (lowest value first), cost (lowest cost first using the costs specified on the inter-organization ship methods form), in transit time (shortest in transit time first), and then maximum trip weight (highest value first).

After a ship method is selected for the first internal transfer, calculate the earliest the trip can ship based on the supply availability and the latest the trip could possibly arrive based on the destination inventory requirements. Continue loading the trip with additional supplies that fit within the trip earliest possible ship date and latest possible dock date.

Distribution Planning uses the following rules when consolidating trips:

- Safety stock level: distribution planning will always ship available supplies on time to meet safety stock demands. Minimum Trip Capacity can be violated.
- Target level: During trip consolidation, distribution planning will only ship available supplies on time to meet target inventory levels if there is a trip that the supply can be put on without violating the trip capacity.
- For a supply, the earliest possible ship date considers the destination maximum inventory level constraint.
- For a supply, the latest possible dock date considers the source maximum inventory level constraint.

## Trip Identifiers

Trips are identified in the trips form and the supply and demand window with trip numbers. Trip identifiers appear in the Distribution Planning Trips form and the supply and demand window. Internal sales orders and internal requisitions on a trip have the same ship and dock date and ship method. Transfers are grouped based on the load consolidation limits for a ship method Trips are created within the load consolidation horizon.

Trip identifiers are not released to the source instance, only the internal sales orders and internal requisitions which make up the trip are released to the source instance.

If an internal transfer is too big for the maximum trip size, then the internal transfer is automatically split into two or more internal transfers where each internal transfer is now the maximum trip size or lower. Automatic splitting of internal transfers into smaller sizes to meet the maximum trip size constraint occurs in one of two cases:

- If the selected ship method maximum trip size would be violated, then the internal transfer can be split into multiple internal transfers so that the trips are below the maximum trip size. For example, if the internal transfer is for 1000 units and 200 units fill a semi-trailer, then 5 internal transfers are created.

- For ship methods that do not have a maximum trip size, internal transfers are not split.

### The Trips Form

The Trips form displays details about each trip including the from and to organizations and the ship and dock dates and the ship method. The weight and cube utilization are calculated and displayed in percents if trip limits are defined for the ship method.

Other fields shown include trip weight and cube, available weight and cube, and maximum weight and cube. Also included for each trip are the in transit lead-time, the ship method, mode, service level and carrier name. Statuses for each trip are provided to show if it is an existing trip and if there are trip utilization exceptions issued for it.

The following is calculated for each trip and displayed in the trips form:

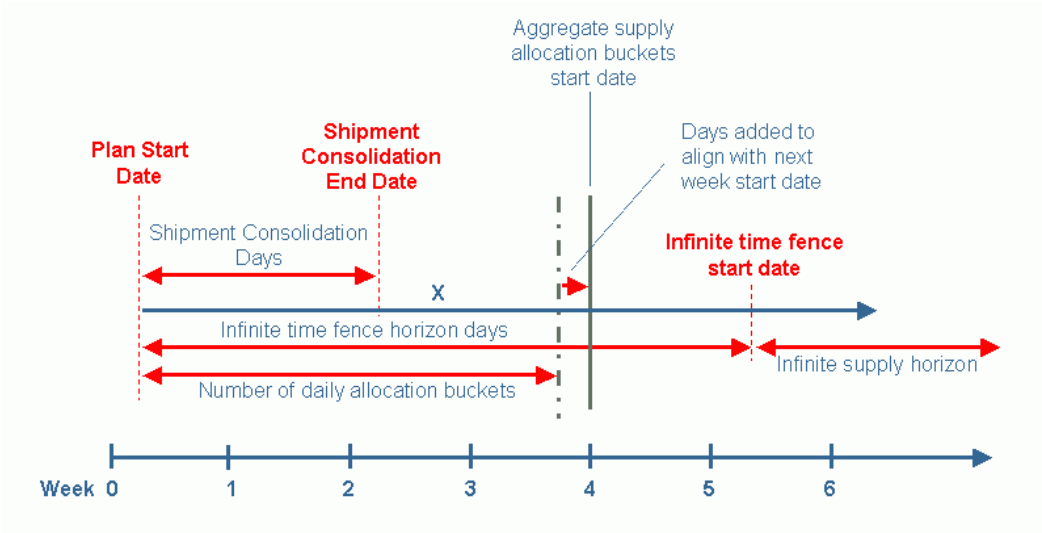
- Earliest supply date: The earliest possible date that a trip can ship based on the material available dates of all of the supplies on the trip. Tells the planner that a trip can ship earlier than scheduled. For demands, the material available date means when the supplies pegged to the demand are complete and available for shipping.

- Latest possible dock date: The latest of all of the required dock dates for the supplies scheduled on the trip. Tells the planner when the trip should arrive at the destination organization. If it is earlier than the actual scheduled dock date, it indicates that the trip requires expediting.

- Cost of under utilization: The formula is Trip Upper Weight Limit * (cost/weight unit) - Actual Trip Weight * (cost/weight unit). Applies when the cost/unit for weight is provided on the inter-organization shipping form.

## Understanding Time Aggregation Options

This diagram illustrates the relationship among the trip consolidation time fence, the trip consolidation days, the infinite time fence, and the daily/aggregate allocation buckets. In this example, the planning buckets are daily.




## The Organizations Tabbed Region

You can specify a distribution plan as a supply schedule to other distribution plans. This enables you to subset the distribution planning problem and run multiple distribution plans. You can run a centralized allocation plan less frequently and run replenishment plans for the outlying locations more frequently. The behavior of a distribution plan as a supply schedule is exactly the same as the behavior of MPP/MPS/MRP plans as supply schedules.

For items and organizations planned in the central plan, no new supplies are planned when it is used as a supply schedule. Instead, the available supplies are pushed further outwards in the supply chain and may be reallocated during subsequent runs of the distribution plan. The only difference is after the infinite time fence.

Distribution plans can be fed as a demand schedule to a distribution plan. This allows distribution planning users to also subset the planning problem into multiple distribution plans, and close the loop between plans by feeding the main distribution plan as a demand schedule. When a distribution plan is listed as a demand schedule for an organization in a second distribution plan, the behavior is similar to checking the interplant check box on an Oracle Advanced Supply Chain Planning plan. The only demands passed are the requested outbound shipments for the organization. The demands from the demand schedule plan appear in the distribution plan as inter-organization demand.

### Setting Up the Organizations Tabbed Region

1. Enter global demand schedules from Demand Planning.

2. Check or uncheck the Include Sales Order check box.

   WIP, Reservations, and Purchases are always included. Safety stocks are always

planned.

3. Add demand and supply schedules.

   Distribution plans can be used as demand schedules. Distribution plans and MRP/MPS/MPP plans can be supply schedules.

   Distribution plans do not create any new planned orders for item-organizations that are found in an MRP/MPS/MPP supply schedule or a Distribution Plan supply schedule until the infinite time fence. If there are existing non-firm supplies for that item-organization that are not in the supply schedule, these are canceled by default since the distribution plan relies on the supply schedule. If the existing supplies are firm, then the distribution plan does not cancel them.

## The Decision Rules Tabbed Region

When the MSO: Enable Decision Rules is set to Yes, you can select Decision Rules options for Distribution Planning in the Decision Rules Tab. This tab is grayed out if you have set MSO: Enable Decision Rules to No.

Decision rules are supported by Distribution Planning for:

- End item substitution
- Substitute components
- Alternate BOMs
- Alternate sources

# 13

# Running and Analyzing Distribution Plans

This chapter covers the following topics:

- Global Forecasting
- Ship Method Selection
- Distribution Planning Overview
- Distribution Plan Workbench
- Distribution Plan Exception Messages
- Defining Organization Selection Lists

## Global Forecasting

You can use global forecasting with distribution plans; see Global Forecasting, page 3-119. If you use global forecasting, you forecast across your enterprise using global demand schedules from Oracle Demand Planning. Distribution planning selects a source organization to meet each forecast and sales order demand; this results in local allocation of supply across your distribution network.

If global forecasts are not used, then sales order consumption occur for sales orders with ship from organizations that have organization forecasts. If there are multiple organizations in a plan and no global forecasts, then for any organization without any forecasts, there will not be any sales order consumption with a ship from for that organization.

Use the Ship Methods and Inter-Location Transit Times forms to define shipping methods between and organization and regions/zones for use in global forecasting.

The firm flag in global forecasting indicates that the source organization is firm, just as it does for sales orders. If global forecasting is enabled, sales order warehouses are selected before any sales order line splits occur.

For customer vendor managed inventory, Oracle recommends that you use global forecasts to represent projected future demand from the customer. For consigned

vendor managed inventory, at the external organizations, the internal requisitions and planned inbound shipments are allocated to the global forecast but ship method selection is not performed since it is not required for allocations to a forecast.

## Ship Method Selection

In sourcing rules and bills of distributions, you can specify multiple supply sources within each rank and assign percentages to each. Distribution plans use the percentages for different supply sources if you are not using decision rules. They do not necessarily use the percentages for the same supply source with different ship methods

When there is more than one available ship method for a source, distribution plans select ship method by this process for each organization supply source. Set profile option MSC: Distribution Planning Ship Date to instruct the planning engine when to schedule the departure of trips with truckload ship methods that is considers for load consolidation.

Sort the ship methods in this order:

- Rank (lowest value first)
- Cost (lowest cost first): From the Oracle Inventory Shipping Networks form
- Intransit Time (shortest intransit time first)
- Maximum trip weight (highest value first)

Select a ship method that meets that required delivery time by meeting the following criteria:

- Rank 1
- Lowest cost ship method
- The demand's (demand dock date - available date) is the same or more than the intransit time
- Trip size is between maximum and minimum utilization targets

If more than one ship method meets the required delivery time, select the ship method that most closely meets these criteria:

- Rank 1
- Lowest cost
- Shortest lead time

If the trip created does not match the selected ship method maximum and minimum trip utilization targets, select the ship method that most closely meets these criteria:

- Rank 1
- Lowest cost
- Matches maximum and minimum trip utilization targets

If there is still no ship method that meets the rank 1 criteria, verify whether or not Plan Option form, Decision Rules tab, Alternate Sources is selected. If it is, evaluate the rank 2 alternate sources and consider alternate ship methods against the criteria. If there is still no ship method that meets the criteria, evaluate the rank 3 alternate sources.

If no Ship Method is found that meets the criteria, the supply is likely to be late. Select the shortest lead-time ship method unless there is a trip sizing consideration that leads to the selection of another ship method.

## Distribution Planning Overview

**Demand Types**

Distribution planning uses the following independent demand types:

- Oracle Demand Planning forecasts: Organization specific and Global forecasts for all organizations
- Source instance org-specific forecasts: Oracle Inventory > Planning >Forecasts
- Sales Orders
- Inventory optimization plans for safety stock levels
- Distribution plans as demand schedules to distribution plans

**Supply Types**

Distribution planning uses the following supply types:

- On Hands
- Expected receipts
- Scheduled receipts from work orders, purchase orders, and requisitions: Discrete, process, and flow manufacturing supplies are supported
- Planned orders as supplies: From Other distribution plans: Oracle Advanced Supply Chain Planning MRP/MPS/MPP plans and source instance MPS plans

Oracle Project Manufacturing and Oracle Shop Floor Management are not supported with distribution planning.

**Internal Requisitions and Internal Sales Orders**

Users can create internal requisitions and internal sales orders with the standard procedures in Oracle Purchasing and Oracle Order Management. These are collected and used as supplies and demands for distribution plans.

Internal requisitions and internal sales orders may not match each other in the source instance. This happens because of user changes to the internal sales order, partial shipments of the internal sales order, rescheduling by distribution planning of the internal sales order, and so forth. Users are not allowed to update the internal requisition so after changes to the internal sales orders, the two documents may not by aligned. To resolve this for planning, the internal sales order is used as the source of truth in distribution planning.

During collections, both internal sales orders and internal requisitions are collected. In distribution planning, we use the correct internal requisition number and source and destination organizations for the internal requisition. However, the quantity, ship date and timestamp, arrival date and timestamp, ship method, and firm flag are the values found on the internal sales order. The result is that distribution planning takes a single view of the internal transfer, as defined by the internal sales order, and does not contain contradictory values for the two documents.

If internal requisitions have been created, but the corresponding internal sales orders have not been created, then when we have a mismatch:

- Firm internal requisitions: They remain as firm with no change to date and quantity. The supply and demand picture in the source organization (where the corresponding Internal Sales Order should be) is incorrect.

- Not firmed internal requisitions: They may get rescheduled in or out.

**Supplier Capacity**

Define supplier capacity in the Approved Supplier List in Oracle Purchasing

Distribution planning uses the same supplier capacity model that is used in the MRP/MPS/MPP plan types

**MRP/MPS/MPP Supply Schedules**

Distribution plans can be used as a Demand Schedules for MRP/MPS/MPP plans and the resulting MRP/MPS/MPP plans are used as supply schedules for the same distribution plan. Users should run the MRP/MPS/MPP plans to update the plans with the latest supply information before running the distribution plan.

Make the distribution plans demand schedules available to MRP/MPS/MPP plans with the following rules:

- Dependent demands are passed for all inter-organization demands.

- Distribution plan demand quantities, due dates, and demand priorities passed to the MPP/MPS/MRP plans are the initial unconstrained quantities and demand due dates; these are before constraints and trip consolidation is considered in the distribution plan. The priorities passed are the actual priorities except in the case of

safety stock level, target inventory leve, and excess supply priority.

Optionally include target inventory plan option for MRP/MPS/MPP plans using distribution plan as a demand schedule:

- Yes: Users may establish target inventory levels and attempt to plan to meet the target inventory demands. However, when smoothing their production schedules and resolving constraints, they may choose to produce some amount less than required by the target inventory levels. In this case, distribution planning distributes according to safety stock inventory levels first and then allocates the remainder using the target inventory levels

- No: Do not use target inventory levels. Users do not want to plan production levels to meet target inventory demands. Only consider target inventory levels when there is excess inventory in the central locations.

**Inventory Optimization Plans**

Inventory optimization plans can be used as a time-phased schedule of safety stock levels by item-organization.

Run Oracle Inventory Optimization as needed to update time-phased safety stock levels

Oracle Inventory Optimization plans accept distribution plans as demand schedules

In turn, Oracle Inventory Optimization plans pass time-phased safety stock levels to the distribution plans

**Collections**

Collections processes are the same collections processes used for MRP/MPS/MPP plans

Since distribution planning does not consider routings and resources, users do not need to collect these entities unless required for MRP/MPS/MPP plans. Schedule and collect other entities as needed.

If you use legacy collections to import supply for kitting as work orders, you must also import the kit component demand. If you want the distribution planning engine to create the kit component requirements, import the supply as firm planned orders.

**High Volume Processing**

High volume distribution plan processing is a special type of processing that you can use if you are a business with large numbers of:

- Locations: For example, in the thousands

- Items per location. For example, in the tens of thousands or more

It handles large volumes of processing using multi-processing, either:

- Multiple servers linked together with Oracle Real Application Clusters

- A single planning server with multiple processors

Consider using high volume distribution planning if your business could benefit from

- Increased plan availability: Plans are available earlier in the day and release of planned orders occurs earlier in the cycle. Warehouses have earlier visibility into the daily transfer requirements.
- More frequent regeneration of plans: Daily or intra-day depending on location and item sizing). Warehouses have more frequent visibility to the latest supply and demand picture.
- Improved operational efficiency: Since transfers and purchases can be released later in the business cycle, distribution planners can better account for the latest supply and demand picture and increase accuracy of their quantities and schedule dates.
- Reduced server hardware load: Requires less total memory on the planning server. Large volume plans can load to available server memory.

The planning engine uses multi-processing during the distribution planning phases of:

- Supply allocation: Calculates the independent and dependent demands at each distribution location and allocates supply to those demands
- Load consolidation: Shipping early or late to improve trip utilization

**Launch Distribution Plans**

Parameters are the same as those for MRP/MPS/MPP plans.

## Distribution Plan Workbench

**Distribution Plan Summary**

Use Distribution Plan Summary for fast, easy analysis of the distribution planning plan output.

The plan summary is new for distribution planning. The plan summary can be accessed from:

- The navigator, by highlighting the plan name and right clicking to Plan Summary
- (M) Plan >Plan Summary

The user can specify the default plan and default tab as plan summary in the plan preferences. If the user opens the Planner Workbench, then the plan summary is displayed by default. If the user is not in the owning organization for the default plan specified in the plan preferences, the Planner Workbench opens with the usual plans view.

A new region on the Other tab of the plan preferences is called Plan Summary. It holds the specifications for the plan summary screen including the planner name field (used

for the counts in the plan summary section).

Automate opening the plan summary:

- Set Plan Preferences >Default Tab = Plan Summary
- Set Plan Preferences >Default Plan = <plan name>
- Open Planner Workbench and the plan summary automatically opens for the default plan

Plan summary data can be filtered for each planner:

- Set Plan Preferences > Plan Summary: Select a planner
- Plan Summary only displays data for the selected planner specified in the user's plan preferences

The Summary region displays pre-seeded exceptions and recommendations

The seeded exception messages alert you to:

- Material Shortages
- Late Sales Orders
- Under Utilized Trips

Click Details to open the exception details.

Recommendations alert you to:

- Trips Ready for Release
- Purchases Ready for Release

Click Details to open the recommendation details and click Release to release all trips or purchases.

Plan summary counts are planner specific if planner is specified in the plan preferences.

**KPIs**

The KPI region displays four comparison statistics. They are recalculated each time that the plan is run

- Inventory Turns: Calculated in the same way as Oracle Advanced Supply Chain Planning
- Vehicle Utilization: Displayed as a percent. Vehicle utilization = Average (All trip utilizations for the plan). Each trip utilization is included if Ship Method = Truckload and Weight Capacity Limit is not null. Each Trip utilization = Trip weight / Trip weight total capacity.

- Fill Rate: Same as on time delivery: [(Total number of orders - Number of late orders) * 100) / Total number of orders]. We do not show service level which is computed in Oracle Advanced Supply Chain Planning as (Demand quantity satisfied by due date / Demand quantity) * 100. In the distribution market, the number of sales orders completed on time is more interesting than the quantity satisfied by due date.

- Supply Chain Costs: We only support total cost in the display and do not display the components of the cost breakdown. It is calculated the same as Oracle Advanced Supply Chain Planning.

Users can also open the key indicators window from the planner workbench tree.

Set the targets for the four key indicators in the plan preferences.

**High Volume Processing**

Some distribution planning workbench windows are not available for plans run with high volume processing. In these plans, allocation details are not updated for the final plan output. They are:

- From the Horizontal Plan window and the Allocation Plan, the Allocation Details view

- From the Trips view, the Trip Allocation Details view

There can be variances between exception messages issued by high volume and standard distribution plans because the supply and demand pictures may be slightly different. In standard distribution plans, the planning engine performs the netting and allocation and the load consolidation together; in high volume distribution plans, it performs them separately.

## Distribution Plan Exception Messages

**Overview**

For general information about exception messages, see Overview of Exception Messages, page 15-1. The list of exception messages there summarizes the exception messages for the supply chain planning types (master production plan, master production schedule, and material requirements plan). Distribution planning shares some of these exception messages and it has some unique exception messages. The topics that describe the distribution planning exception groups explain the exception messages issued by distribution plans.

**Viewing Exceptions**

You view distribution planning exception messages in the same way as one views supply chain plan exception messages. However, for distribution plans, you use the Distribution Plan Workbench rather than the Planner Workbench to access them. For general information about how to view exception messages, see Viewing Exceptions,

page 15-9.

**Personal Queries**

Most Important Exceptions uses a personal query.

Set the personal query used in the Plan Preferences > Other > Most Important Exceptions Personal Query.

Right click from most important exceptions to navigate to exception details, supply, demand, trips, and so on.

Personal Queries enables users to:

- Create a custom name for each exception
- Include recommendations and reschedules, and sales order changes
- Use the same exception multiple times (for example, late sales orders for X, and late sales orders for Y)
- Leverage enhanced inventory level exceptions filter criteria: Percent above or below safety stock or target or maximum

It works as follows:

- The custom name is displayed, not the exception name. The count is for the total number of exceptions and ignores any group by's defined for the personal query
- The Edit Query button opens the personal query from.
- The Details button opens the exception details for the highlighted row.
- Right Clicks from any row include:
  - Exception Details: Shows the exceptions for the row highlighted
  - Supply, Demand, Supply and Demand, and On Hand: Shows all supply and demand without regard to the custom exception parameters.
  - Items: Shows all items
  - Trips: Shows the trips for a trip related exception.
- The exceptions are sequenced in the window just as they appear in the personal query.

**Related Exceptions**

This table shows related distribution planning exceptions. After you review an exception message, you might consult related exception messages to gather more cause and effect information about a situation.

| Exception Group | Exception Message | Related Exceptions |
|---|---|---|
| Late Sales Orders and Forecasts | Late replenishment exceptions for sales orders / forecasts | Material constraint<br>Order lead time constraint<br>Order is firmed late<br>Demand quantity is not satisfied |
| Late Sales Orders and Forecasts | Sales order / forecast at risk | Order causes supplier capacity overload<br>Order with insufficient lead time |
| Material Capacity | Material constraint | Allocation constraint<br>Order lead time constraint<br>Item shipment consolidated to a later date |
| Supply Exceptions for Late Sales Orders and Forecasts | Allocation constraint | Allocation bucket details |
| Shortage and Excess | Items with a shortage | Material constraint<br>Allocation constraint |
| Shortage and Excess | Items below safety stock | Material constraint<br>Allocation constraint |
| Shortage and Excess | Items below target | Material constraint<br>Allocation constraint<br>Item shipment consolidated to a later date |

## Late Sales Orders and Forecasts Exception Group

The following sections discuss the exceptions in this exception group and state their effects on distribution plans.

### Sales order/forecast at risk

**Explanation**

The purpose of this exception is to indicate that a certain end demand is at risk. The reasons for this risk are investigated by going to the various related exceptions.

This exception is only generated when the sales order is in the same organization that sources from a supplier. The exception can occur when Enforce Purchasing Lead times or Enforce Supplier Capacity is not checked in the plan options.

> **Note:** The planner can keep the Enforce Supplier Capacity or Purchasing Lead-times constraint disabled, or the planning engine can disable these constraints if the demand pegged to a sales order is late.

This exception will be calculated by obtaining a unique list of demands from the list of end demands that are pegged to:

- Supply orders that cause Supplier Capacity Overload: This exception message appears when the scheduled supplier capacity in a planning time bucket is overloaded
- Supply order with insufficient lead time: This exception message appears when the scheduled supply order violates purchasing lead time

The following exception messages are in the Late Sales Orders and Forecasts exception group that you can use for collecting further information about the sales order or forecast at risk:

- Sales Order / Forecast at Risk due to Material Shortage
- Order causes Supplier Capacity Overload
- Order with Insufficient Lead-time

**Information Displayed**

The information displayed for this exception message all refers to the demand line and is:

- Order Number: The Order Number for the Sales Order
- Item: The name of the end item
- Category: The category where the end item exists
- Org: The organization for the end item
- End Item Description
- Order Type
- Demand Date

- Planned Arrival Date
- Product Family
- Order Quantity
- Customer
- Customer Site
- Demand Class
- Planner: The planner name
- Planning Group
- Priority

**Resolution Suggestions**

Check for more details from related exceptions in the Supply Problems for Late Sales Orders and Forecasts exception group.

### Past due sales orders

**Explanation**

This exception message appears for past due sales order lines. A past due sales order line is a sales order line with a schedule date earlier than the plan horizon start date.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Past due sales orders" in Late Sales Orders and Forecasts Exception Group, page 15-14.

### Past due forecast

**Explanation**

This exception message appears for late forecast entries. A late forecast entry is a forecast entry with a date earlier than the plan horizon start date. The planning engine issues this message even if the forecast is totally consumed.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Past due forecast" in Late Sales Orders and Forecasts Exception Group, page 15-14.

### Late replenishment for sales order

**Explanation**

This exception message appears in a distribution plan when the planning engine detects that the supplies for a sales order line are due later than the sales order line due date. This exception is generated for external sales orders and is not generated for internal sales orders.

The demand satisfied date is the latest due date of the supplies pegged directly to an end demand. The planning engine issues this exception message against a sales order line when its demand satisfied date is later than its schedule date.

This exception usually occurs because of a material constraint or planning time fence. It often occurs in Enforce Purchasing Lead Time and Enforce Supplier Capacity constrained plans when the planning engine needs to move supply order due dates to honor supplier capacity or lead-time constraints.

For example, there is a sales order line on item A due 25 January for quantity 100 in organization D2 The supplies pegged to this sales order line are:

- Supply 1: Quantity 50 and due date 23 January
- Supply 2: Quantity 20 and due date 25 January
- Supply 3: Quantity 30 and due date 27 January
- Demand satisfied date is 27 January (from Supply 3).
- Days late is 2.
- Quantity satisfied by sales order line schedule date is 70 (from Supply 1 and Supply 2).

For more information on this exception message, see Late Sales Orders and Forecasts Exception Group, page 15-14.

### Late replenishment for forecast

**Explanation**

This exception message appears in a distribution plan when the planning engine detects that the supplies for a forecast are due later than the forecast due date.This exception is generated for external sales orders and is not generated for internal sales orders.

The demand satisfied date is the latest due date of the supplies pegged directly to an end demand. The planning engine issues this exception message against a sales order line when its demand satisfied date is later than its schedule date.

This exception usually occurs because of a material constraint or planning time fence. It often occurs in Enforce Purchasing Lead-Time and Enforce Supplier Capacity constrained plans when the planning engine needs to move supply order due dates to honor supplier capacity or lead-time constraints.

For example, there is a forecast entry e on item A due 25 January for quantity 100 in organization D2 The supplies pegged to this forecast entry are:

- Supply 1: Quantity 50 and due date 23 January
- Supply 2: Quantity 20 and due date 25 January
- Supply 3: Quantity 30 and due date 27 January
- Demand satisfied date is 27 January (from Supply 3).
- Days late is 2.
- Quantity satisfied by forecast schedule date is 70 (from Supply 1 and Supply 2).

For more information on this exception message, see Late Sales Orders and Forecasts Exception Group, page 15-14.

## Supply Exceptions for Late Sales Orders and Forecasts Exception Group

The following sections discuss the exceptions in this exception group and state their effects on distribution plans.

### Allocation constraint

**Explanation**

The allocation constraint exception message appears for each allocation bucket and item when the destination organization is not allocated the full requested supply from the source organization or from the supplier.

The exception issued for each item, destination organization, allocation bucket and source organization or supplier / supplier site.

The planning engine does not issue this exception message if the plan was run with high volume processing.

Allocation constraints can occur for one or more of the following reasons:

- Higher priority demands from other organizations acquired the supply available for an organization leaving a shortage for the organization's demands.
- Multiple demands from several organizations of the same priority led to the application of a Fair Share Allocation Rule, leaving a shortage for a demand.
- Rounding of demands from other organizations due to order modifiers led to additional allocations for other demands, leaving a shortage for a demand.
- An insufficient supplier capacity compelled multiple organizations to allocate supplies across competing demands.

**Information Displayed**

- Action
- Exception
- Source Org
- Destination Org: Not populated if the allocation constraint is not for transferring demands.
- Customer
- Customer Site
- Supplier
- Supplier Site
- Item: Item Number of the item for which the exception is generated.
- Allocation bucket start date.
- Allocation bucket end date.
- Demand quantity: Total demand quantity from the destination organization for this bucket. Note that demand quantity in a bucket can include carried over demands that were not satisfied in prior buckets.
- Allocated quantity: Total supply allocated to the destination organization for this bucket.
- Total Demand quantity: Total demand quantity in this bucket from all demand sources. Again, this can include carried over demand from prior buckets.
- Total Supply quantity: Total supply quantity from the source organization or the supplier in this bucket.
- % of Total Supply Allocated: Allocated quantity / total supply quantity * 100%.
- Fixed lot multiplier: The order modifier used for this item and destination organization.
- Allocation Rule: Fair Share Allocation Rule Name.
- Allocation Rule Type: Fair Share Allocation Rule Type.
- Planner
- Product Family

- Item Category

**Resolution Suggestions**

To resolve this exception, navigate to the horizontal plan or the allocation plan to review all allocations made in a bucket and determine if allocations, demands or supplies should be adjusted.

Also, check for more information used by the distribution plan to make the allocation decisions in the Allocation Bucket Details window. To navigate to Allocation Bucket Details window, right click on the Allocation Constraint exception message and select Allocation Bucket Details.

## Allocation bucket details

**Explanation**

Allocation Bucket Details is not a true exception message, but an additional piece of information displayed about the allocation constraint exception. The allocation bucket details shows the information used by the distribution plan to make the allocation decisions.

You can also display the allocation bucket details information by right clicking within the horizontal plan or the allocation plan.

An allocation bucket results row is displayed for each demand priority, allocation bucket, source organization, destination organization, and Firm flag.

> **Note:** The Firm flag indicates whether the demand is firm or is pegged directly to a firm supply in the destination organization. For example, if an internal transfer from Org1 to Org2 is firmed, then the demand created in Org1 from the internal transfer is referred to as a firm demand.

During allocation, firm demands are given higher priorities over other demands. Firm demands from the earliest bucket are given the highest priority. If the item is a component, then a row appears for each of the parent items also. However, in such a case the destination organization is null.

You can navigate to Supply Allocation Detail window by right clicking the Allocation Constraint exception message and selecting the Allocation Bucket Details option.

**Information Displayed**

- Action
- Exception
- Source Org
- Destination Org

- Supplier
- Supplier Site
- Item
- Demand Priority: Inventory rebalancing demands display as priority 0. All other demands display their original demand priority.
- Firm Flag: Indicates that the demand is firm or is pegged to a firm supply in the destination organization.
- Firm Demand Carry Forward Buckets: The number of allocation buckets that the firm demand is carried forward. If the firm demand is in the current bucket, then the bucket quantity is 0.
- Allocation Bucket Start Date
- Allocation Bucket End Date
- Demand Quantity: Total demands for this priority and bucket for this destination organization.
- Fixed Lot Multiplier: The order modifier used for this item and destination organization.
- Actual Allocated Quantity: The actual quantity allocated to this destination org for this priority and allocation bucket.
- Total Available to Allocate Quantity: The total quantity available to allocate to all demands for this priority and allocation bucket.
- Total Supply: The total available supply in this bucket from this source organization.
- Allocated Percentage: This value is calculated by the following formula:

  *(Actual Allocated Quantity / Total Available to Allocate Quantity *100)*
- Total Allocated Quantity to Higher Priorities: The supply quantity allocated to higher priority demands in this allocation bucket.
- Total Demands for All Higher Priorities: Total demands before rounding for all higher demand priorities in this bucket.
- Total Demands for this Priority: Total demands before rounding in this allocation bucket.

- Planner
- Product Family
- Item Category

### Item shipment consolidated to a later date

**Explanation**

An Item Shipment Consolidated to a Later Date exception message is generated when the supply quantity is available to ship on time but there is not a shipment available for the internal transfer. This can happen when supplies are pegged to target demands and when there is no less-than-truckload or parcel ship method.

**Information Displayed**

- Action
- Exception
- Source Org
- Destination Org
- Item
- Need by date: The date when the demand is due in the destination organization.
- Available Date: The earliest date when the supply is available in the source organization.
- Suggested Due date: The actual date when the supply is available in the destination organization.
- Quantity: The allocation line quantity. Typically, this is the quantity that is required to meet the target inventory level demand.
- Trip ID: The ID of the trip on which the allocation line is placed
- Planner
- Product Family
- Item Category

**Resolution Suggestions**

If the supplies are pegged to safety stock or other higher priority demands, the planning engine consolidates the supplies to create an on-time shipment. However, in such a

case, the shipment quantity can be less than the minimum shipment utilization target.

You can also consolidate trips manually to resolve this exception. For more information on consolidating trips manually, see "Consolidating Trips" in Manage Distribution Plan Overview, page 14-1.

## Sales order cancellation

**Explanation**

This exception message is generated for each sales order line that has some or all of the demand quantity canceled. Sales orders can be canceled if the profile option MSC: Cancel Outstanding Sales Order Quantities is set to Yes.

Note that the system does not generate a Late replenishments for sales order exception for sales orders that are canceled.

**Information Displayed**

- Action
- Release
- Exception
- Org
- Customer
- Customer Site
- Requested Ship Date
- Due Date
- Latest Acceptable Date
- Order Number
- Ship Method
- Item
- Original Demand Quantity
- Expired Demand Quantity
- New Demand Quantity
- % of Demand Expired: This percentage is calculated by using the following formula:

*(Expired Demand/Original Demand) * 100*

- Planner
- Product Family
- Item Category

**Resolution Suggestions**

Distribution planning engine provides this exception as an FYI to the planner. Resolution may not be required for this exception.

## Order causes supplier capacity overload

**Explanation**

This exception is generated when a particular buy order causes the supplier capacity to be exceeded. This is detected and flagged at the time of scheduling the buy order.

When Enforce Supplier Capacity is not checked, buy orders are scheduled without regard to supplier capacity and this exception can occur relatively frequently.

When Enforce Supplier Capacity is checked, firm buy orders may cause supplier capacity to be overloaded. These orders are not rescheduled but the exception condition is detected and reported.

This exception is generated as a related exception to sales order/forecast at risk exception.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Order causes supplier capacity overload" in Supply Problems for Late Sales Orders and Forecasts Exception Group, page 15-24.

## Order lead time constraint

This exception is generated when a demand gets satisfied later than the due date because of insufficient lead time.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Order lead time constraint" in Supply Problems for Late Sales Orders and Forecasts Exception Group, page 15-24.

> **Note:** Despite the similarities, the following fields are described differently in this exception message for distribution plans:
>
> - Required Start Time field is described as From Date: Required Start Time for make orders, the dock date for buy orders, and the ship

date for transfer orders.

- Required Completion Time field is described as To Date: Required Completion Time.

### Order with insufficient lead time

This exception message is generated for any order that gets scheduled when there is insufficient time from the plan start date or the planning time fence for the item lead time.

This exception will be generated if Enforce Purchasing Lead Time is not checked.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Order with insufficient lead time" in Supply Problems for Late Sales Orders and Forecasts Exception Group, page 15-24.

### Demand quantity is not satisfied

This exception is generated when demand satisfied dates are pushed to the end of the planning horizon for the supply quantity pegged to this demand is less than the demand quantity (at some point within the supply chain pegging tree).

This exception is generated for every demand for which the supply quantity is insufficient

This exception is generated as a related exception for Late Replenishments for Sales Order/Forecast.

### Order violates a business calendar

This exception is generated for any order in which one of the dates on the order is in violation of a valid calendar that governs that date. As part of the exception details we will provide the name of the calendar that is being violated as well as the usage of that calendar with respect to the order, for example, Shipping and Receiving. Note that only a single exception will be generated for each order, even if that order violates multiple calendars. The calendar violation field in the exception details will indicate the specific calendars that have been violated.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Order violates a business calendar" in Supply Problems for Late Sales Orders and Forecasts Exception Group, page 15-24.

> **Note:** For distribution plans, this exception message also displays the ID of the trip that the order is on.

## Material Capacity Exception Group

The following sections discuss the exceptions in this exception group and state their effects on distribution plans.

### Supplier capacity overloaded

**Explanation**

This exception message appears when, in a planning time bucket, the supplier required capacity is more than the supplier available capacity.

These exceptions are typically issued when Enforce Supplier Capacity is not checked. Purchase orders are scheduled without regard to supplier capacity and overloads can occur.

The overload Percentage is calculated using the following formula:

*(Required Quantity/Cumulative Available Quantity) * 100*

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Supplier capacity overloaded" in Material and Resource Capacity Exception Group, page 15-45.

> **Important:** A new field is added to this exception for distribution plans called Maximum Overload Percentage. This field displays the maximum overload percentage for the exception time period.

### Organization capacity exceeded

**Explanation**

This exception message is generated whenever organization capacity, either weight or cube, is exceeded at the end of a day. The start and end dates indicate the time period during which either weight or cube organization capacity is overloaded. Generated once for every date range when the organization capacity is exceeded. The maximum overload quantity is calculated as the maximum amount of the overload during the date range.

The planning engine allows organization capacity to be exceeded and reports the occurrences. Note that the planning engine does not recalculate the exception during on-line or batch replan. It is only calculated during a full plan launch. Also, shipments are not automatically rescheduled because organization capacity is exceeded.

**Information Displayed**

- Action
- Exception

- organization
- Start Date
- End Date
- Weight Over Load %: This percentage is calculated by the following formula for the date range between the start date and end date:

  *Maximum of (Actual Weight / Maximum Capacity Weight) * 100*

- Cube Over Load %: This percentage is calculated by the following formula for the date range between the start date and end date:

  *Maximum of (Actual Cube / Maximum Capacity Cube) * 100*

**Resolution Suggestions**

Consider the following steps to resolve an Organization capacity violation exception message:

1. Navigate to the Trips window and review the deliveries by date:
   - Reschedule the Dock Dates for the trips in the plan at later dates.
   - Reschedule the Ship Dates for the trips in the plan at earlier dates.
   - Optionally firm the adjusted Trip.
2. Release the adjusted Trip.

## Material shortage

**Explanation**

The exception is issued for each planning bucket when:

- The inventory calculated by [constrained supplies - unconstrained demands] at the end of the bucket is less than the target inventory level. The value [constrained supplies - unconstrained demands] is referred to as Unconstrained Projected Available Balance.
- If you did not define a target inventory for the organization, the system defines the safety stock level as the target inventory. Hence, the exception is issued when the Unconstrained Projected Available Balance goes below the safety stock level if the target inventory is not defined.
  - **Constrained supplies:**The planned supplies output supply schedule, constrained by material availability, based on the

constraints you selected while defining the plan options, for example, supplier capacity or purchasing lead-time.

- **Unconstrained demands:** Demand calculated during an unconstrained planning step. This does not specify the final constrained demands in each bucket.

In other words, the exception is issued if there is a supply shortage in a daily or weekly planning bucket, and if the plan tried to meet all unconstrained or actual demands.

**Important:** The bucketing is either at the daily or weekly level since these are the only two options allowed for planning buckets. In the daily planning buckets, the material shortage is reported by the minute as distribution planning really plans in minute increments. For weekly buckets, distribution planning uses 00:00:00 on the first day of the week bucket and 23:59:00 on the last day of the week.

The start of a material shortage occurs anytime the unconstrained projected available balance is less than the target inventory on the start date and the unconstrained projected available balance one minute prior is greater than the unconstrained projected available balance on the start date. That is, anytime the unconstrained projected available balance becomes worse a new material shortage is generated. In other words, for a single Material Shortage exception, the (unconstrained projected available balance - target inventory) on the start date is at its lowest value for the date range of the exception.

The end of the material shortage occurs in either of the following cases

- If you start a new material shortage
- The (unconstrained projected available balance - target inventory) becomes greater than zero

The quantity on the material shortage is the unconstrained projected available balance at the start of the material shortage.

**Information Displayed**

- Organization: The organization with the material shortage
- Item Planner
- Supplier: If the material is purchased, then this field displays the supplier name.
- Supplier Site

- Target Qty: Displays the target inventory level on the start date of the exception (From Date). Note that this value cannot be used to compare the shortage amount if the target stock levels have changed during the date range of the exception.
- Safety Stock Qty: Displays the Safety Stock Inventory level on the start date of the exception. Like target quantity, this value also cannot be used to compare the shortage amount if the safety stock levels have changed during the date range of the exception.
- Unconstrained PAB: Displays the inventory calculated by [constrained supplies - unconstrained demands] on the start date of the exception.
- From Date
- To Date
- Shortage: Displays the inventory calculated by [Target Inventory Level - Unconstrained PAB] on the start date of the exception.
- Actual Duration (Hours): Displays the hours elapsed between the start date and the end date. The system calculates the hours by [End Date - Start Date].
- Product Family
- Item Category

**Resolution Suggestions**

Check the following related exceptions to determine the underlying cause of the material shortage in the current bucket for a specific item-organization combination:

- Lead-time constraint: The related exception is Order Lead-time Constraint.
- Supplier capacity constraint: The related exception is another Material Shortage with a specific supplier name.
- Source organization constraint: The related exception is another Material Shortage for the same item with a different organization as the source organization. This indicates that the supply is constrained or short in the source organization. The system also issues an allocation constraint.
- Kit component constraint: The related exception is another Material shortage with a different item, which is a component of the kitted item in the original material shortage. The user can now follow the related exceptions for the component to understand why it is in short supply.
- Allocation constraint: The related exception is an allocation constraint exception.

- Load consolidation constraint: The related exception is an item trip consolidated to a later date.

To summarize, check for the following related exceptions to resolve a Material shortage exception:

- Material shortage for the
  1. Same item in the source organization
  2. Component item in the destination organization
  3. Same item from a supplier
- Allocation constraint, Demand quantity not satisfied, and Order lead-time constraint for the
  1. Same item in the source organization
  2. Component item in the destination organization
- Item shipment consolidated to a later date
  1. For same item in the source organization

Also consider:

- Adjusting the planned inbound shipment quantity
- Updating supply allocation rule
- Firming the planned inbound shipments on a new date
- Modifying the sourcing rules: For example, change sourcing percentage

## Transportation and Distribution Exception Group

The following sections discuss the exceptions in this exception group and state their effects on distribution plans.

### Trip under utilized

**Explanation**

Generated when both weight and cube for a trip is below the minimum weight and cube allowed for the particular ship method.

> **Note:** The minimum weight and cube are defined by the plan options

and ship method trip limits.

The planning engine generates an exception message for each trip with weight and cube below the minimum level.

**Information Displayed**

- Action
- Exception
- Trip ID
- Ship Method
- Source Org
- Destination Org
- Plan Ship Date
- Plan Dock Date
- Weight Under Load %: Displays the percentage of weight by which the trip is under-loaded. Displays null if the trip is not under-loaded. The percentage is calculated by the following formula:

  *(1 - Actual Weight/Minimum Weight) * 100*

- Weight
- Min Weight Allowed
- Cube Under Load %: Displays the percentage of cube by which the trip is under-loaded. Displays null if the trip is not under-loaded. The percentage is calculated by the following formula:

  *(1 - Actual Cube/Minimum Cube) * 100*

- Cube
- Min Cube Allowed
- Pieces

**Resolution Suggestions**

To resolve this exception, consider the following steps:

1. Right click on the exception message in the Exception Details window, and select

Trips.

2. In the Trips window review the trip and internal requisitions.

3. Adjust the Trip so that it respects the minimum weight and/or cube:

   1. Add unassigned internal requisitions to the trip.

   2. Release the updated trip.

   **Note:** Optionally, accept the under utilization and firm and release the trip.

## Trip over utilized

**Explanation**

Generated when either weight or cube for a trip is above either the maximum weight or cube allowed for the particular ship method.

**Note:** The maximum weight and cube are defined by the plan options and ship method trip limits.

The planning engine generates an exception message for each trip with weight and cube above the maximum level. Currently, over utilization of a trip can happen only in the case of firm internal sales orders with quantities that are above the trip maximum.

**Information Displayed**

- Action
- Exception
- Trip ID
- Ship Method
- Source Org
- Destination Org
- Plan Ship Date
- Plan Dock Date
- Weight Over Load %: Displays the percentage of weight by which the trip is overloaded. Displays null if the trip is not overloaded. The percentage is calculated

by the following formula:

*(1 - Actual Weight/Maximum Weight) * 100*

- Weight
- Max Weight Allowed
- Cube Over Load %: Displays the percentage of cube by which the trip is overloaded. Displays null if the trip is not overloaded. The percentage is calculated by the following formula:

  *(1 - Actual Cube/Maximum Cube) * 100*

- Cube
- Max Cube Allowed
- Pieces

**Resolution Suggestions**

To resolve this exception, consider the following steps:

1. Right click on the exception message in the Exception Details window, and select Trips.
2. In the Trips window review the trip and internal requisitions.
3. Adjust the Trip so that it respects the maximum weight and/or cube:
   1. Remove internal requisitions or reduce the quantity of internal requisitions on the trip
   2. Release the updated trip.

      **Note:** Optionally, accept the over utilization and firm and release the trip.

## Item Shortage and Excess Exception Group

The following sections discuss the exceptions in this exception group and state their effects on distribution plans.

### Item with a projected stockout

**Explanation**

Distribution planning shares the Items with a shortage exception message with ASCP.

However, to distinguish this exception from a Material Shortage, Distribution Planning recognizes this exception message as Item with a Projected Stockout.

This exception message appears when projected available balance for a planning bucket is negative and is within the exception set Shortage Exceptions exception time period. Projected available balance is Previous bucket projected available balance + Sum of supply quantities with due date in this planning time bucket - Sum of demand quantities with due date in this planning time bucket.

The demands are most likely independent (because the planning engine pushes out dependent demand due dates). Due to lead time, intransit time, calendar, planning time fence, or supplier capacity constraints, the supply due dates are later than the end demand due date.

The characteristics of this exception message are same as those of supply chain plans, as Distribution Planning shares this exception message with ASCP. For more information on this exception message, see "Items with a shortage" in Shortages and Excess Exception Group, page 15-74.

### Items below safety stock

**Explanation**

This exception message appears when projected available balance for a planning bucket is below the specified safety stock level for the planning bucket (but not below zero). Projected available balance is Previous bucket projected available balance + Sum of supply quantities with due date in this planning time bucket - Sum of demand quantities with due date in this planning time bucket.

The exception is not issued when the projected available balance is negative and the more severe exception Item with a Projected Stockout Exception is issued.

The planning engine does not consult the exception set for the item.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Items below safety stock" in Shortages and Excess Exception Group, page 15-74.

The following new fields are added to this exception for distribution plans:

- Duration (Days): Displays the difference between the start date and the end date of the planning time bucket by [End Date - Start Date].
- Maximum Qty: Displays the maximum quantity below safety stock.

### Items with excess inventory

The planning engine generates this message when projected available balance for a bucket is greater than the exception set Excess Quantity value for the item and within the exception set Excess Exceptions exception time period. Projected available balance is

calculated by the following formula:

*[Previous bucket projected available balance + Sum of supply quantities with due date in this planning time bucket - Sum of demand quantities with due date in this planning time bucket]*

Note that items with excess inventory are not generated for items with items above target exceptions or maximum inventory level exceptions.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Items with excess inventory" in Shortages and Excess Exception Group, page 15-74.

**Important:** The following new fields are added to this exception for distribution plans:

- Maximum Quantity: Displays the maximum excess quantity for the exception time period.
- Maximum Cost: Displays the cost of the total quantity by [ Quantity * Item Cost]

### Items below target inventory level

**Explanation**

This exception message appears when projected available balance for a planning bucket is below the specified target inventory level for the planning bucket. Projected available balance is calculated by the following formula:

*[Previous bucket projected available balance + Sum of supply quantities with due date in this planning time bucket - Sum of demand quantities with due date in this planning time bucket]*

The planning engine does not consult the exception set for the item.

**Additional Information:** The following exception messages are issued whenever the target quantity for an item changes and quantity is below target. However, the planning engine does not generate a new exception when this quantity (i.e. the quantity below target) is updated.

- Supplier capacity overloaded
- Items with a projected stockout
- Items with excess inventory
- Items below safety stock
- Items below target inventory level

- Items above target inventory level
- Items above maximum inventory level
- Material shortage

Note that all these exception messages have both From Date and To Date fields. The fields carry time stamps and the exceptions are issued from the date/time stamp that the exception is triggered and ends at the date/time stamp that the exception condition is resolved.

**Information Displayed**

- Action
- Exception
- Org
- Item
- Start Date: The start date for the first planning time bucket
- End Date: The start date for the last planning time bucket
- Duration (Days): Displays the days elapsed between the start date and the end date, and is calculated by [End Date - Start Date].
- Actual Duration (Hours): Displays the hours elapsed between the start date and the end date, and is calculated by [End Date - Start Date].
- Maximum Qty: Displays the maximum quantity for the time period, and is calculated by the Maximum of [Target Inventory Level - Projected Available Balance].
- Target Qty: Target Inventory Level on the start date.
- Planner
- Product Family
- Item Category

**Resolution Suggestions**

Consider the following to resolve this exception:

- Expediting supply orders

- Transferring some inventory from another organization to the organization for which the exception is generated

## Items above target inventory level

**Explanation**

The planning engine generates this message when projected available balance for a planning bucket is greater than the target inventory level for the item. Projected available balance is calculated by the following formula:

*[Previous bucket projected available balance + Sum of supply quantities with due date in this planning time bucket - Sum of demand quantities with due date in this planning time bucket]*

Note that items above target are not generated for items with inventory levels above maximum.

> **Note:** An exception message is issued whenever the target quantity changes and quantity is above target. However, a new exception is not issued when the quantity above target changes.

**Information Displayed**

- Action
- Exception
- Org
- Item
- Start Date: The start date for the first planning time bucket
- End Date: The end date for the last planning time bucket
- Duration (Days): Displays the days elapsed between the start date and the end date, and is calculated by [End Date - Start Date].
- Actual Duration (Hours): Displays the hours elapsed between the start date and the end date, and is calculated by [End Date - Start Date].
- Maximum Qty: Displays the maximum quantity for the time period, and is calculated by the Maximum of [Projected Available Balance - Target Inventory Level].
- Target Qty: Target Inventory Level on the start date.
- Safety Stock Qty: Safety stock inventory level on the start date.

- Planner
- Product Family
- Item Category

**Resolution Suggestions**

Consider the following to resolve this exception:

- Cancelling unnecessary supply orders
- Transferring the excess inventory to another organization

### Items above maximum inventory level

The planning engine generates this message when projected available balance for a bucket is greater than the maximum inventory level for the item. Projected available balance is calculated by the following formula:

*[Previous bucket projected available balance + Sum of supply quantities with due date in this planning time bucket - Sum of demand quantities with due date in this planning time bucket]*

**Information Displayed**

- Action
- Exception
- Org
- Item
- Start Date: The start date for the first planning time bucket
- End Date: The end date for the last planning time bucket
- Duration (Days): Displays the days elapsed between the start date and the end date, and is calculated by [End Date - Start Date].
- Actual Duration (Hours): Displays the hours elapsed between the start date and the end date, and is calculated by [End Date - Start Date].
- Maximum Qty: Displays the maximum quantity for the time period, and is calculated by the Maximum of [Projected Available Balance - Maximum Inventory Level]
- Maximum Inventory Level: Maximum Inventory Level on the start date
- Planner

- Product Family
- Item Category

**Resolution Suggestions**

Consider the following to resolve this exception:

- Cancelling unnecessary supply orders
- Transferring the excess inventory to another organization

## Reschedule Exception Group

The following sections discuss the exceptions in this exception group and state their effects on distribution plans.

### Changes recommended for sales orders

**Explanation**

The exception is generated when ASCP recommends changes to the existing sales order line details. The exception will be generated each time there is a change in the following sales order line entities in ASCP.

This exception helps integrating the planning and Order management data flow whenever ASCP recommends changes to the existing orders.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Changes recommended for sales orders" in Reschedules Exception Group, page 15-79.

### Orders to be rescheduled out

**Explanation**

This exception message appears when the planning engine suggests that you reschedule an existing supply order (scheduled receipt) to a later date to avoid carrying excess inventory. It occurs when the planning engine detects a non-firm existing supply order with a due date that is earlier than it suggests (suggested due date).

The planning engine does not issue this recommendation for firm existing supply orders.

The planning engine continues to plan lower bill of material levels as if you accept the suggestion.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Orders to be rescheduled out" in Reschedules Exception Group, page 15-79

**Important:** A new field is added to this exception for distribution plans called Demand Order Number. This field displays the order number of the internal sales order.

### Orders to be rescheduled in

**Explanation**

This exception message appears when the planning engine suggests that you reschedule an existing supply order to an earlier date. It occurs when the planning engine detects a non-firm existing supply order with a due date that is later than it suggests (suggested order date).

The planning engine continues to plan lower bill of material levels as if you accept the suggestion.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Orders to be rescheduled in" in Reschedules Exception Group, page 15-79.

**Important:** A new field is added to this exception for distribution plans called Demand Order Number. This field displays the order number of the internal sales order.

### Orders to be cancelled

**Explanation**

This exception message appears when the planning engine suggests that you cancel an existing supply order.

It occurs when the planning engine detects a non-firm existing supply order that you do not need to satisfy demand or safety stock requirements.

The planning engine continues to plan lower bill of material levels as if you accept the suggestion.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Orders to be cancelled" in Reschedules Exception Group, page 15-79.

**Important:** A new field is added to this exception for distribution plans called Demand Order Number. This field displays the order number of the internal sales order.

### Past due orders

**Explanation**

This exception message appears when the planning engine detects supply orders and planned orders that have order (start) dates and due dates in the past (before the planning horizon start date).

For non-firmed supply orders, the planning engine also issues Orders to be rescheduled out exception message.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Past due orders" in Reschedules Exception Group, page 15-79

### Order is firmed late

**Explanation**

This exception is generated when the planning engine encounters a firm order because of which planning is unable to schedule succeeding orders in time to meet the demand due date. This exception is generated when the order is firmed.

There will be one exception for every Firm Supply that is encountered that causes demand lateness

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Order is firmed late" in Reschedules Exception Group, page 15-79.

### Order is firmed early

**Explanation**

This exception is generated when the planning engine encounters a firm order because of which planning is unable to schedule preceding orders without causing lead time compressions on the upstream preceding orders.

There will be one exception for every Firm Supply that is encountered that causes upstream order lead time compression.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Order is firmed early" in Reschedules Exception Group, page 15-79.

### Sales Order Line Allocation Split

**Explanation**

This exception message is generated for each sales order line that is split during the order line allocation process. The planning engine generates this exception message only once for the original sales order line number. Sales order lines are only split if the appropriate plan option is checked.

> **Note:** The planning engine also generates Late Replenishment for Sales Order exception message for the new sales order lines that are satisfied late.

**Information Displayed**

- Action
- Exception
- Org
- Item
- Sales Order Number
- Suggested Due Date: The original suggested due date of the sales order line
- Original Qty: The original sales order line quantity
- Qty on Time: The quantity that is delivered on time
- Late Qty: The quantity of the late split sales order line. Displays the total of all lines that are late if there is more than one split from the original line.
- Late Suggested Due Date: The date of the late split sales order line. Displays the latest date if more than one line is split from the original line.
- % Quantity Satisfied on Time: Displays the percentage of quantity delivered on time by the following formula:

  *[Qty on Time / Original Qty] * 100*
- Planner
- Product Family
- Item Category

> **Note:** Distribution planning engine provides this exception as an FYI to the planner. Resolution may not be required for this exception.

### Order quantity change

**Explanation**

Generated whenever the purchase order, internal sales order, or internal requisition quantity is reduced but is still greater than zero. If the order quantity is reduced to 0, that is considered a cancellation and a different reschedule recommendation is issued.

**Information Displayed**

- Action
- Release
- Exception
- Trip ID
- Source Org
- Destination Org
- Ship Date
- Due Date
- Demand Order Number: Internal Sales Order Number
- Order Number: Internal Requisition Number
- Ship Method
- Item
- Old Quantity
- New Quantity
- Planner
- Product Family
- Item Category

**Resolution Suggestions**

Consider increasing the quantity of the purchase order, internal sales order, or the internal requisition.

**Note:** Distribution planning engine provides this exception as an FYI to the planner. Resolution may not be required for this exception.

## Substitutes and Alternates Exception Group

The following sections discuss the exceptions in this exception group and state their effects on distribution plans.

### Planned order uses alternate BOM

**Explanation**

The exception message Planned order uses alternate BOM/routing in ASCP is renamed as Planned order uses alternate BOM in Distribution Planning.

This exception message appears when the planning engine:

- Under the direction of a decision rule, assigns an alternate bill of material and routing to a planned order
- Detects a firm a planned order with an alternate bill of material and routing

As Distribution Planning shares this exception message with ASCP, the characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Planned order uses alternate BOM/routing" in Substitutes and Alternates Used Exception Group, page 15-99.

### Planned order uses substitute components

**Explanation**

This exception message appears when the planning engine:

- Under the direction of a decision rule, assigns a substitute component to a planned order.
- Detects a firm a planned order with a substitute component.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Planned order uses substitute components" in Substitutes and Alternates Used Exception Group, page 15-99.

### Order sourced from alternate facility

**Explanation**

This exception message appears when the planning engine:

- Under the direction of a decision rule, assigns a planned order to an alternate facility
- Detects a firm planned order with an alternate facility assigned

An alternate facility is an organization in the supply chain and is not a supplier site.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Order sourced from alternate facility" in Substitutes and Alternates Used Exception Group, page 15-99.

### Order sourced from alternate supplier

**Explanation**

This exception message appears when the planning engine:

- In a plan with decision rules enabled, under the direction of a decision rule, assigns a planned order to an alternate supplier (supplier with rank other than 1)
- In any distribution plan, detects a firm planned order with an alternate supplier assigned

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Order sourced from alternate supplier" in Substitutes and Alternates Used Exception Group, page 15-99.

### Demand satisfied using end item substitution

**Explanation**

This exception message appears when the planning engine plans to satisfy an end item demand using a supply order with a substitute item. The planning engine substitutes items when both of these are true:

- The plan is under the direction of substitution rules
- The plan option Decision Rules, End Item Substitution is selected

If the planning engine satisfies a demand with multiple planned orders, it issues an exception for each supply order with the substitute item.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Demand satisfied using end item substitution" in Substitutes and Alternates Used Exception Group, page 15-99.

### Alternate ship method used / ship method changed

**Explanation**

This exception is generated when the Distribution Planning engine selects an alternate ship method for a planned order or changes the ship method on an existing sales order, external purchase order, or planned order. The distribution plan can change the ship method on a sales order even if the decision rules are not enabled (MPP/MPS/MRP plans require decision rules enabled for this feature). The planning engine evaluates alternate ship methods for internal transfers and uses similar logic to evaluate ship methods for sales orders.

This exception is not used for internal sales orders, internal requisitions, or planned orders for internal shipments or internal arrivals.

For released orders, you will get an exception when the originally suggested ship method changes to a new ship method. For planned orders you will get an exception if system chooses an alternate ship method

**Information Displayed**

- Action
- Exception
- Trip ID
- Original Ship Method
- New Ship Method
- Source Org
- Destination Org
- Due Date
- Old Intransit Time
- New Intransit Time
- Source Type: Internal Requisition
- Order: Internal Requisition Number
- Item
- Quantity
- Planner

- Product Family
- Item Category

> **Note:** Distribution planning engine provides this exception as an FYI to the planner. Resolution may not be required for this exception.

### Internal transfer uses alternate ship method / ship method changed

**Explanation**

This exception is generated for every occurrence of the use of an alternate ship method or a change in ship method for internal sales orders / internal requisitions and planned shipments / planned arrivals. Note that decision rules do not have to be enabled for the distribution plan to select alternate ship methods for internal transfers.

Users can specify sourcing rules with multiple ship methods at Rank 2 and below for internal transfers. Distribution plans can select lower rank ship methods for organizations specified as Rank 1 sources. Users do not need to enable decision rules for this feature. However, if a new source is Rank 2, distribution plans will not select the new source unless decision rules are enabled and alternate sources are selected.

As multiple ship methods can be listed in the sourcing rule for any rank, this exception is not generated unless the ship method selected is a lower rank than the source is originally listed.

**Information Displayed**

- Action
- Exception
- Trip ID
- Original Ship Method
- New Ship Method
- Source Org
- Destination Org
- Due Date
- Old Intransit Time
- New Intransit Time
- Source Type: The source type is displayed as Internal Requisition

- Order: Internal Requisition Number
- Item
- Quantity
- Planner
- Product Family Item Category

### Planned order uses inventory rebalance source

**Explanation**

This exception is generated if the planning engine selects a supply source that is defined as a inventory rebalance source of supply. Users can specify inventory rebalance sources on the sourcing rules and the planning engine can use them under certain conditions.

This exception is generated only for each of the internal requisitions sourced from an inventory rebalance source. The name of the inventory rebalancing rule is also displayed in the exception message.

> **Note:** Inventory rebalance sources are used to transfer inventory to use up the surplus at another organization before sourcing through the usual channels.

**Information Displayed**

- Action
- Exception
- Trip ID
- Ship Method
- Sourcing Rule
- Source Org
- Destination Org
- Due Date
- Source Type: Internal requisition
- Order: Internal requisition number

- Item
- Quantity
- Planner
- Product Family
- Item Category

> **Note:** Distribution planning engine provides this exception as an FYI to the planner. Resolution may not be required for this exception.

## Item Exceptions Exception Group

The following sections discuss the exceptions in this exception group and state their effects on distribution plans.

### Items with negative starting on hand

**Explanation**

This exception message appears when the planning engine detects an item with negative beginning on-hand balance.

It usually occurs because of an incorrect inventory balance.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Items with negative starting on hand" in Item Exceptions Exception Group, page 15-108.

### Items with expired lot

**Explanation**

This exception appears when the planning engine detects a potential expired lot. A potential expired lot is a lot that:

- Has lot expiration date during the planning horizon
- Is not pegged to a demand that results in its use before its lot expiration date

It occurs against items under lot control of Full Control. The calculation for lot expiration date is Lot Receipt Date + Shelf Life Days.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Items with expired lot" inItem Exceptions Exception

Group, page 15-108.

### Sourcing split percentage violated

**Explanation**

This exception message appears for days when the sourcing split percentages among rank 1 suppliers is violated. The planning engine issues the exception against suppliers whose sourcing percentage is not satisfied.

The actual sourcing percentage for a supplier is calculated as (Cumulative quantity sourced from supplier/Cumulative quantity sourced from rank 1 suppliers) * 100

The distribution planning can only violate the sourcing split when decision rules are enabled and alternate sources are selected.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Sourcing split percentage violated" in Item Exceptions Exception Group, page 15-108.

### Items with no activity

**Explanation**

This exception appears when the planning engine detects an item in an organization with no demand and no supply throughout the planning horizon. It usually occurs for:

- Substitute components
- Components on alternate bills of material
- End item substitutes

Typically, these items do not have other sources of demand and the planning engine does not need to use them during the planning horizon.

If the item has no activity in multiple organizations, the planning engine issues this exception message for each organization.

Distribution Planning shares this exception message with ASCP. The characteristics of this exception message are same as those of supply chain plans. For more information on this exception message, see "Sourcing split percentage violated" in Item Exceptions Exception Group, page 15-108.

## Recommendations Exception Group

The following sections discuss the exceptions in this exception group and state their effects on distribution plans.

Distribution Planning shares the following exception message with ASCP. The characteristics of these exception messages are same as those of supply chain plans: For

more information on this exception message, see Recommendations Exception Group, page 15-118.

- Discrete jobs recommendations
- Purchase requisitions recommendations

### Trip recommendations

**Explanation**

For Trip recommendations exception message, the planning engine generates a summary level exception for new planned trips generated by the distribution plan with the complete internal requisitions information for all internal requisitions attached to the trip.

## Defining Organization Selection Lists

When you right-click in the Planners Workbench, a Horizontal Plan menu appears and preference set names are no longer displayed. The preference set selections for the Horizontal Plan are only available from a right clicking within the Horizontal Plan itself.

This table describes the right-click options:

| Option | Description |
|---|---|
| This Org | The Horizontal Plan is displayed for the organization based on the organization-item context of the right-click. |
| Ship From / To Orgs | The Horizontal Plan is displayed for several organizations based on the organization-item context of the right-click.<br><br>Suppose the right-click is made from the context of Organization X Item A. The sourcing rules are checked, and for Organization Z Item A, every source organization and every destination organization is displayed. Organization Z is also displayed, as are inventory rebalance organizations. |

| Option | Description |
| --- | --- |
| All Orgs | The Horizontal Plan is displayed for all organizations, based on the item context of the right-click.<br><br>Each individual organization is also displayed if you select Display Each Org in All Orgs View on the plan preferences setting for material plan.<br><br>Otherwise, only the Summary section is displayed. After the All Orgs Horizontal Plan is displayed, you can right-click to toggle between showing only All Orgs and Display Each Org. |
| All Orgs (internal shipments not included) | The Horizontal Plan is displayed for all organizations, based on the item context of the right-click. Each individual organization is also displayed if you select Display Each Org in All Orgs View on the plan preferences setting for material plan.<br><br>Otherwise, only the Summary section is displayed. After the All Orgs Horizontal Plan is displayed, you can right-click to toggle between showing only All Orgs and Display Each Org. |
| OrgList1, OrgList2, OrgList3 | OrgList1, OrgList2, OrgList3 refers to user-defined names for various organization selection lists, as defined on the Org Selection List form.<br><br>When selected, the Horizontal Plan opens with each organization displayed in the sequence defined from the list. The Summary section at the top of the Horizontal Plan. |

At the top of the Horizontal Plan, the Summary displays totals for all organizations shown in the Horizontal Plan, if there is more than one organization displayed in the Horizontal Plan. The summary section is the totals for all organizations displayed.

# 14

# Managing Distribution Plans

This chapter covers the following topics:

- Manage Distribution Plan Overview
- Distribution Pegging
- Fair Share Allocation
- Setting Up Customer Lists

## Manage Distribution Plan Overview

**Adjusting Allocations**

The Distribution Plan Workbench provides several methods of analyzing and updating supply allocations from one distribution center to another or from a distribution center to end demands (sales orders and forecasts). The user can access either the allocation plan or the horizontal plan for information about how distribution planning has allocated scarce supplies. Users can adjust and firm internal transfers and allocate to sales orders and forecasts.

Users can adjust allocations by:

- Updating the allocation plan: Adjust allocations from source to destination organizations
- Analyzing the multiple organization display horizontal plan and then firming transfer dates and quantities in the supply demand window
- Firm and update quantities on internal sales orders and requisitions and also firm planned inbound and outbound shipments
- Firming actual and planned purchase orders and planned purchase requisitions
- Adjust allocations of supplier capacity to destination organizations by updating and firming planned orders

- Manually allocating to sales orders and forecasts by organization

**Adjust Allocations to Distribution Centers**

The context of the allocation plan is derived from where the user accesses it. A right-click from the:

- Horizontal Plan opens it for the same organization-item of the Horizontal Plan.
- Items window opens it for the same source organization-item as the items row.
- Supply and Demand Window opens it for the same source organization-item as the demand or supply row.

The user has three choices for the horizontal dimension, Customer, Customer Site, and Demand Class. The user can change the horizontal dimension by right clicking the allocation plan.

The date range across the top of the form are the first day of each allocation bucket. If the allocation bucket is weekly, then the date is the first day of the week. Distribution planning does not summarize to any other weekly or period levels; some allocation buckets, for example two weeks, may not aggregate correctly to the period level.

It shows unconstrained demands by bucket, whether they are sales orders, forecasts, transfer demand, or kit demand. This is the original demand quantity, not the net demand quantity after any expiration or kill of sales orders. Sales orders reflect the demand date based on the plan options; this is the suggested due date and not any distribution planning rescheduled dates.

Allocation plan (new for distribution planning):

- Is accessed for an item-organization from the Supply and Demand window, the Horizontal Plan, the Workbench Navigator tree, and the Plan Summary
- Displays allocations from the source organization to destination organizations, customers and customer sites, and demand classes
- Displays by allocation bucket
- Displays specific customers using the customer list
- Enables double clicks to Supply/Demand window
- Enables right click to Horizontal Plan

**Reviewing Allocations to Customers**

Unconstrained Demand: Total unconstrained demands with suggested due date in the bucket for the destination organization, customer, customer site, or demand class.

Expired Demand: Total amount of expired demand with a suggested due date in the bucket (sales orders and forecasts).

Target and safety stock: Target and safety stock inventory levels for the organization at the end of the allocation bucket.

Supply: The total available supply for this bucket from this source organization (not shown in the All Orgs view)

Firm Allocations: For a destination organization, this includes any firm transfers from the source organization, either planned or actual.

Suggested Allocated Qty: Of the supplies in this bucket, the quantity allocated to this destination organization, customer, customer site, or demand class. The allocations are from supply in the bucket and can be allocated to demands that have suggested due dates in any bucket.

Manual Allocation Qty: User editable field when the context is a destination organization.

Effective Allocation Qty: The allocation total of this bucket which is the manual allocation quantity; if it is null, it is the greater of the firm allocations or the suggested allocation quantity.

Cum Unconstrained Demand: Total unconstrained demand cumulative-to-date for this destination organization, customer, customer site, or demand class.

Cum Expired Demand: Total unconstrained expired demand cumulative-to-date for this destination organization, customer, customer site, or demand class.

Cum Supply: Total available supply for this and all prior buckets from this source organization.

Cum Suggested Allocated Qty: Suggested allocated quantity cumulative-to-date for this destination organization, customer, customer site, or demand class.

Cum Fill Rate: 100% * Cum unconstrained demand / Cum suggested allocated quantity. This can be greater than 0 when quantity is allocated to target or safety stock, as target and safety stock are not included in the cumulative unconstrained demands.

**Manual Allocation**

The user can enter a manual allocation quantity from the source organization to a destination organization. The user enters the quantity in Allocation Plan > Manual Allocation Quantity. When the form is saved, a new firm planned inbound and outbound shipment (planned order) is created as follows :

- It is from the source organization to the destination organization
- It uses the rank 1 ship method from the sourcing rule. If there is more than one rank 1 ship method, then the highest percentage ship method is used. If the top percents are a tie, then the fastest ship method is used.
- Ship date is set to the beginning of the allocation bucket (respecting shipping and in-transit calendars)

- Dock date is set based on the ship method, in-transit calendar, and receiving calendar.
- The quantity of the new planned order is the difference between the firm allocations and the manual allocation quantity.
- The updated display after saving shows firm allocations including the newly created firm planned order. The field Manual Allocation Qty is cleared since the allocation is made.
- A message is given in the message bar saying that " <number> new firm planned orders are created".
- Entries are not allowed that reduce firm allocations. If the user needs to reduce firm allocations, then the user can open the supply window and cancel firm actual or planned shipments.

The Manual Allocation Quantity in the Allocation Plan works as follows:

- It is a user-editable field
- The Allocation Plan Reset button clears the form
- The Allocation Plan Recalculate button updates effective allocation quantity and displays warnings when allocation exceeds supply
- Saving manual allocation quantity entries creates firm planned orders as follows:
  - From the source to destination organization
  - Uses Rank 1 ship method from the sourcing rule by default
  - Ship date is the beginning of the allocation bucket
  - Dock date is calculated based on ship method and calendars

**Horizontal Plan**

In addition to the Allocation Plan, the horizontal plan can be used to analyze allocations across the distribution network. The user can drill down to individual supply records to make adjustments to the planned allocations

Use the enhanced horizontal plan to review material flows across the enterprise. It displays multiple organizations and their specific inbound and outbound transfers.

Right-click to allocation details to review distribution planning allocation decisions

Double-click to supply demand window to analyze and update individual supply demand records Review pegging data

After making adjustments, use replan to calculate the downstream impacts

New for distribution planning, the horizontal plan organization selection options are presented whenever the user calls for the horizontal plan. The user selects the initial organizations to display and can change the selection from within the horizontal plan.

If the user defined organization lists in the setup, then the organization list names are also shown as choices in the organization selection list.

Organization display includes:

- Single organization
- Ship from and to organizations
- All organizations
- Display for organizations in an organization list

Fields available for display in the horizontal plan include:

- External Demand: Includes sales orders and forecasts
- Sales Order
- Forecast
- Kit Demand: Kit demand is the constrained dependent demand for a component of a kit. For example, item A is used to make item X. The kit demand is the demand for Item A resulting from planned orders and discrete jobs to make item X.
- Outbound Shipments: Includes internal sales order and planned outbound shipments. The planner can drill down into the supply and demand window for a bucket on this row and view the internal sales orders and planned outbound shipments.
- Other Demand: Includes hard reservations (against sales orders), inter-organization demand from other distribution plans as demand schedules, copied schedule demand, demand class consumption, expired lots, scrap demand, and non-standard demand.
- Total Demand: Includes external demand, planned outbound shipments, other demand, and kit demand. Kit demand consists of kit planned order demand, non-standard job demand, and discrete job demand.
- Requested Outbound Shipments: Includes unconstrained transfer demand which is the requested outbound shipments.
- Unconstrained Kit Demand: Includes unconstrained kit planned order demand and discrete job demand.

- Unconstrained Other Demand: Includes hard reservations, distribution planning inter-organization demand, copied schedule demand, demand class consumption, expired lots, scrap demand, and non-standard demand.
- Unconstrained Total Demand: Includes unconstrained kit demand, unconstrained other demand, external demand, and requested outbound shipments.
- Internal Supply: Includes beginning on-hand, work in process, material in receiving, and planned orders.
- Beginning On Hand
- In Receiving: Total in receiving
- WIP
- External Supply: Includes in-transits, purchase orders, requisitions, and planned orders
- Requested Inbound Shipments: The unconstrained transfer supplies. It is derived by the user interface as Requested outbound shipment suggested due date at source organization + In transit lead time for the default ship method. It recalculates other dates by using the calendars. It is not the direct output from the planning engine. The requested inbound shipments may violate order size.
- Inbound Shipments: Transfer supply. It includes in-transits, purchase requisitions, and planned inbound shipments. The planner can drill down into the supply demand window for a bucket on this row and view the supplies.
- In Transit
- Purchase Order
- Requisition
- All Planned Orders: Includes planned make orders, planned purchase orders, and planned inbound shipments.
- Total Supply: Includes beginning on hand, work in process, purchase orders, purchase requisitions, in-transits, in receiving, and planned orders.
- Current Scheduled Receipts: Includes work in process, purchase orders, purchase requisitions, in-transits, and in receiving.
- Projected On Hand: Same as Projected Available Balance except does not include any planned orders.
- Projected Available Balance: Includes total supply and total demand.

- Unconstrained Projected Available Balance: Includes beginning on-hand, total supply, and unconstrained total demand.
- Maximum Quantity
- Target Quantity
- Safety Stock Quantity
- Inbound In Transit
- Outbound In Transit
- Net ATP
- Expired Lots

**Display Horizontal Plan Allocation Details**

There is a supply allocation detail row for each demand priority, allocation bucket, source organization, destination organization, and firm flag. If the item is a component, then there is also a row for each parent item but the destination organization is null. To see the details for an allocation bucket, right-click a demand or a supply row and select Allocation Details.

The fields shown include:

- Demand Priority: Inventory rebalancing demands display as priority 0. All other demands display their original demand priority.
- Firm Flag: Indicates that the demand is firm or is pegged to a firm supply in the destination organization.
- Firm Demand Carry Forward Buckets: The number of allocation buckets to which the firm demand is carried forward. If the firm demand is in the current bucket, then the bucket quantity is zero.

The allocation detail rows

- Display demands by priority and how supplies are allocated to each demand type and priority
- Show demands carried forward from previous allocation buckets
- Show time period by allocation bucket

**Order Types**

The new order types for the supply and demand window are:

- Requested Inbound and Outbound Shipments: Unconstrained demand for internal

transfers from one organization to another organization. Outbounds are shown for the source organization and inbounds for the destination organization.

- Planned Inbound and Outbound Shipments: The constrained demand and supply order types for planned internal transfers.

- If there are internal sales orders and internal requisitions, they are the constrained demand and supply order types for existing internal transfers.

  The user will find the following rows in the supply and demand window for planned transfers:

  - Planned Inbound Shipment
  - Requested Inbound Shipment
  - Planned Outbound Shipment
  - Requested Outbound Shipment

  The user will find the following rows in the supply and demand window for internal requisitions and internal sales orders:

  - Internal Requisition
  - Requested Inbound Shipment
  - Internal Sales Order
  - Requested Outbound Shipment
  - Requested inbound shipments and requested outbound shipments show the same order number because they are the same material movement as seen from either the source or the destination organization.

- Suggested Due Date: The requested inbound shipment due date is the same date and time as the actual demand it is associated with. For example, if a forecast is due on Day 3 at 00:00:00, then there will be a requested inbound shipment with a suggested due date Day 3 at 00:00:00

- Planning Time Fence: The requested inbound shipment suggested due date respects the planning time fence and, if there is not sufficient lead-time, then the suggested due date is set to the planning time fence. In the case of the requested inbound shipments, the planning time fence is applied to the due date and not to the order start date or ship date.

- Suggested Dock Date: The suggested dock date is offset from the suggested due date by the post-processing lead-time. If the suggested dock date falls on a non-

working date, then it is moved earlier

- Unconstrained Kit Demand: The unconstrained demand generated for items that are components of kits. This is not a shipment row type.

- Constrained Kit Demand: The constrained demand that is generated for items that are components of kits and that is the result of a planned order to make the kit. This is not a shipment row type.

**Verifying Allocation Adjustments**

On-line and batch replan can be used to check the results of user entered allocation adjustments. It only replans items with changed demands or supplies; it does not completely replan trips

On-line and batch replan decides which items to replan based on manual changes the planner makes:

- Demand changes include adding a demand and changing a demands quantity, due date or demand priority.

- Supply changes include both adding new supplies and firming and also changing supply quantities or dates and firming

- Supplier capacity changes include adding or reducing supplier capacity.

- Trip changes include firming a trip (which cascades the firm down to all of the outbound shipment lines on the trip) and changing the dates of the trip (which cascades the changed dates down to all of the outbound shipment lines on the trip).

Load consolidation is not completely recalculated during on-line and batch replan. The load consolidation recalculations involves (for changed items):

- All shipment lines are removed from existing trips

- Trips are considered firm and are not rescheduled. However, new shipment lines are can be added to the trip

- If the trips cannot be loaded with shipment lines for the changed items, then trips are created

- The existing trips may be underutilized after the shipment line for the changed item is removed if enough new shipment lines are not added

**Adjusting Allocations to Sales Orders**

To allocate to individual sales orders and forecasts, drill down to the supply and demand window from allocation plan or horizontal plan You can:

- Firm the entire sales order line (or forecast) on the due date

- Firm the entire sales order line on a new date
- Split and firm both partial sales order lines on new dates
- Split and firm only one of the partial sales order lines

Then, run On-line or Batch Replan. Firm demands are allocated to first and all other demands are reallocated the remaining supplies

The user checks firm for a demand (forecast or sales order) and updates both the New Date and New Quantity fields to change the demand suggested due date (earlier or later) and, optionally, the demand quantity.

Sales order and forecast demands with the firm flag checked and with new date and new quantity populated receive allocations first (with other firm demands) during distribution planning batch or on-line replan. We refer to these demands as Date/Qty firm to distinguish them from sales order demands subject to the usual behavior of the firm flag. If the sales order is simply firm without values for New Date and New Quantity then the behavior is unchanged. The sales order source organization cannot be changed if the sales order firm flag is checked.

Date/Qty firm sales orders are not retained from one full plan run to the next plan run. The overwrite options flag does not apply to Date/Qty firm sales orders. A full plan run always re-snapshots sales orders.

For example:

- The user selects a sales order that is four days late and firms it.
- The user enters new date (which is on time) and new quantity for the sales order. .
- Replan will allocate supplies on the new date to this sales order before allocating supplies to other sales orders that are not firm.

**Allocation Plan**

View the distribution planning allocation decisions by customer in the allocation plan. To use it:

- Display allocations from the source organization to Customers and customer sites Demand classes
- Display by allocation bucket
- Select specific customers with the customer list
- Double click sales order quantities to open the supply demand window for specific sales orders to firm and optionally split the demands
- If you open it from the items node with no organization context, then the allocation plan displays allocations by customer for the entire enterprise. You can analyze

allocations to each customer totaled for all distribution centers. Use this method if many customer sites are sourced from many different distribution centers.

**Consolidating Trips**

In the Find Opportunities window, users can select certain transfers and consolidating. The action:

- Adds the shipment lines to the target trip
- Updates the weight and cube fields for the target trip
- Firms and updates the shipment lines to the new ship date, dock date and ship method
- Does not update any other dates such as order date or start date. These are updated when a replan or a full plan launch are run.

The planner can find under utilized trips in various ways. The planner can add trips under utilized exceptions to the most important exceptions in the plan summary or open the trips under utilized exceptions in the exceptions summary. The planner can also check the utilization percents in the trips form. From any of these, the planner can work to improve the utilization of the trip by opening the Consolidate Trips window.

From within the Consolidation Trips window, the planner can use the find opportunities algorithm. The find opportunities algorithm takes the following find criteria as input to limit the transfers to consider placing on the target trip:

- Utilization % (weight and cube): Always less than the value entered.
- Days from Ship Date: The number of days before and after the ship date of the targeted trip
- Supply Available Days Early: For individual shipments (internal requisitions), this date is less than or equal to the trip ship date. If the user enters a negative value, then individual shipments are considered with supplies that are not available until that many days after the actual shipment is scheduled for shipment. The assumption is the planner can expedite them.

From the trip, navigate to Find Opportunities form

- It displays the under utilized trip
- Enter parameters to search for other transfers that can be loaded on the under utilized trips
- Select the transfers and change ship date, dock date, and ship method for the selected outbound shipments Then, click Consolidation to put them on the target under utilized trip

- Optionally release now or later

The trip information at the top of the Consolidate Trip form is the target trip that the planner is trying to improve the utilization

The Opportunities region displays the Trips selected based on the user entered values in the find algorithm.

The Shipment Lines region displays the lines for the highlighted trip in the opportunities region.

- Demand Days Late: Target Trip (Dock date + Post processing days) - Need by date. If late, it is in red.
- Supply Days Late: Trip ship date - Supply available date. If late, it is in red.

For both Demand Days Late and Supply Days Late fields, the trip refers to the trip that is in the top region; that is, the trip we are looking to add shipment lines to. Both fields display in red if there is a problem with its either meeting the demand due date or having the supply available for the new ship date.

Supply Available Date field for each shipment line is calculated from the pegging relationship and displayed so the user can understand how early the supply is available in the source organization. It might be moved onto a trip that is earlier than the trip it is on.

**Expediting Supplies**

Distribution planners use the same Workbench features to expedite supplies that are used by MRP/MPS/MPP plans. Use exception management and Workbench functionality to

- Increase supplier capacity
- Select alternate suppliers
- Reduce transit times
- Firm orders early based on supplier responses

**Rebalancing Inventories**

Review the plan for inventory rebalance requirements

Check the Planned order uses inventory rebalance source exception to review inventory rebalance actions by the plan As desired, release inventory rebalance planned orders

Use horizontal plan for multiple organizations to determine if additional inventory rebalancing is required

Refer to profile option MSC: Inventory Rebalancing Surplus Inventory Basis and plan option Inventory Rebalancing Surplus Days for more information about the inventory rebalancing feature.

**Updating and Releasing Trips**

Update and release trips using the Trips form

- Update ship date, dock date and ship method for a trip
- Changes to the trip updates all internal transfers on the trip
- Release all internal transfers on a trip by releasing the trip

In the Trips form, the user can change the ship method, ship date, and dock date for a trip. If the user changes the dock date or the ship date and blanks out the other date, then the other date is calculated based on the selected ship method. If no ship method is selected, then the user must enter both dates.

The user can firm and release trips from the trips form.

All changes made to a trip (for example, date changes, firm, and release) are propagated to the internal requisitions, internal sales orders, planned inbound and outbound shipments for a particular trip.

From the supply and demand window, users can remove or add internal shipments to trips.

**Analyze Trip Loading**

Analyze how a trip is loaded with the Trip Allocation Details form

Right click from a trip to view Trip Allocation Details

Each detail line:

- Associates unconstrained demands in the destination with constrained supplies in the source as shipment lines are loaded
- Supply date: The earliest date that the supply is available in the source organization for this demand
- Earliest Possible Dock Date: The earliest date that the trip can dock and not cause a violation of maximum inventory level at the destination organization
- Latest Possible Dock Date: The latest date that the trip can dock and not cause a violation of safety stock level at the destination organization

The Trip Allocation Details form provides the user a way to determine which items and quantities on the trip have the earliest required ship and dock dates and highest priority. This allows a user to make decisions about which trip lines must go on the trip and which lines could be delayed. Trip allocation details are not displayed for dates outside of the trip consolidation window.

Similar information is provided by item in the supply and demand window, but the Trip Allocation Details form provides a more granular view. Both the earliest and latest dock dates are calculated using the ship method for the trip. Faster or slower ship

methods can change these dates; they were considered by the distribution planning engine prior to assigning the trip allocation detail Line to the particular trip. The information in the Trip Allocation Details form is based on that ship method.

Use these dates to determine the supplies and trips that can be considered when manually consolidating shipments.

Each trip allocation detail Line is associated with both of the following:

- The unconstrained demand (requested outbound shipment) from the destination organization that triggered the requirement
- The constrained supply (planned inbound shipment or internal requisition) to the destination organization

Trip Allocation Details are related to demands as follows:

- During the allocation and trip loading process, the distribution planning engine evaluates demands from the destination organization and creates trip allocation detail lines that are tied to each of its unconstrained demands.
- The unconstrained demands are shown in the supply and demand window as requested outbound shipments.
- This relationship exists during the trip loading engine process and is not shown as part of the pegging tree.
- A trip allocation detail line quantity can be larger or smaller than its associated demand.
- Multiple trip allocation detail lines can be associated to a single demand row. The relationship and number of trip allocation detail Lines is affected by such factors as trip size, number of demands in the destination organization, order modifiers, and priorities based on internal engine logic as trips are loaded.
- A trip allocation detail line quantity can also be larger than the associated demand because of order modifiers.

**Creating Internal Requisitions and Internal Sales Orders**

You can release planned orders for transfers from distribution plans

Release either the planned outbound shipment or the planned inbound shipment

The distribution planning release mechanism automatically creates both the internal requisition in the destination organization and the internal sales order in the source organization The internal requisition is automatically interfaced to Oracle Order Management as part of the release mechanism and the internal sales order is created as part of the release process

Releasing trips or releasing individual shipments works the same as both documents are created in the source by the release mechanism

Distribution planning completes all of the steps necessary to create both documents, including creating the internal requisition and marking it as interfaced to Oracle Order Management. The internal sales order is created, the internal requisition number is populated and the internal sales order is marked as booked. In addition, the Oracle Order Management loopback API loads both the ship date and the arrival date to the internal sales order; these dates then reflect the planning decisions.

Upon creation of the internal sales order, it is in the booked status; the delivery line is also created which in turn can be used by Oracle Transportation Management. Oracle Transportation Management can select the mode, carrier, service level, and can schedule the load so that it is ready to be tendered.

The dates populated in the source instance for the internal sales order and internal requisition relate to the dates in the distribution plan supply and demand window as follows:

- Internal requisition Need By Date from Distribution Plan Workbench Implement Dock Date
- Earliest Acceptable Date is not populated
- Latest Acceptable Date is not populated
- Schedule Ship Date from Distribution Plan Workbench Implement Ship Date
- Schedule Arrival Date from Distribution Plan Workbench Implement Dock Date
- Request Date from Distribution Plan Workbench Implement Ship Date
- Promise Date from Distribution Plan Workbench Implement Ship Date
- Earliest Ship Date (visible on the delivery line) from Material Available Date

Earliest Ship Date on the sales order is not visible in the Sales Order form, but the user will be able to see the it when viewing the sales order line's related delivery line in Oracle Shipping. This requires that the item be an available-to-promise item and that the profile option OM: Source for TP Early Ship/Deliver Date is set to Earliest Acceptable Date.

- If the item is an available-to-promise item and profile option OM: Source for TP Early Ship/Deliver Date is set to Earliest Acceptable Date, then the Earliest Ship Date on the delivery line is set to the greater of the earliest acceptable date or the earliest ship date.
- If the item is not an available-to-promise item, then the delivery line Earliest Ship Date is populated with the sales order line Earliest Acceptable Date; if that date is null, then today's date is used. The Earliest Ship Date from the sales order only passes to the delivery line for available-to-promise items.

**Rescheduling Internal Sales Orders and Internal Requisitions**

Planners can release reschedules and cancellations for internal transfers

The internal sales order is updated with the new date (and new quantity or new ship method, if different)

The information that tracks supply, is updated by the reschedule release so that supply and demand is synchronized for internal sales orders and internal requisitions even after the internal sales order is rescheduled

Recollected data and distribution plans show synchronized internal sales order and internal requisition dates even after the internal sales order is rescheduled

When the user releases a rescheduled internal requisition and internal sales order, the Oracle Order Management Process Order API is called. This updates the internal sales order to the new date and new quantity.

The requisition itself is not changed, as Oracle Purchasing does not allow updates to requisitions that are interfaced to Oracle Order Management. Instead, the Oracle Order Management Process Order API also updates the information that tracks the supply (from internal requisitions). Distribution plans use the actual dates and quantities from the internal sales order and the internal requisition detail is from the material supply information which is kept in synch with the internal sales order by the Oracle Order Management Process Order API.

There may be differences in dates between the internal requisition and the internal sales order. However, after the data is collected and used in distribution planning, the internal requisition and internal sales order are synchronized.

**Release Sales Order Changes**

Distribution planners can release customer sales order updates to the source instance (publishing plan results to Oracle Order Management) including

- Source organization
- Ship method
- Firm flag
- Suggested ship date
- Planned arrival date
- In transit lead-time
- Material availability date

Distribution planning provides the same functionality as MRP/MPS/MPP plans. Global Forecasting is supported; it uses distribution planning to select the best source organization for sales orders

# Distribution Pegging

## Demand to Supply Pegging

**Allocation Pegging**

This pegging shows the constrained supplies (Planned Inbound Shipments, Internal Requisitions, On-Hand) allocated to unconstrained demands (Unconstrained Planned Order Demands, Sales Orders, Forecasts). You generate this pegging in the Allocation Module.

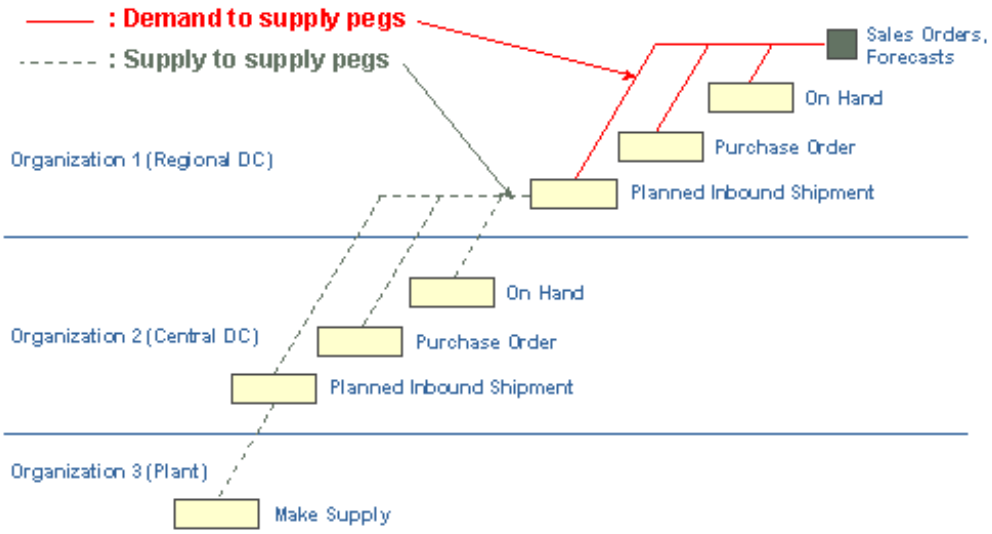
This utilizes a two-step allocation process. First, allocation rules determine the demand quantities. Second, each demand is pegged to available supplies.The quantity that each demand is allocated in each bucket is first determined based on the allocation rules. After this, each demand is then pegged to the supplies available for allocation in that bucket. Each supply is pegged to one or more supplies in the end demand organization.

The supply-to-supply peg is created after load consolidation is completed. This pegging shows the constrained supply on the destination (planned inbound shipment or internal requisition) pegged to the constrained supplies on the source (planned inbound shipment, internal requisition, and on-hand). Essentially, it shows the parts of the supply from the source that is a part of a constrained supply on the destination.

By order types, the pegging displayed across organizations is:

- Requested inbound shipment (unconstrained supply)
  - Down to supplies: To the unconstrained demand in the source organization and then to the supplies in the source organization
  - Up to demands: Not displayed
- Requested outbound shipment (unconstrained demand):
  - Down to supplies: Displays supplies in this organization
  - Up to demands: Not displayed
- Planned inbound shipment (constrained supply):
  - Down to supplies: Displays supplies in the source organization
  - Up to demands: Displays demands in the same organization
- Planned outbound shipment (constrained demand):
  - Down to supplies: Not displayed

- Up to demands: To the supply in the destination organization, the planned inbound shipment, and then above that to demands




**Note:** Distribution planning does not use any of the Oracle Advanced Supply Chain Planning pegging profile options.

**Note:** The planning engine does not show pegging relationships to safety stock demand, target demand, and negative on hand demand. There are no demands for these so there is no demand-supply relationship.

### Allocation Lines

Allocation lines are created from demand-supply pegging. An allocation line for a demand is nothing but the grouping of supplies that are pegged to that demand. Allocation lines are very close to the original pegging with one major exception – allocation lines are in order size quantities. Various supplies are clubbed together to form lines that conform to the order size.

The demand for a particular allocation line is a subset of the entire demand-to-supply pegging.

## Supply to Supply Pegging

The supply to supply peg is created by Load consolidation. This pegging shows the constrained supply on the destination (Planned Inbound Shipment or Internal Requisition) pegged to the constrained supplies on the source (Planned Inbound Shipment, Internal Requisition, On-Hand). Essentially, it shows the parts of the supply

from the source that are part of a constrained supply on the destination.

Allocation lines are the primary input to load consolidation. During processing, these allocation lines are merged or split, combining or splitting the list of source supplies (generated during allocation) in the process. When a shipment is firmed (confirmed or shipped), planned inbound shipments are created in the destination. There are multiple lines – one for each item – in a given shipment.

Each inbound shipment is pegged to the source supplies that are present in the allocation lines contained within that shipment for that item. Thus, the supply-supply peg is indirectly derived from the demand-supply pegging generated during allocation.

By direction, the supply-to-supply pegging displayed across organizations is described in the tables below.

**Down to Supplies**

| | |
|---|---|
| Requested Inbound Shipment (Unconstrained Supply) | Displays to the unconstrained demand in the source organization and then displays supplies in the source organization. |
| Requested Outbound Shipment (Unconstrained Demand) | Displays supplies in this organization. |
| Planned Inbound Shipment (Constrained Supply) | Displays supplies in the source organization. |
| Planned Outbound Shipment (Constrained Demand) | Not displayed. |

**Up to Demand**

| | |
|---|---|
| Requested Inbound Shipment | Not displayed. |
| Requested Outbound Shipment | Not displayed. |
| Planned Inbound Shipment | Displayed for demands in the same organization. |
| Planned Outbound Shipment | Displays to the supply in the destination organization, the planned inbound shipment, and then above that to demands. |

**Supply Pegging to safety stock / target demand**

By design, there are no demand rows in the supply/demand window that represent

safety stock and target demand. The corollary is that there are no supply/demand rows to show in the pegging window when a supply pegs in part or all to meet safety stock or target demands.

If the user checks the pegging for a supply, and only part of the quantity is pegged to demands, then the other part of the supply is used to meet safety stock or target inventory levels. You can confirm this by opening the material plan and reviewing the projected available balance before and after the supply arrives at the destination. You'll notice that the PAB is increased with the arrival of the supply. By comparing the PAB with the safety stock and target levels, you can determine what part of the supply is used to meet inventory level demands.

## Assembly to Component Pegging

The pegging for components to end assemblies or kits is generated during kitting in allocation. When a new work order is generated by the kitting module, unconstrained demands are pushed down to the component level. The kitting module determines when unconstrained supplies can be made available. and the constrained component supplies are created. This unconstrained component demand is analogous to the constrained Planned Outbound Shipment which the UI derives from the Planned Inbound Shipment.

Constrained component supply to constrained assembly item supply pegging is generated in the allocation module. This shows all the component supplies the kitting module used to build a particular WIP job. This is very similar to the supply-supply pegging for transfers (shipments). As with the load consolidation pegging creation, this assembly supply component supply pegging is also derived from the initial demand to supply pegging for the unconstrained component demands.

By direction, the assembly-to-component pegging displayed across organizations is described in the table below.

**Down To Supplies**

| | |
|---|---|
| Unconstrained Kit Demand (unconstrained demand for the component) | Displays supplies in this organization. |
| Constrained Kit Demand (constrained demand for the component) | Displays supplies in this organization or in the source organization (if the order type is not an external purchase order or a shipment from an organization that is not planned) |
| Component Constrained Supply ( Order type can be Planned Orders, External Purchase Orders, Internal Requisitions, Discrete Jobs) | Displays supplies in this organization or in the source organization (if the order type is not an external purchase order or a shipment from an organization that is not planned) |

**Up To Supplies**

| | |
|---|---|
| Unconstrained Kit Demand | Not displayed. |
| Constrained Kit Demand | Not displayed. |
| Component Constrained Supply | Displays to the parent kit supply in the destination organization that generates the demand component. |

**Down to Demands**

| | |
|---|---|
| Unconstrained Kit Demand | Not displayed. |
| Constrained Kit Demand | Not displayed. |
| Component Constrained Supply | Not displayed. |

**Up to Demands**

| | |
|---|---|
| Unconstrained Kit Demand | Not displayed. |
| Constrained Kit Demand | Not displayed. |
| Component Constrained Supply | Displayed for unconstrained demand in the same organization. |

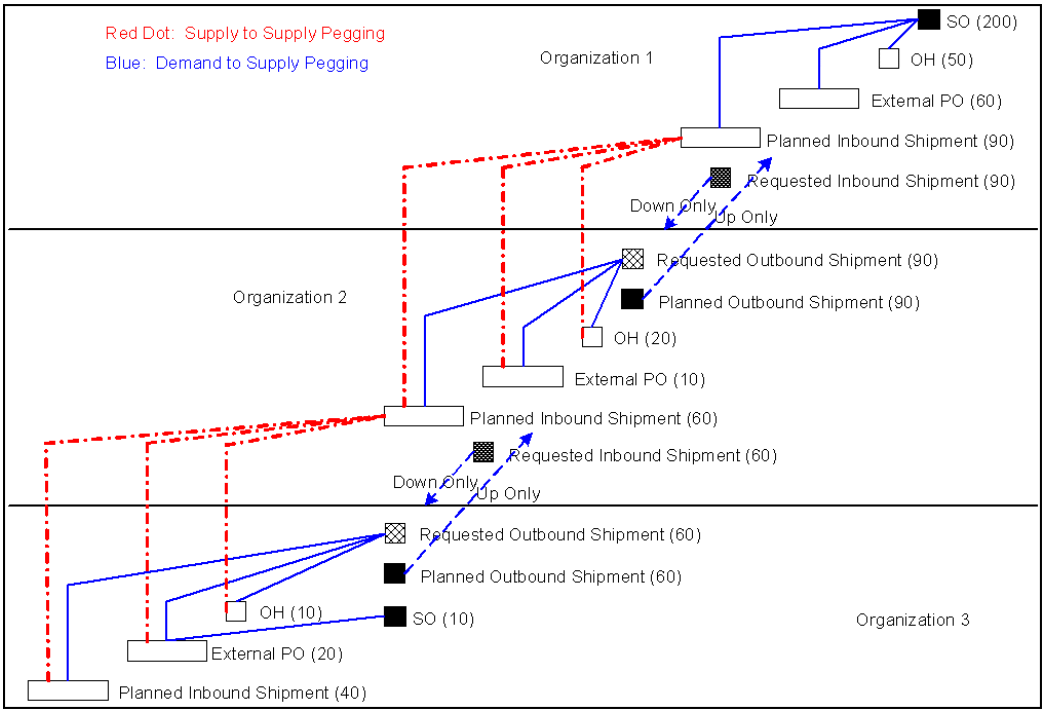
## Distribution Pegging Examples

The examples below show pegging across multiple organizations, where supplies include on-hand inventories, purchase orders, and inbound shipments. The seond example shows supplies shared by multiple sales orders, and the third example includes kitting, where multiple components must be sourced separately and aggregated into the final kit. Individual scenarios show how pegging is done at different levels of abstraction, such as pegging an entire supply organization to a demand or pegging a specific purchose order to the demand. The scenarios include pegging going up and down.

### Example 1

The diagram below shows a pegging illustration with three organizational levels of

pegging feeding into a top level sales order. Below it are scenarios that show how pegging is done at different levels of abstraction.




**Scenario 1 (Actual Demand pegged down)**

This first scenario illustrates how the entire three organizations function as a supply to the to final sales order.

<u>On Hand of Qty 20 Org 2</u>

- On Hand of Qty 50 Org 1
- Purchase Order of Qty 60 Org 1
- Planned Inbound Shipment of Qty 90 Org 1
  - On Hand of Qty 20 Org 2
  - Purchase Order Qty 10 Org 2
  - Planned Inbound Shipment of Qty 60 Org 2
    - On Hand of Qty 10 Org 3
    - Purchase Order of Qty 20 Org 3 (only 10 pegged)
    - Planned Inbound Shipment Qty 40 Org 3

**Scenario 2 (Constrained Planned Order Demand pegged up)**

This scenario shows how the entire Organization 3 contributes to the final sales order.

Note that regarding this scenario:

- There is no pegging up from external sales orders.
- There is no pegging up from Requested Outbound Shipments.
- There is pegging down from Requested Inbound Shipments to Requested Outbound Shipments.

<u>Planned Outbound Shipment Qty 60 Org O3</u>

- Planned Inbound Shipment Qty 60 Org O2
  - Requested Outbound Shipment Qty 90 Org O2
  - Planned Inbound Shipment Qty 90 Org O1
    - Sales Order Qty 200 Org O1

**Scenario 3 (Supply pegged up)**

This scenario shows how the individual PO at Organization 3 for 20 units conbtributes to the final sales order.

<u>Purchase Order Qty 20 Org O3</u>

- Sales Order Qty 10 Org O3
- Requested Outbound Shipment Qty 60 Org O3
- Planned Inbound Shipment Qty 60 Org O2
  - Requested Outbound Shipments Qty 90 Org O2
  - Planned Inbound Shipments Qty 90 Org O1
    - Sales Order Qty 200 Org O1

**Scenario 4 (Constrained Supply pegged down)**

This scenario looks at the specific supply at Organization 1 representd by a planned shipment of 90 units and tracks the pegging flows downward.

<u>Planned Inbound Shipment Qty 90 Org O1</u>

- On Hand Qty 20 Org O2
- Purchase Order Qty 10 Org O2

- Planned Arrival Qty 60 Org O2
  - On Hand Qty 10 Org O3
  - Purchase Order Qty 20 Org O3 (only 10 pegged)
  - Planned Arrival Qty 40 Org O3

**Scenario 5 (Unconstrained Demand pegged down to unconstrained supply)**

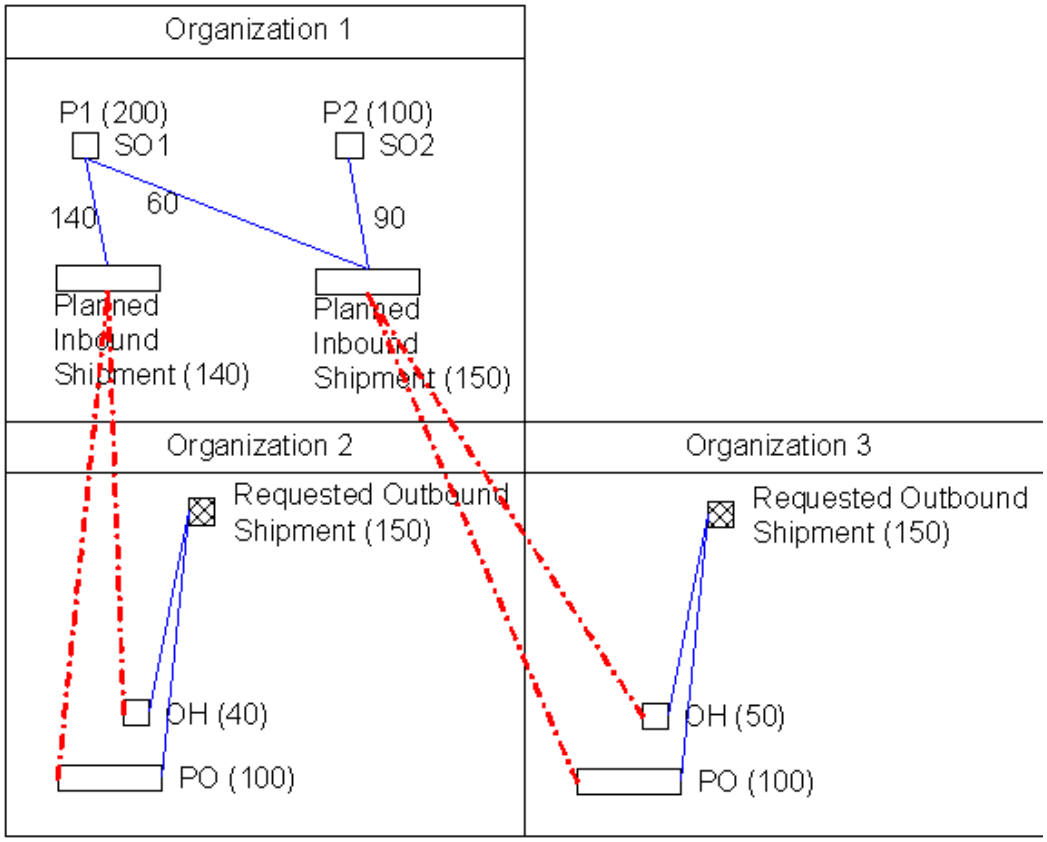
This scenario looks at the unconstrained demand generated by the requested inbound shipment of 90 units in Organization 1, pegged down to the associated unconstrained supply represented by the requested outbound shipment.

Requested Inbound Shipment Qty 90 Org O1

- Requested Outbound Shipment Qty 90 Org 2
  - On Hand Qty 20 Org O2
  - Purchase Order Qty 10 Org O2
  - Planned Arrival Qty 60 Org O2
    - On Hand Qty 10 Org O3
    - Purchase Order Qty 20 Org O3 (only 10 pegged)
    - Planned Arrival Qty 40 Org O3

### Example 2

This example shows two sales order demands where supplies and demands are shared.




**Scenario 1: Demand Pegged Down:**

This scenario shows shows how Sales Order 1 is fed from two supplies pegged down to two organizations.

<u>SO1 Org 1 Qty 200</u>

- Planned Inbound Shipment Org 1 Qty 140 of 140
  - PO Org 2 Qty 100
  - OH Org 2 Qty 40
- Planned Inbound Shipment Org 1 Qty 60 of 150
  - PO Org 3 Qty 100
  - OH Org 3 Qty 50

**Scenario 2: Demand Pegged Down:**

This scenario shows pegging from the requested outbound shipments in Organizations 2 and 3.

<u>Requested Outbound Shipment Org 2 Qty 150</u>

- PO Org 2 Qty 100
  - OH Org 2 Qty 40

Requested Outbound Shipment Org 3 Qty 150

- PO Org 3 Qty 100
  - OH Org 3 Qty 50

**Scenario 3: Supplies pegged up:**

This scenario shows pegging from Organization 2 and 3 purchase orders up to the sales orders in Organization 1.

Purchase Order of Qty 100 Org 2

- Request Outbound Shipment of Qty 150 Org 2
- Planned Inbound shipment of Qty 140 Org 1
  - Sales Order SO1 of Qty 200 Org 1

Purchase Order of Qty 100 Org 3

- Request Outbound Shipment of Qty 150 Org 3
- Planned Inbound shipment of Qty 150 Org 1
  - Sales Order SO1 of Qty 60 of 200 Org 1
- Sales Order SO21 of Qty 90 of 100 Org 1

**Scenario 4: Supplies pegged up:**

This scenario shows pegging in Organization 1 from the planned inbound shipments to the sales orders.

Planned Inbound shipment of Qty 140 Org 1

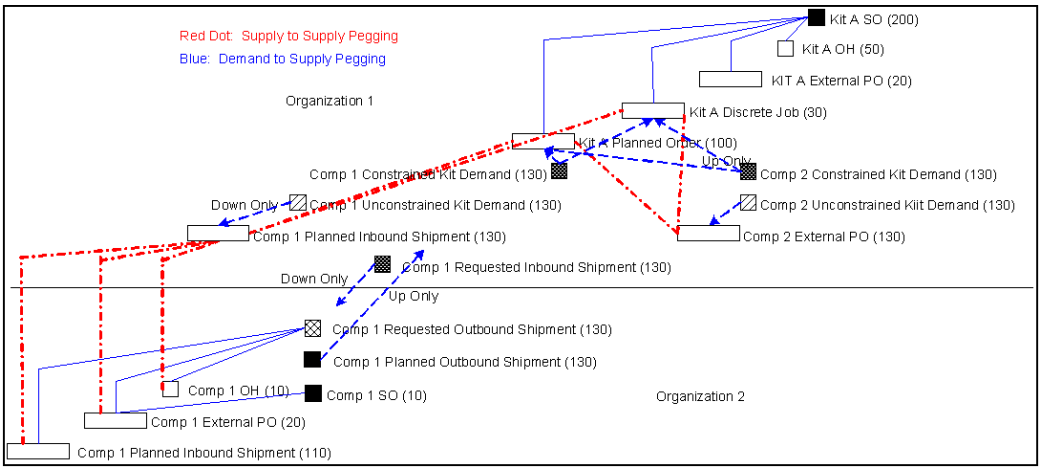
- Sales Order SO1 of Qty 140 of 200 Org 1

Planned Inbound shipment of Qty 150 Org 1

- Sales Order SO1 of Qty 60 of 200 Org 1
- Sales Order SO21 of Qty 90 of 100 Org 1

### Example 3 - Kitting

The following illustrates pegging with kit demands and supplies.




**Scenario 1 (Actual Demand pegged down)**

This scenario shows pegging starting from the top sales order down.

<u>Kit A Sales Order of Qty 200 Org 1</u>

- Kit A On Hand of Qty 50 Org 1
- Kit A Purchase Order of Qty 60 Org 1
- Kit A Discrete Job of Qty 30 Org 1
  - Comp 1 Planned Inbound Shipment Qty 30 of 130 Org 1
    - On Hand of Qty 10 Org 2
    - Purchase Order Qty 10 of 20 Org 2
    - Planned Inbound Shipment of Qty 110 Org 2
  - Comp 2 External PO of Qty 30 of 130 Org 1
- Kit A Planned Order to make Qty 100 Org 1
  - Comp 1 Planned Inbound Shipment Qty 100 of 130 Org 1
    - On Hand of Qty 10 Org 2
    - Purchase Order Qty 10 of 20 Org 2
    - Planned Inbound Shipment of Qty 110 Org 2
- Comp 2 External PO of Qty 100 of 130 Org 1

**Scenario 2 (Constrained Planned Order Demand pegged up)**

This scenario shows pegging from the component supply up to the kit supplies.

Note that regarding this scenario:

- There is no pegging up from Unconstrained Kit Demand.
- There is no pegging down from Constrained Kit Demand.
- There is no pegging up from a component supply to a demand. The component supply only pegs up to the kit supply.

Comp 1 Planned Outbound Shipment Qty 130 Org O2

- Comp 1 Planned Inbound Shipment Qty 130 Org O1
  - Kit A Planned Order Qty 100 Org O1
    - Sales Order Qty 100 of 200 Org O1
  - Kit A Discrete Job Qty 30 Org O1
    - Sales Order Qty 30 of 200 Org O1

## Fair Share Allocation

The different fair share allocation methods (except the order sizing method), determine a fair share percent of the available supply that is allocated to each competing demand.

- Current Demand Ratio
- None
- Fixed Percent
- Safety Stock Ratio
- Order Size

Fair share allocation methods are invoked when:

- Two or more competing demands have the same demand priority
- At least one of the competing demands is transfer between sales orders
- There is a supply shortage in the current allocation bucket to meet all of the demands at a certain priority

With the order sizing fair share allocation rule, each organization is allocated its fair share percent of the available supply, subject to the order size. The organization with the highest percent is allocated supply first, and then the order size is applied and this

may increase the supply. The organization with the next highest percent is allocated supply second, again subject to its order size. If two organizations have the same percent, then the organization with the higher rank is allocated supply first.

The other fair share rules only differ from each other in how the fair share percentage is calculated. Once calculated, the fair share percentage is applied in the exactly the same manner.

## Fair Share Allocation Methods

For the supply allocation rules, if there is a tie in percent or order size, the organization rank is used to break the tie. Organization rank is inferred from the sequence that organizations are entered on the form. If you want to control which organization is considered first when two organizations are tied based on a particular supply allocation rule, then enter the organizations with the highest priority organization at the top of the form. Inferred rank is not used for demand priority override supply allocation methods.

**Current Demand Ratio Method**

Fair share percents are calculated based on the quantity of the competing demands in the current allocation bucket.

You can also optionally enter a percent for one or more organizations. The percent overrides the actual demand ratio for that organization and the remaining organizations are apportioned the remaining percentages based on the demand ratios.

When the percents are the same, rank is used to determine which organization is allocated supply first.

**None (no fair share allocation)**

Current first come first served logic is used when allocating supplies to competing demands with the same priority. The supplies are allocated based on distribution planning priority pegging logic that is essentially first come first served. If two demands have the same priority and due date, one demand is allocated completely before the second demand is considered. You cannot control which demand is allocated first. This is the default method if no Fair Share Allocation Method is specified for an item-org.

**Fixed Percent Method**

The user enters the fair share percent in the percent fields. The entered percents are used during the allocation process and define the minimum amount of the available supplies that an organization should receive. During allocation, the organization with the highest percent is considered first and is allocated up to that percent of the supply before the next organization is considered. After all organizations with defined percents are considered, any remaining supply is allocated on a first come first serve basis.

The defined fixed percent values do not have to total 100 percent and are not normalized to internally to 100% by the planning engine. For example, you specify that Org1 is 50 % and do not specify any percentages for any other organizations. During allocation, Org1 is always considered first and can be allocated up to 50% of the supply

before any other organizations are considered. After this step, then all the remaining supplies are allocated to organizations not in the rule, one organization at a time. The first organization selected may use up all remaining supply. Consider defining all organizations in the rule.

If Org1 and Org2 are specified at 25% each, and there are no other destination organizations, then the results of the allocation appears as though the 25% each is normalized to 50% each.

**Safety Stock Ratio Method**

For an organization, the fair share percent is the organization safety stock level divided by the total of all organization safety stock levels. The safety stock average value across the allocation bucket is used to determine the safety stock ratio. You can also optionally enter a percent for one or more organizations.

You can also optionally enter a percent for one or more organizations. The percent overrides the safety stock ratio for that organization and the remaining organizations are given the remaining percentages based on the demand ratios. When the fair share percents are the same, then rank is used to determine which organization is allocated supply first.

If the organization safety stock is 0, it is given a priority lower than any organization with a positive value for the safety stock. The allocation steps are:

- Allocate to organizations with a safety stock values or a percent specified.
- If there is supply left after this first allocation, allocate to organizations with safety stock 0. Allocate to organizations by rank and within rank, allocate equally until demands are filled.

When the percents are the same, rank is used to determine which organization is allocated supply first.

**Order Size Method**

This is an exception to the concept of calculating a fair share percent. When order size method is selected, then the user must specify the fixed lot multiple values and, optionally, the rank. The organization with the largest fixed lot multiple is allocated a fixed-lot-multiple order size quantity, then the next organization is allocated a fixed lot multiple order size, then the next until either all supply is used up or there is not enough supply to satisfy any fixed lot multiple. If two fixed lot multiple order sizes are the same, rank determines which organization is first allocated a fixed lot multiple order size quantity.

Organizations are allocated supply first. If the source organization has an order, this is used with the other destination organizations to determine the source organization's own allocations. Then, this supply is allocated to the source organizations independent demands such as sales orders, forecasts, target inventory level, and safety stock.

For order sizing, distribution planning considers the supply allocation rule order size multiplier for internal transfers.

The supply allocation rule order sizes can be used to define fixed lot multipliers, such as pallet quantities, that are only used for inter-organization transfers between a specific ship from-ship to organization pair. These might be different from the item attribute order fixed lot multiple which is used for all inbound shipments to an organization without regard to the source.

Distribution planning uses the following defaulting hierarchy to find the order size multiplier for internal transfers from and to an organization pair:

- If the fixed lot multiplier on the plan run date has a value, use it for internal transfers from and to this organization pair Ignore all item attribute order modifiers.
- If the fixed lot multiplier is null, use the destination organization item attribute Fixed Lot Multiplier.
- If destination organization item attribute Fixed Lot Multiplier is Null, then use one as the fixed lot multiplier if item attribute Round Order Quantities is checked (when rounding, always round up to avoid a fractional shortage).
- Use fractional quantities up to 6 digits

If you put an organization on the rule and do not define an order size, we use item attribute Fixed Lot Multiplier for the order size method. For organizations missing from the fair share rule, we process them after all demands are satisfied for organizations that have an order size.

### Default Fair Share Allocation Method

You can select a default fair share allocation method on the Plan Options form. The default method applies to all item-destination organizations except where a supply allocation rule has been explicitly defined. The choices for the plan option Default Fair Share Allocation Method are:

- Current Demand Ratio
- Safety Stock Ratio

When the default fair share allocation method is applied to an item-destination organization, you cannot specify ranks and percents. The standard defaulting logic is used.

### Fair Share Allocation Rules

You can specify a supply allocation rule that does not include all of the destination warehouses for a shipping warehouse.

If the organization priority is not selected, the planing engine uses fair share allocation rules. Each unspecified warehouse is considered only after all demands within a specific priority for the specified warehouses are met in an allocation bucket. Unmet

demands are moved to the next time bucket. For example:

- Organizations R1, R2 and R3 source from D2. R1 and R2 have fixed percents specified as 50 / 50.

- If demands for R1, R2, R3, and D2 are 100 each available for demand priority 6 and supply is 250 units, R1 is allocated 100 units and R2 is allocated 100 units. Only after R1 and R2 are satisfied does the planning engine consider R3 and D2. Either R3 or D2 is allocated the 50 remaining units.

### Fair Share Logic

Fair share rules are invoked because there is a supply shortage in an allocation bucket. Fair share rules are used to allocate supplies to demands that have the same demand priority and are within the same allocation bucket. When allocating available supplies to demands, the supplies may be split between demands, not necessarily completely satisfying any one demand.

The remaining balance of the unsatisfied demands are considered in the next allocation bucket that has a new quantity of available supplies. The demand priority of the unsatisfied demands is not changed. In the next bucket, other higher priority demands may be considered before the unsatisfied demands that were carried forward. In fact, it is possible for the unsatisfied demands to be carried forward many allocation buckets, even to the end of the plan horizon.

These are the rules that planning engine uses to allocate scarce supplies to demands with the same demand priority:

- Allocation proceeds first for firm demands by priority and then non-firm demands by priority. At some point, as each level is considered, supplies may run out, and then fair share allocation is invoked.

- Firm demands are allocated supplies first until all firm demands are satisfied. This allocation to form demands occurs before the allocation considers any non-firm demands. Firm demands are firm internal sales orders, firm planned outbound shipments and demands pegged to firm planned orders such as a planned outbound shipment that is pegged to a firm supply in the destination organizations.

  Allocation is to firm demands first by original demand priority and then by earliest date. If all of the firm demands cannot be satisfied, they are carried forward to the next bucket.

- The organization with the highest fair share percentage gets the first chance at the available supplies and can be allocated up to its fair share percentage of the available supplies.

  The organization with the highest fair share percentage is only allocated quantity to meet demands. For example, organization A fair share is 50% of the supply which is 2000 units. However, in the current allocation bucket, organization A demands are

only for 500 units so only 500 units are allocated.

The allocations consider order sizing, so there may be excess supply allocated in a bucket due to order sizing constraints. If the allocation does not meet the order size requirement, then enough additional supply is allocated to reach the next fixed lot multiple to respect the order size.

- If there are ties for the fair share percentage, the inferred rank is used to break the tie to determine which organization is considered first.

- After all organizations with fair share percentages are allocated supply, organizations with no fair share percentages are allocated supply on a first come first served basis, one organization at a time within a priority. Your needs may be best served by defining all organizations in the rule and not relying on defaulting logic. Organizations with no fair share percentages can occur with either of the following:

  - The organization is not included in the supply allocation rule but is a valid destination organization based on the sourcing rules

  - The organization is included in the supply allocation rule but does not have an allocation value specified (in the case of fixed percent method and order size method). The user is not required to give each list organization a value.

- Transfers are never generated to move inventory backwards. For example, a transfer would never be created to move material from organization R2 back to organization D2 for the purpose of reallocating it to other organizations from organization D2.

  The organization with the highest allocation percentage may not always not receive its fair share because there isn't enough inventory on shipping lanes flowing to or through that organization. If most of the available inventory is in organization R5 and organization R1 has the highest allocation percentage then R1 will not get transfers according to its fair share. Defining inventory rebalance distribution rules between R1 and R5 resolves this issue.

- The planning engine creates transfers using standard sourcing rules and supply allocation rules.

- The use of fair share rules raises the number of partial demand satisfactions in the final plan output since supplies are split between competing demands of the same demand priority.

In cases where all demands can be met but safety stock levels cannot be met, the affect of applying the fair share allocation rules is a rebalancing of the available inventory. The fair share rules are applied to the remaining supplies that are distributed with reference to the fair share rule and the safety stock or target inventory shortages.

The example shows a case where RDC1 and RDC2 source from DC1. DC1 has sales

orders, forecasts and transfer demand from the two RDC's.

The example is for the first allocation bucket, and shows allocations with three different supplies in the first allocation bucket for on hand in DC1. The current demand ratio fair share allocation method is used.

| DC1 Demands | Priority | Demand Quantity | Allocation If Supply Is 100 | Allocation If Supply Is 300 | Allocation If Supply Is 700 |
|---|---|---|---|---|---|
| Sales order | 1 | 100 | 50 | 100 | 100 |
| RDC1 request | 1 | 100 | 50 | 100 | 100 |
| Forecast | 2 | 100 | 0 | 25 | 100 |
| RDC1 request | 2 | 200 | 0 | 50 | 200 |
| RDC1 request | 2 | 100 | 0 | 25 | 100 |
| RDC1 request | 3 | 100 | 0 | 0 | 10 |
| RDC1 request | -3 | -1000 | -0 | 0 | 90 |

## Customer Fair Share Allocation Method for Sales Orders and Forecasts

A plan option is provided that allows to user to select the customer fair share allocation method that is applied to sales orders and forecasts. The customer fair share allocation method for sales orders and forecasts uses the same fair share allocation approach as the demand ratio supply allocation rule. There is no need for you to specify individual fair share allocation rules by source organization and customer.

The options are:

- No Fair Share: There is no fair share allocation and supplies are allocated to sales orders and forecasts on a first come first served basis. This is the same as null.
- Demand Class: Fair share is done at the demand class level. Below demand class, supplies are allocated on a first come first served basis.
- Customer: Fair share is done at the customer level. Below customer, supplies are allocated on a first come first served basis.
- Customer Site: Fair share allocation is performed at the customer site level. If there are multiple orders in the same allocation bucket from the same customer site, then supplies are allocated on a first come first served basis.

The fair share allocation is used whenever a source organization has a supply shortage due to competing sales order, forecast, and requested outbound shipment demands with the same demand priority in the same allocation bucket (as determined by the demand priority rule set). If there is no demand priority rule set, then the priorities used are the default priorities for sales orders, forecasts, and over-consumed forecasts.

The fair share allocation between sales orders and forecasts is based on the ratio of demands for each sales order and forecast in the supply allocation bucket. The available supply is allocated to each demand based on the ratio of the demand to the total demand. For both sales orders and forecasts, the quantity allocated by the demand due date is retained and reported in the late replenishment exception message.

The planning engine treats forecasts demands without a customer as demands with dummy customer name. That is, if two forecasts (one with customer and one without customer) are for equal quantity, the fair share is equal between the two forecasts.

If you do not choose fair share allocation for sales and forecasts, then the first come, first served logic is applied. The supply is used to satisfy one demand at a time until the supply is exhausted. When demands have the same priority, you cannot control which demands are considered first. For example, there are five sales order and forecasts demands for 10 units each and all the same priority and there is a supply of 20 units. Using fair share means that each of the 5 demands is allocated 4 units and using first come first served means that 2 demands are allocated 10 units each.

These examples show no fair share allocation and fair share allocation at the demand class level, the customer level, and the customer site level. This table shows demands against an item in organization C1 for June 30. Organization C1 uses daily supply allocation buckets. The June 30 on-hand balance for the item is 340.

| Demand Type: Order Number | Priority | Demand Class | Demand Source | Qty |
|---|---|---|---|---|
| Sales Order: SO1 | 1 | DC1 | Customer A | 100 |
| Sales Order: SO2 | 2 | DC2 | Customer B / Site 1 | 200 |
| Forecast: FC3 | 2 | DC2 | Customer B / Site 2 | 100 |
| Sales Order: SO4 | 2 | DC3 | Customer C | 50 |
| Sales Order: SO5 | 2 | DC3 | Customer D | 50 |
| Sales Order: SO6 | 3 | DC4 | Customer E | 100 |

| Demand Type: Order Number | Priority | Demand Class | Demand Source | Qty |
|---|---|---|---|---|
| Total | - | - | - | 600 |

This is how the planning process performs first-come, first-served allocation:

- 100 units are allocated to SO1 because this is the highest priority sales order. No fair share allocation is required for priority 1 demands. After this step, there is 240 units of supply left.
- There are 400 units of priority 2 demands and only 240 units of supply left. The priority 2 demands are allocated supply based on a first come first server method. While there are several possible outcomes, depending on which demand is considered first, assume that Customer B, Site 1 is allocated 200 units of demand and Customer B, Site 2 is allocated 40 units of demand.
- There are 100 units of priority 3 demands and no available supply so no allocation occurs.

This table shows the result of the first-come, first-served allocation.

| Demand Type: Order Number | Priority | Demand Class | Demand Source | Qty | Allocated Qty (Qty Satisfied by Due Date) |
|---|---|---|---|---|---|
| Sales Order: SO1 | 1 | DC1 | Customer A | 100 | 100 |
| Sales Order: SO2 | 2 | DC2 | Customer B / Site 1 | 200 | 200 |
| Forecast: FC3 | 2 | DC2 | Customer B / Site 2 | 100 | 40 |
| Sales Order: SO4 | 2 | DC3 | Customer C | 50 | 0 |
| Sales Order: SO5 | 2 | DC3 | Customer D | 50 | 0 |
| Sales Order: SO6 | 3 | DC4 | Customer E | 100 | 0 |

| Demand Type: Order Number | Priority | Demand Class | Demand Source | Qty | Allocated Qty (Qty Satisfied by Due Date) |
|---|---|---|---|---|---|
| Total | - | - | - | 600 | 340 |

This is how the planning process performs fair share allocation by demand class:

- 100 units are allocated to SO1 because this is the highest priority sales order. No fair share allocation is required for priority 1 demands. After this step, there is 240 units of supply left.
- There are 400 units of priority 2 demands and only 240 units of supply left. The priority 2 demands are allocated supply based on the demand class.
- DC2 has 300 units of demand and DC 3 has 100 units of demand. The allocation is 180 units for DC2 and 60 units for DC3
- Within DC2, the allocation proceeds on a first come first served basis. There are two possible outcomes; SO2 is allocated 180 units and FC3 is allocated nothing, or FC 3 is allocated 100 units and SO2 is allocated 80 units. Assume SO2 is allocated 180 units and FC3 is allocated nothing.
- Within DC3, the allocation proceeds on a first come first served basis. There are two possible outcomes; SO4 is allocated 50 units and SO5 is allocated 10 units, or SO5 is allocated 50 units and SO4 is allocated 10 units. Assume SO4 is allocated 50 units and SO5 is allocated 10 units.
- There are 100 units of priority 3 demands and no available supply so no allocation occurs.

This table shows the result of the fair share allocation by demand class.

| Demand Type: Order Number | Priority | Demand Class | Demand Source | Qty | Allocated Qty (Qty Satisfied by Due Date) |
|---|---|---|---|---|---|
| Sales Order: SO1 | 1 | DC1 | Customer A | 100 | 100 |
| Sales Order: SO2 | 2 | DC2 | Customer B / Site 1 | 200 | 180 |

| Demand Type: Order Number | Priority | Demand Class | Demand Source | Qty | Allocated Qty (Qty Satisfied by Due Date) |
|---|---|---|---|---|---|
| Forecast: FC3 | 2 | DC2 | Customer B / Site 2 | 100 | 0 |
| Sales Order: SO4 | 2 | DC3 | Customer C | 50 | 50 |
| Sales Order: SO5 | 2 | DC3 | Customer D | 50 | 10 |
| Sales Order: SO6 | 3 | DC4 | Customer E | 100 | 0 |
| Total | - | - | - | 600 | 340 |

This is how the planning process performs fair share allocation by customer:

- 100 units are allocated to SO1 because this is the highest priority sales order. No fair share allocation is required for priority 1 demands. After this step, there is 240 units of supply left.
- There are 400 units of priority 2 demands and only 240 units of supply left. The priority 2 demands are allocated supply based on the customer.
- Customer B has 300 units of demand, customer C has 50 units of demand, and Customer D has 50 units of demand. The allocation is 180, 30 and 30 respectively.
- Within Customer B's two sites, the allocation proceeds on a first come first served basis. There are two possible outcomes (assume that the first is the actual result); Site 1 is allocated 180 units and Site 2 is allocated nothing, or Site 2 is allocated 100 units and Site 1 is allocated 80 units. Assume Site 1 is allocated 180 units and Site 2 is allocated nothing.
- There are 100 units of priority 3 demands and no available supply so no allocation occurs.

This table shows the result of the fair share allocation by customer.

| Demand Type: Order Number | Priority | Demand Class | Demand Source | Qty | Allocated Qty (Qty Satisfied by Due Date) |
|---|---|---|---|---|---|
| Sales Order: SO1 | 1 | DC1 | Customer A | 100 | 100 |
| Sales Order: SO2 | 2 | DC2 | Customer B / Site 1 | 200 | 180 |
| Forecast: FC3 | 2 | DC2 | Customer B / Site 2 | 100 | 0 |
| Sales Order: SO4 | 2 | DC3 | Customer C | 50 | 30 |
| Sales Order: SO5 | 2 | DC3 | Customer D | 50 | 30 |
| Sales Order: SO6 | 3 | DC4 | Customer E | 100 | 0 |
| Total | - | - | - | 600 | 340 |

This is how the planning process performs fair share allocation by customer site:

- 100 units are allocated to SO1 because this is the highest priority sales order. No fair share allocation is required for priority 1 demands. After this step, there is 240 units of supply left.
- There are 400 units of priority 2 demands and only 240 units of supply left. The priority 2 demands are allocated supply based on the customer. Customer B Site 1 has 200 units of demand, Customer B Site 2 has 100 units of demand, Customer C has 50 units of demand and Customer D has 50 units of demand. The allocation is 120, 60, 30 and 30 respectively.
- There are 100 units of priority 3 demands and no available supply so no allocation occurs.

This table shows the result of the fair share allocation by customer site.

| Demand Type: Order Number | Priority | Demand Class | Demand Source | Qty | Allocated Qty (Qty Satisfied by Due Date) |
|---|---|---|---|---|---|
| Sales Order: SO1 | 1 | DC1 | Customer A | 100 | 100 |
| Sales Order: SO2 | 2 | DC2 | Customer B / Site 1 | 200 | 120 |
| Forecast: FC3 | 2 | DC2 | Customer B / Site 2 | 100 | 60 |
| Sales Order: SO4 | 2 | DC3 | Customer C | 50 | 30 |
| Sales Order: SO5 | 2 | DC3 | Customer D | 50 | 30 |
| Sales Order: SO6 | 3 | DC4 | Customer E | 100 | 0 |
| Total | - | - | - | 600 | 340 |

**Organization Priority Overrides**

Assign organization override priorities to the source organization to control the relative priority level of the source organization independent demands versus the dependent demands from other organizations

If you select plan option Use Organization Priority Overrides, priorities are based on the organization override priorities set in the supply allocation rule for each organization-item You cannot use a demand priority rule set.

Allocation from a source organization to the destination organizations are based on the assigned destination organization priority

- If no priorities are assigned for an organization-item, allocations are done on an equal priority basis
- Priorities assigned to forecasts, sales orders, safety stock, and target inventory are the same priority as the assigned organization priority

In the demand priority override region of supply allocation rules, you can select:

- Use Organization Priorities: For all demands against this organization, the demand

priorities are set to the values specified for each organization. You can set the relative priorities of all demands from several organizations.

- None or Null: Demand priorities are not overwritten.

You can also optionally include the source or shipping organization and specify a priority for the shipping organization. This allows you to specify priorities for the shipping organization at the same time that you specify priorities for the receiving organizations. This technique allows you to control whether demands from the other organizations have higher or lower priorities than those from the source organization.

If Organization Priority is selected, then all unspecified warehouses are set at the same priority which is one less than any specified warehouses.

For example, Organizations R1, R2 and R3 source from D2. A demand priority override is specified for R1 as 1, R2 as 2, and D2 as 2 No priority is specified for R3. The default demand priority override for R3 is 3.

If no organization priority override rule is specified, then all destinations and source are treated as having the same priority.

When organization priority override is used, then within an organization all demands are given the same priority. Supplies are fair shared within this priority based on the plan option customer fair share allocation method.

### Fair Share Allocation from Suppliers to Organizations

You cannot define and assign fair share allocation rules to items sourced from suppliers, but a plan option is provided to set the fair share allocation method for all suppliers. The fair share allocation logic is called when supplier capacity is defined and demand exceeds available supplier capacity in an allocation bucket.

The allocation logic applied to supplies from a supplier is the same as used for allocation or supplies between organizations. The plan option choices are:

- None: No fair share allocation is performed and supplies are allocated based on a first come first serve basis.

- Current Demand Ratio: Fair share allocation is performed using the current demand ratio of the organizations sourcing from the supplier

- Safety Stock Ratio: Fair share allocation is performed using the safety stock ratios of the organizations sourcing from the supplier.

The total supply that is allocated is the net supply available by the end of the allocation bucket. This is based on the supplier capacity.

For example, supplier capacity is 10 units per day, all days are work days, there are no demands until the second weekly bucket, and the total demand exceeds supplier capacity. If the third weekly bucket ends on day 18, there are a total of 180 units to allocate among the competing demands.

The planning engine uses this defaulting hierarchy to find the order size multiplier for suppliers:

- If the approved supplier list fixed lot multiplier is blank, use the destination organization item attribute Fixed Lot Multiplier for internal transfers from and to the organization.

- If the destination organization item attribute Fixed Lot Multiplier is blank, then use 1 as the fixed lot multiplier

- If item attribute Round Order Quantities is selected round up, otherwise use fractional quantities up to 6 digits.

Load consolidation is not done for shipments to customers. If load consolidation is needed for supplies or customers, you can model the supplier or customer as an external organization.

Consider both the supplier capacity and the fixed lot multiplier to achieve appropriate allocations. For example, A plan runs on January 7 and item X has planning time fence of 4 days. Organizations A and B source item X from Supplier S. The supplier capacity is 500 per day (24x7 calendar) and the fixed lot multiple is 750 units. The plan option value for the supplier fair share method is Current Demand Ratio. However, the results might not look like much of a fair share due to the order size relative to the supplier capacity. The following demands from organizations A and B illustrate the case:

- No planned orders can be due before January 10 due to the planning time fence. Organization B is allocated to first, since its percentage fair share is higher because its total demand is higher. For organization B, total demand up to January is 5830 and rounded to 6000. For organization A, total demand up to January 10 is 4350 and rounded to 4500. The fair share capacity from January 7 to January 10 is 2000 (500 each day). Organization B gets 857.142 (42.8571% * 2000) and rounded to 0 since we only have 500 capacity left and order size is 750. Organization A gets 1142.86 (57.1429% * 2000) and rounded to 1500. The higher percentage organization gets to do rounding first and we will round up first if supply allows. We only round down if supplier capacity is insufficient.

- On January 11, organization A total carried over demand plus new demands is rounded to 6000. Organization B total carried over demand plus new demands is rounded to 4500. We have 500 carried over to add to the 500 on January 11, so total supply available is 1000. Fair share organization A gets 571.429 (57.1429% * 1000) and rounded up to 750; organization B gets 428.571(42.8571% * 1000) and rounded down to 0 again.

- So after the first five days of the plan, A is allocated 2250 units and B is allocated nothing. To achieve a better fair share, you either reduce the order size or consider changing the allocation bucket to weekly so there is more supply available relative to the order size.

## Setting Up Customer Lists

The Customer List form is used to specify a default customer selection list in the plan preferences, which is used when the allocation plan for customers and customer sites opens. Defined customer lists are displayed in the Customer List form.

### To set up customer lists

1. Navigate to Tools > Customer List or right-click on an allocation plan when the default horizontal dimension is Customer and select Customer List.

2. Add a Name and Owner for the customer list.

3. The Public drop-down list determines whether the customer list is accessible by other planners, both for definition and for display when a user right-clicks on an allocation plan. The default value is No. Change it to Yes if you want to make the customer list public.

4. Define customer selection lists by selecting customers from the list of customers. Use the arrows to move customers up and down in the form to set the order in which the customers are displayed.

5. If you want, enter values in the Customer Site fields.

# 15

# Supply Chain Plan Exception Messages

This chapter covers the following topics:

- Overview of Exception Messages
- Filtering Exception Messages
- Viewing Exceptions
- Understanding Exceptions
- Exception Diagnosis and Resolution

## Overview of Exception Messages

The planning engine issues exception messages (exceptions) to:

- Alert you to a situation that may need your intervention, for example, a past due sales order
- Recommend that you perform an action, for example, change the date of a supply order

The planning engine issues certain exceptions for all plan types and others for only certain plan types.

The planning engine only issues exceptions against items and resources that have exception sets assigned to them.

You can consider exception messages and recommendations when you:

- Run plans
- Review plans

When running plans, you can:

- Set plan options that make your plans consistent with your company business

practices.

- Run them for a single plant or for an entire supply chain.
- Run them with no material and resource constraints, with some material and resource constraints, and with optimization objectives (for example, profit, inventory turns, customer service, and overloading resources).

When reviewing plans, you can:

- Search for specific exceptions (for example, exceptions that relate to a specific buyer or item)
- View exceptions grouped by type
- Drill down to related exceptions and detailed supply and demand information
- Run simulations to test improved plan suggestions
- Use Oracle Workflow to notify employees and trading partners of specific exception and to create automatic resolution actions

## Exception Groups and Exception Messages Summary

Oracle Advanced Planning and Scheduling displays exception messages by exception group. An exception group is a group of exception messages that deal with a common issue.

This section lists the exception groups and the exception messages in each exception group.

Oracle Value Chain Planning also uses the term exception group to mean an exception message filter. Those exception groups are not part of these collections of exception messages with the same subject.

### Late sales orders and forecasts

- Sales order/forecast at risk
- Past due sales orders
- Past due forecast
- Late replenishment for sales order
- Late replenishment for forecast
- Early replenishment for sales order

- Early replenishment for forecast

### Supply problems for late sales orders and forecasts

- Sales order/forecast at risk due to resource shortage
- Sales order/forecast at risk due to material shortage
- Requirement causes resource overload
- Order causes supplier capacity overload
- Order causes transportation weight capacity overload
- Order causes transportation volume capacity overload
- Order with insufficient lead time
- Requirement with insufficient lead time
- Order lead time constraint
- Requirement lead time constraint
- Demand quantity not satisfied
- Late supply pegged to forecast
- Late supply pegged to sales order
- Order violates a business calendar

### Material and resource capacity

- Material constraint
- Resource constraint
- Resource overloaded
- Supplier capacity overloaded
- Resource underloaded
- Batch was started with less than minimum capacity
- Batch was started with more than maximum capacity

### Transportation and distribution

- Transportation resource constraint
- Transportation resource's weight overloaded
- Transportation resource's volume overloaded

### Shortages and excess

- Items with a shortage
- Items below safety stock
- Items with excess inventory

### Reschedules

- Past due orders
- Orders to be rescheduled out
- Orders to be cancelled
- Orders to be rescheduled in
- Orders with compression days
- Orders scheduled to next inventory point
- Order is firmed late
- Requirement is firmed late
- Order is firmed early
- Requirement is firmed early
- Shared supply scheduled late

### Substitutes and alternates used

- Planned order uses alternate BOM/routing
- Planned order uses substitute components
- Planned order uses alternate resources

- Order sourced from alternate facility
- Order sourced from alternate supplier
- Demand satisfied using end item substitution

### Projects/tasks

- Items with a shortage in a project/task
- Items allocated across projects/tasks
- Items with excess inventory in a project/task

### Item exception

- Items with negative starting on hand
- Items with expired lot
- Items with no activity
- Sourcing split percentage violated

### Recommendations

- Batches
- Discrete jobs
- Flow schedules
- Jobs
- Purchase requisitions

## Filtering Exception Messages

Use exception message filters to reduce the number of exception messages that the planning engine issues. By doing so, the planning engine spends less time and effort because it does not create exception messages that you don't want to see.

Without any filters the planning engine issues all exception messages under all circumstances.

Whether or not you use filters, you can use personal and public queries to limit what you see to only the exception messages that you want. However, if you have used

filters, you cannot enquire against exception message occurrences that you have filtered out.

The filters that you can use are:

- Exception sets
- Exception groups

When you use exception sets:

- The planning engine issues all exception messages.
- It issues exception messages for items and resources that you have assigned to an exception set.
- You can tell it not to issue some occurrences of some exception messages; those that don't meet certain quantity or date thresholds. For example, you can tell it not to issue Items with excess quantity exception messages if the excess quantity is below 3000 units or not to issue Items with a shortage exception message if the shortage occurs outside the planning time fence.

When you use exception groups:

- You can tell the planning engine not to issue certain exception messages.
- For the exception messages that you allow it to issue, you can tell it to only issue occurrences for certain organizations, certain item categories, or up to a certain number of days from the plan date.

You assign:

- Exception sets to items and resources
- Exception groups to plans

## Exception Sets

Use planning exception sets in the source instance to specify sensitivity controls and exception time periods for exceptions.

The fields in the exception set are not item and resource attributes but they act as if they are. Define as many planning exception sets as you need for your different types of items and resources (use the Planning Exception Sets form). Then, assign exception sets to items and resources.

The planning engine only issues exceptions against items and resources that have exception sets assigned to them.

Sensitivity controls control the quantity and percent thresholds for exception messages. For example, setting Excess Quantity to 3000 limits reporting of excess to situations in

which supply exceeds demand by 3000.

For the excess quantity, use a value of 1 or higher. If you use 0, the planning engine does not issue exception messages.

Exception time period types control the time period for exceptions. For example, setting shortage exceptions to Planning time fence limits reporting of shortage to those situations in which the shortage is within the planning time fence.

## Creating and Updating Exception Sets

Before creating and updating exception sets, study the exception messages. When the description of an exception message indicates that it is subject to exception set values, consider sensitivity controls and time periods that make sense for your business.

### To create and update exception sets

1. Navigate to the Planning Exception Sets window.
2. Create or select a planning exception set name.
3. Enter sensitivity controls except User-Defined Time Fence (Days).
4. Select exception time period types.

   If you selected User-defined time fence in any of the fields, specify the length of the time fence in days in User-Defined Time Fence (Days).
5. Save your work.

   **Assigning Planning Exception Sets**

   To assign a planning exception set to an item, navigate to the Items form, MPS/MRP Planning attribute group, Exception Set field.

   To assign a planning exception set to a resource:

   - Navigate to the Departments form, click Resources, and view the Resources form
   - Navigate to the Owned region, Planning tabbed region, Exception set field

## Assigning Planning Exception Sets

To assign a planning exception set to an item, navigate to the Items form, MPS/MRP Planning attribute group, Exception Set field.

To assign a planning exception set to a resource:

- Navigate to the Departments form, click Resources, and view the Resources form
- Navigate to the Owned region, Planning tabbed region, Exception set field

## Exception Group

Use exception to tell the planning engine which exception messages to issue for you. You can also specify which:

- Organizations to issue them for
- Item categories to issue them for
- Time fence to issue them within

Oracle Value Chain Planning also uses the term exception group to mean a collection of exception messages with the same subject, for example, Late Sales Orders and Forecasts Exception Group. Those exception groups are not part of this filter called Exception Group.

To set up an exception group, attend to the:

- Header
- Exceptions tab
- Filter tab

In the header, give the exception group a name (field Exception Group Name).

In the Exceptions tab, put the names of the exception messages that you do want the planning engine to issue for you in the box Selected Exceptions. Put the names of the exception messages that you do not want the planning engine to issue for you in the box Available Exceptions. The exception message names are in each box in alphabetical order.

In the Filter tab

- Select the instance:organizations that you want the planning engine to issue exceptions for. Use column Organization and the + icon to add organizations to the list.
- Select the item categories that you want the planning engine to issue exception messages for their members. Use column Category and the + icon to add item categories to the list
- Enter a how many days out from the plan date that you want the planning engine to issue exception messages. Use field Exception Time Fence (Days). This applies to excess and shortage exceptions for items that do not have excess and shortage time fences in their exception sets.

The filters only apply to exception messages that you have told the planning engine to issue.

In the Filter tab, if you don't fill up any of the information for the:

- Instance/Organization: The planning engine issues exception messages for all instances/organizations that the plan plans.
- Item category: The planning engine issues exception messages for all members in all item categories in all instances/organizations that the plan plans.
- Time fence: If you have exception sets, the planning engine issues exception messages according to the assigned exception sets. Otherwise, it issues exception messages for all days in the planning horizon.

You assign an exception group to a plan, see The Main Tabbed Region, page 3-47

### Exception Set and Exception Group Interaction

You can use both exception sets and exception groups.

If you run a plan with an exception group, the planning engine plans items and resources that have an exception set like this. It:

- Creates exceptions according to the exception group filters.
- Filters them according to the exception sets tolerances.
- Uses exception set Exception Time Periods instead of the exception group Exception Time Fence.

## Viewing Exceptions

### Overview

View exception messages in the Planner Workbench. For more information, see Overview of Planner Workbench, page 16-1.

### To view exceptions

1. In the Navigator pane, choose a plan for which to view exception messages. You can view exception messages at the item level by selecting an item in the Items or Organization tree.
2. In the right pane, navigate to the Actions tabbed region to access the Exception Summary window.

#### Exception Summary Window

The Exception Summary window displays summary exception message information:

- Generated by the current planning run
- Saved from previous simulation runs

It displays the following information:

- Action Type: The exception group
- Version
- Count: The exception message count by exception group

The window orders the exception groups by their typical importance to troubleshooting; for example, late orders are more important than recommendations.

Using the Find window, you can sort, group, or subtotal exceptions according to various criteria, for example, item, supplier, and buyer.

### Exception Summary Window

The Exception Summary window displays summary exception message information:

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It displays the following information:

- Action Type: The exception group
- Version
- Count: The exception message count by exception group

The window orders the exception groups by their typical importance to troubleshooting; for example, late orders are more important than recommendations.

Using the Find window, you can sort, group, or subtotal exceptions according to various criteria, for example, item, supplier, and buyer. If you group by organization, item, planner code, resource, category, department, customer, or supplier, the results window displays their column headings. For other group by criteria, the results window displays a generic column heading, for example, Group By 1.

### To sort exceptions

1. Navigate to the Exception Summary and select View > Find.

   The Find Actions window displays.

2. Select criteria by which to sort exceptions.
3. Select Display Message Count.
4. Click Find.

### To view exception details

1. Navigate to the Exception Summary window and place the cursor over the exception group or the exception message.
2. Double click on the entity to access the Exception Details window.

### Exception Details Window

The Exception Details window displays information about each exception. If you select one exception type, the window displays information in a folder for that exception type. If you select multiple exception types, the window displays the generic default folder.

Days Late applies to the Late replenishment for forecast and Late replenishment for sales order exception messages.

Quantity Satisfied By Due Date is the portion of a demand that can be satisfied by the due date.

### Buttons

On the Exception Details window, you can obtain additional information about certain exceptions by clicking buttons on the bottom. The buttons that appear are unique to the exception.

### Right Mouse Options

From the Exception Details window, you can obtain additional information by right-clicking on the exception. The choices in the pop-up menu are unique to the exception. Some choices are:

- Supply
- Demand
- Resource Availability
- Resource Requirements
- Sources
- Destinations

- Related Exceptions
- Gantt Chart
- Horizontal Plan
- Vertical Plan
- End Item Supplies
- End Pegged Supplies
- Critical Activities

### Related Exceptions

If you are working in a constrained or optimized plan, you can use the right mouse option Related Exceptions to obtain further cause and effect information, for example:

- Is an order late because of a resource, material, or transportation resource constraint.
- Does a material, resource, or transportation resource issue cause late orders?

From a resource, material, or transportation resource constraint exception message, you drill down to Late replenishment for sales order and Late replenishment for forecast exception messages that the constraint affects.

### Exception Message Filters

Use exception message filters to view only the exception messages that you want to. You can create and save queries that specify certain exception messages and certain criteria. When you execute this query, the planning engine displays the exception messages that meet your criteria.

For example, you may want to view the Late replenishment for sales order and Late replenishment for forecast exception messages if the shipment of item A from organization M1 is delayed by more than two days.

You can filter on exception messages issued both by Oracle Advanced Supply Chain Planning and Oracle Collaborative Planning.

### To filter exception messages

1. In the Planner Workbench, click the Queries tabbed region.
2. In Plan, select the plan that you want to query.
3. To create a query for you to use (personal query), right-click Personal Queries and

select Create Query. To create a query for you and others to use (public query), right-click Public Queries and select Create Query.

You can also right-click Personal Queries or Public Queries and then click the Create Query icon.

4. In the Create Query window:

   Specify the Query Name.

   In Query Type, select Exceptions. You can use the other choices to create queries that filter item, resource, and supplier information.

   If the query is personal and you want to make it public, in Public, select Yes. If the query is public and you want to make it personal, in Public, select No.

5. In the Exceptions region, select the exception messages that you want to view.

   You can filter on most but not all planning engine exception messages. To include Oracle Collaborative Planning exception messages, set profile option MSC: Configuration to APS + CP.

   The query results display the exception messages in the order that they appear in this region. If you want to change the order of the exception messages, use the arrows on the right of the region to rearrange them.

6. For some exception messages, you can specify selection criteria. The query selects occurrences of the exception message that match the criteria.

   If you want the query to display its results grouped by criteria, select Group By for those criteria. For example, you group the exception message Late replenishment from supplier by supplier. Your query displays the number of Late replenishment from supplier exception messages against each supplier.

   To clear the criteria and start over, click Clear.

7. To save the query, click Save or Save as.

   To delete existing saved query criteria, click Delete.

8. Click Execute. The query results appear in the right pane.

   To view the results of a previously executed query, in Executed Query, select its name.

   To re-execute a saved query, search for it in the left pane under Personal Queries and Public Queries.

9. To view exception details, right-click the exception message and select Exceptions All, Exception Action Taken, or Exception No Action Taken. The Exception Details window appears.

   To research Oracle Collaborative Planning exception messages, click More Details.

To research planning engine exceptions, click the remaining buttons.

## Understanding Exceptions

This section explains:

- The circumstances under which the planning engine issues each exception message
- Where appropriate, the calculation of key attributes of the exception message
- Where appropriate, a scenario illustrating the exception message
- The information shown for each exception message
- Resolution suggestions for the exception message

The exception message explanations for Constrained - Enforce Due Dates and Constrained - Enforce Capacity Constraints plans assume that both plan options Material Constraints and Capacity Constraints are selected. Note the behavior of constrained and optimized plans that have either or both options cleared:

- Resource or material capacity does not cause late orders.
- Lead time still can cause a late order.
- The planning engine still reports resource and material capacity overloads.

### Late Sales Orders and Forecasts Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Sales order/forecast at risk | Yes | Yes | Yes | Yes | Yes |
| 2: Past due sales orders | Yes | Yes | Yes | Yes | Yes |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 3: Past due forecast | Yes | Yes | Yes | Yes | Yes |
| 4: Late replenishment for sales order | No | Yes | Yes | Yes | No |
| 5: Late replenishment for forecast | No | Yes | Yes | Yes | No |
| 6: Early replenishment for sales order | No | Yes | Yes | Yes | No |
| 7: Early replenishment for forecast | No | Yes | Yes | Yes | No |
| 8: Late Replenishment for MPP/MPS Demands | No | Yes | Yes | Yes | No |
| 9: Changes recommended for sales orders | No | Yes | Yes | Yes | Yes |

### 1: Sales order/forecast at risk

**Explanation**

This exception message appears when demands are at risk. A demand is at risk when it is pegged to a supply order against which the planning engine has issued certain exception messages. These certain exception messages are in the Supply Problems for

Late Sales Orders and Forecasts exception group and you can use them for further information about the sales order or forecast at risk:

- Sales order/forecast at risk due to resource shortage
- Sales order/forecast at risk due to material shortage
- Requirement causes resource overload
- Order causes supplier capacity overload
- Order causes transportation weight capacity overload
- Order causes transportation volume capacity overload
- Order with insufficient lead time
- Requirement with insufficient lead time
- Order lead time constraint
- Requirement lead time constraint
- Demand quantity not satisfied
- Late supply pegged to forecast
- Late supply pegged to sales order

#### Information Displayed

The information displayed for this exception message all refers to the demand line and is:

- Order Number
- End Item
- End Item Org
- End Item Description
- Order Due Date
- Order Quantity
- Customer
- Customer Site

- Demand Class

#### Resolution Suggestions

Check for more details from related exceptions in the Supply Problems for Late Sales Orders and Forecasts exception group.

### 2: Past due sales orders

#### Explanation

This exception message appears for past due sales order lines. A past due sales order line is a sales order line with a schedule date earlier than the plan horizon start date.

#### Information Displayed

The information displayed for this exception message is:

- Organization: The sales order line warehouse
- Item
- Order Number
- Old Date: The sales order line schedule date
- Date: The sales order line schedule date
- Quantity

#### Resolution Suggestions

Consider revising the sales order line schedule date.

### 3: Past due forecast

#### Explanation

This exception message appears for late forecast entries. A late forecast entry is a forecast entry with a date earlier than the plan horizon start date. The planning engine issues this message even if the forecast is totally consumed.

#### Information Displayed

The information displayed for this exception message is:

- Organization
- Item
- Order Number: The forecast entry line number
- Old Date: The forecast entry due date
- Date: The forecast entry due date
- Quantity: The forecast entry netted quantity

#### Resolution Suggestions

Consider:

- Deleting the entry from the forecast
- Revising the forecast due date

### 4: Late replenishment for sales order

#### Explanation

This exception message appears in a constrained plan when the planning engine detects that the supplies for a sales order line are due later than the sales order line.

The demand satisfied date is the latest due date of the supplies pegged directly to an end demand. The planning engine issues this exception message against a sales order line when its demand satisfied date is later than its schedule date.

This exception usually occurs because of a material constraint, resource constraint, or planning time fence. It often occurs in Constrained - Enforce capacity constraint plans when the planning engine needs to move supply order due dates to honor capacity constraints.

For example, there is a sales order line on item A due 25 January for quantity 100 in organization D2

The supplies pegged to this sales order line are:

- Supply 1: Quantity 50 and due date 23 January
- Supply 2: Quantity 20 and due date 25 January
- Supply : Quantity 30 and due date 27 January

Demand satisfied date is 27 January (from Supply 3).

Days late is 2.

Quantity satisfied by sales order line schedule date is 70 (from Supply 1 and Supply 2).

#### Information Displayed

The information displayed for this exception message is:

- Org: Sales order line warehouse
- End Item: For the sales order line
- Quantity: For the sales order line
- Order Number: For the sales order line
- Priority: For the sales order line
- Customer

- Customer Site
- Demand Date: Sales order line schedule date
- Demand Satisfied Date
- Days Late: Demand Satisfied Date - Demand Date
- Quantity Satisfied by Due Date: The quantity of on time and early supply orders pegged directly to the sales order line. This appears if you set profile option MSO: Allow Partial Demand Completion to All End Demands or to Sales Orders.

#### Resolution Suggestions

In the Planner Workbench, Exception Details window, sort the orders by your priority, for example, days late or demand priority.

For each exception, right click on it, select Related Exceptions, and view the constraint.

See Identifying Root Causes of Late Demand, page 15-124for more information.

Consider:

- Revising demand priority rules
- Revising the sales order line demand priority
- Expediting the supply order
- Revising the sales order line schedule date or forecast entry date

### 5: Late replenishment for forecast

#### Explanation

This exception message appears in a constrained plan when the planning engine detects that the supplies for a forecast entry are due later than the forecast entry.

The demand satisfied date is the latest due date of the supplies pegged directly to an end demand. The planning engine issues this exception message against a forecast entry when its demand satisfied date is later than its schedule date.

This exception usually occurs because of a material constraint, resource constraint, or planning time fence. It often occurs in Constrained - Enforce capacity constraint plans when the planning engine needs to move supply order due dates to honor capacity constraints.

For example, there is a forecast entry on item A due 25 January for quantity 100 in organization D2.

The supplies pegged to this forecast entry are:

- Supply 1: Quantity 50 and due date 23 January

- Supply 2: Quantity 20 and due date 25 January
- Supply : Quantity 30 and due date 27 January

Demand satisfied date is 27 January (from Supply 3).

Days late is 2.

Quantity satisfied by forecast entry due date is 70 (from Supply 1 and Supply 2).

#### Information Displayed

The information displayed for this exception message is:

- Org: For the forecast entry
- End Item: For the forecast entry
- Quantity: Unconsumed quantity for the forecast entry
- Order Number: Forecast entry line number
- Priority: For the forecast entry
- Customer
- Customer Site
- Demand Date: Forecast entry date
- Demand Satisfied Date
- Days Late: Demand Satisfied Date - Demand Date
- Quantity Satisfied by Due Date: The quantity of on time and early supply orders pegged to the forecast. This appears if you set profile option MSO: Allow Partial Demand Completion to All End Demands or to Sales Orders.

#### Resolution Suggestions

See 4: Late replenishment for sales order resolution suggestions in this topic.

### 6: Early replenishment for sales order

#### Explanation

This exception message appears in a constrained plan when the planning engine detects that the supplies for a sales order line are due earlier than the sales order line.

The demand satisfied date is the latest due date of the supplies pegged directly to an end demand. The planning engine issues this exception message against a sales order line when its demand satisfied date is earlier than its schedule date.

The planning engine issues the message even if it plans the supply earlier due to constraints.

For example, there is a sales order line on item A due 25 January for quantity 100 in organization D2.

The supplies pegged to this sales order line are:

- Supply 1: Quantity 50 and due date 19 January
- Supply 2: Quantity 20 and due date 21 January
- Supply 3: Quantity 30 and due date 23 January

Demand satisfied date is 23 January (from Supply 3).

#### Information Displayed

The information displayed for this exception message is:

- Org: Sales order line warehouse
- End Item: For the sales order line
- Quantity: For the sales order line
- Order Number: For the sales order line
- Priority: For the sales order line
- Customer
- Customer Site
- Demand Date: Sales order line schedule date
- Demand Satisfied Date
- Item Description

#### Resolution Suggestions

If you are implementing Just-In-Time scheduling, use this exception to help minimize inventory carrying cost by identifying causes of early replenishment, for example:

- Organization receiving calendar restrictions: For example, supplier delivers once a week.
- Resource load levelling
- Firm supplies

### 7: Early replenishment for forecast

#### Explanation

This exception message appears in a constrained plan when the planning engine detects

that the supplies for a forecast entry are due earlier than the forecast entry.

The demand satisfied date is the latest due date of the supplies pegged directly to an end demand. The planning engine issues this exception message against a forecast entry when its demand satisfied date is earlier than its schedule date.

The planning engine issues the message even if it plans the supply earlier due to constraints.

For example, there is a forecast entry on item A due 25 January for quantity 100 in organization D2.

The supplies pegged to this forecast entry are:

- Supply 1: Quantity 50 and due date 19 January
- Supply 2: Quantity 20 and due date 21 January
- Supply 3: Quantity 30 and due date 23 January

Demand satisfied date is 23 January (from Supply 3).

#### Information Displayed

The information displayed for this exception message is:

- Org: Forecast entry organization
- End Item: For the forecast entry
- Quantity: For the forecast entry
- Order Number: Forecast entry line number
- Priority: For the forecast entry
- Customer
- Customer Site
- Demand Date: Forecast entry date
- Demand Satisfied Date
- Item Description
- Demand Class

#### Resolution Suggestions

See 4: Early replenishment for sales order resolution suggestions in this topic.

### 8: Late replenishment for MPP/MPS demands

#### Explanation

The Late Replenishment for MPP/MPS Demands exception is generated when the MRP detects that the supply is going to miss the required dependent demand due date.

It alerts MRP users when supplies are going to miss due dates driven by the MPS or MPP.

#### Information Displayed

The information displayed for this exception message is:

- Order Number
- Item
- Org
- Due Date
- Quantity

#### Resolution Suggestion

Review the Days Late on this exception. You can opt to:

- Ignore it if the Days Late is not significant
- Pull in the supply that is feeding the firmed MPP/MPS supply and resolve the lateness. In order to do this, you may need to add a resource or supplier capacity to make the pull in of this supply a feasible action.
- Push out the MPP/MPS supply to a later date in the MPP/MPS plan. In the next run of this plan (the MRP Plan), the demand will appear at a later date and will be satisfied on time.

### 9: Changes recommended for sales orders

#### Explanation

This exception message is generated each time there is a change in the following entities:

- Source Organization
- Material availability date
- Schedule arrival date
- Ship method

You can double click on the sales order recommendation provided in the Exception Summary window to open the Demand window for sales order lines with release

recommendations.

You can right click from the exception and select the following:

- Demand
- Supply/Demand

#### Information Displayed

The information displayed for this exception message is:

- Item
- Description
- Sales order number with reference to line number
- Customer/customer site
- Old source organization
- New source organization
- Old schedule date (Suggested due date)
- New schedule date (Demand satisfied date)
- Old schedule arrival date
- New schedule arrival date
- ATP override flag
- Latest acceptable days
- Request ship date
- Request arrival date
- Promise ship date
- Promise arrival date

#### Resolution Suggestion

Release recommendations to execution system.

## Supply Problems for Late Sales Orders and Forecasts Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Sales order/forecast at risk due to resource shortage | Yes | No | No | No | No |
| 2: Sales order/forecast at risk due to material shortage | Yes | No | No | No | No |
| 3: Requirement causes resource overload | No | Yes | Yes | Yes | No |
| 4: Order causes supplier capacity overload | No | Yes | Yes | Yes | No |
| 5: Order causes transportation weight capacity overload | No | Yes | Yes | Yes | No |
| 6: Order causes transportation volume capacity overload | No | Yes | Yes | Yes | No |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 7: Order with insufficient lead time | No | Yes | Yes | Yes | No |
| 8: Requirement with insufficient lead time | No | Yes | Yes | Yes | No |
| 9: Order lead time constraint | No | Yes | Yes | Yes | No |
| 10: Requirement lead time constraint | No | Yes | Yes | Yes | No |
| 11: Demand quantity not satisfied | No | Yes | Yes | Yes | No |
| 12: Late supply pegged to forecast | Yes | Yes | Yes | Yes | Yes |
| 13: Late supply pegged to sales order | Yes | Yes | Yes | Yes | Yes |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 14: Order violates a business calendar | Yes | Yes | Yes | Yes | Yes |

### 1: Sales order/forecast at risk due to resource shortage

#### Explanation

This exception message appears when the scheduled resource capacity in a planning time bucket is overloaded and indicates that end demands may be at risk due to a resource capacity shortage. The planning engine looks at all make supplies within the bucket (according to their operation schedules), finds their end orders and issues this exception message against those end orders.

For example, there is a sales order on Item A for quantity 100 due on 17 January.

An unconstrained plan creates supply to satisfy this demand using lead-times and applying order modifiers. The planned order is on Item B which has a resource requirement on resource R1 for 10 hours on 10-January.

On 10-January, the cumulative available capacity for resource R1 is 1000 hours and the required capacity is 1200 hours (which includes this resource requirement as well as resource requirements from other supplies pegged to end demands). The planning engine issues a Resource overloaded exception message.

The planning engine issues this Order at risk due to resource shortage for the sales order due on 17 January as well as each of the other end demands pegged to resource R1 on 10 January.

#### Information Displayed

The information displayed for this exception message is:

- Organization: The supply organization
- Resource
- Dept/Line
- From Date: The start date of the resource overload
- To-Date: The end date of the resource overload

- End Order Number: For the end demand

Some of the information fields for this exception message could be blank; this is normal behavior.

**Resolution Suggestions**

Consider:

- Adjusting the top level independent demand date
- Increasing resource availability:
  - Hours available
  - Resource units assigned to the operation
  - Work and non-work days
- Using an alternate resource: Change the resource in the supply order routing.
- Using an alternate routing for this item
- Modifying the sourcing rules
- Subcontracting
- Using substitute items: Change the supply order bill of material.
- Change shift pattern
- Add capacity: For example, additional workday.
- Levelling the resource

### 2: Sales order/forecast at risk due to material shortage

**Explanation**

This exception message appears when the scheduled supplier capacity in a planning time bucket is overloaded and indicates that an end demand is at risk due to a material shortage. The planning engine looks at all buy supplies within the bucket (according to their dock dates), finds their end orders and issues this exception message against those end orders.

For example, there is a sales order on Item A for quantity 100 due on 17 January.

An unconstrained plan creates supply to satisfy this demand using lead-times and applying order modifiers. The planned order is on Item C, dock date 10-January, quantity 150, and supplier SUPP1.

On 10 January, the cumulative available capacity for SUPP1/Item C is 1000 units and the required capacity is 1200 units (which includes this supply as well as other supplies

pegged to end demands). The planning engine issues a Supplier capacity overloaded exception message.

The planning engine issues this Order at risk due to material shortage for the sales order due on 17 January as well as each of the other end demands pegged to SUPP1/Item C on 10 January.

#### Information Displayed

View this exception message from Planner Workbench tree Suppliers.

The information displayed for this exception message is:

- Organization: The supply organization
- Item: The item with the material shortage
- Date: The end demand due date
- End Order Number: The end demand order number
- Supplier
- Supplier Site

Some of the information fields for this exception message could be blank; this is normal behavior.

#### Resolution Suggestions

Consider:

- Adjusting the sales order schedule date
- Adjusting the supplier capacity: In the Planner Workbench left pane, right-click Supplier and select Supplier Capacity.
- Using an alternate supplier: Change the supplier in the sourcing rule
- Using a substitute item: Change the supply order bill of material
- Increasing the supplier flexfence capacity tolerance percentage
- Changing end order quantity
- Modifying the sourcing rule: For example, sourcing percentage
- Producing the supply order yourself

### 3: Requirement causes resource overload

#### Explanation

This exception message appears when, during scheduling a make order, the planning

engine detects a resource requirement that causes a resource capacity overload.

This exception message also appears when the setting for the profile option MSO: Maximize Search of Availability Intervals is incorrect. For more details, see MSO Profile Options, page A-84.

When an operation fails scheduling, the planning engine uses profile options MSO: Pull push base and MSO: Pull push offset to determine the time by which it pulls or pushes the operation when attempting to reschedule. If the planning engine is scheduling:

- Backwards, it is the time backwards (pulling delay)
- Forwards, it is the time forwards (pushing delay)

MSO: Pull push base is the numerical base by which the offset is multiplied to get each delay (it has no unit of measure and the default is 1)

MSO: Pull push offset is the numerical offset (it is in minutes and the default is 1440)

The delay is calculated by i * base (i-1) * offset where i is the rescheduling attempt that it is calculating. For example, with backward scheduling and the default values, the pulling delays are:

- Delay for first rescheduling attempt: 24 hours earlier [1 * 1 * 1440 = 1440 / 60]
- Delay for second rescheduling attempt: 48 hours earlier [1 * 2 * 1440 = 2880 / 60]
- Delay for third rescheduling attempt: 72 hours earlier [1 * 3 * 1440= 4320 / 60]

#### Information Displayed

The information displayed for this exception message is:

- Supply Order Number: The order number that contains the overloading resource requirement.
- Order Type
- Item
- Item Description
- Start Date: The start date of the time bucket in which the overloading activity falls.
- End Date: The end date of the time bucket in which the overloading activity falls.
- Resource Requirements: The required capacity of the overloading activity within the time bucket.
- Resource Overload: The amount by which the resource capacity in the time bucket is overloaded after scheduling the overloading requirement.

- Resource Name
- Organization
- Department
- Resource Sequence Number: In the routing.
- Operation Sequence Number: In the routing.
- Resource Capacity: The resource available capacity in the bucket before scheduling of the overloading requirement.
- Cause: This contains the cause of the overload. This attribute is only populated when this exception is generated in Enforce Capacity Constraints plans. Valid values are:
  - Exceeded maximum number of attempts to schedule: This means that the planning engine tried for the specified number of attempts set in MSO: Maximum Number of Pushes for Operation. If all the attempts to schedule proved to be unsuccessful, it goes back to the time slot corresponding to the first attempt to schedule, and schedules the activity there with an overload on the resource. Each time the planning engine is required to search for a new spot to schedule, it looks ahead by a certain time period that is dictated by the settings of the profile MSO: Push Pull Base and MSO: Push Pull Offset.

    Each unit or bucket in the number of attempts made is determined by using the following formula:

    Time Window = N * a*b^N

    Where:

    N = A value incremented from 1 to MAX in increments of 1 where MAX is the value set in the profile MSO:Max Num of Pushes for Operation.

    a = the value set in the profile MSO: Push Pull Offset; measured in minutesa = the value set in the profile MSO: Push Pull Offset; measured in minutes

    b = the value set in the profile MSO: Push Pull Base; default is 1. The planning engine searches in intervals of time that increase in a linear fashion.

  - Firm Resource Requirement: If a resource requirement's start/end are firmed, the planning engine is forced to schedule this requirement at the user specified time. This can sometimes cause an overload if this requirement has been firmed at a time where there is no capacity available on the resource. In such cases, the cause column indicates this condition.

  - Pegged to Firm Resource Requirement / Supply: A resource requirement is forced to be scheduled at a certain time because it pegs to another firm order or

a resource requirement. This can severely restrict the planning engine's span of search for available capacity to schedule this resource requirement and force an overload.

#### Resolution Suggestions

Consider:

- Checking and evaluating the end demand information
- Collecting and evaluating available options regarding increasing available capacity or decreasing required capacity
- Selecting and implementing options.

### 4: Order causes supplier capacity overload

#### Explanation

This exception message appears when, during scheduling a buy order, the planning engine detects an order that causes a supplier capacity overload.

#### Information Displayed

View this exception message from Planner Workbench tree Suppliers.

The information displayed for this exception message is:

- Bucket Start Date: The start date of the time bucket in which the overloading order falls.
- Item
- Item Description
- Organization
- Due Date
- Dock Date
- Required Supplier Capacity: The required capacity of the overloading order within the time bucket.
- Supplier Capacity Overload: The amount by which the cumulative available supplier capacity is overloaded after scheduling the overloading order.
- Supplier Name
- Supplier Site
- Cumulative Available Capacity: The cumulative available supplier capacity before

scheduling the overloading order.

#### Resolution Suggestions

Consider:

- Checking and evaluating the end demand information
- Collecting and evaluating available options regarding increasing available capacity or decreasing required capacity
- Selecting and implementing options.

### 5: Order causes transportation weight capacity overload

#### Explanation

This exception message appears when, during scheduling a transfer order, the planning engine detects a transportation weight capacity overload.

#### Information Displayed

The information displayed for this exception message is:

- Item
- Order Number
- Bucket Start Date: The start date of the time bucket in which the overloading shipment falls.
- Supply Order Number
- Order Type
- Item
- Item Description
- Ship Date
- Shipment Weight
- Shipment Weight UOM
- Weight Capacity overload: The amount by which this shipment causes the available weight capacity to be overloaded.
- Ship Method
- Source Org
- Destination Org

- Available Weight Capacity/Day: The available weight capacity on Ship Date before scheduling of the overloading shipment.

#### Resolution Suggestions

Consider:

- Checking and evaluating the end demand information
- Collecting and evaluating available options regarding increasing available capacity or decreasing required capacity
- Selecting and implementing options.

### 6: Order causes transportation volume capacity overload

#### Explanation

This exception message appears when, during scheduling a transfer order, the planning engine detects a transportation volume capacity overload.

#### Information Displayed

The information displayed for this exception message is:

- Bucket Start Date: The start date of the time bucket in which the overloading shipment falls.
- Supply Order Number
- Order Type
- Item
- Item Description
- Ship Date
- Shipment Weight
- Shipment Weight UOM
- Weight Capacity overload The amount by which this shipment causes the available volume capacity to be overloaded
- Ship Method
- Source Org
- Destination Org
- Available Weight Capacity/Day: The available volume capacity on Ship Date before scheduling of the overloading shipment.

#### Resolution Suggestions

Consider:

- Checking and evaluating the end demand information
- Collecting and evaluating available options regarding increasing available capacity or decreasing required capacity
- Selecting and implementing options.

### 7: Order with insufficient lead time

#### Explanation

This exception message appears when the planning engine schedules a supply order within a window whose size is less than the minimum duration of the supply order.

The planning engine issues this message if either of the following situations exist:

- Constrained Plan - Enforce Due Date and Optimized Plan - Enforce Due Date: Profile option MSO: Lead Time Control is to Violate minimum processing time to meet demand due date and there is not enough lead-time to meet the demand.
- Constrained Plan - Enforce Due Date, Optimized Plan - Enforce Due Date, Constrained Plan - Enforce Capacity Constraints, and Optimized Plan - Enforce Capacity Constraints: A supply is firmed early and the upstream orders need to be compressed.

#### Information Displayed

The information displayed for this exception message is:

- Supply Order Number: The order number of the order with insufficient lead-time
- Item
- Organization
- Order Type
- Supplier: For buy orders.
- Supplier Site: For buy orders.
- Source Org: For transfer orders.
- Ship Method: For transfer orders.
- Order Start Time: For make orders, the start time; for buy orders, the dock date; and for transfer orders, the ship date.
- Order Completion Time: The due date.

- Minimum Lead Time: The minimum lead-time Required to avoid the compression.
- Actual Lead Time: Order Completion Time - Order Start Time. This represents the compressed duration as seen in the plan output.
- Minimum Start Time: The minimum start time of this supply order.

#### Resolution Suggestions

Consider:

- That the supply may be behind schedule
- Checking and evaluating the end demand information
- Either expediting work on the supply or adjusting the demand due date

### 8: Requirement with insufficient lead time

#### Explanation

This exception message appears when the planning engine schedules a resource requirement in either of these ways:

- Within a window whose size is less than the minimum duration of the resource requirement.
- To start earlier than the earliest start time of its operation according to the planning time fence and other upstream precedence constraints

The planning engine issues this message if either of the following situations exist:

- Constrained Plan - Enforce Due Date and Optimized Plan - Enforce Due Date: Profile option MSO: Lead Time Control is to Violate minimum processing time to meet demand due date and there is not enough lead-time to meet the demand.
- Constrained Plan - Enforce Due Date, Optimized Plan - Enforce Due Date, Constrained Plan - Enforce Capacity Constraints, and Optimized Plan - Enforce Capacity Constraints: A supply is firmed early and the upstream requirements need to be compressed.

#### Information Displayed

The information displayed for this exception message is:

- Supply Order Number: The order number of the supply order that contains this resource requirement with insufficient lead-time.
- Item
- Organization
- Order Type

- Op-Seq: Operation sequence in the routing.
- Res-Seq: Resource sequence in the routing.
- Department: The department of the resource that contains this resource requirement
- Resource: The resource that contains this resource requirement.
- Start Time: Of the resource requirement.
- Completion Time: Of the resource requirement.
- Minimum Lead Time: Based on the maximum assigned units in the routing.
- Actual Lead Time: Completion Time - Start Time. Represents the compressed duration of this resource requirement
- Minimum Start Time: Of the Resource Requirement.

#### Resolution Suggestions

Consider:

- That the supply may be behind schedule
- Checking and evaluating the end demand information
- Either expediting work on the supply or adjusting the demand due date

### 9: Order lead time constraint

#### Explanation

This exception is generated in Enforce Capacity Constraints plans. It is generated when the lead-time of an order is the cause for a demand being satisfied late. The exception specifies the minimum lead-time required for the order as well as the actual lead-time that is available if the demand is to be satisfied on time. The actual lead-time will be less than the minimum lead-time indicating that a lead-time compression is required to meet the demand on time. Since, this is an Enforce Capacity Constraints plan, Oracle Advanced Supply Chain Planning will not actually compress the lead-time. Instead, it will satisfy the demand late and issue the Order Lead Time Constraint exception. This exception is generated for make orders without a routing, buy orders and transfer orders.

The planning engine:

- Issues this exception if profile option MSO: Calculate Constraint Exceptions is Yes
- Does not issue this exception message if the plan planning mode is Constrained (Without Detailed Scheduling)

#### Information Displayed

The information displayed for this exception message is:

- Supply Order Number: This is the order number of the supply that has the lead-time constraint.
- Item
- Organization
- Order Type
- Due Date
- Supplier: For buy supplies.
- Supplier Site: For buy supplies.
- Source Org: For transfer supplies.
- Ship Method: For transfer supplies.
- Required Start Time: For make orders, the start time; for buy orders, the dock date; and for transfer orders, the ship date.
- Required Completion Time: The due date.
- Minimum Lead Time: The minimum lead-time for this order.
- Actual Lead Time: Required Completion Time - Required Start Time.
- Minimum Start Time: The earliest time that this order can start.

#### Resolution Suggestions

Consider:

- That the supply may be behind schedule
- Checking and evaluating the end demand information
- Either expediting work on the supply or adjusting the demand due date

### 10: Requirement lead time constraint

#### Explanation

This exception is generated in Enforce Capacity Constraints plans. It is generated when the lead-time of a resource requirement is the cause for a demand being satisfied late. The exception specifies the minimum lead-time required for the resource requirement as well as the actual lead-time that is available if the demand is to be satisfied on time. The actual lead-time represents the processing time as dictated by the usage specified in

the routing definition. The actual lead-time will be less than the minimum lead-time indicating that a lead-time compression is required to meet the demand on time. Since, this is an Enforce Capacity Constraints plan, Oracle Advanced Supply Chain Planning will not actually compress the lead-time. Instead, it will satisfy the demand late and issue the Requirement Lead Time Constraint exception. This exception is generated for Resource Requirements for Make Orders with Routings specified.

The planning engine issues this exception if profile option MSO: Calculate Constraint Exceptions is Yes.

#### Information Displayed

The information displayed for this exception message is:

- Supply Order Number: The supply order that contains this resource requirement.
- Item
- Organization
- Order Type
- Op-Seq: Operation sequence in the routing.
- Res-Seq: Resource sequence in the routing.
- Department: The Department of the resource that is on the resource requirement.
- Resource: The resource that contains this resource requirement.
- Required Start Time: Of the resource requirement so as to meet the demand on time.
- Required Completion Time: Of the resource requirement so as to meet the demand on time.
- Minimum Lead Time: Based on the maximum assigned units in the routing.
- Actual Lead Time: Required Completion Time - Required Start Time
- Minimum Start Time: Of the resource requirement.
- Start Date: The planned start date of the resource requirement.
- End Date: The planned completion date of the resource requirement.

#### Resolution Suggestions

Consider:

- That the supply may be behind schedule

- Checking and evaluating the end demand information
- Either expediting work on the supply or adjusting the demand due date

#### 11: Demand quantity not satisfied

**Explanation**

This exception message appears when the planning engine finds any demand pegged to supplies and the supply quantities are less than the demand quantity. The planning engine issues this exception message for demands at all levels of the supply chain bill of materials.

**Information Displayed**

The information displayed for this exception message is:

- Item: On the supply.
- Item Description
- Order Number
- Organization
- Demand Quantity
- Demand Order Type
- Due Date
- Demand Class
- Customer
- Customer site
- Quantity Mismatch: Demand quantity - Total pegged supply quantity

**Resolution Suggestions**

Consider:

- Checking and evaluating the end demand information
- Finding other sources of supply for the demand or adjusting the demand due date

#### 12: Late supply pegged to forecast

**Explanation**

This message appears when a supply due date is later than the demand due date to which it is pegged; the demand can be independent demand or dependent demand (which will eventually peg to a forecast). This usually occurs because of lead-times and

time fences.

Refer to the example for the Late supply pegged to sales order exception message, the planning engine issues this Late supply pegged to forecast exception message in bucket 15 against the planned order pegged to the dependent demand and forecast in bucket 12.

#### Information Displayed

The information displayed for this exception message is:

- Organization: For the supply order
- End Item: Forecast entry item
- Quantity: For the supply order
- Order Number: The forecast entry line number
- Priority
- Customer
- Customer Site
- Due Date: For the supply order
- Demand Date: The demand due date
- End Demand Date: The forecast entry due date
- Days Late: Due Date - Demand Date. This calculation uses calendar days rather than manufacturing calendar working days.

#### Resolution Suggestions

Consider:

- Expediting the late supply
- Adjusting the forecast entry date

### 13: Late supply pegged to sales order

#### Explanation

This message appears when a supply due date is later than the demand due date to which it is pegged; the demand can be independent demand or dependent demand (which will eventually peg to a sales order). This usually occurs because of time fences.

For example, there are forecasts at organization D1 on item A for quantity 50 on day 7 and quantity 30 on day 12.

Organizations D1 and M1 have two days transit time between them.

The planning engine creates dependent demand at organization M1 on item A for quantity 50 on day 7 and quantity 30 on day 12.

There are sales orders at organization M1 on Item A for quantity 50 on day 9 and quantity 30 on day 14.

Total demand at organization M1 on Item A is 160.

There is a discrete job at organization M1 on Item A for quantity 100 on day 5.

Because of lead-times and time fences, the first day available to create a planned order at organization M1 on Item A is day 15.

The planning engine creates a planned order at organization M1 on Item A for quantity 60 on day 15 and pegs it to the:

- Dependent demand on day 12
- Sales order on day 12

The planning engine issues a Late supply pegged to sales order exception message with:

- Due date of Day 15 (supply order)
- Demand date of Day 12 (sales order)
- End demand date of Day 12 (sales order)
- Days late of 3 (Day 15 - Day 12)

The planning engine issues a Late supply pegged to forecast exception message with:

- Due date of Day 15 (supply order)
- Demand date of Day 12 (dependent demand)
- End demand date of Day 14 (forecast)
- Days late of 3 (Day 15 - Day 12)

| Schedule Entity | 1 | ... | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Org D1: Forecasts | - | - | - | - | - | - | 50 | - | - | - | - | 30 | - |
| Org M1: Dependent demand | - | - | - | - | 50 | - | - | - | - | 30 | - | - | - |

| Schedule Entity | 1 | ... | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Org M1: Sales orders | - | - | - | - | 50 | - | - | - | - | 30 | - | - | - |
| Org M1: Supply orders | - | | 100 | - | - | - | - | - | - | - | - | - | - |
| Org M1: Planned orders | - | - | - | - | - | - | - | - | - | - | - | - | 60 |

#### Information Displayed

The information displayed for this exception message is:

- Organization: For the supply order
- End Item: Sales order line item
- Quantity: For the supply order
- Order Number: For the sales order
- Priority
- Customer
- Customer Site
- Due Date: For the supply order
- Demand Date: The demand due date
- End Demand Date: The sales order line due date
- Days Late: Due Date - Demand Date. This calculation uses calendar days rather than manufacturing calendar working days.

#### Resolution Suggestions

Consider:

- Expediting the late supply
- Adjusting the sales order line schedule date

### 14: Order violates a business calendar

#### Explanation

The planning engine issues this exception message against buy orders, make orders, transfer orders, sales orders, and forecasts (entities) that have dates that are non-workdays of the following calendars (violates the calendar). For make orders with routings, the planning engine does not issue this exception message for resource requirements that violate calendars:

- Shipping calendar: The dates that a shipments can start from a supplier or source organization
- Receiving calendar: The dates that a customer or destination organization can receive shipments
- Intransit calendar: The dates that a carrier or other shipment service operates
- Supplier capacity calendar: The dates that a supplier operates and has processing time and capacity available. Start dates and processing times of buy orders must respect this calendar
- Organization manufacturing calendar: The dates that a work center operates and has capacity available. The order and due dates of make orders must respect this calendar.

Each entity can have only one exception message. If the entity violates multiple calendars, the exception message lists all of the calendars that it violates.

For example, 1 January for organization M is a non-workday on the receiving calendar. There is a purchase order shipment due to organization M on 1 January. When the plan runs, the planning engine issues this exception message against the purchase order shipment.

This exception message is related to exception message Sales order/forecast at risk.

#### Information Displayed

- Item
- Item Description
- Source Organization: For transfer orders.
- Order Type: For buy orders and transfer orders, Planned Order, Purchase Requisition, or Purchase Order. For make orders, Planned Order or Discrete Job. For sales orders, Sales Order. For forecasts, Forecast.
- Order Number: For buy orders and transfer orders, planned order, purchase requisition, or purchase order number. For make orders, planned order or discrete job number. For sales orders, sales order number. For forecasts, forecast name.

- Supplier: For buy orders.
- Supplier Site: For buy orders.
- Customer: For sales orders and forecasts.
- Customer Site: For sales orders and forecasts.
- Organization: For buy orders, the receiving organization. For transfer orders, the destination organization. For make orders without a routing, the make at organization. For sales orders and forecasts, the shipping organization.
- Order Date
- Order Start Date
- Order Due Date
- Order Dock Date: For buy orders and transfer orders.
- Order Ship Date; For forecasts, the forecast date. For sales orders, the suggested ship date. For buy orders, the ship date from the supplier. For transfer orders, the ship date from the source organization.
- Calendar: All calendars that the entity violates.
- Order Quantity
- Ship Method: For sales orders, forecasts, buy orders, and transfer orders.

**Resolution Suggestion**

Change the date of the entity.

Arrange for work on the non-workday.

## Material and Resource Capacity Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

For cells that contain (1), note that orders with compression days and overloaded exceptions (resource overloaded, supplier capacity overloaded, and transportation resource overloaded) are generated for constrained and optimized plans only when there are firm supplies in the plans or if you select the Enforce Demand Due Dates plan option.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Material constraint | No | No | Yes | Yes | Yes |
| 2: Resource constraint | No | No | Yes | Yes | Yes |
| 3: Resource overloaded (1) | Yes | Yes | Yes | Yes | Yes |
| 4: Supplier capacity overloaded (1) | Yes | Yes | Yes | Yes | Yes |
| 5: Resource underloaded | Yes | Yes | Yes | Yes | Yes |
| 6: Batch was started with less then minimum capacity | No | Yes | Yes | Yes | No |
| 7: Batch was started with more than maximum capacity | No | Yes | Yes | Yes | No |
| 8: Operation Hard Link Violation | No | Yes | Yes | Yes | No |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 9: Late replenishment to maintenance work order demand | No | Yes | Yes | No | No |
| 10: Maintenance work order resource overload | No | Yes | Yes | No | No |
| 11. Premium Resource capacity is utilized | No | Yes | Yes | Yes | No |
| 12: Warehouse capacity exceeded | No | Yes | Yes | Yes | Yes |

### 1: Material constraint

**Explanation**

This exception message appears when a demand due date needs to be pushed out due to either:

- Lead time violation
- Supplier capacity constraint

If there are also Resource constraint exception messages for this end demand, you may also need to provide adequate resource capacity.

The planning engine:

- Issues this exception if profile option MSO: Calculate Constraint Exceptions is Yes
- Does not issue this exception message if the plan planning mode is Constrained (Without Detailed Scheduling)

#### Lead time violation

It occurs for lead-time violation when there is not enough time to obtain the material. For buy items with lead-times and for make items with no routings and lead-times, the planning engine uses total lead-time. The overload is the quantity.

For example, today is 12-December, there is a demand for 5 on 20-December, and the total lead-time is 10 days.

#### Supplier capacity constraint

It occurs for supplier capacity constraint when there is not enough supplier capacity to purchase the buy item by a certain date. The certain date is the Latest possible completion time (LPCT) - the item post-processing lead-time, including breaks and delivery calendars.

You can see the amount of supplier capacity that you need to add at different suppliers during different time periods in order to satisfy a demand on time. If there are Resource constraint exception messages for an end demand, you may also need to provide adequate resource capacity.

Supplier capacity is available at 0000 hours each work day according to the owning organization manufacturing calendar. The planning engine accumulates supplier capacity for a plan:

- From the launch date, if you launch the plan on a work day at 0000 hours
- From the next working day after the launch date, if you launch the plan on a non-work day or on a work day after 0000 hours

While the horizontal plan accumulates the available and required capacities from the beginning, the exception process begins accumulating them again on the day after it issues an exception message.

Since supplier capacity is global, the planning engine issues these exceptions to the owning organization.

The calculation of overload is Required Quantity - Cumulative Available Quantity.

The calculation for Cumulative Available Quantity is Cumulative supplier capacity - Cumulative quantity already used by other supplies. The amount already used depends on previously scheduled supplies.

For example, supplier capacity is 25 units per day.

The plan start date is 3 January.

The planning engine needs to purchase 100 units on 5 January.

The cumulative available supplier capacity on 5 January is 75 units.

If the planning engine suggested a supply order to meet the demand, it would overload supplier capacity by 25 units (100 required - 75 available). However, an Enforce Capacity Constraints plan with Material selected cannot overload supplier capacity. The planning engine:

- Moves the supply and dependent demand to a later date where supplier capacity is available
- Issues this Material constraint exception message with overload of 25 units

#### Information Displayed

The information displayed for this exception is:

- Organization
- Item
- Item Description
- Supplier
- Supplier Site
- Supply Order Number
- Order Type
- Quantity
- Due Date
- Dock Date
- Bucket Start Date: The date of the overload. (For this exception, there is no end date.)
- Required Capacity
- Cumulative Available Capacity: At Bucket Start Date before scheduling.
- Overload

#### Resolution Suggestions

Check to see if these exceptions cause Late replenishment for sales order or Late replenishment for forecast exception messages; right click the exception message and select Related Exceptions.

In the Planner Workbench, Exception Details window, sort the Late replenishment for sales order and Late replenishment for forecast exception messages by your priority, for example, days late or demand priority.

Check to see if a resource capacity issue caused early processing of the supply order resulted in the material constraint.

Consider:

- Adjusting sales order line schedule date
- Adjusting forecast entry date
- Adjusting supplier capacity
- Using an alternate supplier
- Using a substitute component: In unconstrained plans, make a manual substitution.
- Arranging and recording new substitute items
- Increasing supplier flexfences
- Changing the sales order or forecast quantity
- Modifying the sourcing rule: For example, change sourcing percentage
- Changing lead-time

### 2: Resource constraint

#### Explanation

This exception appears when the planning engine detects unavailability of resource capacity for a specific time period because of the capacity requirements of an end demand. The overload is the amount of resource capacity needed.

The planning engine:

- Issues this exception if profile option MSO: Calculate Constraint Exceptions is Yes
- Does not issue this exception message if the plan planning mode is Constrained (Without Detailed Scheduling)

When the planning engine performs resource/task allocation for an order, it first tries to schedule demands backward from the demand due dates. If there is not enough resource availability in a planning time bucket for it to schedule an activity to meet the demand due date, it generates this Resource constraint exception for the planning time bucket.

Since the order failed backward scheduling, the planning engine forward schedules the order from the plan start date to realistically allocate the resources/tasks. Therefore, the actual resource requirements may be later than the dates on the exception.

There are differences among the plan types:

- Constrained - Enforce due dates and Optimized - Enforce due dates: When the planning engine determines the window in which it wants to schedule the operation, it schedules the operation in that window with an overload if necessary.

- Constrained - Enforce capacity constraints and Optimized - Enforce capacity constraints: When the planning engine determines the window in which it wants to schedule the operation, it determines if there would be an overload if it schedules the operation.

  If there would not be any resource overload, the planning engine does not issue the exception.

If there would be a resource overload, the planning engine issues the exception and reports the quantity of the resource constraint as the quantity reported in the exception message. For example, an end demand may have the following resource constraints associated with it:

- Resource 1: Constraint dates 5 January to 6 January, overload 4 hours

- Resource 2: Constraint dates 7 January to 8 January, overload 2 hours

- Resource 1: Constraint dates 21 January to 27 January, overload 22 hours

You can see the amount of capacity that you need to add at different resources during different time periods in order to satisfy the demand on time. If there are also Material constraint exception messages for this end demand, you may also need to provide adequate supplier capacity.

#### Information Displayed

- Resource

- Organization

- Department

- Supply Order Number: Of the operation and resource.

- Order Type

- Item

- Item Description

- Op-seq. number

- Res-Seq number

- From Date: The start date of the planning time bucket in which the resource is overloaded.

- To Date: The end date of the planning time bucket in which the resource is overloaded.
- Resource Requirement
- Resource Capacity: The available capacity of the resource before scheduling the resource.
- Overload: Resource Capacity - Resource Requirement after scheduling the resource.

**Resolution Suggestions**

Consider:

- Adjusting sales order line schedule date
- Increasing your resource availability:
  - Increase hours available per unit (overtime)
  - Increase the resource assigned units
  - Increase work days (overtime)
  - Changing shift pattern
- Using an alternate resource
- Using an alternate routing
- Modifying the sourcing rules
- Subcontracting
- Using substitute items (with different resources)

### 3: Resource overloaded

**Explanation**

This exception message appears when, in a planning time bucket, both:

- The resource required capacity is more than the resource available capacity
- The load ratio is more than the exception set Over-utilization

  The amount of overload is the minimum duration of the operation for the maximum assigned units of the routing. Load ratio is a percent and its calculation is (Required Capacity/Available Capacity) * 100.

There are differences among the plan types:

- Constrained - Enforce due dates and Optimized - Enforce due dates: Since the planning engine holds the due dates, the material and resources that support them can contribute to resource overload.

- Constrained - Enforce capacity constraints and Optimized - Enforce capacity constraints, the message typically appears only if there are firm supplies or firm operation start or end dates. Typically, these plans change due dates to avoid overloading resources but since the supplies and operation dates are firm, they can contribute to resource overload.

For example, resource R1 has available capacity of 24 hours day (one resource unit for three shifts) on the three daily planning buckets 3 January, 4 January, and 5 January.

The supplies that use resource R1 are:

- S1: Operation sequence 10, resource sequence 10

  Start 3 January 12:00, end 4 January 12:00

  Requirements 24 hours

- S2: Operation sequence 10, resource sequence 10

  Start 4 January 0:00, end 4 January 10:00

  Requirements 10 hours

- S3: Operation sequence 10, resource sequence 10

  Start 4 January 12:00, end 5 January 12:00

  Requirements 24 hours

The exception set Over-utilization for resource R1 is 0 (report load ratios over 100).

Based on the task start and due dates, the planning engine schedules the resource requirements as follows:

- S1: 12 hours on 3 January and 12 hours on 4 January

- S2: 10 hours on 4 January

- S3: 12 hours on 4 January and 12 hours on 5 January

The daily resource requirements are:

- 3 January: 12 hours

  4 January: 34 hours

  5 January: 12 hours

Required capacity exceeds available capacity on 4 January. The planning engine issues this Resource overloaded exception on 4 January with load ratio 142 ((34 / 24) * 100).

#### Information Displayed

The information displayed for this exception message is:

- Organization
- Resource
- Dept/Line
- Start Constraint Date: The start date of the planning time bucket in which the resource is overloaded
- End Constraint Date: The start date of the last planning time bucket in which the resource is overloaded. As long as Load Ratio remains the same in successive planning time buckets, the planning engine uses the same exception and extends the End Constraint Date.
- Load Ratio

#### Resolution Suggestions

Consider:

- Using resolution suggestions for the Resource constraint exception message
- Adjusting the exception set Over-utilization

### 4: Supplier capacity overloaded

#### Explanation

This exception message appears when, in a planning time bucket, the supplier required capacity is more than the supplier available capacity.

The amount of overload is Required capacity - Cumulative available capacity of that bucket. Load ratio is a percent and its calculation is (Required Quantity/Cumulative Available Quantity) * 100.

Since supplier capacity is global, the planning engine issues these exceptions to the owning organization. You can only view this exception in the plan's owning organization.

There are differences among the plan types:

- Unconstrained: Since unconstrained plans assume infinite capacity, the planning engine may issue many instances of this exception.
- Constrained - Enforce due dates and Optimized - Enforce due dates: The planning engine issues this exception if overloading the supplier capacity is the only way to meet the demand date.
- Constrained - Enforce capacity constraints and Optimized - Enforce capacity constraints: The planning engine issues this exception when firm supply orders and

their lower-level component firm supply orders overload the supplier capacity.

For example, supplier A available capacity on days 2 through 10 is 1 per day.

Days 6 and 7 are non-work days.

There are planned orders for buy item B which the planning engine sources from supplier A:

- Dock date day 1, quantity 5
- Dock date day 3, quantity 12
- Dock date day 9, quantity 23

The planning engine issues the following Supplier capacity overloaded exception messages:

- On day 1, the load ratio is 500 (5 * 100) Since there is no available quantity on day 1, this calculation does not include it.
- On day 3, the load ratio is 200 (12/(1*2) * 100). There are two days of suppler capacity available since the previous Supplier capacity overloaded exception message on day 1 (days 2 and 3).
- On day 9, the load ratio is 575 (23/(1*4) *100). There are four days of suppler capacity available since the previous Supplier capacity overloaded exception message on day 3 (days 4, 5, 8, and 9).

#### Information Displayed

The information displayed for this exception message is:

- Organization: The owning organization
- Item
- From Date: The start date of the planning time bucket in which the supplier capacity is overloaded
- To Date: The start date of the last planning time bucket in which the supplier capacity is overloaded. As long as Load Ratio remains the same in successive planning time buckets, the planning engine uses the same exception and extends the To Date.
- Supplier
- Supplier Site
- Load Ratio: The planning engine does not carry supplier capacity overloads from one planning time bucket to the next.

#### Resolution Suggestions

Consider:

- Using resolution suggestions for the Material constraint exception message
- Adjusting the exception set Over-utilization

### 5: Resource underloaded

#### Explanation

This exception message appears when, in a planning time bucket, both:

- The resource required capacity is less than the resource available capacity
- The load ratio is the same as or lower then than the exception set Over-utilization.

Load ratio is a percent and its calculation is (Required Quantity/Cumulative Available Quantity) * 100.

For example, resource R1 has available capacity of 24 hours day (one resource unit for three shifts) on the three daily planning buckets 3 January, 4 January, and 5 January.

The supplies that use resource R1 are:

- S1: Operation sequence 10, resource sequence 10

  Start 3 January 12:00, end 4 January 12:00

  Requirements 24 hours

- S2: Operation sequence 10, resource sequence 10

  Start 4 January 0:00, end 4 January 10:00

  Requirements 10 hours

- S3: Operation sequence 10, resource sequence 10

  Start 4 January 12:00, end 5 January 12:00

  Requirements 24 hours

The exception set Under-utilization for resource R1 is 60 (report load ratios of 60 or less).

Based on the task start and due dates, the planning engine schedules the resource requirements as follows:

- S1: 12 hours on 3 January and 12 hours on 4 January
- S2: 10 hours on 4 January
- S3: 12 hours on 4 January and 12 hours on 5 January

The daily resource requirements are:

- 3 January: 12 hours
- 4 January: 34 hours
- 5 January: 12 hours

The planning engine detects that on both 3 January and 5 January the load ratio is 50 ((12 / 24) * 100) which is lower than the exception set Under-utilization. It issues this Resource underloaded exception for each of those days.

#### Information Displayed

The information displayed for this exception message is:

- Organization
- Resource
- Dept/Line
- Start Constraint Date: The start date of the planning time bucket in which the resource is underloaded.
- End Constraint Date: The start date of the last planning time bucket in which the resource is underloaded. As long as Load Ratio remains the same in successive planning time buckets, the planning engine uses the same exception and extends the End Constraint Date.
- Load Ratio

#### Resolution Suggestions

Consider:

- Adjusting the exception set Under-utilization
- Increasing the workload
- Decreasing available capacity
- Shifting resources to other work centers
- Processing rework
- Executing special projects
- Balancing the loads across planning time buckets

### 6: Batch was started with less than minimum capacity

#### Explanation

This exception message appears when the resource has batching parameters.

The planning engine creates batches that meet the resource minimum batch quantity within the batching window. It converts the quantities of all orders into the unit of measure of the batching resource.

If it cannot find enough orders within the batching window whose quantities make up the minimum batch quantity, it creates the batch with less than the minimum quantity and issues this exception.

For example, batching resource R1 has characteristics:

- Minimum batch capacity: 30
  - Maximum batch capacity: 100
  - Batch capacity unit of measure: M3 (cubic meters)
  - Batching window size: 3 days

The physical attributes of item A are:

- Weight: 15 KG
- Volume: 4 F3 (cubic feet)

The planning engine schedules supply orders for item A and its resource R1:

- S1: Operation sequence 10, resource sequence 10

  Quantity 100

  Volume = 11.34 M3

  Needs to be scheduled on 3 January

- S2: Operation sequence 10, resource sequence 10

  Quantity 80

  Volume 9.07 M3

  Needs to be scheduled on 5 January

- S3: Operation sequence 10, resource sequence 10

  Quantity 250

  Volume 28.35 M3

  Needs to be scheduled on 7 January

The planning engine schedules a batch on 3 January with S1.

The batch size is now 11.34 M3.

It schedules S2 as follows:

- Sets S2's batching window relative to its scheduling date: S2's scheduling date is 5 January so the batching window is from 2 January to 8 January.
- Searches within the batching window for an existing batch that still has room: The batch with S1 (started on 3 January) is within S2's batching window.
- Moves in S2 to 3 January and combines it with S1 in the same batch.

The batch size is now 20.41 M3 (11.34 M3 + 9.07 M3).

It schedules S3 as follows:

- Sets S3's batching window relative to its scheduling date: S3's scheduling date is 7 January so the batching window is from 4 January to 10 January.
- Searches within the batching window for an existing batch that still has room. There are no existing batches within S3's batching window.
- Creates a separate batch containing only S3 then continues scheduling other supplies.

There are no other supplies for the planning engine to schedule.

The batch size for the batch started on 3 January is 20.41 and the minimum batch capacity is 30. The planning engine issues this Batch was started with less than minimum capacity exception message against the batch started on 3 January.

#### Information Displayed

The information displayed for this exception message is:

- Batch Number
- Resource
- Dept/Line
- Min Capacity: The minimum batch capacity in the unit of measure of the item's volume
- Max Capacity: The maximum batch capacity in the unit of measure of the item's volume
- From Date: The batch start date
- To Date: The batch finish date.
- Load Ratio: Required Capacity/Maximum Batch Capacity
- Required Capacity: For all activities in the batch in the unit of measure of the item's volume

#### Resolution Suggestions

Consider:

- Reducing the number of days in the planning time fence: Rather than creating new batches, the planning engine adds orders to batches and moves in later orders to meet the minimum batch capacity.
- Increasing the size of the batching window: The planning engine has more candidates from which to select for the batches.
- Unfirming firm orders: The planning engine does not pre-process them into batches.

### 7: Batch was started with more than maximum capacity

#### Explanation

This exception message appears when the resource has batching parameters and the planning engine creates a batch with more than the maximum quantity. It occurs when:

- There are firm orders
- The only way to meet a demand due date in a Constrained - Enforce due dates plan is to violate the maximum batch capacity
- The only way to meet a demand due date in a Constrained - Enforce capacity constraints plan with Resource Constraint selected and Material Constraint cleared is to violate the maximum batch capacity

The planning engine converts the quantities of all orders into the unit of measure of the batching resource.

For example, batching resource R1 has characteristics:

- Minimum batch capacity: 30
  - Maximum batch capacity: 100
  - Batch capacity unit of measure: M3 (cubic meters)
  - Batching window size: 3 days

The physical attributes of item A are:

- Weight: 15 KG
- Volume: 4 F3 (cubic feet)

The planning engine converts item A volume from 4 F3 to 0.1134 M3.

The planning engine schedules supply orders for item A and its resource R1:

- S1 - firm: Operation sequence 10, resource sequence 10

  Quantity 600

  Volume = 68.04 M3

  Needs to be scheduled on 5 January

- S2 - firm: Operation sequence 10, resource sequence 10

  Quantity 600

  Volume 68.04 M3

  Needs to be scheduled on 5 January

The planning engine schedules a batch on 5 January with S1. It cannot change the date of a firm supply order to move it into another batch.

The batch size is now 68.04 M3.

The planning engine schedules adds S2 to the batch started on 5 January. It cannot change the date of a firm supply order to move it into another batch and cannot start another batch.

The batch size is now 136.08 M3 (68.04 M3 + 68.04 M3).

There are no other supplies for the planning engine to schedule.

The batch size for the batch started on 5 January is 136.08 and the maximum batch capacity is 100. The planning engine issues this Batch was started with more than maximum capacity exception message against the batch started on 5 January.

#### Information Displayed

The information displayed for this exception message is:

- Batch Number
- Resource
- Dept/Line
- Min Capacity: The minimum batch capacity in the unit of measure of the item's volume
- Max Capacity: The maximum batch capacity in the unit of measure of the item's volume
- From Date: The batch start date
- To Date: The batch finish date
- Load Ratio: Required Capacity/Maximum Batch Capacity

- Required Capacity: For all activities in the batch in the unit of measure of the item's volume

#### Resolution Suggestions

Consider unfirming some firm orders. Rather than violating the maximum batch capacity, the planning engine will move unfirm orders to another date.

### 8: Operation Hard Link Violation

#### Explanation

This exception message appears when a user-defined operation minimum time offset, maximum time offset, or item shelf life days cannot be respected due to firming of requirements or orders. It can also appear when a negative minimum time offset or a negative maximum time offset is violated because of the upstream operation start time boundary.

#### Information Displayed

The information displayed for this exception message is: .....

- From
  - Item
  - Organization
  - Supply order number
  - Operation sequence number
  - Resource sequence number
- To
  - Item
  - Organization
  - Supply order number
  - Operation sequence number
  - Resource sequence number
- Minimum time offset
- Maximum time offset
- Shelf life days
- Actual offset

#### Resolution Suggestions

Navigate to the Supply/Demand window or the Resource Requirements window to identify causes and possible solutions.

### 9: Late replenishment to maintenance work order demand

#### Explanation

The format of this exception message is *WO-1 Requires Item A on Day 1 and pegged supply will not be available until Day 9*.

This exception message appears in a constrained plan when the planning engine detects that the supplies for a maintenance work order demand are due later than the maintenance work order demand. The demand satisfied date is the latest due date of the supplies pegged directly to an end demand. The planning engine issues this exception message against a maintenance work order demand when its demand satisfied date is later than its schedule date.

#### Information Displayed

The information displayed for this exception message is:

- Organization: For the supply order
- End Item: Work Order item
- Quantity: For the supply order
- Work Order Number
- Priority
- Due Date: For the supply order
- Demand Date: The demand due date
- Days Late: Due Date - Demand Date.

You can search the occurrences of this exception message on Visit.

#### Resolution Suggestions

See Late Sales Orders and Forecasts Exception Group > exception message 4: Late replenishment for sales order resolution suggestions.

### 10: Maintenance work order resource overload

#### Explanation

The format of this exception message is *WO-1 would cause Resource B to be overloaded for Days 5,6 and 7*.

This exception message appears when, in a planning time bucket, both occur:

- The resource required capacity is more than the resource available capacity

- The load ratio is more than the exception set Over-utilization

Load ratio is a percent and its calculation is (Required Capacity/Available Capacity) * 100.

This exception appears when the planning engine detects an overload condition of resource capacity for a specific time period and maintenance work order because of the capacity requirements the maintenance work order. This exception is only triggered for the set or maintenance work orders that have not been allocated their required resources.

**Information Displayed**

The information displayed for this exception message is:

- Work Order Number
- Resource
- Organization: Of the resource
- Dept/Line
- Start Constraint Date: The start date of the planning time bucket in which the resource is overloaded. This field does not show the start date of the activity.
- End Constraint Date: The start date of the last planning time bucket in which the resource is overloaded. As long as Overload remains the same in successive planning time buckets, the planning engine uses the same exception and extends the End Constraint Date. This field does not show the end date of the activity.
- Overload: Required Capacity - Available Capacity

You can search the occurrences of this exception message on Visit.

**Resolution Suggestions**

See exception message 3: Resource overloaded resolution suggestions.

### 11: Premium resource capacity is utilized

**Explanation**

Planning issues this exception when it plans to use premium resource capacity.

**Information Displayed**

- Organization: The organization where the resource exists.
- Department: The Department where the resource exists.
- Resource: The resource name.
- Start Constraint Date: Start date of the bucket where premium capacity is used.

- End Constraint Date: End date of the bucket where premium capacity is used.
- Available Hours (Total): The total hours available in the bucket.
- Available Hours (Regular): The regular hours available in the bucket.
- Required Hours: The required hours in the bucket.
- Load Ratio (Total Hours): Required Hours / Available Hours (Total).
- Load Ratio (Regular Hours): Required Hours / Available Hours (Regular)

#### Resolution Suggestions

Review the situation to determine the effect and appropriateness of the Planning engine's action.

Consider longer-term investigation and coordination between regular capacity and expected supply.

### 12: Warehouse Capacity Exceeded

#### Explanation

This exception is issued when Planning recommends any of the following actions regarding warehouse capacity constraints:

- Ship items earlier and move to a downstream warehouse.
- Move pre-build stock to a downstream organization warehouse.
- Ignore safety stock demands.
- Stop planning supply inventory.

#### Information Displayed

- Organization
- Category: This field is blank if the plan is constrained by the warehouse capacity at the organization level.
- Start Constraint Date
- End Constraint Date
- Required Warehouse Capacity
- Available Warehouse Capacity
- Load Ratio: Ratio of Required Warehouse Capacity over Available Warehouse Capacity

**Resolution Suggestions**

- Review the situation to determine the effect and appropriateness of the planning engine's recommendation.
- Consider longer-term investigation and coordination between warehouse capacity and expected supply.

## Transportation and Distribution Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

For cells that contain (1), note that orders with compression days and overloaded exceptions (resource overloaded, supplier capacity overloaded, and transportation resource overloaded) are generated for constrained and optimized plans only when there are firm supplies in the plans or if you select the Enforce Demand Due Dates plan option.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Transportation weight constraint | No | No | Yes | Yes | Yes |
| 2: Transportation volume constraint | No | No | Yes | Yes | Yes |
| 3: Transportation resource's weight overloaded (1) | Yes | Yes | Yes | Yes | Yes |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 4: Transportation resource's volume overloaded (1) | Yes | Yes | Yes | Yes | Yes |

### 1: Transportation weight constraint

**Explanation**

This exception appears when the planning engine detects unavailability of transportation weight capacity for a specific time period because of the capacity requirements of supplies pegged to an end demand. The overload is the amount of extra resource capacity needed.

The planning engine issues this exception if profile option MSO: Calculate Constraint Exceptions is Yes.

The plan parameter Resource Capacity includes the transportation resources. In an enforce capacity constraints plan with Resource Constraints cleared and Material Constraints selected, the planning engine may calculate transportation weight load and issue exception messages.

If you do not want to use transportation weight capacity as a constraint, either leave its definitions blank (the planning engine assumes infinite capacity) or enter a large amount. Since a large amount affects plan performance, we recommend leaving its definitions blank.

The calculation for overload is Required Capacity - Available Capacity.

For example, transportation resource TR1 has characteristics:

- Weight capacity: 100 LB per day
- Volume capacity = 100 F3 (cubic feet)/day

The physical attributes of item A are:

- Weight: 1 LB
- Volume: 1 F3 (cubic feet)

There is a shipment of item A1 for quantity 1000 on 3 January from organization M1 to organization M2.

The planning engine detects not enough transportation weight capacity on 3 January. In an enforce capacity constraint plan, the planning engine moves the shipment to dates on which there is enough transportation capacity.

The planning engine:

- Accumulates available transportation weight capacity
- Schedules the shipment on 13 January
- Issues this Transportation weight constraint exception message for 3 January with overload 900 (1000 required - 100 available)

#### Information Displayed

The information displayed for this exception message is:

- To Organization: Destination organization
- From Organization: Source organization
- Ship Method
- Constraint Date
- Overload

#### Resolution Suggestions

Consider:

- Adjusting your transportation resource capacity
- Using a different ship method
- Using a different shipping calendar

### 2: Transportation volume constraint

#### Explanation

This exception appears when the planning engine detects unavailability of transportation volume capacity for a specific time period because of the capacity requirements of supplies pegged to an end demand. The overload is the amount of extra resource capacity needed.

The planning engine issues this exception if profile option MSO: Calculate Constraint Exceptions is Yes.

The plan parameter Resource Capacity includes the transportation resources. In an enforce capacity constraints plan with Resource Constraints cleared and Material Constraints selected, the planning engine may calculate transportation volume load and

issue exception messages.

If you do not want to use transportation volume capacity as a constraint, either leave its definitions blank (the planning engine assumes infinite capacity) or enter a large amount. Since a large amount affects plan performance, we recommend leaving its definitions blank.

The calculation for overload is Required Capacity - Available Capacity.

For example, transportation resource TR1 has characteristics:

- Weight capacity: 100 LB per day
- Volume capacity = 100 F3 (cubic feet)/day

The physical attributes of item A are:

- Weight: 1 LB
- Volume: 1 F3 (cubic feet)

There is a shipment of item A1 for quantity 1000 on 3 January from organization M1 to organization M2.

The planning engine detects not enough transportation volume capacity on 3 January. In an enforce capacity constraint plan, the planning engine moves the shipment to dates on which there is enough transportation capacity.

The planning engine:

- Accumulates available transportation capacity
- Schedules the shipment on 13 January
- Issues this Transportation volume constraint exception message for 3 January with overload 900 (1000 required - 100 available)

#### Information Displayed

The information displayed for this exception message is:

- To Organization: Destination organization
- From Organization: Source organization
- Ship Method
- Constraint Date
- Overload

#### Resolution Suggestions

Consider:

- Adjusting your transportation resource capacity
- Using a different ship method
- Using a different shipping calendar

### 3: Transportation resource's weight overloaded

**Explanation**

This exception message appears when, in a planning time bucket, the transportation resource required weight capacity is more than the transportation resource available weight capacity.

The plan parameter Resource Capacity includes the transportation resources. In an enforce capacity constraints plan with Resource Constraints cleared and Material Constraints selected, the planning engine may calculate transportation resource load and issue exception messages.

If you do not want to use transportation capacity as a constraint, either leave its definitions blank (the planning engine assumes infinite capacity) or enter a large amount. Since a large amount affects plan performance, we recommend leaving its definitions blank.

There are differences among the plan types:

- Unconstrained: The planning engine issues this exception frequently because unconstrained plans do not consider transportation capacity.
- Constrained - Enforce due dates and Optimized - Enforce due dates: The planning engine issues this exception if overloading the transportation resource capacity is the only way to meet the demand date.
- Constrained - Enforce capacity constraints and Optimized - Enforce capacity constraints: The planning engine issues this exception when firm jobs overload the transportation capacity.

The calculation for:

- Transportation resource required weight capacity is Shipment quantity * Item weight
- Utilization percent is (Required Capacity/Available Capacity) * 100

For example, transportation resource TR1 has available weight capacity of 100 LB per day.

The physical attributes of item A are:

- Weight: 1 LB
- Volume: 1 F3 (cubic feet)

There is a shipment of item A1 for quantity 1000 of Item A1 on 3 January from organization M1 to organization M2.

In an unconstrained plan, the planning engine:

- Schedules this shipment on 3 January to satisfy the demand on time
- Issues this Transportation resource's weight overloaded exception message with overload is 900 (1000 required - 100 available)

#### Information Displayed

The information displayed for this exception message is:

- Constraint Start Date: The start date of the planning time bucket in which the transportation resource weight constraint occurs.
- Constraint End Date: The end date of the planning time bucket in which the transportation resource weight constraint occurs.
- Supply Order Number: Of the transfer supply.
- Order Type
- Item
- Item Description
- Ship Date
- Shipment Weight
- Shipment Weight UOM
- Weight Capacity overload
- Ship Method
- Source Org
- Destination Org
- Available Weight Capacity/Day: The available weight capacity on Ship Date before scheduling of the overloading shipment.

#### Resolution Suggestions

Consider:

- Adjusting your transportation resource capacity
- Using a different ship method

- Using a different shipping calendar

#### 4: Transportation resource's volume overloaded

**Explanation**

This exception message appears when, in a planning time bucket, the transportation resource required volume capacity is more than the transportation resource available volume capacity.

The plan parameter Resource Capacity includes the transportation resources. In an enforce capacity constraints plan with Resource Constraints cleared and Material Constraints selected, the planning engine may calculate transportation resource load and issue exception messages.

If you do not want to use transportation capacity as a constraint, either leave its definitions blank (the planning engine assumes infinite capacity) or enter a large amount. Since a large amount affects plan performance, we recommend leaving its definitions blank.

There are differences among the plan types:

- Unconstrained: The planning engine issues this exception frequently because unconstrained plans do not consider transportation capacity.
- Constrained - Enforce due dates and Optimized - Enforce due dates: The planning engine issues this exception if overloading the transportation resource capacity is the only way to meet the demand date.
- Constrained - Enforce capacity constraints and Optimized - Enforce capacity constraints: The planning engine issues this exception when firm jobs overload the transportation capacity.

The calculation for:

- Transportation resource required volume capacity is Shipment quantity * Item volume
- Utilization percent is (Required Capacity/Available Capacity) * 100

For example, transportation resource TR1 has available volume capacity of 100 F3 per day.

The physical attributes of item A are:

- Weight: 1 LB
- Volume: 1 F3 (cubic feet)

There is a shipment of item A1 for quantity 1000 of Item A1 on 3 January from organization M1 to organization M2.

In an unconstrained plan, the planning engine:

- Schedules this shipment on 3 January to satisfy the demand on time
- Issues this Transportation resource's volume overloaded exception message with overload is 900 (1000 required - 100 available)

#### Information Displayed

The information displayed for this exception message is:

- Constraint Start Date: The start date of the planning time bucket in which the transportation resource volume constraint occurs.
- Constraint End Date: The end date of the planning time bucket in which the transportation resource volume constraint occurs.
- Supply Order Number: Of the transfer supply.
- Order Type
- Item
- Item Description
- Ship Date
- Shipment Volume
- Shipment Volume UOM
- Volume Capacity overload
- Ship Method
- Source Org
- Destination Org
- Available Volume Capacity/Day: The available volume capacity on Ship Date before scheduling of the overloading shipment.

#### Resolution Suggestions

Consider:

- Adjusting your transportation resource capacity
- Using a different ship method
- Using a different shipping calendar

## Shortages and Excess Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Items with a shortage | Yes | Yes | Yes | Yes | Yes |
| 2: Items below safety stock | Yes | Yes | Yes | Yes | Yes |
| 3: Items with excess inventory | Yes | Yes | Yes | Yes | Yes |

**Asset Intensive Planning**

These exception messages also occur against items with part condition Defective.

When you release a planned repair order, you have to scrap the defective components. This creates a shortage of the defective part.

These exception messages also show the part condition.

Resolution suggestions:

- Include other repairable defective parts that are not included in the plan
- Cancel the repair order and purchase the part instead

To see this exception message, in exception set, set Shortage Exceptions exception time period.

### 1: Items with a shortage

**Explanation**

This exception message appears when projected available balance for a planning bucket is negative and is within the exception set Shortage Exceptions exception time period. Projected available balance is Previous bucket projected available balance + Sum of supply quantities with due date in this planning time bucket - Sum of demand

quantities with due date (excluding safety stock demand) in this planning time bucket.

There are differences among the plan types:

- Unconstrained: The planning engine can peg late supplies to demands at any level in the supply chain. Therefore, you can see item shortages in several levels of the supply chain bill of material.

- Unconstrained, Constrained - Enforce due dates, Optimized - Enforce due dates: The planning engine can compress lead-times and violate planning time fences to meet demands. Item shortages typically occur when there are firm orders whose due dates are too late to meet the demand.

- Constrained - Enforce capacity constraints and Optimized - Enforce capacity constraints: The demands are most likely independent (because the planning engine pushes out dependent demand due dates). Due to lead-time, planning time fence, resource capacity constraints, or supplier capacity constraints, the supply due dates are later than the end demand due date.

For example, item A1 in organization M1 has the following demands and supplies in daily buckets:

- 3 January

  Beginning available (on hand) balance 0.

  Planned order 1: Quantity 100

  Planned order 3: Quantity 200

  Discrete job 1: Quantity 300

  Planned order demand 1 (dependent demand): Quantity 250

  Forecast demand 1: Quantity 200

- 4 January

  Planned order 4: Quantity 100

  Planned order demand 2 (dependent demand): Quantity 250

  Forecast demand 2 = 200

- 5 January

  No demands or supplies

- 6 January

  Planned order 5: Quantity 200

This table shows the horizontal view of this scenario.

| Schedule Entity | Beg | 3 January | 4 January | 5 January | 6 January |
|---|---|---|---|---|---|
| Requirements | - | 450 | 450 | 0 | 0 |
| Supply orders | - | 300 | 0 | 0 | 0 |
| Planned orders | - | 300 | 100 | 0 | 200 |
| Projected available balance | 0 | 150 | (200) | (200) | 0 |

The planning engine issues this Item with a Shortage exception message for quantity -200 from 4 January to 5 January.

#### Information Displayed

The information displayed for this exception message is:

- Organization
- Item
- Item Description
- Quantity: Projected available balance
- From Date: The start date of the planning time bucket in which the negative projected available balance occurs.
- To Date: The start date of the last planning time bucket in which the negative projected available balance occurs. As long as Quantity remains the same in successive planning time buckets, the planning engine uses the same exception and extends the To Date.

#### Resolution Suggestions

Consider:

- Expediting the late supply
- Adjusting the sales order schedule date

### 2: Items below safety stock

#### Explanation

This exception message appears when projected available balance for a planning bucket is below the specified safety stock level for the planning bucket. Projected available balance is Previous bucket projected available balance + Sum of supply quantities with due date in this planning time bucket - Sum of demand quantities with due date in this planning time bucket. See Safety Stock, page 4-129.

The planning engine does not consult the exception set for the item.

For example, there are sales orders at organization M1 on item A for quantity 200 past due and quantity 150 in bucket 4.

Item A has safety stock level 73 for buckets 1 to 3 and 45 for bucket 4.

There is a planned order for item A for 395 in bucket 4.

The planning engine creates an Items below safety stock exception for buckets 1 to 3. The planned order in bucket 4 meets the sales order demands and the safety stock.

| Schedule Entity | Past | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Org M1: Sales orders | 200 | - | - | - | 150 |
| Org M1: Safety stock level | - | 73 | 73 | 73 | 45 |
| Org M1: Planned orders | - | - | - | - | 395 |

#### Information Displayed

The information displayed for the exception message is:

- Organization
- Item
- Item Description
- From Date: The start date of the planning time bucket with projected available balance below safety stock.
- To Date: The start date of the last planning time bucket with projected available balance below safety stock. As long as Quantity remains the same in successive

planning time buckets, the planning engine uses the same exception and extends the To Date.

- Quantity: Projected Available Balance - Specified Safety Stock

#### Resolution Suggestions

Consider expediting supply orders.

### 3: Items with excess inventory

#### Explanation

The planning generates this message when projected available balance for a bucket is greater than the exception set Excess Quantity value for the item and within the exception set Excess Exceptions exception time period. Projected available balance is Previous bucket projected available balance + Sum of supply quantities with due date in this planning time bucket - Sum of demand quantities with due date in this planning time bucket.

For example, item A1 in organization M1 has exception set information:

- Excess Quantity: 1
- Excess Exceptions Time Period: 5 days

This table shows a horizontal view of item A1.

| Schedule Entity | Beg | 3 January | 4 January | 5 January | 6 January |
|---|---|---|---|---|---|
| Requirements | - | 450 | 450 | 0 | 0 |
| Supply orders | - | 300 | 0 | 0 | 0 |
| Planned orders | - | 300 | 100 | 0 | 200 |
| Projected available balance | 0 | 150 | (200) | (200) | 0 |

The planning engine issues this Item with excess inventory exception message for quantity 150 on 3 January.

#### Information Displayed

The information displayed for this exception message is:

- Organization

- Item
- Item Description
- Quantity: Projected Available Balance - Exception set Excess Quantity
- From Date: The start date of the planning time bucket with excess projected available balance
- To Date: The start date of the last planning time bucket with excess projected available balance. As long as Quantity remains the same in successive planning time buckets, the planning engine uses the same exception and extends the To Date.

#### Resolution Suggestions

Consider:

- Canceling unneeded supply orders
- Transferring the material to another facility

## Reschedules Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

For cells that contain (1), note that orders with compression days and overloaded exceptions (resource overloaded, supplier capacity overloaded, and transportation resource overloaded) are generated for constrained and optimized plans only when there are firm supplies in the plans or if you select the Enforce Demand Due Dates plan option.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Past due orders | Yes | Yes | Yes | Yes | No |
| 2: Orders to be rescheduled out | Yes | Yes | Yes | Yes | No |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 3: Orders to be cancelled | Yes | Yes | Yes | Yes | No |
| 4: Orders to be rescheduled in | Yes | Yes | Yes | Yes | No |
| 5: Orders with compression days (1) | Yes | Yes | Yes | Yes | No |
| 6: Orders scheduled to next inventory point | Yes | Yes | Yes | Yes | No |
| 7: Order is firmed late | No | Yes | Yes | Yes | Yes |
| 8: Requirement is firmed late | No | Yes | Yes | Yes | Yes |
| 9: Order is firmed early | No | Yes | Yes | Yes | Yes |
| 10: Requirement is firmed early | No | Yes | Yes | Yes | Yes |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 11: Shared supply scheduled late | No | Yes | Yes | Yes | Yes |

The planning engine follows these rules when it recommends rescheduling purchase orders and purchase requisitions:

- Purchase orders, reschedule out: The planning engine may not reschedule out purchase orders because of lead-time constraints, of insufficient capacity between plan start date and the dock date, or the order date or start date is past due. It may reschedule out purchase orders that are pegged to demands whose due dates have moved out.

- Purchase orders, reschedule in: The planning engine may not reschedule in purchase orders within supplier lead-time or that are past due. It may reschedule in purchase orders outside supplier lead-time but the new order date must not be past due. The planning engine does not consider capacity.

- Purchase requisitions, reschedule out: The planning engine may reschedule out purchase requisitions because of lead-time constraints, of insufficient capacity between plan start date and the dock date, the order date or start date is past due, or pegging to demands whose due dates have moved out.

- Purchase requisitions, reschedule in: The planning engine may not reschedule in purchase requisition within supplier lead-time or are past due. It may reschedule in purchase orders outside supplier lead-time but the new order date must not be past due and the requisition must have sufficient accumulated capacity.

The planning engine must compress the lead-time for subsequent supplies and may recommend rescheduling in Constrained - Enforce demand due date plans or when a requirement for this item results from a firmed supply.

### 1: Past due orders

#### Explanation

This exception message appears when the planning engine detects supply orders and planned orders which have order (start) dates and due dates in the past (before the planning horizon start date).

For non-firmed supply orders, the planning engine also issues an Orders to be

rescheduled out exception message.

The planning engine schedules all operations of a past due order beyond the planning horizon start date. If the order is firm, the planning engine retains the order's firmed duration as it schedules all its operations beyond the planning horizon start date.

There may be dependent demand resulting from past due orders. If you clear plan option Lot for Lot, the planning engine groups the demand which results by item and creates one planned order per item (or more depending on the plan options) to meet it. If you select it, the planning engine creates one planned order for each dependent demand.

#### Information Displayed

The information displayed for this exception message is:

- Organization
- Item
- Order Number
- Old Date: The current due date
- Date: The suggested due date. It is usually the planning horizon start date but it can be later if the schedules receipt is not firm and is not needed until a later planning time bucket.
- Quantity
- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

#### Resolution Suggestions

Check the end item demand which causes the supply order.

Consider:

- Changing the demand due date
- For supply orders, expediting
- For supply orders, cancelling

### 2: Orders to be rescheduled out

#### Explanation

This exception message appears when the planning engine suggests that you reschedule an existing supply order (scheduled receipt) to a later date to avoid carrying excess inventory. It occurs when the planning engine detects a non-firm existing supply order with a due date that is earlier than it suggests (suggested due date).

The planning engine does not issue this recommendation for firm existing supply orders.

The planning engine continues to plan lower bill of material levels as if you accept the suggestion.

For example, item A1 at organization M1 has the following demand and supply:

- A non-firm discrete job for quantity 100 due on 5 January
- A sales order line for quantity 100 due on 8 January

The planning engine issues this Orders to be rescheduled out exception against the discrete job and suggests a new date of 8 January.

Item attribute Acceptable Early Days has no effect on this exception message. For:

- An unconstrained plan: The planning engine keeps the due date date and does not issue this exception message.
- A constrained plan: The planning engine ignores it and uses its scheduling logic.

#### Information Displayed

The information displayed for this exception message is:

- Organization
- Item
- Order Number
- From Date: The current due date
- To Date: The suggested due date
- Quantity
- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date

- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

#### Resolution Suggestions

Consider reviewing the recommendations for the item and then rescheduling the order out. The planning engine continues to plan lower level bills of material as if you accept the suggestion.

### 3: Orders to be cancelled

#### Explanation

This exception message appears when the planning engine suggests that you cancel an existing supply order.

It occurs when the planning engine detects a non-firm existing supply order that you do not need to satisfy demand or safety stock requirements.

The planning engine continues to plan lower bill of material levels as if you accept the suggestion.

The following diagram shows a scenario in organization M1:

- There is a sales order at organization M1 on Item A for quantity 100 in bucket 3.
- There is a forecast at organization M1 on item A for quantity 100 in bucket 4.
- There are discrete jobs at organization M1 for item A for quantity 150 in bucket 1, 50 in bucket 5, and 100 in bucket 8.
- The planning engine pegs 100 of the supply of 150 in bucket 1 to the sales order for 100 in bucket 3. It creates an Early replenishment for sales order exception message against the supply of 150 in bucket 1.
- The planning engine pegs 50 of the supply of 150 in bucket 1 to the forecast for 100 in bucket 4.
- The planning engine pegs the entire supply of 50 in bucket 5 to the forecast for 100 in bucket 4. It creates an Order to be rescheduled in exception message against the supply of 50 in bucket 5 from bucket 5 to bucket 4.
- The planning engine cannot find any demand to which to peg the supply of 100 in bucket 8. It creates an Orders to be cancelled exception message against the supply of 100 in bucket 8.

| Schedule Entity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Org M1: Sales orders | - | - | 100 | - | - | - | - | - |
| Org M1: Forecasts | - | - | - | 100 | - | - | - | - |
| Org M1: Supply orders | 150 | - | - | - | 50 | - | - | 100 |

#### Information Displayed

The information displayed for this exception message is:

- Org
- Item
- Order Number
- Date: The due date
- Quantity
- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

#### Resolution Suggestions

Consider reviewing the recommendations for the item and then cancelling the order. The planning engine continues to plan lower level bills of material as if you accept the suggestion.

### 4: Orders to be rescheduled in

#### Explanation

This exception message appears when the planning engine suggests that you reschedule an existing supply order to an earlier date. It occurs when the planning

engine detects a non-firm existing supply order with a due date that is later than it suggests (suggested order date).

The planning engine continues to plan lower bill of material levels as if you accept the suggestion.

For example, there is a sales order at organization M1 on Item A for quantity 100 in bucket 3.

There is a forecast at organization M1 on item A for quantity 100 in bucket 4.

There are discrete jobs at organization M1 for item A for 150 in bucket 1, 50 in bucket 5, and 100 in bucket 8.

The planning engine pegs 100 of the supply of 150 in bucket 1 to the sales order for 100 in bucket 3. It creates an Early replenishment for sales order exception message against the supply of 150 in bucket 1.

The planning engine pegs 50 of the supply of 150 in bucket 1 to the forecast for 100 in bucket 4.

The planning engine pegs the entire supply of 50 in bucket 5 to the forecast for 100 in bucket 4. It creates an Order to be rescheduled in exception message against the supply of 50 in bucket 5 from bucket 5 to bucket 4.

The planning engine cannot find any demand to which to peg the supply of 100 in bucket 8. It creates an Orders to be cancelled exception message against the supply of 100 in bucket 8.

| Schedule Entity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Org M1: Sales orders | - | - | 100 | - | - | - | - | - |
| Org M1: Forecasts | - | - | - | 100 | - | - | - | - |
| Org M1: Supply orders | 150 | - | - | - | 50 | - | - | 100 |

#### Information Displayed

The information displayed for this exception message is:

- Organization
- Item
- Order Number

- From Date: The current due date
- To Date: The suggested due date
- Quantity
- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

#### Resolution Suggestions

Consider reviewing the recommendations for the item and then rescheduling the order in. The planning engine continues to plan lower level bills of material as if you accept the suggestion.

### 5: Orders with compression days

#### Explanation

This exception message appears when the planning engine detects that a supply order needs to be completed in less time that its minimum processing time in order for it to meet a demand. If the planning engine plans the order according to its lead-time, it would start in the past (before the planning horizon start date).

The key attributes of this exception message are:

- Compression Days
- Days in the Past

**Compression Days**

It is all of these:

- The number of days of work that you need to make up on the order to respect its due date.
- The number of days that the order would be scheduled in the past (before the planning horizon start date).
- The number of days that the order needs to be compressed if its order date is the planning horizon start date.

The planning engine calculates it for unconstrained and constrained plans.

To calculate compression days, the planning engine:

- Uses the organization's manufacturing calendar
- Backward schedules orders using item lead-time offset (for unconstrained plans) or routing level processing times (for constrained plans) ; it uses the 24x7 calendar.
- Calculates Item/routing lead time – (Suggested Due Date – Plan Start Date).

  The planning solver never compresses an order for more days then the lead time.

A supply order with compression days at a higher level of the supply chain bill of material leads to supply orders with compression days at lower levels of the supply chain bill of material. To calculate the lower level compression days, the planning engine sets each lower level dependent demand due on the planning horizon start date and backward schedules its supply order from that date. The compression days for each supply order represents the amount of compression time needed for that order alone.

For example, C pegs to B which pegs to A which pegs to end demand. Lead time offset is 3 for A, B, and C. The supply order for A has 1 compression day. The supply order for B has 3 (day 0 - 3 days lead-time) compression days and the supply order for C has 3 (day 0 - 3 days lead-time) compression days.

For purchase orders and requisitions with reschedule in recommendations, the compression days is the number of days that the planning solver reschedules in the supply. Non-rescheduled and rescheduled out purchase orders are not compressed supplies.

**Days in the Past**

It is the number of days in the past the order needs to start to meet the demand on time.

The planning engine calculates it for Constrained (Classic) plans.

A supply order with days in the past at a higher level of the supply chain bill of material leads to supply orders with days in the past at lower levels of the supply chain bill of material. It sets each lower level dependent demand due on the start date of the supply which caused it (which is prior to the planning horizon start date) and backward schedules its supply order from that date. The compression days for each supply order represents the time difference between the order start date and the planning horizon start date. This method calculates compression for an order in relation to its higher level supply orders.

For example, C pegs to B which pegs to A which pegs to end demand. Lead time offset is 3 for A, B, and C. The supply order for A has 1 compression day, the supply order for B has 4 (day 0 - 1 - 3 days lead-time) days in the past and the supply order for C has 7 (day 0 - 4 - 3 days lead-time) days in the past.

**Plan Types**

There are differences among the plan types:

- Unconstrained: The planning engine may compress supplies that need to be

rescheduled in and planned orders if there is not enough time between the planning horizon start date and the demand date.

- Constrained (Classic) - Enforce capacity constraints and Optimized - Enforce capacity constraints: The planning engine moves out demands (other than those from firm supplies) to avoid compression of the supplies pegged to the demands. It creates Late replenishment for sales orders and Late replenishment for forecast exception messages.

- Constrained (Classic) - Enforce due dates and Optimized - Enforce due dates: The planning engine may compress scheduled receipts and planned orders during the scheduling process while trying to meet the demand due date. In some cases, it may schedule supplies within the planning time fence.

For example:

- Launch an unconstrained plan with plan start date of Wednesday.

- The planning engine detects an unsatisfied demand for Friday and creates a planned order due on Friday.

- It calculates lead-time offset for the item as three days and calculates the order date for Tuesday.

- It sets the order date to Wednesday and issues this exception with one compression day.

#### Information Displayed

The information displayed for this exception message is:

- Organization

- Item

- Order number

- Date: The due date

- Quantity

- Compression Days

- Days in the Past

- Schedule Ship Date

- Schedule Arrival Date

- Request Ship Date

- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

#### Resolution Suggestions

Consider changing the demand due date to a later date. The planning engine continues to plan as if you accept the suggestion.

If the exception occurs on a transfer order, use the Supply/Demand window for visibility into the destination organization. You can take action either at the source or destination organization.

### 6: Orders scheduled to next inventory point

#### Explanation

This exception message appears for plans:

- With items that have item attribute Planned Inventory Point selected
- With plan option Move Jobs to PIP selected
- In which orders are created to move inventory to the next planned inventory point

When the planning engine finds excess supply that needs to be cancelled at an upstream point that is not a planned inventory point, it:

- Creates an order to move this supply to the downstream planned inventory point
- Issues this Orders scheduled to next inventory point exception message

If the excess supply does not meet the criteria for this exception message, the planning engine issues an Orders to be cancelled exception.

For example, item A uses one component (C).

There are three discrete jobs on item C for quantity 50 due in bucket 10.

There are two MDS entries on item A for quantity 50 in buckets 12 and 13.

The planning engine pegs two of the discrete jobs to the MDS entries.

Since item A is a planned inventory point, the planning engine schedules the third job to item A rather than cancelling it.

| Schedule Entity | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|
| Org M1, Item C: Discrete jobs | 50<br>50<br>50 | - | - | - | - |
| Org M1, Item A: MDS | - | - | 50 | 50 | - |

#### Information Displayed

The information displayed for this exception message is:

- Org
- Item: In the created order
- Planned Inventory Point: The item marked as a PIP item at the point to which the order is scheduled
- Date: The order due date
- Quantity
- Department/Line
- Order Number
- Resource: The resource on which the supply order is scheduled
- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

#### Resolution Suggestions

This exception message is for information.

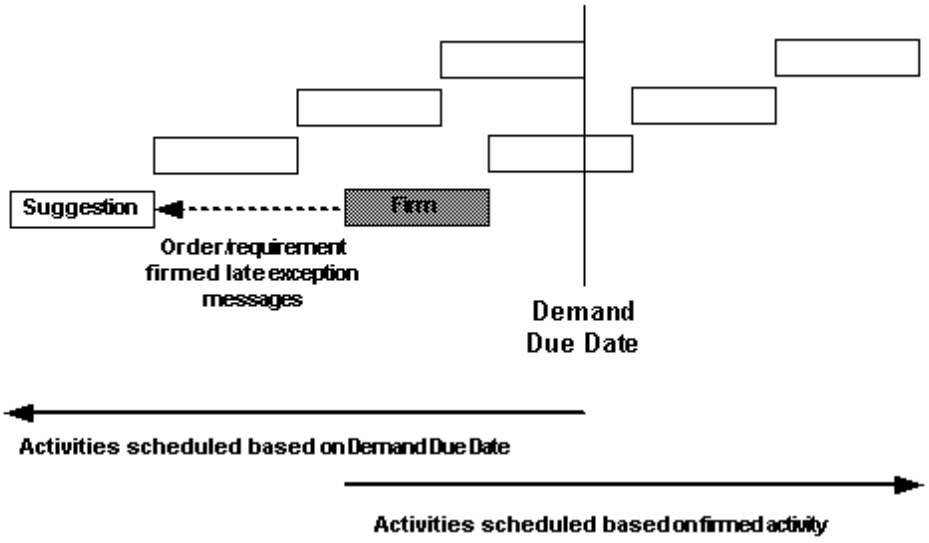
### 7: Order is firmed late

#### Explanation

This exception appears when the planning engine is scheduling activity Unconstrained Latest Possible Completion Times (ULPCTs) for a supply order and finds a firm supply that does not fit in with the scheduling of the non-firm operations to that point.

This diagram shows an example of the situation.

***Order/requirement firmed late example***




In Enforce demand date plans with profile option MSO: Lead Time Control set to Violate minimum processing times to meet demand due date, the planning engine violates precedence constraints between the firm supply and its next downstream supply.

#### Information Displayed

The information displayed for this exception message is:

- Firm Supply Item
- Firm Supply Item Description
- Firm Supply Order Number
- Firm Supply Organization
- Source Organization: For transfer supplies.
- Supplier: For buy supplies.

- Supplier Site: For buy supplies.
- Firming Type: Firm Start Date, Firm End Date, Firm Start Date and End Date, or Firm All.
- Days Late: The number of days by which the firm supply is late according to the ULPCT calculation.
- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

#### Resolution Suggestions

Consider:

- Researching the situation that resulted in the original firming
- Evaluating the supply schedule and the end demand information
- Collecting and evaluating available options regarding changing the firmness of the activity, changing the firm date of the activity, or dealing with other activities that fall outside of minimum start time and of demand due date.
- Selecting and implementing options.

### 8: Requirement is firmed late

#### Explanation

This exception message appears in the same circumstances as exception message Order is firmed late.

#### Information Displayed

The information displayed for this exception message is:

- Firm Supply Item
- Firm Supply Item Description
- Firm Supply Order Number
- Firm Supply Organization

- Source Organization: For transfer supplies.
- Firm Supply Operation Sequence Number: If operation firming leads to the exception message.
- Firm Supply Resource Sequence number: If resource firming leads to the exception message.
- Firming Type: Firm Start Date, Firm End Date, Firm Start Date and End Date, or Firm All.
- Days Late: The number of days by which the firm supply is late according to the ULPCT calculation.
- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

**Resolution Suggestions**

Consider:

- Researching the situation that resulted in the original firming
- Evaluating the supply schedule and the end demand information
- Collecting and evaluating available options regarding changing the firmness of the activity, changing the firm date of the activity, or dealing with other activities that fall outside of minimum start time and of demand due date.
- Selecting and implementing options.

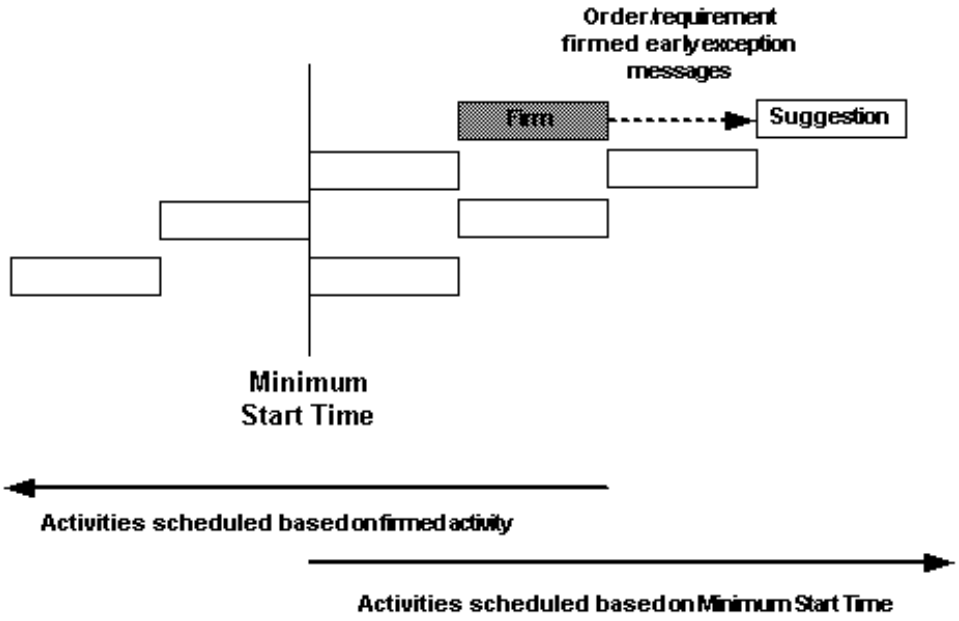
### 9: Order is firmed early

**Explanation**

This exception appears when the planning engine is scheduling activity Unconstrained Earliest Possible Start Time (UEPSTs) for a supply order and finds a firm supply that does not fit in with the scheduling of the non-firm operations to that point.

This diagram shows an example of the situation.

*Order/requirement firmed early example*




In Enforce demand date plans with profile option MSO: Lead Time Control set to Violate minimum processing times to meet demand due date, the planning engine violates precedence constraints between the firm supply and its next downstream supply.

**Information Displayed**

The information displayed for this exception message is:

- Firm Supply Item
- Firm Supply Item Description
- Firm Supply Order Number
- Firm Supply Organization
- Source Organization: For transfer supplies.
- Supplier: For buy supplies.
- Supplier Site: For buy supplies.
- Firming Type: Firm Start Date, Firm End Date, Firm Start Date and End Date, or Firm All.
- Days Late: The number of days by which the firm supply is late according to the

UEPST calculation.

- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

#### Resolution Suggestions

Consider:

- Researching the situation that resulted in the original firming
- Evaluating the supply schedule and the end demand information
- Collecting and evaluating available options regarding changing the firmness of the activity, changing the firm date of the activity, or dealing with other activities that fall outside of minimum start time and of demand due date.
- Selecting and implementing options.

### 10: Requirement is firmed early

#### Explanation

This exception message appears in the same circumstances as exception message Order is firmed early.

#### Information Displayed

The information displayed for this exception message is:

- Firm Supply Item
- Firm Supply Item Description
- Firm Supply Order Number
- Firm Supply Organization
- Source Organization: For transfer supplies.
- Firm Supply Operation Sequence Number: If operation firming leads to the exception message.
- Firm Supply Resource Sequence number: If resource firming leads to the exception

message.

- Department
- Resource
- Firming Type: Firm Start Date, Firm End Date, Firm Start Date and End Date, or Firm All.
- Days Late: The number of days by which the firm supply is late according to the UEPST calculation.
- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

**Resolution Suggestions**

Consider:

- Researching the situation that resulted in the original firming
- Evaluating the supply schedule and the end demand information
- Collecting and evaluating available options regarding changing the firmness of the activity, changing the firm date of the activity, or dealing with other activities that fall outside of minimum start time and of demand due date.
- Selecting and implementing options.

### 11: Shared supply scheduled late

**Explanation**

This exception appears when shared supplies get fixed at the beginning of the current slice and need to be treated as firm when scheduling demands within the current slice.

The planning engine calculates it only if profile options:

- MSO: Generate Shared Supply Exceptions is Yes
- MSO: Additional Demand Slices for Shared Supply Rescheduling is not -1

A shared supply is similar to a firm supply because, at the beginning of scheduling a

slice, the planning engine treats shared supplies from previous slices as firm. A shared supply is different from a firm supply because the planning engine considers all lower level supplies of a shared supply as shared. Therefore, a shared supply can cause lateness but cannot cause compression.

For more information, see Plan Shared Supplies, page 7-42.

#### Information Displayed

The information displayed for this exception message is:

- Shared Supply Item
- Shared Supply Organization
- Shared Supply Item Description
- Shared Supply Order Number
- Shared Supply Order Type
- Supply Quantity
- Due Date
- Source Organization
- Ship Method
- Supplier
- Supplier Site
- Days Late: The number of days by which the shared supply is late according to the ULPCT calculation.
- Schedule Ship Date
- Schedule Arrival Date
- Request Ship Date
- Request Arrival Date
- Promise Ship Date
- Promise Arrival Date

#### Resolution Suggestions

Consider

- Evaluating the supply schedule and the end demand information
- Collecting and evaluating available options regarding firming the activity or splitting and rearranging supply orders to avoid a shared supply.
- Selecting and implementing options.

## Substitutes and Alternates Used Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

For cells that contains (2), note that these exceptions are not a result of decisions made by the planning engine. They are only visible in an unconstrained plan if a planner manually chosen this alternative, for example, by firming a planned order or selecting an alternate routing.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Planned order uses alternate BOM/routing | Yes (2) | Yes | Yes | Yes | Yes |
| 2: Planned order uses substitute components | No | Yes | Yes | Yes | Yes |
| 3: Planned order uses alternate resources | No | Yes | Yes | Yes | Yes |
| 4: Order sourced from alternate facility | No | Yes | Yes | Yes | Yes |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 5: Order sourced from alternate supplier | Yes | Yes | Yes | Yes | Yes |
| 6: Demand satisfied using end item substitution | No | Yes | Yes | Yes | No |
| 7: Work order uses substitute component | No | Yes | Yes | No | No |

### 1: Planned order uses alternate BOM/routing

#### Explanation

This exception message appears when the planning engine, in a constrained or cost-based optimized plan:

- Under the direction of a decision rule, assigns an alternate bill of material and routing to a planned order
- Detects a firm a planned order with an alternate bill of material and routing

#### Information Displayed

The information displayed for this exception message is:

- Org
- Item
- Date: The due date
- Quantity
- Alternate BOM

- Alternate Routing

#### Resolution Suggestions

Monitor the volume and frequency of occurrences. Many occurrences bear investigation as alternates and substitutes are often more expensive or more difficult to obtain.

### 2: Planned order uses substitute components

#### Explanation

This exception message appears when the planning engine, in a constrained or cost-based optimized plan:

- Under the direction of a decision rule, assigns a substitute component to a planned order.
- Detects a firm a planned order with a substitute component.

#### Information Displayed

The information displayed for this exception message is:

- Org
- Item
- Date: The due date
- Substitute Component
- Quantity: Of the substitute component
- Order Number

#### Resolution Suggestions

Monitor the volume and frequency of occurrences. Many occurrences bear investigation as alternates and substitutes are often more expensive or more difficult to obtain.

### 3: Planned order uses alternate resources

#### Explanation

This exception message appears when the planning engine, in a constrained or cost-based optimized plan:

- Assigns an alternate resource to an operation of a planned order in a constrained or cost-based optimized plan
- Detects a firm planned order that uses an alternate resource

The situation usually occurs when the primary resource becomes overloaded. The resource can exist either in the primary routing or in an alternate routing.

#### Information Displayed

The information displayed for this exception message is:

- Org
- Dept./Line
- Resource: The alternate
- Date: The due date
- Quantity
- Order Number

#### Resolution Suggestions

Monitor the volume and frequency of occurrences. Many occurrences bear investigation as alternates and substitutes are often more expensive or more difficult to obtain.

### 4: Order sourced from alternate facility

#### Explanation

This exception message appears when the planning engine, in a constrained or cost-based optimized plan:

- Under the direction of a decision rule, assigns a planned order to an alternate facility
- Detects a firm planned order with an alternate facility assigned

An alternate facility is an organization and is not a supplier site.

#### Information Displayed

The information displayed for this exception message is:

- Org: The destination organization
- Item
- Date: The due date
- Quantity
- Source Org: The alternate facility
- Supplier
- Supplier Site

#### Resolution Suggestions

Monitor the volume and frequency of occurrences. Many occurrences bear investigation

as alternates and substitutes are often more expensive or more difficult to obtain.

### 5: Order sourced from alternate supplier

#### Explanation

This exception message appears when the planning engine:

- In a constrained or cost-based optimized plan, under the direction of a decision rule, assigns a planned order to an alternate supplier (supplier with rank other than 1)
- In a constrained or cost-based optimized plan, detects a firm planned order with an alternate supplier assigned

#### Information Displayed

The information displayed for this exception message is:

- Org: The owning organization
- Item
- Date: The due date
- Quantity
- Source Org
- Supplier: The alternate
- Supplier Site: The alternate

#### Resolution Suggestions

Monitor the volume and frequency of occurrences. Many occurrences bear investigation as alternates and substitutes are often more expensive or more difficult to obtain.

### 6: Demand satisfied using end item substitution

#### Explanation

This exception message appears when the planning engine plans to satisfy an end item demand using a supply order with a substitute item. The planning engine substitutes items:

- For cost-based optimized plans
- For any plans under the direction of substitution rules
- If the plan option Decision Rules, End Item Substitution is selected

If the planning engine satisfies a demand with multiple planned orders, it issues an exception for each supply order with the substitute item.

For example, the substitution chain is PSS7001 > PSS7002 > PSS7003 > PSS7004. The planning engine can satisfy demand for:

- PSS7001 using PSS7002, PSS7003, or PSS7004
- PSS7002 using PSS7003 or PSS7004
- PSS7003 using PSS7004

For more information, see End-Item-Level Substitution, page 10-1.

The planning engine calculates the quantity of the substitute using the information in the Item Relationships, *Oracle Inventory User's Guide* form.

For example, there is demand for PSS7002 in organization M1 for 100.

The planning engine satisfies this demand with inventory of item PSS7004 in organization M2.

The demand organization is M1 and the substitute organization is M2. The demand item is PSS7002 and the substitute item is PSS7004.

The substitute organization is the most upstream organization in the supply pegging tree of the substitute item. For example, the planning engine can:

- Peg on hand at organization M2 to a planned order demand arising from a transfer from organization M2 to organization M1
- Peg the transfer order to sales order demand at organization M1

Since the on hand supply is the most upstream supply, its organization is the substitute organization.

#### Information Displayed

The information displayed for this exception message is:

- Org: The demand organization
- Item: The demand item
- Quantity: The demand quantity
- Order Number: If the end demand is a sales order, the sales order number; if the end demand is a forecast, blank
- Substitute Org
- Substitute Item
- Substitute Qty: As specified in the item relationship.
- Date: The due date

- Demand class
- Customer
- Customer site

**Resolution Suggestions**

Release the substitute item to the sales order through Planner Workbench.

To enable release of substitute items, navigate to Planner Workbench Preferences window, Other tab and select Include Sales Orders.

To release substitute items:

- Navigate to the Supply/Demand window.
- The field Action is Release.
- The status of the sales order does not matter for the release to happen.
- After you release the substitution, concurrent process Release sales order recommendations runs in the source instance to make the change to the sales order.

Monitor the volume and frequency of occurrences. Many occurrences bear investigation as alternates and substitutes are often more expensive or more difficult to obtain.

#### 7: Work order uses substitute component

For asset intensive planning, this exception message occurs in the same situation and shows the same information as exception message Planned order uses substitute components. It occurs for maintenance work orders and also shows Visit.

## Projects-Tasks Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Items with a shortage in a project/task | Yes | Yes | Yes | Yes | No |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 2: Items allocated across projects/tasks | Yes | Yes | Yes | Yes | No |
| 3: Items with excess inventory in a project/task | Yes | Yes | Yes | Yes | No |

### 1: Items with a shortage in a project/task

#### Explanation

This exception message appears in the same circumstances as the Items with a shortage except that the planning engine only uses the supplies and demands belonging to a project and task.

If there is both a project manager and a task manager, the planning engine sends the exception message to the task manager through the exception workflow.

#### Information Displayed

The information displayed for this exception message is:

- Org
- Item
- Date: The start date of the planning time bucket with negative project projected available balance
- Quantity: The projected available balance
- Planning Group
- Project
- Task

#### Resolution Suggestions

Consider reviewing and correcting supply and demand imbalances with the project and

task mangers.

### 2: Items allocated across projects/tasks

#### Explanation

This exception appears when the planning engine detects a supply (onhand, scheduled receipt, and planned order) belonging to one project/task which is pegged to a demand belonging to another project/task. It occurs when the two projects are in the same planning group.

If there is both a project manager and a task manager, the planning engine sends the exception message to the task manager through the exception workflow.

#### Information Displayed

The information displayed for this exception message is:

- Org
- Item
- Date: The due date
- Quantity
- Planning Group
- Project: The supply project
- Task: The supply task
- To Project: The demand project
- To Task: The demand task

#### Resolution Suggestions

This exception message is for information.

### 3: Items with excess inventory in a project/task

#### Explanation

This exception message appears in the same circumstances as the Items with excess inventory except that the planning engine only uses the supplies and demands belonging to a project and task.

If there is both a project manager and a task manager, the planning engine sends the exception message to the task manager through the exception workflow.

#### Information Displayed

The information displayed for this exception message is:

- Org

- Item
- Date: The start date of the planning time bucket in which there is an excess
- Quantity: Projected Available Balance - Exception set Excess Quantity
- Planning Group
- Project
- Task

**Resolution Suggestions**

Consider:

- Cancelling unneeded supply orders
- Transferring the material to another project

## Item Exceptions Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Items with negative starting on hand | Yes | Yes | Yes | Yes | Yes |
| 2: Items with expired lot | Yes | Yes | Yes | Yes | No |
| 3: Items with no activity | Yes | Yes | Yes | Yes | Yes |

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 4: Sourcing split percentage violated | Yes | Yes | Yes | Yes | No |
| 5: Items with forecast over consumptions | Yes | Yes | Yes | Yes | No |
| 6: End item minimum remaining shelf life violation | No | Yes | Yes | Yes | No |
| 7: Process effective date range violated | No | Yes | Yes | Yes | No |

### 1: Items with negative starting on hand

#### Explanation

This exception message appears when the planning engine detects an item with negative beginning on-hand balance.

It usually occurs because of a recent inventory backflushing transaction or an incorrect inventory balance.

#### Information Displayed

The information displayed for this exception message is:

- Org
- Item
- Quantity: The beginning on-hand balance

- Date
- Item Description
- Lot Number

#### Resolution Suggestions

Consider:

- Releasing the planned order
- Investigating the item to rule out incorrect inventory balance or to correct an incorrect inventory balance

### 2: Items with expired lots

#### Explanation

This exception appears when the planning engine detects a potential expired lot. A potential expired lot is a lot that:

- Has lot expiration date during the planning horizon
- Is not pegged to a demand that results in its use before its lot expiration date

It occurs against items under lot control Full Control. The calculation for lot expiration date is Lot Receipt Date + Shelf Life Days.

In addition to issuing this exception message, the planning engine plans for you to flush the inventory on its lot expiration date so that you cannot use it after its lot expiration date to satisfy demands.

#### Information Displayed

The information displayed for this exception message is:

- To Organization: The organization holding the inventory
- Item
- Quantity
- Item Description

#### Resolution Suggestions

Consider creating or modifying an actual demand to use the material.

### 3: Items with no activity

#### Explanation

This exception appears when the planning engine detects an item in an organization with no demand and no supply throughout the planning horizon. It usually occurs for:

- Substitute components

- Components on alternate bills of material
- End item substitutes

Typically, these items do not have other sources of demand and the planning engine does not need to use them during the planning horizon.

If the item has no activity in multiple organizations, the planning engine issues this exception message for each organization.

#### Information Displayed

The information displayed for this exception message is:

- Org
- Item
- Item Description

#### Resolution Suggestions

Consider changing the item planning method to Not planned.

### 4: Sourcing split percentage violated

#### Explanation

This exception message appears for days when the percentages of the actual sourcing among rank 1 suppliers is different from the percentages in the sourcing rule for rank 1 suppliers. The planning engine issues the exception:

- Against suppliers whose percentage is not satisfied
- Only if the deviation of split percentages between the planned values and the values defined in the sourcing rule is greater than the value specified in MSC: Sourcing Variance Tolerance

The planning engine uses profile option MSO: Sourcing Allocation Window to determine the reference period of time for the variance.

The formula for calculating the actual sourcing percentage for a supplier is (Cumulative quantity sourced from supplier/Cumulative quantity sourced from rank 1 suppliers) * 100.

For example, a sourcing rule for item A1 lists two suppliers, both rank 1 with a 50% -50% split.

One supplier has a capacity of 60 units per day and the other supplier has a capacity of 40 units per day. A demand for the item is 200.

This table shows a horizontal view of item A1.

| Schedule Entity | 3 January | 4 January | 5 January | 6 January | 7 January |
|---|---|---|---|---|---|
| Supplier 1 capacity | 60 | 60 | 0 | 0 | 0 |
| Supplier 2 capacity | 40 | 40 | 0 | 0 | 0 |
| Planned orders using supplier 1 | 60 | 60 | 0 | 0 | 0 |
| Planned orders using supplier 2 | 40 | 40 | 0 | 0 | 0 |
| Demand | 0 | 0 | 0 | 0 | 200 |
| Total supply | 100 | 100 | 0 | 0 | 0 |
| Projected available balance | 100 | 200 | 200 | 200 | 0 |

The planning engine issues this Sourcing split percentage violated exception message from 3 January to 4 January with a percent variation of 10%.

#### Information Displayed

The information displayed for this exception message is:

- Item
- Supplier: The supplier name
- Supplier Site
- From Date: The start date of the planning time bucket in which the which the actual sourcing percentage does not satisfy the sourcing rule split percentage
- To Date: The start date of the last planning time bucket in which the which the actual sourcing percentage does not satisfy the sourcing rule split percentage. As long as Percent Variation remains the same in successive planning time buckets, the planning engine uses the same exception and extends the To Date.
- Allocated Percentage: The sourcing rule split percentage

- Actual Percentage: The actual split percentage
- Percent Variation: Actual Percentage - Allocated Percentage

#### Resolution Suggestions

Consider:

- Changing the suggested suppliers on the purchase requisitions and purchase orders
- Reviewing supplier agreements, splitting, history, and capacity to detect a capacity constraint or optimization issue

### 5: Items with forecast over consumptions

#### Explanation

This exception message appears for each occurrence of forecast overconsumption and belongs to the Item Exceptions group.

You can right click from the exception and select the following:

- Demand
- Sources
- Destination
- Horizontal plan

#### Information Displayed

The information displayed for this exception message is:

- Item
- Forecast name or Demand Planning scenario name
- Forecast date (schedule ship or request date)
- Original quantity
- Current quantity
- Over consumed quantity

#### Resolution Suggestion

You can take corrective action to increase the forecast or talk to the person responsible for forecasting.

### 6: End item minimum remaining shelf life violation

#### Explanation

This exception message appears when a product is going to violate the required shelf

life criteria when it arrives at a customer site. See: Minimum Remaining Shelf Life, page 4-158

#### Information Displayed

The information displayed for this exception message is:

- Item
- Organization
- Demand order number
- Customer
- Customer site
- Material available date
- Planned arrival date
- Shelf life days
- Minimum remaining shelf life

  This is the requirement specified by the user in the destination side in the Item-Org Mass Maintenance screen.

- Minimum remaining shelf life planned

  This is the left-hand side of the inequality calculated by the plan. In the example above, this is equal to 87 days.

- Minimum remaining shelf life shortfall

  This is equal to (minimum remaining shelf life - minimum remaining shelf life planned). In the example above, minimum remaining shelf life shortfall = 90 - 87 = 3 days.

These hidden fields can be displayed through folder functionality:

- Category
- Planner
- Priority
- Demand Class
- Demand Quantity
- Demand Due Date

- Old Due Date
- Suggested Ship Date

**Resolution Suggestion**

This exception enables planner to identify products that will violate the required shelf life criteria when it arrives at the customer site.

### 7: Process effective date range violated

**Explanation**

This message is generated when the start date of Process Effective Date Range constraints are not respected by the planning engine.

**Information Displayed**

- Item
- Organization
- Supply Order Number
- Order Type
- Supply Start Date
- Effective Start Date
- Effective End Date
- Number of Days Early or Late:

  Calculation is Supply Start Date minus Process Effective Start Date.

The following hidden fields can be displayed through folder functionality: Category, Planner, and Buyer.

**Resolution Suggestions**

Review the supply to determine the appropriate process, update as needed.

Check the item for a mismatch between item processing lead time and routing lead time.

## Transportation Management Exceptions Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| 1: Order will be delivered later than scheduled | No | Yes | Yes | Yes | No |
| 2: Order will be delivered earlier than scheduled | No | Yes | Yes | Yes | No |

### 1: Order will be delivered later than scheduled

#### Explanation

The planning engine issues this exception when Updated Arrival Date is later than:

- For purchase requisitions and internal requisitions, Dock Date
- For internal sales orders, Scheduled Arrival Date

#### Information Displayed

The information displayed for this exception message is:

- Organization
- Item
- Order Number
- Current Date
- Updated Arrival Date
- Quantity
- Planner
- Product Family
- Item Category

- Supplier (for purchase order and internal requisition only)
- Supplier Site (for purchase order and internal requisition only)
- Source Organization (for internal sales order only)

#### Resolution Suggestion

Run either an online replan or a batch replan. The planning engine issues related exceptions when the new arrival time has an effect on demand satisfaction—late replenishment, early replenishment, order at risk

### 2: Order will be delivered earlier than scheduled

#### Explanation

The planning engine issues this exception when Updated Arrival Date is earlier than:

- For purchase requisitions and internal requisitions, Dock Date
- For internal sales orders, Scheduled Arrival Date

#### Information Displayed

The information displayed for this exception message is:

- Organization
- Item
- Order Number
- Current Date
- Updated Arrival Date
- Quantity
- Planner
- Product Family
- Item Category
- Supplier (for purchase order and internal requisition only)
- Supplier Site (for purchase order and internal requisition only)
- Source Organization (for internal sales order only)

#### Resolution Suggestion

Run either an online replan or a batch replan. The planning engine issues related exceptions when the new arrival time has an effect on demand satisfaction—late

replenishment, early replenishment, order at risk

## Recommendations Exception Group

This table shows the exceptions in this exception group and states whether the planning engine issues the exception for each plan type.

| Exception Message | Available In Unconstrained Plans | Available In Constrained Plans with Enforce Demand Dates | Available In Constrained Plans with Enforce Capacity Constraints | Available In Optimized Plans | Available In Inventory Optimization |
|---|---|---|---|---|---|
| Batches | Yes | Yes | Yes | Yes | Yes |
| Discrete Jobs | Yes | Yes | Yes | Yes | Yes |
| Flow Schedules | Yes | Yes | Yes | Yes | Yes |
| Jobs | Yes | Yes | Yes | Yes | Yes |
| Purchase Requisitions | Yes | Yes | Yes | Yes | Yes |

### Explanation

Recommendations are suggestions to the planner to release planned orders. The planned orders become:

- Batches: Oracle Process Manufacturing
- Discrete jobs: Oracle Work in Process
- Flow schedules: Oracle Flow Manufacturing
- Jobs: Oracle Project Manufacturing, Oracle Shopfloor Management (OSFM)
- Purchase requisitions: Oracle Purchasing

### Information Displayed

The information displayed in the Supply/Demand window is:

- Org
- Item
- For Release: Checkbox for releasing the planned order
- Firm: Checkbox for firming the planned order
- Order Type
- Sugg Due Date
- Orig Qty
- Order Number
- Action: The recommendation
- New Date: New firm date specified by planner
- New Qty: New firm quantity specified by planner

If you right click the exception, you can view other key information; calculations for some key terms are:

- Suggested Due Date = Date material is needed in inventory
- Suggested Dock Date = Due date - Postprocessing lead Time
- Suggested Start Date = Dock date - Processing Lead Time
- Suggested Order date = Start date - Preprocessing Lead time. The earliest Suggested Order Date allowed is the current day and no compression days are allowed.

### Resolution Suggestions

Consider firming or releasing the planned order. For more information, see Implementing , page 16-152Planning Recommendation

## Exception Diagnosis and Resolution

### Overview

This section explains how to diagnose and resolve exception messages. It includes:

- Workflow notifications and activities
- Exception information

- Identifying the root causes of late demand (enhanced exceptions)
- Resolution suggestions
- Online simulation
- Identifying differences between plans
- Implementing plan changes

You typically resolve the:

- Most constrained (bottleneck) resource before the least constrained resource
- High priority demands before low priority demands

## Workflow Notifications and Activities

You can automatically forward exceptions (using Oracle Workflow) to your trading partners. They can research and respond to exceptions through self-service web applications including forecast maintenance, supplier capacity update, ATP, and a secured version of the Planner Workbench. Trading partner responses can trigger other workflow activities such as a notification or an automatic reschedule of a purchase order or sales order. For more information, see Review Workflow Notifications, page 2-7.

## Exception Information

The section Understanding Exceptions, page 15-14 describes the circumstances under which the planning engine issues the exceptions and the information that it displays.

The section Viewing Exceptions, page 15-9 describes how to obtain additional information about exceptions by using buttons, right mouse options, and related exceptions.

## Using Constraint Exceptions

Use the constraint exceptions to find situations in which the planning engine is not able to plan within your constraints.

### Overload Related Exceptions

The overload-related constraint exception messages are:

- Requirement causes resource overload
- Order causes supplier capacity overload

- Order causes transportation weight capacity overload
- Order causes transportation volume capacity overload

The planning engine issues these exception messages when a specific resource requirement or a supply order causes overload on a production resource (for make items), a supplier capacity (for buy items), or a transportation resource (for transfer items).

#### Lead Time Related Exceptions

The lead-time-related constraint exception messages are:

- Requirement with insufficient lead time
- Order with insufficient lead time

The planning engine issues these exception messages when it schedules a resource requirement or supply order for less than its minimum duration. Minimum duration depends on order type; for example, a resource requirement minimum duration is the processing time required when using the resource maximum assigned units and usage quantity.

#### Enforce Capacity Constraints Related Exceptions

The constrained plan-related constraint exception messages are:

- Resource constraint
- Material constraint
- Transportation weight constraint
- Transportation volume constraint
- Order lead time constraint
- Requirement lead time constraint

The planning engine issues these exceptions in:

- Constrained plans
- Plan option Enforce Capacity Constraint
- Either or both Material Constraints and Resource Constraints is Yes
- Profile option MSO: Calculate Constraint Exceptions is Yes

It issues them whenever it must satisfy a sales order line or a forecast entry late. They help show the resource overloads, supplier capacity overloads, and lead-time violations

that need to occur for you to satisfy the order on time.

These exception messages from Constrained plans-Enforce capacity constraints mirror overload and lead-time exceptions from Constrained plans-Enforce demand due dates:

- Resource constraint mirrors Requirement causes resource overload
- Material constraint mirrors Order causes supplier capacity overload
- Transportation weight constraint mirrors Order causes transportation weight capacity overload
- Transportation volume constraint mirrors Order causes transportation volume capacity overload
- Order lead time constraint mirrors Order with insufficient lead time
- Requirement lead time constraint mirrors Requirement with insufficient lead time

#### Firming Related Exceptions

The firming-related constraint exception messages are:

- Order is firmed early
- Order is firmed late
- Requirement is firmed early
- Requirement is firmed late

The planning engine issues these exceptions against firmed resource requirements and supply orders when it thinks they are firmed with either of the following effects:

- Too early: It cannot properly schedule upstream tasks--using minimum duration--to start after the plan start date.
- Too late: It cannot properly schedule downstream tasks--using minimum duration--to finish before the demand due date.

#### Other Exceptions

The other constraint exception messages are:

- Shared supply scheduled late: A shared supply is scheduled too late to satisfy one of its end demands. The planning engine issues this exception if profile option MSO: Generate Shared Supply Exceptions is Yes.
- Demand quantity is not satisfied: There is no supply for this demand; the demand is satisfied at the end of the planning horizon.

- Sales order/forecast at risk: The sales order line or forecast entry is likely to be late. The reasons for the lateness are in the exception group Supply Problems for Late Sales Orders/Forecasts.

#### Related Exceptions

The following exception messages relate to the exception message Sales order/forecast at risk:

- Requirement causes resource overload
- Order causes supplier capacity overload
- Order is firmed late
- Order is firmed early
- Requirement is firmed late
- Requirement is firmed early
- Order causes transportation weight capacity overload
- Order causes transportation volume capacity overload
- Order with insufficient lead time
- Requirement with insufficient lead time

The following exception messages relate to the exception message Late replenishments for sales orders/forecasts:

- Resource constraint
- Material constraint
- Order is firmed late
- Order is firmed early
- Requirement is firmed late
- Requirement is firmed early
- Transportation weight constraint
- Transportation volume constraint
- Order lead time constraint

- Requirement lead time constraint
- Demand quantity not satisfied
- Shared supply scheduled late

## Identifying Root Causes of Late Demand

This section explains:

- Late demands: The planning engine process for identifying and scheduling late demands
- Late demand root cause information: Information you need to know to research the causes of late demands
- Viewing late demand information: The windows that you can use to see late demand information

### Late Demands

The exception messages that are critical relative to late demands in constrained and optimized plans with enforce capacity constraints are:

- Late replenishment for sales order
- Late replenishment for forecasts

The process that the planning engine uses that can result in these exception messages is:

- Start from the demand due date, backward schedule the operations for the demand to determine the latest time that activities should start to meet the demand on time. This is the latest possible start time (LPST).
- If the LPST is in the past, find the earliest possible start time (EPST) for the first operation and forward schedule the operations for the demand to determine the earliest possible completion time (EPCT) for the demand.

  The LPST and EPCT depend on resource availability, resource precedence constraints, planning time fence restrictions, and item lead-times.
- Start from the EPCT, backward schedule the operations for the demand to minimize work in process and inventory.

**Critical Path**

The critical path is the branch of the supply chain bill of materials with the longest cumulative lead time.

The planning engine calculates critical path for Constrained - Enforce capacity

constraints plans and Constrained - Enforce due dates plans.

### Late Demand Root Cause Information

This section describes:

- Terms and types of information that you may encounter in researching the root cause of late demands
- Potential causes of late demands

In general, the regular behavior of the planning engine can highlight late demands caused by:

- Environmental circumstances: For example, a downstream resource suffering from capacity overutilization or from supplier capacity overload on one of its supplies.
- Data circumstances: For example, an item with inaccurate lead-times or a resource with inaccurate available hours.

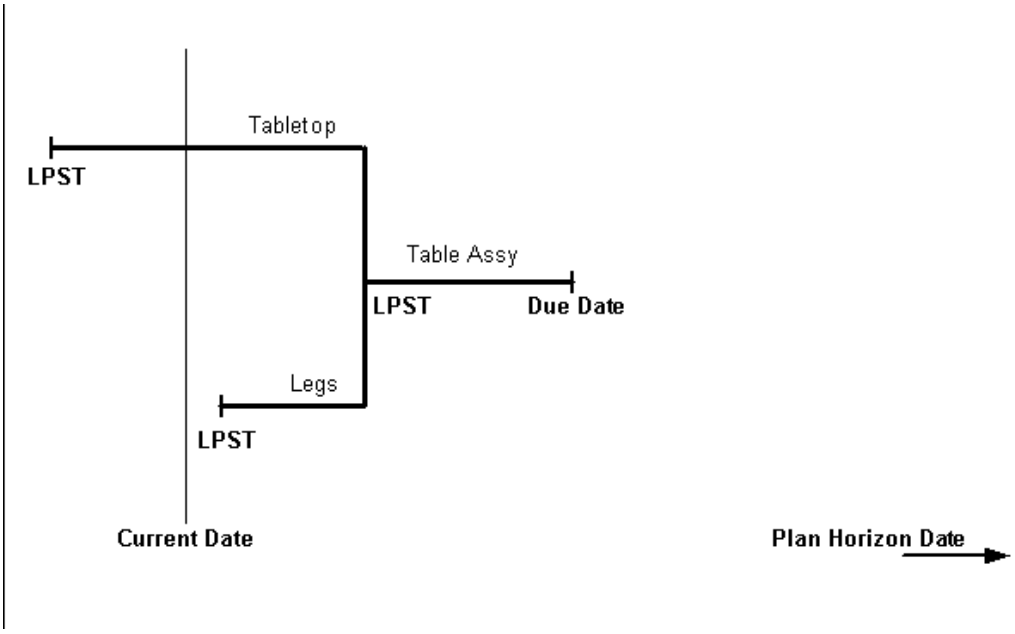
The descriptions in this section use a manufactured table as an example. The table consists of four legs and a top, each of which have operations.

### Latest Possible Start Time

The latest possible start time (LPST) is the time that the activities need to start to meet the demand on time. If the latest possible start time is in the past, the planning engine cannot schedule to meet the demand on time.

This diagram shows the table assembly and its subassemblies backward scheduled from an independent demand due date. The schedule shows each job finishing just in time for its next use; therefore, the beginning of each job is its latest possible start time. The latest possible start time for the tabletop is in the past.

***Latest Possible Start Date Example***



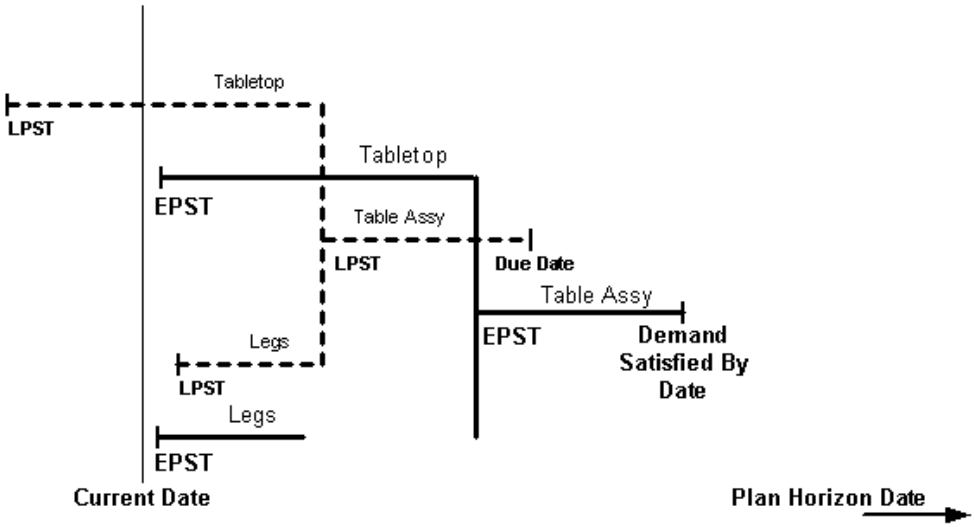

**Earliest Dates**

The earliest possible start time (EPST) is the earliest time that the planning engine can schedule the operations to start.

The earliest possible completion time (EPCT) is the earliest date that the operations are complete if they start at the earliest possible start time.

This diagram shows the table assembly and its subassemblies backward scheduled from the demand due date. Since the tabletop latest possible start time is in the past, the planning engine forward schedules each subassembly from the current date (as material and resources are available). The result is the demand satisfied by date for the table assembly which is later then the demand due date. Since the legs subassembly has a shorter lead-time than the tabletop assembly, it is finished sooner than the tabletop assembly. The completed legs subassembly remains in work in process or moves to inventory until the table assembly needs it.

***Earliest Demand Satisfied Date Example***




**Earliest Order Date**

The earliest order date is the earliest possible date that you can start the order, given plan constraints. It is the earliest possible date that can appear as the suggested order date and usually corresponds to the following dates:

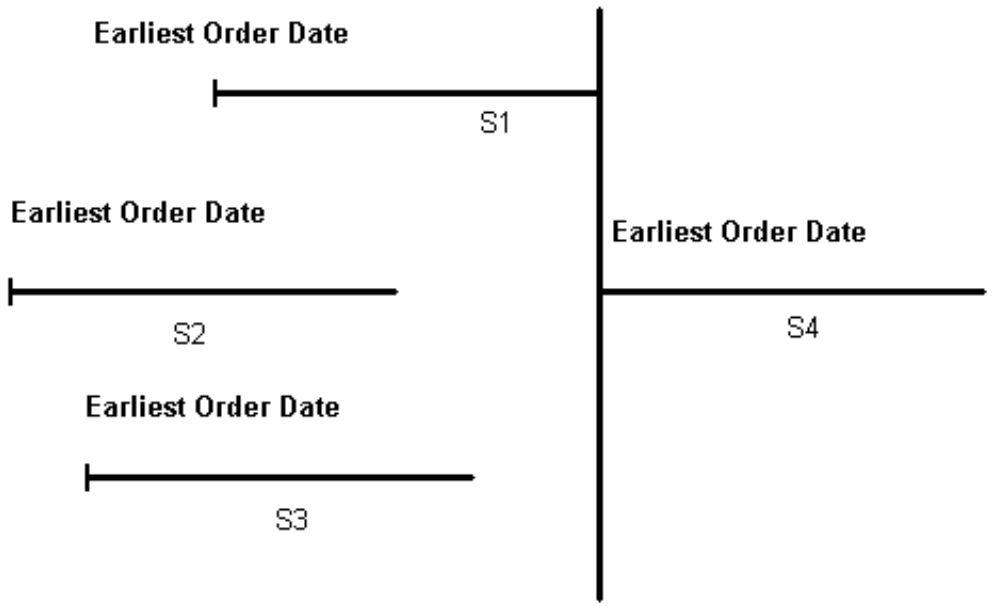
- Make order: Suggested start date
- Buy order: Suggested dock date
- Transfer order: Suggested ship date

Even for supplies on the critical path, the suggested order date is usually after the earlier order date because the planning engine right-justifies it to the next order which has its own set of constraints.

If the suggested order date is later than earliest order date, it is usually because there are more constraining supplies at the same level. If this supply started on earliest order date, it would wait on the other constrained supplies (buy items or subassemblies). The planning engine sets the suggested order date later (delays the order start) to avoid work in process and inventory build-up.

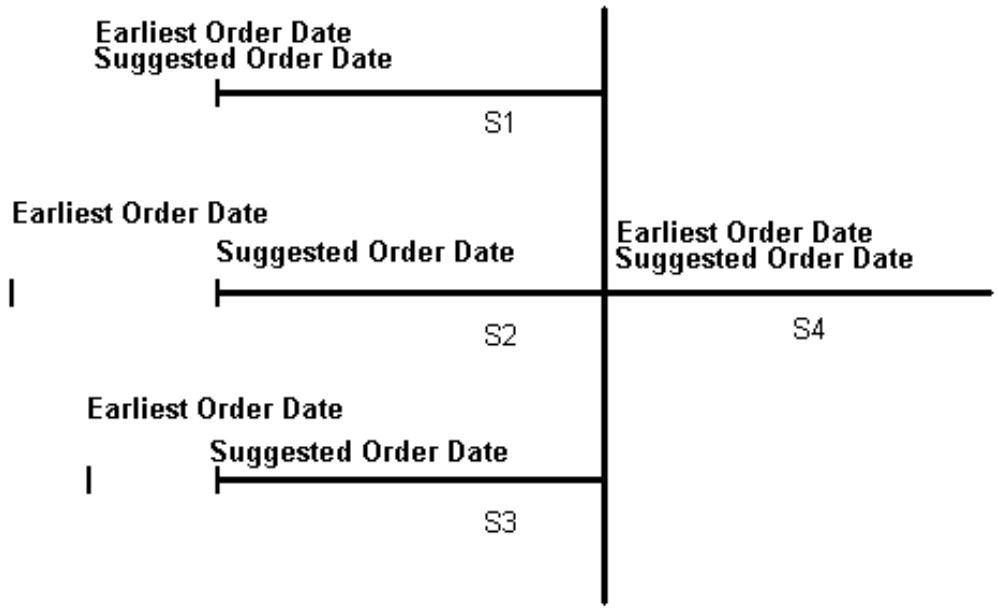
This diagram shows three supplies (S1, S2, and S3) pegged to supply S4. The planning engine forward scheduled the supplies and set the suggested order date for each one to be the same as the earliest order date

*Earliest Order Date Example*




In this diagram, the planning engine has backward scheduled all of the supplies from the due date of S4 to minimize work in process and inventory. This aligns the due date of the subassemblies with the start date of S4. The suggested order dates for S2 and S3 are later than their earliest order dates.

*Suggested Order Date Shifted Example*




**Earliest Completion Date**

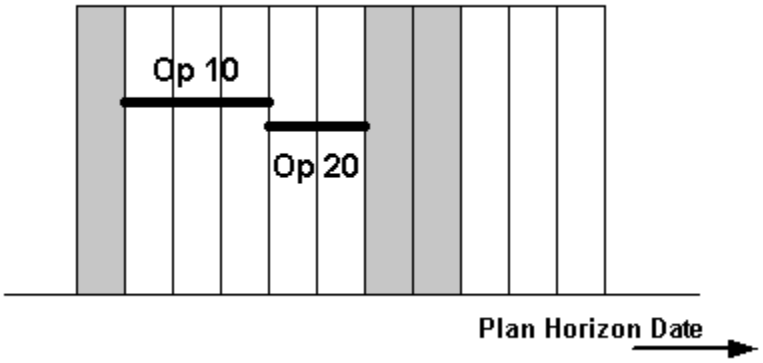
The earliest completion date is the date that the order can finish if you start it on earliest order date. It is the earliest possible date that can appear as the suggested due date.

If suggested order date is the same as earliest order date, then the field suggested due date is the same as earliest completion date.

If suggested order date is different from earliest order date, the time between earliest order date and suggested start date may not be the same as the time between earliest completion date and suggested due date. Breaks in the capacity profile (for example, holidays) may create capacity availability breaks that result in the operations stretching as they fit in around these breaks.

This diagram shows a supply that has two operations; operation 10 lasts three days and operation 20 lasts two days. The planning engine can schedule the operations with no breaks. Since there is no difference between suggested order date and earliest order date, there is no difference between suggested due date and earliest completion date.

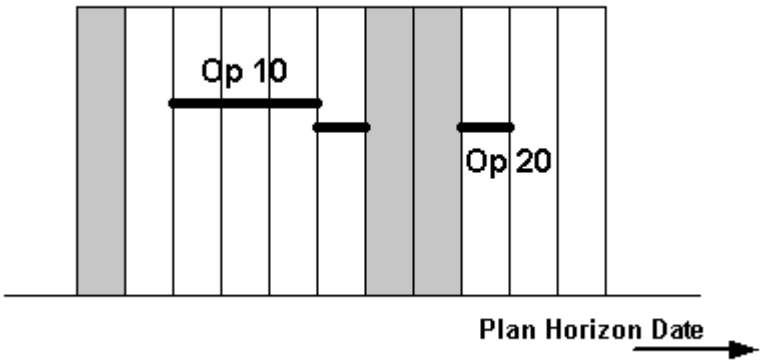
***Earliest Possible Times Example***




This diagram shows the supply when the planning engine must schedule the operations with breaks. Since there is a difference between suggested order date and earliest order date, there difference between suggested due date and earliest completion date. However, the differences are not the same:

- The difference between suggested order date and earliest order date is one day
- The difference between suggested due date and earliest completion date is three days

***Actual Times Example***



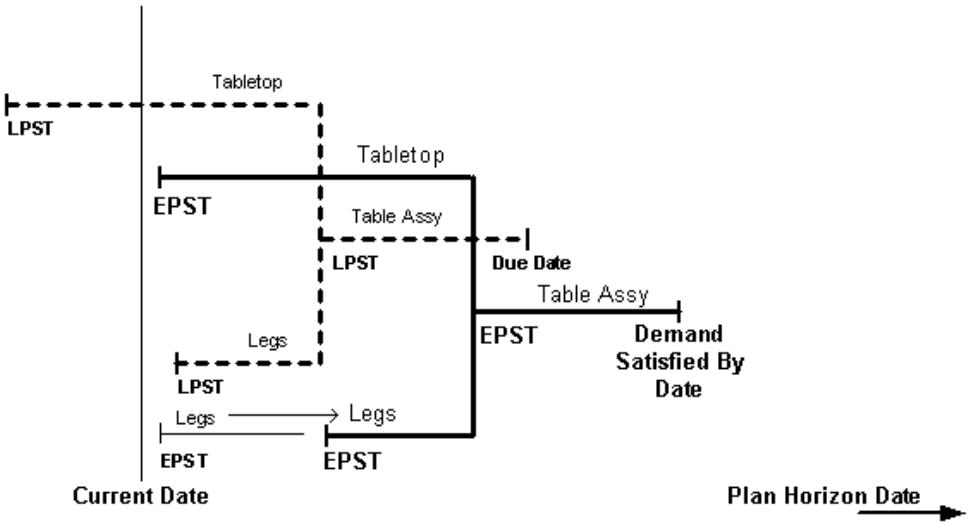

**Earliest Possible Demand Satisfied Date**

The earliest demand satisfied date is the same as the earliest possible completion time of its supply order. The planning engine reschedules the operations backwards from the

earliest possible completion date to minimize work in process and inventory.

This diagram shows the table assembly and its subassemblies backward scheduled from the demand satisfied by date. This aligns the due date of the subassemblies with the start date of the table assembly. The planning engine has scheduled the legs subassembly to start later than the forward scheduling suggested. The completed legs subassembly does not need to remain as long in work in process or in inventory before the table assembly needs it.

***Earliest Demand Satisfied Date with Minimum Work in Process Example***




### Actual Times

The actual start date and end dates are:

- Buy orders (planned orders, purchase orders, purchase requisitions): Actual start date = Dock Date, Actual end date = Due Date
- Make orders (planned orders, discrete jobs, batches, jobs, flow schedules): Actual start date = Start Date, Actual end date = Due Date
- Transfer orders (planned orders, internal sales orders, internal requisitions): Actual start date = Ship Date, Actual end date = Due Date

### Critical Activities

A critical activity is an entity that is:

- Pegged to a late demand.

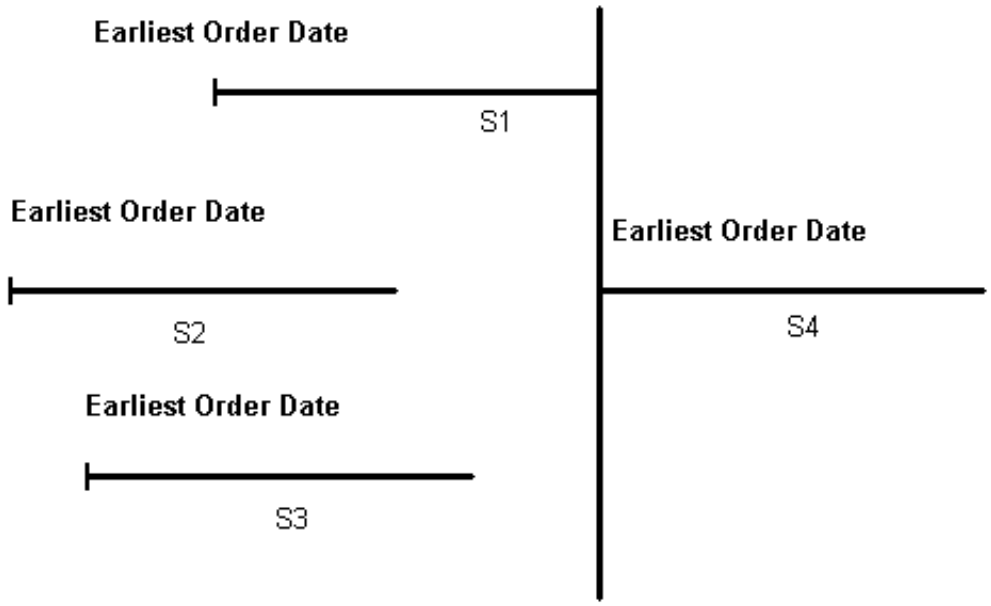
- One of several activities which are at the same bill of material or pegging level.
- The most constraining at its level. The most constraining activity is the one that most restricts the lower (earliest) bound of the earliest order date of the next highest level supply.

It can be a:

- Specific activity of a resource
- Buy supply
- Transfer supply

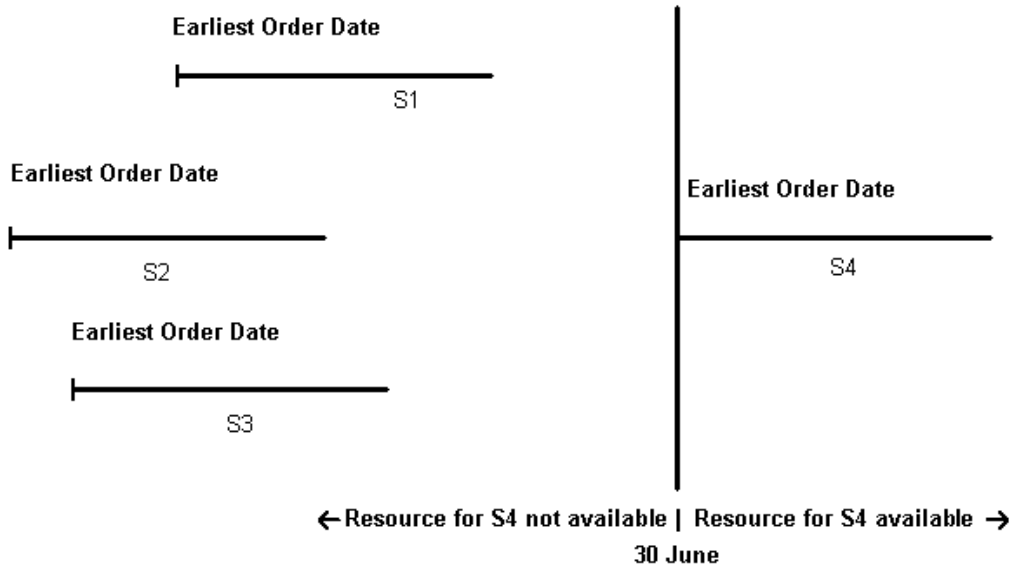
This diagram shows three supplies (S1, S2, and S3) pegged to supply S4. The planning engine forward scheduled the supplies. Among the subassemblies, S1 is the critical supply since it determines the earliest order date of supply S4 (the next highest level supply).

***Critical Activity Example***



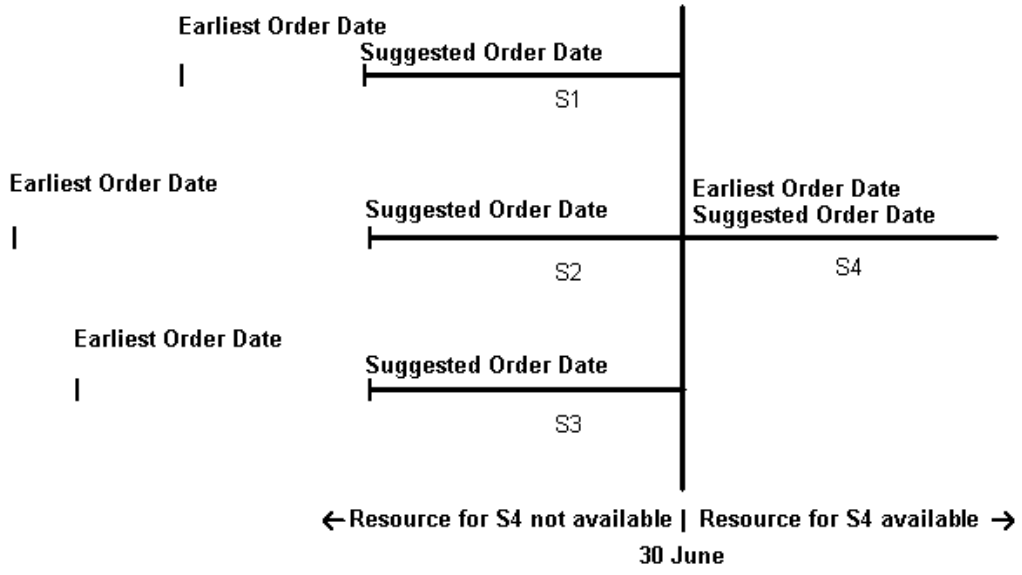

The critical supply does not always have to have its suggested order date and earliest order date the same. In this diagram, the first resource that supply S4 needs is not available until 30 June. Therefore, this resource, rather than supply S1 is the critical activity that determines the earliest order date for supply S4.

***Resource Constraint on Assembly Example***




This diagram shows the final schedule after the planning engine has backward scheduled from the demand satisfied date of supply S4 to minimize work in process and inventory. The planning engine still considers supply S1 as the critical activity.

*Final Schedule for Assembly Example*




### Resource Utilization Profile

The resource utilization profile information includes:

- All the resources required to complete the operation
- Required hours and available hours
- Overload or underload conditions
- Firmed indications
- Percent resource utilization
- Precedence constraints
- All the tasks being worked on by the resource grouped into orders with the same, higher, and lower priority than the one you are researching

### Constrained Times

Constrained Earliest and Actual Times represent the earliest that an activity can start considering resource capacity constraints, supplier capacity constraints, and resource precedence constraints (the earliest that an activity can start is dependent of the earliest time that the previous activity can complete).

### Resource Precedence Constraints

Resource precedent constraints are constraints that cause an activity associated with the late demand to wait for a resource when it is otherwise ready to be worked on. They cause the earliest possible completion time to be later and delay satisfaction of the late demand.

Use the resource utilization profile information to identify resource precedent constraints on the late demand:

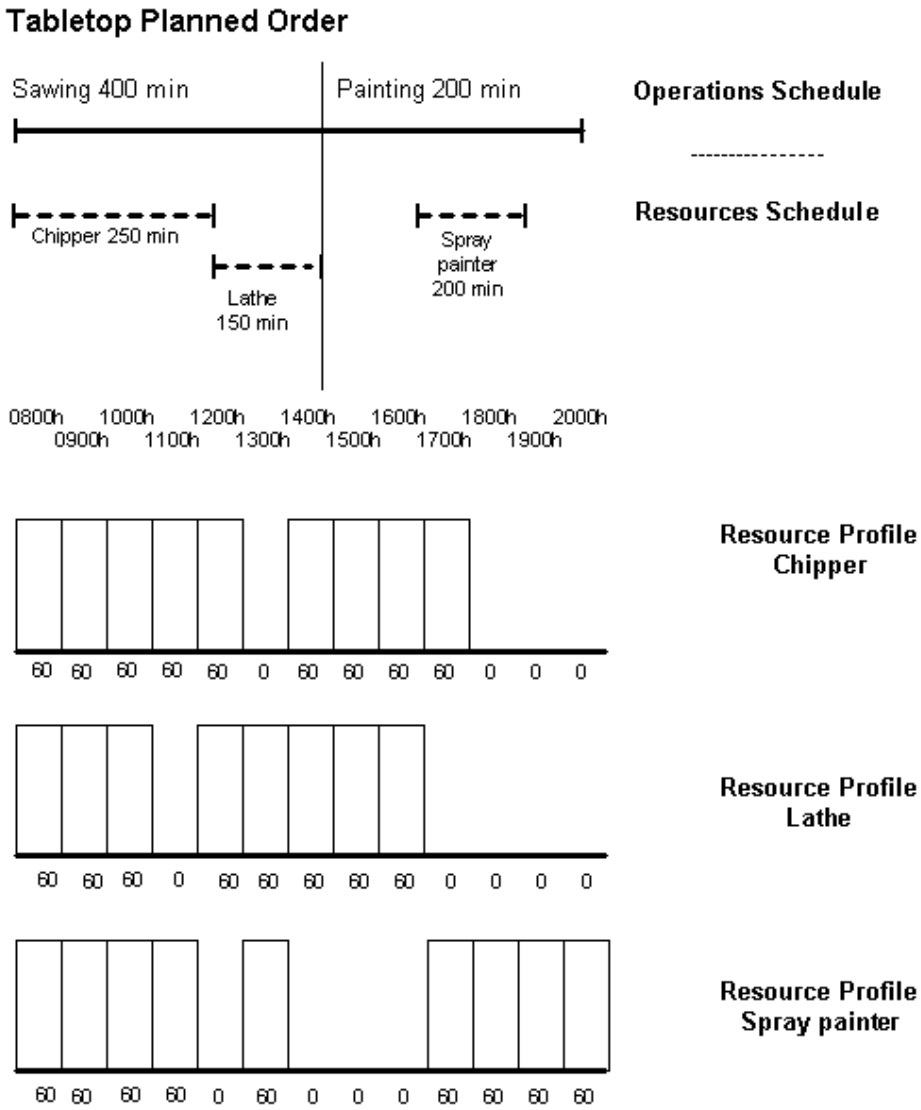
- All the levels of resources and operations that satisfy the late demand and their precedence relationships
- Availability of the upstream resources; if one upstream resource has low availability, it will tend to make all downstream operations later
- Availability of the downstream resource; since the planning engine backward schedules late demand operations to be just-in-time, a downstream activity that is late because of resource unavailability results in late scheduled upstream operations.

Demands constrained by resources also receive a Resource constraint exception message and you use that exception message to find addition information about the resources.

This diagram shows the operations and resource schedule for a tabletop. Operation 10 Sawing takes 400 minutes and uses resources Chipper for 250 minutes and Lathe for 150 minutes. Operation 20 Painting takes 200 minutes and uses resource Spray painter. The capacity consumption profiles for the resources show that the resources are not always available. Therefore, the:

- Schedule for this supply is delayed while waiting for the resource Spray painter
- Due date of the supply is later than it would be if the resource was available when the tabletop assembly was ready for it

*Precedence Constraints and Resource Availability*




**Min Possible Days Late**

For supplies, this indicates how late the end demand would be if this supply was the only late supply.

The calculation for Min Possible Days Late is Earliest Completion Date - Need by Date.

The supply Need by Date is the demand Due Sate. Since the planning engine calculates Need By Date from the item fixed and variable lead-times, the Need By Date may be different than the Suggested Due Date from detailed scheduling.

#### Planning Level

For operations, this indicates its level on the supply chain routing. The higher the number, the lower the operation is on the routing.

For example, if the end item assembly has operations 10, 20, and 30, the level of:

- Operation 10 is 3
- Operation 20 is 2
- Operation 30 is 1

#### Item Lead Time Constraints

Item lead times can cause delays in demand satisfaction.

For example:

- Tabletops are buy items with the item lead-time of 60 days. For buy items, the order date is offset from the dock date by the pre-processing lead-time plus either the default supplier lead-time or by the default the item lead-time.
- If there is no supplier assigned with a specific lead-time, the forward scheduling process on the late demand supply order schedules the dock date for the tabletop 60 days from the plan start date.

If checking determines that this is the reason for the delay of the order, the planner should correct and firm the scheduled dock date for the planned order and consider adjusting the item and default supplier information for the future.

You can run Constrained - enforce demand due date plans so that they might satisfy demands late. You set profile option MSO: Lead Time Control to Do Not Violate Minimum Processing Time. The planning engine schedules a demand late if it:

- Starts from the demand due date
- Backward schedules the supply orders
- Needs to schedule supply orders before the planning time fence date or the plan start date

For these late demands, Unconstrained Earliest Possible Start Time is the same as Unconstrained Latest Possible Start Time and Unconstrained Earliest Possible Completion Time is the same as Unconstrained Latest Possible Completion Time.

The critical path is the branch of the supply chain bill of materials with the longest cumulative lead time.

#### Dependent Demand Material and Resource Constraints

Late demands can be due to material and resource constraints on dependent demand

items. Look for the following situations:

- Supplier capacity for buy dependent demand items: For example, if there is no supplier capacity for purchased tabletops before day 100, then all the planned orders for tabletops are scheduled from day 100 and all other orders downstream and upstream are realigned with them.

- The downstream operations for the dependent demand need resource capacity: For example, a downstream resource is available from day 0 to day 100. Since there is no available capacity from day 101 to the plan horizon, the planning engine must schedule the operation after the plan horizon date (where it assumes infinite capacity). This pushes out the downstream operation, its work order, and the corresponding dependent demand.

#### Planning Time Fence Constraints

The planning time fence also imposes certain constraints on the scheduling. Planning time fence is the point in time in the scheduling process that marks a boundary inside of which changes to the schedule may adversely affect component schedules, capacity plans, customer deliveries and cost. Therefore, planned orders outside the planning time fence can be changed by the system planning logic, but changes within the planning time fence must be manually changed by the master scheduler or planner. Therefore, if the planning time fence is too large, then the demands cannot be rescheduled within the time fence and may be delayed. The planner should be able to see a 'Reasons for Lateness' report, which details the effect of the planning time fence on the lateness of the order.

#### Other Late Demand Causes

When researching late demands, also look for the following situations:

- Item fixed and variable lead-times that do not accurately reflect the length of the routing process. This can result in less optimal pegging which can indirectly cause lateness. It is especially a problem for buy orders with no supplier lead-time and for transfer orders whose source organization is not planned.

- Transportation resource availability inaccurate

- In-transit duration setup between organizations inaccurate

- Many units of a resource are available but the resource assigned units specified on a routing is a lower number. The planning engine uses the routing assigned units as an upper limit on the number of resource units it schedules.

- Preprocessing lead-time inaccurate

- For buy orders, supplier lead-time and postprocessing lead-times

- For transfer orders, the intransit and postprocessing lead-times

### Researching Late Demands Example

A sales order line for item A has due date 7 September. The item receives a Late replenishment for sales order exception message for the 7 September demand with demand satisfied date 30 September.

Check the critical path for completion of the demand. The gaps between levels on the critical path are the best indicator of the constraints, even more than the difference between actual times.

A gap is usually caused by a combination of several constraints, for example, the precedence with the previous level and resource constraints on the current level.

Determine that the reason for the late demand is a precedence constraint on a subassembly; the EPST of the subassembly is 20 September.

Determine the cause of EPST of subassembly is resource availability of RES1.

Check earliest possible start time (EPST) and earliest possible completion date (EPCT) for one of the tasks scheduled on RES1 on 18 September.

Check resource utilization profile for RES1 to determine tasks on RES1 for 18 September.

Identify tasks of the same priority, higher priority, and lower priority.

Check material constraints that might cause a bottleneck to the operation.

Check other late demand causes, for example, item lead-times and planning time fence constraints.

## Viewing Late Demand Information

To obtain more information about the root causes of a late demand, use the following Planner Workbench windows:

- Gantt Chart Orders View: A graphical interface of the late demand with all the supplies pegged to it, start and end times, and critical activities contending for capacity.

- End Pegged Supplies: Supplies pegged to the late demand including the supplies for the independent demand and for all the dependent demands.

- Critical Activities: The activities that lie in the critical path of meeting the end demand. If you focus on expediting these, you should see the most improvement in the demand satisfied date.

  Days Late (Unconstrained) is (Due Date / End Date) – Unconstrained Latest Possible Completion Time.

  For Constrained - Enforce due date plans with profile option MSO: Lead Time Control set to Do Not Violate Minimum Processing Time, Due Date/End Date is the same as Unconstrained Earliest Possible Completion Time.

If the critical path encounters a firm discrete job, firm planned order, or firm operation),

it displays information until the last activity of the firmed supply. It does not consider the following as critical:

- All operations of the firmed supply
- Components pegging to the firmed supply

#### To access root cause information

1. Access any of the following windows:
   - Exception Details window for Late replenishment for sales order or Late replenishment for forecasts.
   - Exception Details window for Material constraint or Resource constraint. Right-click and exception and select Related Exceptions. View Late replenishment for sales orders and Late replenishment for forecasts.
   - Supply/Demand window or Demand window for an item. Select a late demand.
2. Right-click on a late demand.

   For the Gantt Chart, Order view, select Gantt Chart, then select Order view.

For more information on the Gantt chart, see The Order - Centric View, page 16-161

#### Information in the Planner Workbench Critical Activities Window

The Planner Workbench Critical Activities window shows the activities that lie in the critical path of meeting the end demand. If you focus on expediting these, you should see the most improvement in the demand satisfied date.

Earliest Order Date

Earliest Completion Date

Min Feasible Start Time: For

- Planned orders, the planning time fence
- Scheduled receipts outside the planning time fence, the planning time fence
- Buy scheduled receipts inside the planning time fence, Old Dock Date
- Make scheduled receipts inside the planning time fence, Old Start Date

Min Possible Days Late

Critical Path Number: The planning engine assigns this number when there is more than one critical path. It has no meaning for the planner.

Critical Path Level: The level in the supply chain bill of an item. The higher the number, the lower the item is on the bill. For example, you have a supply chain bill of material A

> B > C. The planning engine assigns these critical path levels:

- 1: Item A
- 2: Item B
- 3: Item C

Gap: The time between an operation and its previous operation. The planning engine calculates it as the Earliest Possible Start Time of this operation - the Latest Possible Completion Time of the previous operation.

Planning Level: The level in the supply chain routing of an item-operation. The higher the number, the lower the item-operation combination is on the routing. For example, you have a supply chain bill of material A (operations 10, 20, and 30) > B (operations 10, 20, and 30) > C (operation 10). The planning engine assigns these planning levels:

- 1: Item C, operation 10
- 2: Item B, operation 30
- 3: Item B, operation 20
- 4: Item B, operation 10
- 5: Item A, operation 30
- 6: Item A, operation 20
- 7: Item A, operation 10

Scheduled Demand: The demand that the supply's critical path satisfies

## Online Simulation

You can simulate different ways to resolve exceptions before you make permanent changes by modifying information.

Supplier capacity:

- Add supplier capacity
- Modify dates and quantities

Resource availability:

- Add resource availability
- Modify dates and quantities
- Add new shifts

Supplies:

- Add planned orders
- Firm planned orders, discrete jobs, and purchase orders
- Modify quantities, dates, sources, and alternates

Demands:

- Add Manual MDS
- Modify order priority

Plan Options: Modify objectives

In this process, you may eliminate one exception but create another. For example, if you decide to offload some operations to a different resource, you may overload it.

## Identifying Differences Between Plans

If you rerun a plan or run a new plan after making changes or simulated changes, you can compare two plans to find out why the two plans differ. This is useful for determining if:

- Actions taken by a planner to solve a specific problem have the desired overall effect

  For example, a planner may choose to address a late sales order by increasing the priority of the sales order, and then replanning (generating a new plan in the process). By comparing the new plan to the original plan, the planner can see whether the problem sales order is now on time, and whether any other sales orders may have been pushed out as a result of pulling in the problem sales order.

- Plan setup changes led to changes in key indicator performance. You can compare the plan option settings for two plans.

To compare plans, use the Plan Comparison Report. See Plan Comparison Report, page 22-3.

## Implementing Plan Changes

Based on the results of your analysis, online simulations, and plan comparisons, you can implement changes in the execution system:

- Make most changes in the source instance, including changes to sourcing rules defined in the source.
- Make cross-instance planning sourcing rule changes in the destination instance.

# 16

# Planner Workbench

This chapter covers the following topics:

- Overview of Planner Workbench
- Tailoring the User Interface
- Using the Context Windows
- Implementing Planning Recommendations
- Interactive Scheduling Using the Gantt Chart
- Accessing Planner Workbench From Oracle Collaborative Planning
- Displaying Suppliers Modeled as Organizations

## Overview of Planner Workbench

The Planner Workbench is a powerful graphical tool that lets you perform advanced simulation, review plan performance, and take actions based on system recommendations.

You can use:

- Planner Workbench to view the output of a plan run. Navigate to Supply Chain Plan > Workbench
- Collections Workbench to view collected data from the source instance. Navigate to Collections > View Collected Data

Both have the same structures and navigation styles.

### Planning Detail Report

The Planning Detail Report provides a simple and consolidated report that shows the output of the advanced supply chain planning process. The report gives detailed information to help you understand and analyze the supply chain planning results by

presenting the data selectively and coherently. For a given Supply Chain Plan, the report includes the relevant details about items, resources, gross requirements, scheduled receipts, planned orders, plan constraints, and exceptions in separate worksheets.

See Planning Detail Report, page 22-7.

### General Navigation

The Planner Workbench consists of two main tabs, Plan and Queries. The Plan tabbed pane appears by default. However, you can change the default pane settings in the Preferences window. You can specify Queries as the default tab in the Others tabbed pane of the Preferences window.

The Plan tabbed pane displays a list of plans in a tree structure. You can drill down to the elements in the tree and view corresponding information such as exception messages, supply and demand. The detailed information related to the selected item appears in separate context windows. You can use the following to navigate to various context windows for the selected item:

- Icons
- Tools menu
- Right-click pop-up menu

The Plan tabbed pane displays all available plans for your organization whereas the Queries tabbed pane displays filtered information. You can create specific queries to filter items, resources, supply, demand, exception messages, and suppliers according to your criteria in the Queries tabbed pane. For more information on the Queries tabbed pane, refer to Queries Tabbed Pane.

## Plan Tabbed Pane

The Plan tabbed pane displays a list of plans for an organization. These plans are arranged in a hierarchical tree format. You can expand a plan to view its elements or nodes.

#### View By

You can view a plan by:

- Actions
- Items
- Organizations
- Projects

- Resources
- Suppliers

You can select your view by preference from the View By drop-down menu that is available at the top in the Navigator. The following sections show the drill down information for each view.

**Actions**

Plans > Versions >Exception Groups ...

For exception sets other than Recommendations,

... > Exceptions > Organizations > Items

For Recommendations exception set,

... > Scheduled Receipt Type > Organizations > Items

**Items**

Plans > Product Families/Models/Option Classes or Categories > Items ...

... > Organizations > Components/Departments/Lines/Transportation Resources

... > Approved Suppliers

**Organizations**

Plans > Organizations ...

... > Product Families/Models/Option Classes or Categories > Items > Components/Approved Suppliers

... > Departments > Resources (owned) > Items > Components/Approved Suppliers

... > Transportation Resources

**Projects**

Plans > Organizations ...

... > Planning Groups > Common > Items

... > Items > Planning Groups > Common

**Resources**

Plans > Organizations > Department Classes, Resource Groups, Lines, or Transportation Resources > Departments > Resources > Items

**Suppliers**

Plans > Approved Suppliers > Categories > Items Organizations

### Drill Down

In any window with summary information like actions summary or horizontal plan, you can drill down to more detailed information by double-clicking on an element. This feature lets you do the following:

- Drill down on action messages to view details of a particular action.
- Drill down to different levels in the Items, Organizations, and Resources categories to view details.
- Drill either down or up from a supply or demand order in the Pegging tree.
- When working in the Items or Organizations category, drill down from the Horizontal Plan to view supply/demand details. When working in the Resources category, drill down from the Horizontal Plan to view resource availability.
- When working in the Items or Organizations category, drill down from the Vertical Plan to view supply/demand details.

### Multi-selecting in the Navigator

You can multi-select items or nodes in the Navigator:

- Expand the tree and select a node.
- Hold the Shift key down and select another node.

You can right-click and select an option to view information about the multiple nodes you selected.

> **Note:** You cannot use multi-select to select two nodes that do not belong to the same folder, nor can you multi-select an item and a product family.

### Navigating Using Icons

You can use the icons in the Navigator to view detailed information about the element you select.

You can use these icons to:

- Create, save and execute queries for filtering items, exception messages, resources, suppliers, supply and demand based on specific criteria. The first icon is for creating a query while the second and third are for saving and executing queries, respectively.
- View the horizontal plan.

- View the supply and demand details.
- View the exception messages related to the plan or the element.
- View the items related to the plan or the element.
- View the Gantt chart.
- View additional details such as key indicators, process effectivity, and resources.

Based on your selection of plans or elements, icons that are not relevant may get disabled. You can select multiple items using Control-Click.

### Pull-Down Menus

Pull-down menus take context from the Planner Workbench tree. For example, if an item node is selected, the pull-down menus will be related to that item. If a resource is selected, the pull-down menu will be related to that resource.

### Right-click Menu Options

Right-click menu take context from the Planner Workbench tree. For example, if you select an item node, the right-click menu options related to that item appear. The right-click menu options available for various node types (elements) when you view by Actions, Items, Organizations, Projects, Resources, and Suppliers are listed.

Refer the following table for right-click menu options for various node types in view by Actions:

| Node Type | Right-click Menu Options |
|---|---|
| Plan | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |

| Node Type | Right-click Menu Options |
| --- | --- |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Options |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Versions / Exceptions Group / Exceptions | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |

| Node Type | Right-click Menu Options |
|---|---|
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Organization | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |

| Node Type | Right-click Menu Options |
|---|---|
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Items | Exceptions > submenu: |
| | Summary |
| | Details |
| | Horizontal Plan > submenu: |
| | Default |
| | Vertical Plan |
| | Supply/Demand > submenu: |
| | Supply |
| | - Demand |
| | Supply/Demand |
| | Onhand |

| Node Type | Right-click Menu Options |
|---|---|
| | Items > submenu: |
| | Items |
| | Substitutes |
| | Resources > submenu: |
| | Resources |
| | Supply Chain > submenu: |
| | Sources |
| | Supply Chain Bill |
| | Destinations |
| | BOM/Routings > submenu: |
| | Components |
| | Routing Operations |
| | Where Used |
| | Process Effectivity |
| | Co-Products |
| | Key Indicators |
| | Refresh >submenu includes All and Only Selected |
| | Properties |
| | Delete |
| | Help |

Refer the following table for right-click menu options for various node types in view by Items.

| Node Type | Right-click Menu Options |
|---|---|
| Plan | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Options |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |

| Node Type | Right-click Menu Options |
|---|---|
| | Help |
| Categories | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Expand Partial |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |

| Node Type | Right-click Menu Options |
| --- | --- |
| | Help |
| Items / Organizations / Components / Where Used | Exceptions > submenu: |
| | Summary |
| | Details |
| | Horizontal Plan > submenu: |
| | Default |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Supply Chain > submenu: |
| | Sources |
| | Supply Chain Bill |
| | Destinations |
| | BOM/Routings > submenu: |

| Node Type | Right-click Menu Options |
|---|---|
| | Components |
| | Routing Operations |
| | Where Used |
| | Process Effectivity |
| | Co-Products |
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |

Refer the following table for right-click menu options for various node types in view by Organizations.

| Node Type | Right-click Menu Options |
|---|---|
| Plans | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |

| Node Type | Right-click Menu Options |
| --- | --- |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Options |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Organizations | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |

| Node Type | Right-click Menu Options |
|---|---|
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Categories | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |

| Node Type | Right-click Menu Options |
| --- | --- |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Expand Partial |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Items | Exceptions > submenu: |
| | Summary |
| | Details |
| | Horizontal Plan > submenu: |
| | Default |
| | Vertical Plan |

| Node Type | Right-click Menu Options |
|---|---|
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Substitutes |
| | Resources > submenu includes Resources |
| | Supply Chain > submenu: |
| | Sources |
| | Supply Chain Bill |
| | Destinations |
| | BOM/Routings > submenu: |
| | Components |
| | Routing Operations |
| | Where Used |
| | Process Effectivity |
| | Co-Products |
| | Key Indicators |

| Node Type | Right-click Menu Options |
| --- | --- |
| | Refresh > submenu includes All and Only Selected |
| | Properties |
| | Delete |
| | Help |
| Departments / Resources / Transportation Resources | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Resource Availability |
| | Resource Requirements |
| | Gantt Chart |

| Node Type | Right-click Menu Options |
|---|---|
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |

Refer the following table for right-click menu options for various node types in view by Projects.

| Node Type | Right-click Menu Options |
|---|---|
| Plans | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |

| Node Type | Right-click Menu Options |
| --- | --- |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Options |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Organizations | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |

| Node Type | Right-click Menu Options |
|---|---|
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Planning Groups / Projects / Tasks | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Key Indicators |

| Node Type | Right-click Menu Options |
|---|---|
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Items | Exceptions > submenu: |
| | Summary |
| | Details |
| | Horizontal Plan > submenu: |
| | Default |
| | Vertical Plan |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Substitutes |

| Node Type | Right-click Menu Options |
|---|---|
| | Supply Chain > submenu: |
| | Sources |
| | Supply Chain Bill |
| | Destinations |
| | BOM/Routings > submenu: |
| | Components |
| | Routing Operations |
| | Where Used |
| | Process Effectivity |
| | Co-Products |
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |

Refer the following table for right-click menu options for various node types in view by Resources.

| Node Type | Right-click Menu Options |
| --- | --- |
| Plans | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Options |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |

| Node Type | Right-click Menu Options |
|---|---|
| Organizations | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Department Classes / Departments | Exceptions > submenu: |

| Node Type | Right-click Menu Options |
|---|---|
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Resource Availability |
| | Resource Requirements |
| | Gantt Chart |
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |

| Node Type | Right-click Menu Options |
|---|---|
| | Help |
| Resources / Resource Groups / Transportation Groups | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Resource Availability |
| | Resource Requirements |
| | Gantt Chart |
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |

| Node Type | Right-click Menu Options |
| --- | --- |
| | Properties |
| | Delete |
| | Help |
| Items | Exceptions > submenu: |
| | Summary |
| | Details |
| | Horizontal Plan > submenu: |
| | Default |
| | Vertical Plan |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Substitutes |
| | Supply Chain > submenu: |
| | Sources |
| | Supply Chain Bill |

| Node Type | Right-click Menu Options |
|---|---|
| | Destinations |
| | BOM/Routings > submenu: |
| | Components |
| | Routing Operations |
| | Where Used |
| | Process Effectivity |
| | Co-Products |
| | Key Indicators |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |

Refer the following table for right-click menu options for various node types in view by Suppliers.

| Node Type | Right-click Menu Options |
|---|---|
| Plans / Organizations | Exceptions > submenu: |
| | Summary |
| | Details |

| Node Type | Right-click Menu Options |
| --- | --- |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Options |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Approved Suppliers | Exceptions > submenu: |
| | Summary |
| | Details |

| Node Type | Right-click Menu Options |
|---|---|
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Key Indicators |
| | Refresh > submenu: |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Categories | Exceptions > submenu: |
| | Summary |
| | Details |
| | Supply/Demand > submenu: |
| | Supply |
| | Demand |
| | Supply/Demand |

| Node Type | Right-click Menu Options |
|---|---|
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Expand Partial |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |
| Items | Exceptions > submenu: |
| | Summary |
| | Details |
| | Horizontal Plan > submenu: |
| | Default |
| | Supply/Demand > submenu: |
| | Supply |

| Node Type | Right-click Menu Options |
|---|---|
| | Demand |
| | Supply/Demand |
| | Onhand |
| | Items > submenu: |
| | Items |
| | Resources > submenu: |
| | Resources |
| | Key Indicators |
| | Supplier Information |
| | Refresh > submenu: |
| | All |
| | Only Selected |
| | Properties |
| | Delete |
| | Help |

**Oracle Advanced Planning Command Center Editable Material Plan**

Use the Oracle Advanced Planning Command Center Editable Material Plan to mass edit planned orders.

You can navigate to it from:

- Navigator pane from category and item levels
- Personal query results for item

Right click and select New Material Plan.

See *Oracle Advanced Planning Command Center User's Guide*.

**Oracle Advanced Planning Command Center Editable Resource Plan**

Use the Oracle Advanced Planning Command Center Editable Resource Plan to mass edit resource requirements.

You can navigate to it from:

- Navigator pane from department and resource levels
- Personal query results for resource

Right-click and select New Resource Plan.

See *Oracle Advanced Planning Command Center User's Guide*.

### Properties Window

You can view properties for any node in the Navigator or pegging tree by selecting the node, then choosing [right-click] > Properties.

For an MRP plan with an MPS plan as a demand schedule, the MRP item may peg to a demand in the MPS plan. In this case, the Properties window displays pegging information about the end demand from the MPS.

The Properties window displays different views depending on whether you navigate from a demand or a supply. The following displays the properties for a supply in the pegging tree.

### Navigating Through a Find Window

The Find windows enables you to control the volume of data displayed. You can set find criteria for all trees and detail windows.

The Find window enables you to display basic information for the items in the current plan, plus pegging and supply/demand information.

### To display the Find window

1. Select a plan in the Planner Workbench.
2. Choose Tools > [Exception Details, Supply/Demand, Supply, Demand, On Hand, Items, or Resources].

   The Find window appears. You can search for the following item details:

   - ABC Class (Items only)
     - BOM Item Type
     - Buyer
     - Category

- Effectivity Control
- Exception Set
- Forecast Control
- Item
- MRP Planning Method
- Make or Buy
- Nettable Quantity
- Non Nettable quantity
- Organization
- Planner
- Primary Supplier
- Repetitive
- Standard Cost
- WIP Supply Type

3. To retrieve all records, leave all fields blank and choose Find.
4. To retrieve a subset of records, enter a search string. You can use just one string in your search (containing a criterion, an operator, and a value), or you can enter several strings to refine your search.
5. Once you have entered at least one string containing a field name, a condition, and (optionally) a value, choose Find to start your search.
6. Optionally, choose a folder to import a previously defined search strings and start the search.

   **Wildcard Search Condition**

   If you want to perform a wildcard search, set the condition as Starts With. For example, if you want to retrieve all items that start with X, set the condition as Starts With and specify X in the From field.

   **Rolling Dates Search Condition**

   If you want to filter based on rolling dates, select Days From Today as the

condition. For example, if you want to retrieve all late replenishments for sales order exception messages where the due date is less than five days from today, select Days From Today condition and specify 5 in the From field.

### Expand Partial

Use Expand Partial to search for item(s) in the tree in the Planner Workbench and Collection Workbench. You can enter either the complete item name or a partial name with a wildcard.

**To use Expand Partial**

1. From Planner Workbench, select a plan name from the Navigator.
2. Select a category node, such as Organizations or Items.
3. Right-click on an item in the Navigator.

   A menu appears.
4. Select Expand Partial.

   The Enter Reduction Criteria for Long List form appears.
5. Enter either a complete item name or a partial item name with a wildcard and select OK. This search is not case sensitive.

   Matching results (up to 500 in number at a time) are displayed in the left pane. If there are no matching items, a message appears in the status bar.
6. Select Cancel to close the window.

## Queries Tabbed Pane

The Planner Workbench enables you to filter specific information in a plan. You can create queries to filter items, suppliers, resources, and exception messages based on specific criteria. You can also save the query and execute it whenever you require.

### Navigating the Queries Tabbed Pane

**Icons**

You can click the icons provided in the bottom of the Navigator to create, save and execute queries.

| Icon | Description |
|---|---|
| Create Query | First icon in the Navigator. |

| Icon | Description |
| --- | --- |
| Save Query | Second icon in the Navigator. |
| Execute Query | Third icon in the Navigator. |

### Right-click Menu Options

You can right-click in the Queries tabbed pane and select the following options pertaining to queries:

- Create Query
- Save Query
- View Query
- Execute Query
- Delete Query
- Rename Query

### Navigating Nodes in the Queries Tabbed Pane

The Queries tabbed pane consists of the following nodes:

- Query Result: You can expand the Query Result node to view the results of your unsaved queries.
- Personal Queries: You can save your query either as a Personal query or a Public query. In case you want to share the query with others planners, save the query as Public query. You can create and save various types of queries such as items, resources, exception messages, and suppliers within the Personal Queries node. For example, if you want to create a personal query to filter items in a plan, navigate to the Item type in the Personal Queries node, right-click and select Create Query.
- Public Queries: If you want to have exclusive ownership rights to view, execute, and modify a query, save it as a Personal query. The Public Queries node comprises of Item, Resource, Exception, and Supplier. You can create and save various types of queries such as items, resources, exception messages, and suppliers within the Public Queries node. For example, if you want to create a public query to filter exception messages associated with a plan, navigate to the Exception type in the Public Queries node, right-click and select Create Query.

## Create a Query

### To create a query

You can create queries for filtering items, resources, suppliers, and exception messages associated with a plan in the Planner Workbench.

1. Click the Queries tab in the Planner Workbench. The Queries tabbed pane appears.
2. Specify the name of the plan on which you want you run the query.
3. Right-click in the Queries tabbed pane to display the pop-up menu.
4. In the pop-up menu, select Create Query.

   Alternatively, you can click the Create Query icon at the bottom of the Queries tabbed pane to create queries.

   The Create Query window appears.
5. Specify a name for the query in the Query Name field.
6. Select a type of query from the Query Type drop-down menu to specify the information you want to filter.

   The various types of queries are Item, Resources, Exceptions, and Suppliers. You can select Item to create queries that filter information related to items. Similarly, you can select Resources and Suppliers to create queries that filter information related to resources and suppliers, respectively. For information about how to filter exception messages, see Exception Messages, page 15-1.
7. Click Yes in the Public drop-down menu in case you want the query to be visible to other planners as a public query.
8. Specify the criteria in the Criteria box. For example, you may want to filter those items that need to be purchased. In this case, specify Make or Buy, Equals, and Buy in the Criteria, Condition, and From fields, respectively.

   The following table lists the criteria for querying items, resources, and suppliers.

| Query Type | Criteria |
| --- | --- |
| Item | ABC Class |
| | BOM Item Type Buyer |
| | Category |
| | Effectivity Control |
| | Exception Set |
| | Forecast Control |
| | Item |
| | MRP Planning Method |
| | Make or Buy |
| | Nettable Quantity |
| | Non Nettable Quantity |
| | Organization |
| | Planner |
| | Repetitive |
| | Standard Cost |
| | WIP Supply Type |
| | Carrying Cost |
| | ATP Flag |
| | ATP Components Flag |
| | Create Supply Flag |
| | PIP Flag |
| Orders | Planning Group |
| | Project |
| | Task |

| Query Type | Criteria |
|---|---|
| Resources | Department Class |
| | Department Line |
| | Maximum Rate |
| | Minimum Rate |
| | Organization |
| | Owning Department |
| | Resource |
| | Resource Group |
| | Resource Type |
| Suppliers | Approved Supplier |
| | Supplier Site |
| | Buyer |
| | Category |
| | Item |
| | Organization |
| | Planner |
| | Standard Cost |

9. To retrieve all the records that meet any one of the criteria that you specify, select Match Any. However, if you want to retrieve only those records that meet all criteria, select Match All.

10. Select the check box preceding the criteria specifications for those criteria specifications that you want to include as active. When you execute a query, the planning engine considers only the active criteria as the basis for the search.

11. Click Save to save the query. Based on your selection, the planning engine saves the query either as a Personal Query or a Public Query.

12. Click Execute to run the query. The planning engine filters and displays the result based on the criteria you specified in the query.

    **View Results of a Query**

    When you execute a query, the planning engine displays the result to the right of

the Queries tabbed pane.

If you want to view the details of a specific filtered row, click the row. When you right-click the selected row, the available options appear. You can select the required option from the drop-down menu to navigate to context windows such as Exceptions window and Horizontal Plan window.

If you want to the view the Results window without the Navigator, you can click the Collapse window sliding bar, which is the vertical slider between the Navigator and the Results window.

> **Note:** To execute a query for a particular plan, you can specify the name of the plan in the Plan field.

**Multi-select Items in Query Results Window**

You can multi-select specific records or items in the Query Results window.

For example, you may want to view the demand information for two specific records in the Query Results window. Use Ctrl-click to highlight the specific records. Select [right-click] > Supply > Demand to view the demand information for the items you selected.

## Tailoring the User Interface

The following table shows the menu options for the Planner Workbench and what happens when a particular menu option is selected.

| Menu | Menu Option | Description |
|---|---|---|
| File | Export | Export the plan information to Microsoft Excel. |
| Edit | Duplicate | Duplicate a record. |
| Edit | Clear | Edit the current field. |
| Edit | Delete | Delete the current field. |
| Edit | Preferences | Set a user profile. |
| View | Show Navigator | Display Navigator window. |
| View | Find | Find a record. |

| Menu | Menu Option | Description |
|---|---|---|
| View | Find All | Find all records. |
| View | Query by Example | Run queries for certain information. |
| View | Record | View a record. |
| View | Requests | Review requests. |
| Tools | Exception Details | View exception details for your plan. |
| Tools | Supply/Demand | View supply and demand information. |
| Tools | Supply | View supply information. |
| Tools | Demand | View demand information. |
| Tools | On-Hand | View on-hand quantities. |
| Tools | Items | View items information. |
| Tools | Resources | View resources information. |
| Tools | Notifications | View notifications. |
| Tools | Launch Notifications | Launch notifications. |
| Tools | Work Dates | View work dates for your plan. |
| Tools | Preferences | Set preferences. For more information, see Defining Display Preferences, page 16-44. |
| Tools | Close All Detail Windows | Close all context windows that are open in the Planner Workbench. |

| Menu | Menu Option | Description |
|---|---|---|
| Plan | Start Online Planner | Start online planner. |
| Plan | Online Replan | Run replan. |
| Plan | Stop Online Planner | Stop online planner |
| Plan | Online Planner Status | View online plan status. |
| Plan | Batch Replan | Run replan in batch mode. |
| Plan | Save Actions | Save actions related to your plan. |
| Plan | Launch New Plan | Launch new plan |
| Plan | Copy Plan | Copy your baseline plan before running a new plan. |
| Plan | Purge Plan | Delete the plan. |
| Plan | Plan Options | View plan options. |
| Plan | Select All for Release | Release all planned orders for items with your planner code. |
| Plan | Release | Release selected orders only. |
| Plan | Undo Summary | View summary of changes in the Planner's Workbench for online planning purposes. |
| Plan | Add Undo Bookmark | Add bookmark to the Undo Summary. |
| Plan | Compare Plans | Compare plan exceptions and options |
| Plan | Firm All | Firm all orders that meet the requirements you specify in a search criteria within the planning time fence. |

You can tailor the user interface in the following ways:

## Resize Windows

You can resize windows as with any windows-based application. In the Planner Workbench you can adjust slide bars to change the relative widths of the Navigator and the context windows, such as Exception Summary, that you open.

## Customize Columns

You can show and hide cells and resize their heights and widths on the horizontal plan and folder windows.

## Adjustable Item Field

If you have large item numbers, you can add the Item field to the scrollable region of these Planner Workbench windows and adjust its size using folder technology:

- Supply/Demand
- Supply
- Demand
- On Hand
- Items
- Process effectivity

The Item field in the fixed region remains whether or not you also add the field to the scrollable region.

## Defining Display Preferences

Display preferences control what horizontal material planning data, horizontal capacity planning data, supplier planning information, transportation planning information, and supply/demand detail are displayed for each item.

### To define your display preferences

1. Navigate to the Planner Workbench.
2. Choose Tools > Preferences.

   The Material Plan tab appears as the default tab.
3. Type the name for your preference set.

A preference set is applicable to all types of horizontal plans. You can create and save up to three personal preference sets for viewing a horizontal plan based on your requirements. You may want to create multiple preference sets to view different levels of information for a horizontal plan. For example, you may want to view summary-level information with rows displaying gross requirements, total supply, safety stock, and on-hand quantity to validate whether or not supply matches demand at a period level. You may also want to view detailed information for each supply type on a daily-level.

Preference sets are unique to the individuals creating it. If you create and apply a specific preference set, it is available only to you.

4. Enter Display Buckets, Display Factor, Decimal Places, Show Graph and check each type of plan information you want to display in your material plan.

   Display Factor is a multiplier.

5. Choose the Capacity Plan tab.

6. Check each type of plan information you want displayed in your resource capacity plan.

7. Choose the Supplier Plan tab.

8. Check each type of plan information you want displayed in your supplier capacity plan.

9. Choose the Transportation tab.

10. Check each type of plan information you want displayed in your capacity plan.

11. Choose the Allocated ATP tab.

    Oracle Global Order Promising supports two allocation methods for different business needs:

    - Allocated ATP based on User-Defined Allocation Percentage
      - Allocated ATP based on Demand Priority

        For more details on Allocated ATP, see *Oracle Global Order Promising.*

12. Check each type of information you want displayed in your allocated ATP.

13. Choose the Other tab.

    Supply/Demand details appear. You can select the following based on your requirements:

    - Release Phantoms: Enables the release of planned orders for the phantoms.

- Release Configurations: Enables the release of planned orders for ATO items.
- Firm Jobs: Enables the release of the Firm status when you release the work in process jobs.
- Include Sales Orders: Enables the release of sales orders (loopback) from the Planner Workbench.
- Release VMI Items: Enables the release of those items from the Planner Workbench that have the item attribute set to VMI items. This check box is selected by default.
- Job Status: When Planner Workbench creates discrete jobs from planned orders, it assigns this status to the discrete jobs.

14. Enter a Job Status.

    When the Planner Workbench creates discrete jobs from implemented planned orders, it assigns the job status you enter in the Preferences window.

15. Select a Job Class.

    When the Planner Workbench creates discrete jobs from implemented planned orders, it assigns the job class you enter in the Preferences window.

16. Select a Req Group By default.

    When the Planner Workbench creates purchase requisitions from implemented planned orders, it assigns the requisition load group you enter in the Preferences window.

    If you do not have a value for this preference, Planner Workbench uses the value of profile option MRP: Requisition Load Group Option.

    Valid values are:

    - All on One: Creates one purchase requisition for all recommended orders
    - Buyer: Creates one purchase requisition for each buyer; within each requisition, creates one line for each planned order
    - Planner: Creates one purchase requisition for each planner; within each requisition, creates one line for each planned order
    - Vendor: Creates one purchase requisition for each vendor; within each requisition, creates one line for each planned order
    - Category: Creates one purchase requisition for each item category; within each

requisition, creates one line for each planned order

- Item: Creates one purchase requisition for each item; within each requisition, creates one line for each planned order
- One each: Creates a purchase requisition for each planned order

17. Enter a category set.

    This category set is used throughout Planner Workbench. Items that you have not assigned to a category in this category set do not appear in Planner Workbench.

    Oracle recommends that you typically select the default planning category set specified in Oracle Inventory. Do not select a category set with flag Allow multiple item category assignments selected. Planner Workbench does not support item assignment to multiple categories and you may experience unexpected results.

18. Under General, select either Plans or Queries in the Default Tab.

    You may consider having the Queries tabbed pane as default if you want a query to be executed automatically each time you open the Planner Workbench. You can specify the query name in the Auto Execute Query field. In addition, you can specify a default plan that needs to open when you access the Planner Workbench.

    View Recommendations for (Days from Today) specifies how many days of recommendations you want to see. Planner Workbench calculates Days from Today using the supply Suggested Order Date.

    If you want to view all actions in the expanded form, select Expand All Actions.

19. Choose Save to use your preference selections.

20. Choose Reset to use your previously saved selections.

    **Note:** The parameter Cutoff Date is not supported in Oracle Advanced Planning and Scheduling.

## Using the Context Windows

You can invoke context windows for a selected plan or element in the Navigator to view summary information in tables and graphs, including:

- Exceptions
- Horizontal Plan
- Vertical Plan

- Supply/Demand
- Items
- Resources
- Supply Chain
- BOM/Routing
- Key Indicators

You can highlight one or more nodes on the Navigator to include the result in a single context window. You can also use the Find window to further limit the context.

## Context Synchronization Between the Context Windows and the Navigator

The planning engine refreshes the context window to synchronize with the node that you select in the Navigator. The planning engine refreshes the context in an open context window when you:

- Select a context window from the right-click pop-up menu
- Click the available short cut icons
- Drill down in an open context window

## Exception Summary Window

The Exception context window segregates all of the exception messages that require immediate attention.

### To view exceptions

1. Choose a plan for which to view exception messages. You can view exception messages at the item level by selecting an item.
2. Drill-down to the item level and right-click the item.
3. To view the Exceptions Summary window, click Exceptions > Summary.

   The Exceptions Summary window appears.

   The Exception Summary window lists exception groups and exception messages for the selected plan in order of their usefulness in troubleshooting. For instance, exceptions due to late sales orders appear before exceptions due to resource constraints.

   Using the Find window, you can sort, group, or sub-total exceptions according to

various criteria including item, supplier, or buyer, for example.

#### To expand all actions

If you want to expand all actions in the Exceptions Summary window, perform the following steps within the Exception Summary window:

1. In the Exceptions Summary window, click in any row that has data.
2. Select [right-click] > Expand All.

   The expanded actions appear.

   If you want to specify your preference of viewing the expanded actions each time you access the Exception Summary window, perform the following steps:
3. Click Tools > Preferences to open the Preferences window.
4. Click the Other tab.
5. In the General box, select Expand All Actions.
6. To save your preference, click Save.
7. Close the Preferences window. When you view the Exception Summary window, the expanded actions appear.

#### To sort exceptions

1. From the Exception Summary window, select View > Find.

   The Find Actions window displays.
2. Select criteria by which to sort exceptions.
3. Check Display Message Count check box.
4. Select Find button.

   Exception messages appear in the Exception Summary window sorted accordingly.

## Exception Details Window

#### To view exception details

Choose [right-click] > Exceptions > Details on an item. The Exception Details window appears.

Exception details display pre-seeded default folders (combination of various key columns) based on exception type. For example, Late Replenishment for Forecast exception detail has a different exception default folder than Material Constraint

exception.

> **Note:** If you select several different exceptions, the generic default folder appears. You can customize exception folders based on your preferences and save it as the default. This is explained in the next section.

Please note that the Days Late column is available and filled in for the following exceptions: Late Replenishment for Forecast and Late Replenishment for Sales Order.

The column named Quantity Satisfied By Due Date in the Exception Details form is used to present the portion of a demand that can be satisfied by the due date.

#### Drill Down to Related Exceptions

If you are working in a constrained or optimized plan, you can drill down from an exception to Related Exceptions (Right Mouse Options) to analyze questions like:

- Why is the order late? Is it because of a resource, material, or transportation resource constraint?
- A material/resource/transportation resource issue is detected. Will it cause any late orders?

The objective is to explain the cause and effect of the problems. The related exceptions that each exception drills down to are indicated by an arrow.

On the other hand, from the constraint exception (resource, material, or transportation resource), you can also drill down to Late replenishment for sales order/forecast if the constraint causes the late replenishment.

This feature only applies to the following:

- Late replenishment for sales orders
- Late replenishment for forecast
- Material constraint
- Resource constraint
- Transportation resource constraints

#### To view related exceptions for the Late Replenishment for Sales Order

1. Select a row in the Late Replenishment for Sales Order Exception Details window.
2. Choose [right-click] > Related Exceptions.

   Related exceptions appear in the Exception Details window.

### Relevant Information Buttons

On the Exception Details window, additional information about the exception can be obtained through clicking the buttons on the bottom of the window. The type of exception determines what buttons are available. For example, the Items and Supply/Demand buttons are available for the Late replenishment for sales order exception.

The following buttons are available:

- Suppliers: For details on the Suppliers window, see Supplier Capacity Window, page 16-125.
- Resources: For details on the Resources window, see Resources Window, page 16-130.
- Items: For details on the Items window, see Items Window, page 16-116.
- More Details
- Supply/Demand: For details on the Supply/Demand window, see Supply/Demand , page 16-64.

### Right-click Menu Options

From the Exception Details window, planners can obtain more information through a right mouse click on the exception. The type of right mouse options users have is determined by the exception that is selected. Options included are:

- Supply
- Demand
- Resource Availability
- Resource Requirements
- Sources
- Destinations
- Related Exceptions
- Gantt Chart
- Horizontal Plan
- Vertical Plan

- End Pegged Supplies
- Critical Supplies
- Calendar

## Horizontal Plan

You can display your plan information horizontally or vertically.

The horizontal plan information is displayed in a pivot table enabling you to drill down from years, to periods, to weeks, to days. The following table shows the default display for the horizontal plan for each plan type:

| Plan Type | Default Display |
|---|---|
| Material Plan | Projected Available Balance |
| Capacity Plan | Required Hours vs. Hours Available |
| Supplier Plan | Required Capacity vs. Available Capacity |
| Transportation Plan | Weight Capacity Available vs. Weight Capacity Required |

The horizontal plan does not show fictitious demand created at the planned inventory point level.

For long-running processes, you can segment the material completions from a supply over the time of the process (supply segments). However, the horizontal plan displays its supply information, including information relating to available-to-promise, as if all of the supply is only available as of the supply due date.

### Viewing the Horizontal Plan

**To display your horizontal plan**

1. Select one or more items, resources, lines, transportation resources, or suppliers from the Navigator.
2. Select [right-click] > Horizontal Plan > Default. If you create multiple preference sets for the horizontal plan, the preference set names appear in the Horizontal Plan right-click pop-up menu. You can select the preference set based on your requirement. For more information on preference sets, see Setting Preferences for Viewing Horizontal Plan, page 16-60.

### Viewing Item Demand/Supply Across All Organizations

The horizontal plan in the Planner's workbench supports an aggregate view of supply-demand for items across all organizations in the supply chain plan.

#### To view an item's horizontal plan across all organizations

1. Navigate to the Planner Workbench.

2. There are two ways of viewing the horizontal material plan across all organizations:

   - View by items and highlight an item. This option provides you with an aggregate view across all organizations. The planning engine displays the numbers in the horizontal plan as an aggregate of all organizations.

   - Alternatively, you can expand the item node and multi-select all organizations that the item is planned for. This option provides you the horizontal plan for each organization that you select.

3. Select [right-click] > Horizontal Plan > Default (or any preference set you may have created).

   The horizontal plan information is displayed in a pivot table that enables you to drill down from aggregate to periods to weeks to days.

### Information in the Horizontal Plan View

This table describes the fields displayed in the Horizontal Plan window, Material Plan:

| Field | Description |
|---|---|
| Sales orders | Sales orders, including internal sales orders. |
| Forecast | Forecasts from Oracle Inventory and Oracle Demand Planning. |
| Production forecast | Demand generated by the forecast explosion process based on product families, models, and option classes. This helps differentiate between dependent demands and derived dependent demands. |
| Dependant demand | The planning engine calculates the dependent demand. |
| Expected scrap | Demand resulting from the application of the Shrinkage Rate item attribute to existing supplies and planned orders. |

| Field | Description |
| --- | --- |
| Payback demand | Demand resulting from a borrow or a payback transaction in Oracle Project Manufacturing. |
| Other independent demand | This includes the following:<br>- Hard reservation (against sales order in Oracle Order Management)<br>- Copied Schedule Demand<br>- Demand Class Consumption (used by allocated ATP)<br>- Expired Lots<br>- Non-standard Demand |
| Gross requirements | The planning engine calculates the total demand in the following way:<br>Sales Orders + Forecasts + Production Forecast + Dependent Demand + Expected Scrap + Payback Demand + Independent Demand<br>The total demand from sales orders, forecasts, dependent demands, payback demand, scrap demands, expired lots, and other demands. |
| Work Orders | Existing make orders from Oracle Discrete Manufacturing, Oracle Process Manufacturing, Oracle Flow Manufacturing, and Oracle Project Manufacturing. |
| Purchase orders | Existing purchase orders. |
| Requisitions | Existing requisitions without corresponding purchase orders, including internal requisitions. |
| In Transit | Interorganization transfer quantities or quantities shipped from suppliers (after the customer receives the advanced ship notice). |
| In Receiving | Quantities that are received at the receiving dock but are not yet received into the inventory. |

| Field | Description |
| --- | --- |
| Planned orders | Make and buy planned orders |
| Payback supply | Supply resulting from a borrow or a payback transaction in Oracle Project Manufacturing. |
| Total supply | The planning engine calculates total supply as an aggregate of work in process, purchase orders, purchase requisitions, in transit, in receiving, planned orders, and payback supply. |
| Beginning on hand | The amount of stock in inventory at the beginning of a plan on hand. The value is 0 for all subsequent periods. |
| Projected available balance | The planning engine calculates this as:<br>Beginning On hand + Total Supply - Total Demand |
| Current scheduled receipts | The planning engine calculates this as the sum of work in process, purchase orders, purchase requisitions, in transit, in receiving, and payback supply. |
| Projected on hand | The planning engine calculates this as:<br>On hand + Beginning Total Supply - Total Demand<br>The planning engine does not include planned orders to calculate the projected on hand. |
| Safety Stock | Safety stock level at the end of the bucket. |
| Net ATP | This indicates the difference between the net supply and demand after ATP performs all forward and backward consumption. |
| Expired lots | This indicates the quantity of expired lots. |

| Field | Description |
| --- | --- |
| ATP+ | The available to promise quantity available based on the plan without considering capable to promise or capable to deliver, The quantity available is as of the plan run and does not account for any supply/demand changes since the plan run. |
| Planned Repair Work Orders, Maintenance Work Orders, Defective Part Demand, Returns Forecast, Defective On-Hand, Defectives In-Transit, Projected Available Balance (Defective) | For asset intensive planning<br>- The defective item supply quantities for repair--on hand, in process, and in transit.<br>- The item demand quantity of forecasted returns<br>- The predicted balance of defective items |

This table describes the fields displayed in the Horizontal Plan window, Capacity Plan:

Before you collect resource availability, attend to source system profile option MRP: Cutoff Date Offset Months. It tells the planning engine how many months of resource availability to calculate for resources and simulation sets. The planning engine does not calculate this information beyond this horizon. For constrained plans beyond this horizon, resource capacity is infinite. Set this value to your plan horizon. A large setting, for example, 12 months, could impact your planning engine performance.

| Field | Description |
| --- | --- |
| Hours available | Calculated based on setups of resources. Collect this information during the collections process using Resource Availability set to either:<br>- Collect Existing Data<br>- Regenerate and Collect Data<br>In the operational data store load parameters, set Recalculate Resource Availability to Yes. |
| Setup hours | Required hours of setup time, including changeover setups |
| Setup hour ratio | Ratio of Setup Hours to Total Hours Available |

| Field | Description |
|---|---|
| Run hours | Required hours of run time (does not include setup time) |
| Run hour ratio | Ratio of Run Hours to Hours Available |
| Required hours | Total Required hours |
| Net hours available | Hours Available - Required Hours |
| Cum hours available | Net available across the plan horizon |
| Capacity load ratio | Load ratio of Required Hours to Hours Available for the bucket |
| Cum capacity load ratio | Load ratio of Cum Required Hours to Cum Hours Available across the plan horizon |
| Hours required per day | Daily hours required |
| Hours available per day | Daily hours available |
| Net ATP | Available to promise availability |
| Maintenance Work Order and Planned Repair Work Order | For asset intensive planning, the required hours for these order types. |

#### Custom Rows

If information that you want to see that is not available on the Horizontal Plan, you can:

- Make your own custom row
- Choose a label for it
- Select the information to display in it
- Enable it selectively, for example, by user or by preference

For example, you want to see projected available balance shown in value instead of in quantity.

If the Horizontal Plan contains information that you want to see in a different way, you can modify it. For example, you might want so see information a Horizontal Plan row in an alternate unit of measure.

To use a custom row:

- Specify the information to display: Provide a PL/SQL program unit with no parameters that. Enter the name of the program unit in profile option MSC: Horizontal Plan Extension Program. You can choose the level—site, responsibility, or user.

- Set its title: Navigate to the Manufacturing Lookups form and select lookup type MRP_HORIZONTAL_PLAN_TYPE_SC. Find the row for Code 500, Meaning User Defined, move to the Description field, and enter the title.

- Enable it: Navigate to the Preferences form, Material Plan tab. Select Demands and select User Defined.

To modify the data in other rows:

- Specify the modified information: Provide a PL/SQL program unit with no parameters that. Enter the name of the program unit in profile option MSC: Horizontal Plan Extension Program. You can choose the level—site, responsibility, or user. If you are also using a custom row, specify the information in the same PL/SQL program unit as you did for the custom row.

- Enable them: Navigate to the Preferences form, Material Plan tab. Select Demands and select User Defined.

#### Exporting the Horizontal Plan

##### To export a horizontal plan to Microsoft Excel

You can copy or export an entire expanded horizontal plan to various other document formats such as Microsoft Word, Microsoft Excel, and Microsoft Notepad. If your operating system does not support clipboards, you cannot copy the plan.

1. In the horizontal plan tabbed region, right-click in the Items or Organization area in the right pane.

2. Click Copy horizontal plan to copy the horizontal plan to the clipboard.

3. Open an application such as Microsoft Word, Excel, or Notepad to paste the copied content.

4. Paste the horizontal plan using the Paste feature of the opened application.

#### Dynamically Define Graphs

Define graphs by selecting which pieces of information to graph.

##### To define information to be graphed

1. Navigate to the Horizontal Plan window.

2. Select the plan parameters you want to graph.

   To graph two or more parameters together, hold the shift key as you select

additional parameters. For example, you can graph either planned orders, gross requirements, or both. You can also choose to graph multiple items.

3. [Right-click] to show and hide graph or save preference in the Tools > Preferences menu.

4. [Right-click] on the Items or Organization area to display more options. Left click on Hide/Show Graph to hide the graph.

5. To change the number of periods being displayed in the horizontal graph, [right-click] anywhere in the graph and select Viewable Groups. Your choices are 5, 7, or 10. Five is the default.

#### Dynamically Choose Types of Graphs

After you have graphed parameters or items, you can change the chart type using the [right-click] menu. For example, if you have displayed a bar chart and you wish to display a line graph, select [right-click] > Line Chart.

#### To change the number of periods being displayed in the graph

Right-click on the graph and select Viewable Groups. The choices are 5, 7, and 10, with 5 as the default.

#### Save Settings for a Horizontal Plan

You can specify and save your preferences for various option settings while viewing a horizontal plan. When you login again, your preference settings would be in effect for the plan. You can save settings for Item, Resource, Transportation, and Supplier types of horizontal plan. The following table lists the option settings that you can specify and save:

| Setting | Description |
|---|---|
| Hide or Show options for a row | You can specify the options that should be hidden or shown for a row. These settings are updated in the Preferences window. |
| Hide/Show graph | You can specify whether or not you want the graph to be shown. These settings are updated in the Preferences window. |
| Column width and row height of data cells | You can adjust the width and height of the data cells as per your requirement in the Planner Workbench. When you save your settings, these settings are updated and maintained by the system internally. |

#### To save your preferences for a horizontal plan

After specifying your preferences for a horizontal plan, perform the following steps to

save your preferences.

1. [Right-click] on the Items or Organization area to display more options.

   The menu appears.

2. Click Save Settings.

   When you login again and return to the Planner Workbench, the settings that you saved are retained.

#### Setting Preferences for Viewing Horizontal Plan

For information on defining display preferences, see Defining Display Preferences, page 16-44.

#### Change Preferences

You may have multiple preference sets for a horizontal plan. If you want to switch between the preference sets, select [right-click] > Change Preferences. In the right-click pop-up menu, click the title of the preference set that you want to view.

#### Set Number Formatting for Horizontal Plan

As the number of order quantity increases, you may want to specify your preference for a number format to ease viewing numbers that run into millions. You can format and view numbers based on your preference for a horizontal plan.

#### To set the format preference for horizontal plans

1. To set the format preference for horizontal plans, navigate to the General Preferences window in the Oracle Self-service Web Applications.

2. Select your preference from the Number Format drop-down menu.

3. Click Apply.

#### Product Family and Member Item Drill Down

#### Aggregate Production Plan

You can view aggregate production plans in the Planner Workbench. The supply and release of planned orders related to member items are reflected in the aggregate planned order at the product family level. The summation of the actual quantities for member items provides the quantity and type of supply for the product family item. You can use this for demand leveling and plan analysis.

You can specify whether or not you want to view details of member items that belong to a plan in a horizontal plan. If you want to view the product family details in the horizontal plan, select the Display Product Family Details check box in the Material Plan tabbed pane of the Preferences window.

The planning engine displays two sections in the horizontal plan view. The first section includes the following information about the product family items:

- Forecast

- Gross requirements

- Planned orders
- Total supply
- Projected available balance

The order types associated with the product family appear against the product family node in the first section.

The second section includes member total (all items belonging to the product family) for the plan. The member total includes all order types. You can use the Show and Hide right-click menu options to view specific order types. Calculations related to member item totals are based on only those member items that are part of the same plan.

You can double-click a row related to firm supplies such as work in process and on-hand, the planning engine displays details of the individual items. However, for detailed information, you can use the Planning Detail report.

#### Comparing Multiple Items

You can view and compare items that belong to two different categories in the horizontal plan. To select more than one items in different categories, highlight an item in the Navigator, hold the Shift key down and select another item.

#### Global Forecasting

There is a possibility that you may not know the exact demand fulfilling facility at the time of preparing and analyzing forecasts in case you have you have multiple shipping, distribution, and manufacturing facilities. You can use global forecasting for consuming forecast without any reference to a shipping organization. You can distribute a forecast to multiple shipping locations.

You need to choose a demand planning scenario published without a context of an organization. In addition you need to choose a Ship to consumption level. Following are the consumption levels supported:

- Configure a forecast and define the Ship To entity. Specify any one of the following values for the Ship To:
    - Item
    - Zone
    - Customer
    - Customer Zone
    - Customer Site
    - Demand Class
- Select the Global Forecasting check box in the Preferences window (Material tabbed

pane).

- In the View by Items mode, select an item and navigate to the Horizontal Plan window.

The global forecast section appears in the Horizontal Plan window. If this section does not appear, use the Show option from the right-click menu to display it. The following information appears in the global forecast section:

- Item name
- Original: This refers to the time phased global forecasts that Oracle Demand Planning publishes.
- Cumulative Original: This indicates the cumulative value of the original time phased global forecasts.
- Consumed: This indicates the number of sales orders that are consuming the forecasts. You can drill down from here to view the set of sales order in the Supply/Demand window.
- Cumulative Consumed: This indicates the total number of sales orders based on the Consumed field.
- Current: This refers to the original sales order. A negative value indicates over consumption. You can drill down from this field to the individual distributed forecasts. When you double-click in this field, the Supply/Demand window appears. You can view details regarding the distribution of the consumed amount across organizations.
- Cumulative Current: This refers to the total number of original sales order based on the values from the Current field.
- Expired Forecast: This refers to the amount of unmet forecasts. You can specify the number of days a forecast can remain unmet. If a forecast cannot be met until the specified number of days, the planning engine displays the forecast as an unmet forecast.

#### Drill-down from Forecast Row in Horizontal Plan

You can double-click the forecast row in the Horizontal Plan window to drill-down to the Supply/Demand window. However, in the case of global forecasting, you can drill down only from the consumed numbers field.

If you want to view consumption details, you can select [right-click] > Consumption Details option.

Information in the Consumption Details window is detailed in the following table:

| Field | Description |
|---|---|
| Sales Order | This indicates the sales order number. |
| Sales Order Sched Date | This indicates the scheduled ship date for the sales order. |
| Consumed Qty | This refers to the quantity consumed. |
| Consumption Date | This refers to the quantity consumption date. |
| Promise Date | For more information, see Lead Time and the Planning Time fence, page 4-70. |
| Request Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| End Item | This refers to the end item that consumed the forecast. An end item is applicable for option class and optional items. |
| Original Item | This indicates the original item for which you received the demand. This information is applicable only if the original item is substituted. |

#### Drill-down from Global Forecasting Section in Horizontal Plan

The following drill-downs are supported from the global forecasting section in the horizontal plan:

- You can drill-down from the current quantity field to the Supply/Demand window to view distributed forecasts.
- You can drill-down from the consumed quantity field to the Supply/Demand window to view the sales orders that consumed the forecasts.

#### Safety Stock Level

To see if your plan satisfies safety stock levels, verify that the projected available balance is the safety stock level. If it is not so exactly, it may be because of:

- The planning engine could not schedule all supplies on time because of resource, material, and transportation constraints
- The reasons in Other Safety Stock Planning Principles in Safety Stock, page 4-129.

## Vertical Plan

The Vertical Plan view is enabled for an Item-Org context and it displays the activity by item over time in a vertical format (non-bucketized).

### View Vertical Plan

**To display your plan vertically**

1. Select one or more items from the tree in the Navigator.
2. Select [right-click] > Vertical Plan.

**Right-click Menu Options in a Vertical Plan**

Based on the context of the selected field, the planning engine displays right-click menu options. If you right-click in an information field (non-fixed field) within a vertical plan, you can:

- Choose to view additional fields associated with the vertical plan.
- Hide fields that you do not want.
- Move selected fields either to the right or the left.
- Increase or decrease the field size.
- Change the prompt or the heading of the field.
- Drill down to the Supply/Demand and Item windows.

When you right-click the graph shown for a vertical plan, the planning engine displays three options: Days, Weeks, and Periods. You can choose the time frame for which you want to view the graph.

## Supply Demand Window

The Supply/Demand window displays information about supplies and demands and shows pegging information.

### View the Supply/Demand Window

You can navigate to the Supply/Demand window from various node types such as items, organizations, plans, departments, and planning groups in the Navigator. In addition to the Navigator, you can also drill down to the Supply/Demand window from other windows such as the Vertical Plan window.

If you request this window from the Exception Details window, it displays supply information, demand information, or both types of information based on the exception type. For example, if the exception message is Demand satisfied using end item substitution, the Supply/Demand window displays demand information only.

### To display the Supply/Demand window

1. Select one or more nodes (using Ctrl-click) in the Navigator.
2. Select [right-click] > Supply/Demand.

   The Supply/Demand pop-up menu displays the following options:

   - Supply
     - Demand
     - Supply/Demand
     - Onhand
3. To display the Supply/Demand window, click Supply/Demand.

   Supply/Demand window has five tabbed regions:

   - Order
   - Release Properties
   - Sourcing
   - Line
   - Project

   Each tabbed region displays fixed fields:

   - Org
   - Item
   - For Release
   - Firm

   While each tabbed region shows different variable fields, you can access all of the Supply/Demand window variable fields using the Orders tab folder function.

### Supply/Demand Window Notes

**Internal Requisitions and Sales Orders**

If you cancel an internal requisition and do not cancel the corresponding internal sales order, Planner Workbench:

- Displays the internal requisition with a cancel reschedule recommendation since the

planning engine can only issue a cancel recommendation for a supply

- Does not display the internal sales order. The planning engine does not plan to satisfy the demand.

**Safety Stock**

To analyze how the planning engine has planned to meet safety stock levels, select the supply and analyze the pegging details. The pegs between a transient safety stock level and supplies peg with supply quantity zero. This is because the supply pegs to a demand after the safety stock level expires; the peg to the demand has the quantity. The pegs between a non-transient safety stock level and supplies peg with quantities that meet the safety stock level. To understand safety stock pegging, see Safety Stock Pegging in Pegging, page 16-83.

### Order Tabbed Pane

The following table provides a description of the fields displayed in the Order tabbed pane:

| Fields | Description |
|---|---|
| Order Type | This refers to the supply or the demand type. For example, purchase order, sales order, planned order. |
| Part Condition | For asset intensive planning, the condition of the item in inventory or the condition of the item after you perform work. |
| Sugg Due Date | The planning engine populates this for demands and supplies. For more information, seeLead Time and the Planning Time Fence, page 4-70. |
| Qty/Rate | Supply, demand quantity, or rate. |
| Visit, Produce to Stock, Maintenance Requirement, Operating Fleet, and Maintenance Plan | For asset intensive planning, production order attributes for order types Maintenance Work Order and Maintenance Work Order Demand. |
| Order Number | Identifies the supply or the demand record. For purchase orders, displays purchase order number, line number, release number, shipment number. |

| Fields | Description |
| --- | --- |
| Action | This refers to the action recommended by the planning engine. The possible values are:<br>- None<br>- Release<br>- Cancel |
| New Date | After you firm a supply, you can specify a new date to change an existing planned order, a forecast, an MDS demand, a manual MDS demand, or a sales order. |
| New Qty | After you firm a supply, you can specify the quantity to change an existing planned order, a forecast, an MDS demand, a manual MDS demand, or a sales order. |
| Order Priority | Indicates the priority of a demand. The planning engine generates this number based on the priority rule used in the plan. |
| ABC Class | Inventory ABC classification of the item. |
| Alternate BOM | BOM Alternate bill of material name |
| Alternate Routing | BOM Alternate routing name |
| Arrival Set Name | On the sales order, the arrival set name designates lines that should arrive together at the customer site. Oracle Advanced Supply Chain Planning does not consider arrival sets but displays the field for information. |
| Bucket Type | This refers to the bucket type that a demand falls under, such as Forecasts. The valid values includes day, week, and period. |
| Build Sequence | This number indicates the order in which the work orders are sequenced. |
| Category | Category of an item |

| Fields | Description |
| --- | --- |
| Company Name | Name of the company |
| Company Site | Name of the company site |
| Component Yield | Bills of material component yield for a component |
| Compression Days | The planning engine calculates the number of days that the order needs to be scheduled in the past (earlier than the planning horizon start date). For more information on Orders with Compression Days, see Exception Messages, page 15-1. |
| Consumed Forecast | For a forecast demand, this field indicates the quantity of the forecast that is consumed by sales orders. |
| Consumption Backward Days | This indicates the number of days (backward) when a forecast can be consumed by sales orders. |
| Consumption Forward Days | This indicates the number of days (forward) when a forecast can be consumed by sales orders. |
| Cube | Total cube of the supply row |
| Cumulative Probability | Not used in Oracle Advanced Supply Chain Planning. |
| Customer | Customer name as it appears on the sales order or forecast. |
| Customer Site | Customer ship to location |
| Days From Today | The planning engine calculates the difference between the suggested due date and the plan launch date to populate this field. |
| Days Late | For more information, seeLead Time and the Planning Time Fence, page 4-70. |

| Fields | Description |
| --- | --- |
| Demand Class | An attribute of a demand that is used to categorize demand. |
| Demand Lateness Cost | Penalty cost for a demand |
| Description | Item description |
| Destination Org | The destination organization for an internal sales order. |
| Earliest Allowable Completion Time | The planning engine calculates this to indicate the end of the scheduling window for the supply that allows sufficient time for the upstream activities to be scheduled. |
| Earliest Possible Completion Time | The planning engine calculates this based on the constrained schedule for upstream supplies. It is the earliest time in which the supply can be completed. |
| Earliest Possible Start Time | The planning engine calculates the difference between the earliest possible completion time and supply duration to populate this field. |
| End Date | The end date of a bucketed forecast. This is used only in the Collections workbench. The planning engine does not populate the end date for Oracle Advanced Supply Chain Planning plans. |
| Expiration Date | This indicates the expiration date for an existing lot. |
| Expired Demand | The planning engine marks the demand quantity as expired if the demand is not met within specific number of days. |
| First Unit Completion Date | Indicates the first unit completion date of the repetitive job. |
| First Unit Start Date | Indicates the first unit start date of the repetitive job. |

| Fields | Description |
| --- | --- |
| Fixed Leadtime | For buy items, the processing lead time |
| Imp Qty/Rate | Corresponds to the new quantity that you specify for an order when you release the order. |
| Implement Alternate BOM | Alternate BOM is an alternate list of component items that you can use to produce an assembly. |
| Implement Alternate Routing | An alternate manufacturing process that you can use to produce an assembly. |
| Implement As | If you select an organization in the Order tabbed pane, you can release the order as a discrete job. If you select a supplier, you can release the order as a purchase order. |
| Implement Date | Corresponds to the new date that you specify for an order when you release the order. |
| Implement Demand Class | Demand Class of released order |
| Implement FUCD | Implement first unit completion date for a repetitive job (editable) |
| Implement Firm | Implement firm flag status (editable) |
| Implement Job | Implement job number (not editable) |
| Implement Line | Implement line for a repetitive job (not editable) |
| Implement Project | Implement project name (editable) |
| Implement Source Org | Implement source organization (editable) |
| Implement Status | Implement work in process status (editable) |
| Implement Supplier | Implement supplier (editable) |

| Fields | Description |
| --- | --- |
| Implement Supplier Site | Implement supplier site (editable) |
| Implement Task | Implement task identifier (editable) |
| Implement Unit Number | Implement starting unit number for unit effectivity (not editable) |
| Implement WIP Class | Implement work in process class (not editable) |
| Implemented Quantity | Previously implemented order quantities (not editable) |
| Internal Sales Order | Internal sales order number |
| Intransit Lead Time | This indicates the transit lead-time associated with a transfer order. |
| Item | Item name |
| Item From Source Plan | A flag that indicates whether the item is planned in some other plan. For example, when you feed an MPS supply plan to another plan such as MRP, the planning engine sets the flag for the item in the MRP plan. |
| Last Unit Completion Date | Indicates the last unit completion date of the repetitive job. |
| Last Unit Start Date | Indicates the last unit start date of the repetitive job. |
| Latest Acceptable Date | Indicates the latest acceptable date for a sales order. |
| Line | Line refers to the flow line. |
| Location | Location refers to the supplier site or organization location. |
| Lot | Lot refers to the lot number. |

| Fields | Description |
| --- | --- |
| MRP Planning Method | Planning method defined for the item |
| Material Available Date | For more information, seeLead Time and the Planning Time Fence, page 4-70. |
| Min Possible Days Late | This planning engine calculates the minimum number of days that the end demand is late because of a particular supply. Other supplies may also cause additional delay. |
| Min Possible Start Time | This field is obsolete. |
| Model/Option Class | This refers to the model or the option class to which the item belongs. |
| Need By Date | For more information, seeLead Time and the Planning Time Fence, page 4-70. |
| Old Dock Date | For more information, seeLead Time and the Planning Time Fence, page 4-70. |
| Old Due Date | For more information, seeLead Time and the Planning Time Fence, page 4-70. |
| Order Date Type | For more information, seeLead Time and the Planning Time Fence, page 4-70. |
| Order Margin | Profit margin of an order |
| Original Item | If the planning engine recommends end item substitution for a demand, the item field refers to the substituted item. This field stores the original demanded item. |
| Original Item Qty | This indicates the demand quantity of the original item. |
| Original Need By Date | Original need by date of the purchase order or the requisition. For more information, see Lead Time and the Planning Time Fence, page 4-70. |

| Fields | Description |
| --- | --- |
| Original Order Quantity | For forecasts, this is the original order quantity of the forecast before consumption or before the forecast expiration. For all other order types, this is the same as the demand quantity. |
| Original Quantity | Original forecast quantity for a global forecast. |
| Origination | This field indicates the source where the planned supply is created. The origin is either the planning engine or ATP. |
| Override Transit Times | Not used in Oracle Advanced Supply Chain Planning. This is reserved for future use. |
| PO Line No | Purchase order line number |
| Planned Arrival Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Planner | Planner code |
| Planning Group | The name of the planning group for which the material is being planned. |
| Planning Level | The identifier assigned to a project in the planning group. |
| Probability | This is not used in Oracle Advanced Supply Chain Planning. |
| Process Days | This field indicates the number of days a planned order is scheduled for a repetitive schedule. |
| Product Family | The product family to which the item belongs. |
| Project Number | Project number. For more information, see Planning in Mixed Mode Environments, page 18-1. |

| Fields | Description |
| --- | --- |
| Promise Arrival Date | The date when you promise that the customer can receive the products. |
| Promised Ship Date | The date when you promise to ship the products to the customer.<br><br>For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Qty by Due Date | This indicates the supply quantity that is available by the demand due date. |
| Quantity in Process | This field indicates the quantity of a supply that is released. |
| Recommended | Oracle Shop Flow Manufacturing job information on collection workbench. |
| Release Errors | This field displays the release validation errors. |
| Repetitive | Repetitive schedule |
| Requested Arrival Date | The date when the customer wants to receive the products.<br><br>For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Requested Ship Date | The date when the customer wants the products to be shipped.<br><br>For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Reschedule Days | This indicates the number of days in or out that a supply order is rescheduled. A negative value indicates that the order is rescheduled to an earlier date. |
| Rescheduled | This flag indicates that the order is rescheduled. |

| Fields | Description |
| --- | --- |
| Schedule Designator | This is the supply schedule name for those supplies that you feed to a plan by using a supply schedule. |
| Schedule Group | This refers to work in process schedule group. |
| Schedule Arrival Date | The date on which the customer can receive the product.<br><br>For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Schedule Ship Date | The date when the product needs to be shipped to the customer.<br><br>For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Service Level | Not used in Oracle Advanced Supply Chain Planning. |
| Shared Supply | A flag to indicate that this supply is shared among multiple demands. |
| Ship Method | Ship method used for transfers and buy orders. |
| Ship Set Name | On the sales order, the ship set name designates lines that should ship together. Oracle Advanced Supply Chain Planning does not consider ship sets. However, the field is provided for information. |
| Ship To | Customer ship to location |
| Shipment | Not used in Oracle Advanced Supply Chain Planning. |
| Source Order Priority | This indicates the priority number on the actual demand record. This is different from the priority number calculated by the planning engine. |

| Fields | Description |
| --- | --- |
| Source Org | Name of the source organization |
| Source Supplier | Name of the source supplier |
| Source Supplier Site | Name of the source supplier site |
| Start Quantity | This indicates the start quantity of a supply that can be different from the finished quantity owing to yield. |
| Subinventory | Subinventory identifier on the supply document, demand document, or location of an on-hand. |
| Substitute Component Rank | BOM substitute component rank |
| Sugg Dock Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Suggested Due Date | The timestamp for the suggested due date in case of:<br>• Past demand lines is 23:59:00 on a day before the plan date<br>• On hand supply due date is 00:00:00 on the plan date |
| Suggested Due Date Before Bucketing | The due date for Planned Order Demand and Model, Option Class or, Product Family Demand order types. |
| Sugg Order Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Sugg Ship Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Sugg Start Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Source Supplier | The supplier company name. |

| Fields | Description |
| --- | --- |
| Source Supplier Site | The supplier company site name. |
| Task Number | The identifier assigned to the task in a project. |
| UOM | This is an item attribute (unit of measurement) |
| Unconstrained Earliest Possible Completion Time | The planning engine calculates this based on the unconstrained schedule for those upstream supplies that allow minimum durations. |
| Unconstrained Earliest Possible Start Time | The planning engine calculates the difference between the unconstrained earliest possible completion time and supply duration. |
| Unconstrained Latest Possible Completion Time | The planning engine calculates this based on the unconstrained schedule for those downstream supplies that allow minimum durations. |
| Unconstrained Latest Possible Start Time | The planning engine calculates the difference between the unconstrained latest possible completion time and the supply duration. |
| Unit Number | This refers to the starting unit effectivity number. |
| Update Need By Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Using Assembly | For planned order associated with demands, this field refers to the assembly with this item as a component. |
| VMI | Yes indicates that the supply is for a VMI-enabled item. |

| Fields | Description |
|---|---|
| WIP Status | Status of the work in process. Some of the values are:<br>- Onhold<br>- Released<br>- Unreleased |
| Weight | Weight of the order |
| WIP Start Qty | Start quantity used for planning |

### Release Properties Tabbed Pane

The following table provides a description of the fields displayed in the Release Properties tabbed pane:

| Fields | Description |
|---|---|
| Implement Date | Implement date (editable) |
| Imp Qty/Rate | Implement quantity or rate (editable). The planning engine initially derives this value by dividing quantity by rate. |
| Implement As | Implement as a work order or a purchase requisition (editable). |
| Implement Alternate BOM | Implement alternate bills of material name (editable) |
| Implement Alternate Routing | Implement alternate routing name (editable) |
| Implement Arrival Date | Implement arrival date (not editable) |
| Implement Demand Class | Implement demand class (not editable) |
| Implement Dock Date | Implement dock date (not editable) |

| Fields | Description |
| --- | --- |
| Implement FUCD | Implement first unit completion date for a repetitive job (editable) |
| Implement Firm | Implement firm flag status (editable) |
| Implement Job | Implement job number (not editable) |
| Implement Line | Implement line for a repetitive job (not editable) |
| Implement Project | Implement project name (editable) |
| Implement Ship Date | Implement ship date (non editable) |
| Implement Source Org | Implement source organization (editable) |
| Implement Status | Implement work in process status (editable) |
| Implement Supplier | Implement supplier (editable) |
| Implement Supplier Site | Implement supplier site (editable) |
| Implement Task | Implement task identifier (editable) |
| Implement Unit Number | Implement starting unit number for unit effectivity (not editable) |
| Implement WIP Class | Implement work in process class (not editable) |
| Implemented Quantity | Previously implemented order quantities (not editable) |
| Location | Implement location for the source organization or the supplier site (not editable) |
| Order Type | Type of order such as planned order, sales order, manual master demand schedule (not editable). |
| Quantity in Process | Implement Quantity or Rate (editable for planned orders only) |

| Fields | Description |
|---|---|
| Quantity/Rate | Original order quantity (not editable) |
| Release Errors | Alerts you to any problem that might have occurred during the process of release. |
| Suggested Due Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |

### Sourcing Tabbed Pane

The following table provides a description of the fields displayed in the Source tabbed pane:

| Fields | Description |
|---|---|
| Source Org | Name of the source organization |
| Source Supplier | Name of the supplier |
| Source Supplier Site | Name of the supplier's site |
| Company Name | Name of the company |
| Company Site | Name of the company site |
| Order Type | Type of order |
| Quantity/Rate | Quantity supplied by the source org |
| Suggested Due Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |

### Line Tabbed Pane

The following table provides a description of the fields displayed in the Line tabbed pane:

| Fields | Description |
|---|---|
| Line | A group of resources |
| Schedule Group | This refers to work in process schedule group. |
| Build Sequence | The sequence number indicating the order in which work orders are sequenced |
| First Unit Start Date | The date on which the first unit belonging to a line is scheduled. |
| Last Unit Completion Date | The date on which the last unit belonging to a line is completed |
| Last Unit Start Date | The date on which the last unit belonging to a line is started |
| Order Type | Type of order. For example, planned order, sales order. |
| Process Days | This field indicates the number of days a planned order is scheduled for a repetitive schedule. |
| Quantity/Rate | This indicates the rate per day for a repetitive schedule. |
| Repetitive | Repetitive schedule |
| Suggested Due Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Using Assembly | Name of the assembly. An assembly is an item that has a bill of material. |

### Project Tabbed Pane

The following table provides a description of the fields displayed in the Project tabbed pane:

| Fields | Description |
|---|---|
| Planning Group | The name of the planning group for which the material is being planned. |
| Project Number | The identifier assigned to a project in the planning group. |
| Task Number | The identifier assigned to the task in a project belonging to a planning group. |
| Order Type | Type of order. For example, planned order, sales order. |
| Quantity/Rate | The quantity of the order. |
| Suggested Due Date | For more information, see Lead Time and the Planning Time Fence, page 4-70. |
| Unit Number | Unit number |

#### Right-click Menu Options in the Supply/Demand Window

In addition to the folder options, the right-click pop-up menu displays the following options to navigate to other windows:

- Exception Details
- Onhand
- Items
- Resource Requirements
- Order Exceptions
- Release
- Gantt Chart
- Horizontal Plan
- Co Product Supplies
- Calendar (based on the context, the following options may be available)

- Calendar > Organization Manufacturing Calendar
- Calendar > Supplier Capacity Calendar
- Calendar > Organization Shipping Calendar
- Calendar > Supplier Shipping Calendar
- Calendar > Organization Receiving Calendar
- Calendar > Customer Receiving Calendar
- Calendar > Carrier Transit Calendar

- More
  - More > Vertical Plan

## Pegging

Pegging is a process that the planning engine uses to link:

- Supplies to demands: All the way up to the top-level independent demand.
- Demands to supplies: All the way down to the bottom-level purchased component supply.

Use pegging to:

- Trace a purchased component or subassembly shortage to the sales orders and forecasts that are affected.
- Prioritize critical material and capacity resources.
- Analyze the impact of changing a supply or demand

Pegging plays a major role in determining the sequence in which demands are satisfied. For some pegging modes, the planning engine:

- Groups supplies and demands into time windows
- Sorts supplies by type
- Pegs by demand priority or randomly within time windows

This section discusses:

- Standard pegging: Standard pegging groups demands into windows and supplies by type, then pegs by priority within window. It provides a limited amount of

prioritization at the day level (the window size is always one day).

- Priority pegging: Priority pegging pegs high priority demands first to on-hand and firm supplies then continues with other existing and non-firm supplies. It controls the trade-off between holding inventory or satisfying lower priority demands.
- FIFO pegging: FIFO pegging pegs demands to supplies on a day-by-day basis. It is the pegging process with the least load on the system.
- Priority/FIFO pegging: The planning engine uses a combination of priority pegging and FIFO pegging methods where it does not prioritize beyond the firm supplies. The load on the system is less than the load from priority pegging.
- Enabling pegging checklist
- Viewing pegging information

The actual date that a demand is satisfied is a function of the detailed scheduling process. There is no guarantee that high priority orders are satisfied on time.

In performing the pegging process, the planning engine selects demands and locates supplies to peg those demands to. Therefore, we say that the pegging process pegs demands to supplies.

When some people think of pegging, they think of supplies pegged to demands. For example, if you are using hard pegging with Oracle Project Manufacturing, it reserves the supply for the demand.

When discussing the results of the pegging process, you can correctly say either that demands peg to supplies or that supplies peg to demands. The diagrams in this section use arrows which indicate the supplies that peg to particular demands.

To use pegging you must enable it for the items and for the plan. The planning engine pegs in several ways (pegging modes). For certain modes, you specify information to instruct the planning engine.

The planning engine pegs each item after the netting process. It begins with all of the items in the highest bill of material level and proceeds level by level to the lowest bill of material level.

The planning engine attempts to minimize substitution at the expense of crossing organizations and uses substituted on-hand or scheduled receipts before creating planned orders. For example:

- Item A is a saleable item
- Item B is a substitute for item A
- In organization M1, there is:
    - Demand for item A, due on day 10, quantity 100, priority 1

    - Demand for item A, due on day 20, quantity 70, priority 2
    - On-hand supply for item A, quantity 40
    - On-hand supply for item B, quantity 70
- In organization M2, there is:
    - On-hand supply for item A, quantity 60
    - On-hand supply for item B, quantity 40
- The planning engine pegs the demand in organization M1, for item A, due on day 10, quantity 100, priority 1 to:
    - Organization M1, on-hand supply for item A, quantity 40
    - Organization M2, on-hand supply for item A, quantity 60
    - Demand satisfied date is day 10
    - It crosses organizations to avoid substituting
- The planning engine pegs the demand in organization M1 for item A, due on day 20, quantity 70, priority 2 to:
    - Organization M1, on-hand supply for item B, quantity 70
    - Demand satisfied date is today
    - There is no supply for the requested item in any organization; it substitutes to use on-hand before creating planned orders

The planning engine passes independent demand priorities to discrete job and planned order dependent demands to which they peg. Planned order dependent demands have lower priority than discrete job dependent demands at the same bill of material level.

The planning engine performs pegging for product family items regardless of the setting of their item attribute Pegging

## Reservations

**Setup**

For the planning engine to plan reservations, select plan option Net Reservations.

**Snapshot**

The planning engine snapshots these reservations for these plan types:

- Unconstrained, Constrained (Classic), and Constrained with Detailed Scheduling: On hand reservations against sales orders

- Constrained without detailed scheduling: All reservations that collect. See Value Chain Planning Collections Implementation Guide, Running Collections, Overview, Details About What is Collected, Reservations.

**Processing**

In the source system, you can reserve:

- One supply to multiple demands

- One demand against multiple supplies

If a supply quantity is partially reserved to demands, the planning engine can peg the unreserved quantity to other demands.

If a demand quantity is partially reserved against supplies, the planning engine can peg the unreserved quantity to other supplies.

The reservation information collected from the source is an input pegging relationship in ASCP. The planning engine pegs other supplies and demands around these reservation relationships. Therefore, you might notice these patterns in the plan output:

- Non FIFO pegging output: The planning engine appears to peg out of order

- Reschedules: Material from one work order is reserved for another work order. If the planning engine reschedules one of the work orders, it also needs to reschedule the other work order.

- Quantity change: If the reserved quantity is higher than the supply or demand quantities, the planning engine changes the reserved quantity to whichever entity has the smaller quantity—the supply or the demand.

  "In a supply-demand reservation, the planning engine changes the reserved quantity in cases where the reserved quantity is greater than the supply or demand quantity. In such cases (which represents a data inconsistency), the planning engine will reset the reserved quantity to a value equal to minimum [ demand quantity, supply quantity ]

- Ignore reservation: The planning engine ignores a reservation if one of the entities in the relationship is missing.

**Analysis**

In Planner Workbench Supply / Demand window, see these fields:

- Reserved: Typically No. If a supply has some quantity reserved to a demand or a demand has some quantity reserved against a supply, this field is Yes.

- Reserved Quantity: The sum of the reserved quantity across all the demands that a supply is reserved to or all the supplies that a demand is reserved against.

In the pegging tree, the reserved quantities of the individual supplies to a demand or the reserved quantities of the individual demands against a supply show as attribute Reserved Quantity.

**Purchase Order Reservations Processing**

This is how the planning engine processes reservations created between purchase order and internal requisition supplies and demands:

- If none of the purchase order has entirely shipped, the planning engine does not change the purchase order reservation.
- If the purchase order quantity is entirely in transit or entirely in receiving, the planning engine applies the reservation originally created originally against the purchase order to the intransit supply, then to the purchase order in receiving supply.
- If the purchase order has been partially shipped, the planning engine respects the reservation across all the supplies that make up the purchase order.

For example:

- Purchase order of quantity 100 is reserved to a sales order of quantity 100.
- 30 units of the purchase order are not shipped.
- 30 units of the purchase order are in transit.
- 40 units of the purchase order are in receiving.

The planning engine sees each of these quantities as a supply and pegs them all to the sales order.

If you have a purchase order reserved to multiple sales orders, the planning engine uses FIFO pegging for the purchase order and the sales order.

For example, this is the status of a purchase order of quantity 100:

- Supply type: Purchase order, Due date: Day 5, Quantity: 30
- Supply type: In transit, Due date: Day 8, Quantity: 30
- Supply type: In receiving, Due date: Day 10, Quantity: 40

Teo sales orders have reservations against the purchase order:

- Due date: Day 12, Quantity: 50
- Due date: Day 15, Quantity: 50

The planning engine pegs:

- 30 units of purchase order on Day 5 to the sales order on Day 12
- 20 units of in transit on Day 8 to the sales order on Day 12
- 10 units of in-transit supply on Day 8 to the sales order on Day 15
- 40 units of in receiving on Day 10 to the sales order on Day 15

### Pegging Modes

This table shows the pegging modes and the settings that you use to enable them.

| Pegging Mode | Plan Option - Priority Pegging | Profile Option - MSC: Use FIFO Pegging |
|---|---|---|
| Standard | Cleared | No |
| Priority | Selected | No |
| FIFO | Cleared | Yes |
| Priority/FIFO | Selected | Yes |

When the pegging process is processing an end-item product substitution, it does not attend to the following profile options, regardless of the pegging mode. The process performs the pegging for these demands immediately following the item substitution:

- MSC: Demand Window Size
- MSC: Peg by Product Supplies
- MSC: Supply Window Size
- MSO: Firm Supply Allocation Window (Forwards Days)
- MSO: Firm Supply Allocation Window (Backwards Days)
- MSO: Use Firm Supplies Before Creating Planned Orders

### Standard Pegging

The standard pegging process makes two passes through the demands and supplies.

#### First Pass

The planning engine groups demands into daily windows. It does not use profile option

MSO: Demand Window Size. The first window starts at the first demand date and the last window ends at the end of the planning horizon.

For example, the demand window size is 1 day, the first demand is due on day 5. The first demand window is from day 5 to day 5, the second demand window is from day 6 to day 6, and the third demand window is from day 7 to day 7.

Demands in each window are sorted by demand priority in ascending order.

The planning engine groups supplies into daily windows. It does not use profile option MSO: Supply Window Size. The first window starts at the first supply availability date and the last window ends at the end of the planning horizon.

For example, the supply window size is 1 day, the first supply is available on day 7. The first supply window is from day 7 to day 7, the second supply window is from day 8 to day 8, and the third supply window is from day 9 to day 9.

Supplies in each window are sorted by type using the following order:

1. Firm supplies
    1. On-hand
    2. Receipt shipment, intransit shipment, payback supply (Oracle Project Scheduling)
    3. Work order (firm), job by-product supply (firm), purchase order (firm), non-standard jobs, non-standard job by-product supply (always considered firm)
    4. Purchase requisition (firm)
2. 2. Existing supplies
    1. Work order (non-firm), job by-product Supply (non-firm), repetitive schedule, repetitive schedule by-product supply, flow schedule, flow schedule by-product supply, purchase order (non-firm)
    2. Purchase requisition (non-firm)
3. Planned supplies
    1. Planned order (firm), planned order by-product supply (firm). You can raise the pegging priority of firm planned orders by releasing them.
    2. Planned order (non-firm), planned order by-product supply (non-firm)

The supplies in each type are sorted as follows:

- On-hand: Lot expiration date and then quantity in ascending order to use expiring lots first. A demand pegging to an expiring lot must have its demand date earlier than the lot expiration date; therefore, some expiring lots may not peg.

- Firm: By date in ascending order within each type.
- Non-firm: By quantity in ascending order within each type.

#### Second Pass

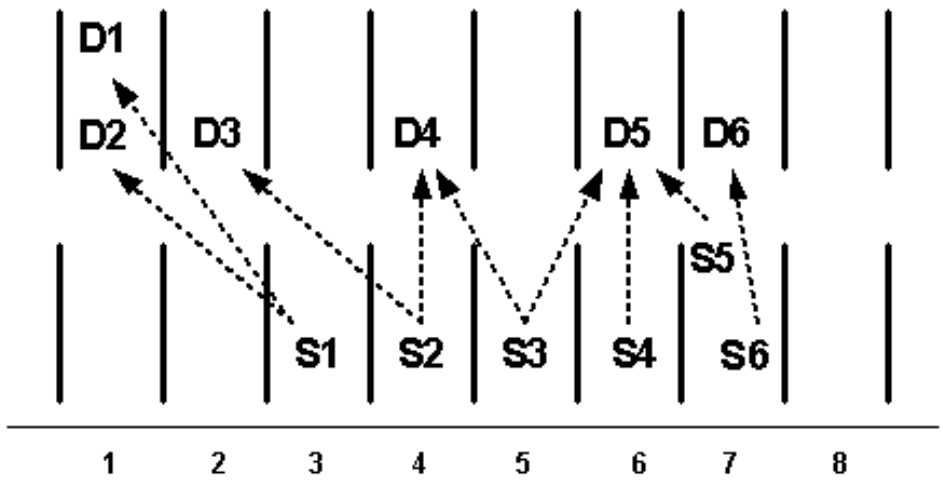
The planning engine begins from the first demand window and pegs demands by demand priority to supplies of the first supply window. If necessary, it continues the pegging process with the next supply window.

As all demands in the each demand window are pegged, it moves to the next demand window and pegs as it did in the first demand window

Unpegged supplies are posted to excess.

In this example, demands D1 and D2 are sorted by priority in ascending order and supplies S5 and S6 are sorted by type. Pegged entities are connected by arrows.

***Pegged Entities***




### Standard Pegging Example

This example shows standard pegging for two items. It begins with various settings and then shows the pegging for each item.

Profile option MSC: Use FIFO Pegging is No.

Plan option Peg Supplies by Demand Priority: Cleared.

In standard pegging, the planning engine uses 1 as the value for MSO: Demand Window Size and MSO: Supply Window Size and ignores the entered values.

**Item A101 Pegging**

This diagram shows the demands, supplies, and pegging information for item A101. Demand priorities are in parentheses, pegged entities are connected by arrows, and split supply quantities are in brackets.

The first demand window starts on day 3 at the first demand date.

Supplies in the first supply window [day 1] are pegged in the following order:

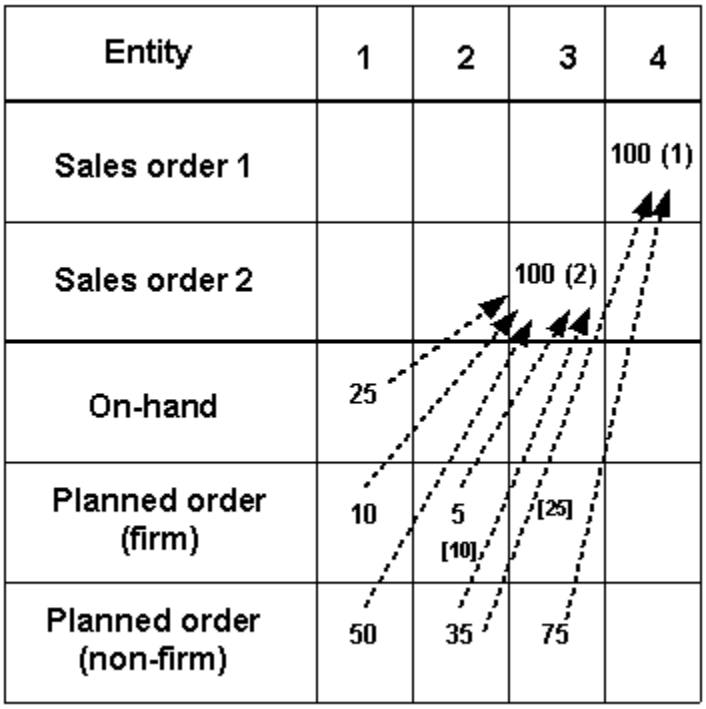
- On-hand of quantity 25 on day 1 and demand quantity of 100 on day 3
- Firm planned order of quantity 10 on day 1 and demand of quantity 100 on day 3
- Non-firm planned order of quantity 50 on day 1 and demand of quantity 100 on day 3

Supplies in the second supply window [day 2] are pegged in the following order:

- Firm planned order of quantity 5 on day 2 and demand of quantity 100 on day 3
- Non-firm planned order of quantity 35 on day 2 (for partial quantity 10) and demand of quantity 100 on day 3
- Non-firm planned order of quantity 35 on day 2 (for partial quantity 25) and demand of quantity 100 on day 4

Supply in the third supply window [day 3] is pegged as non-firm planned order of quantity 75 on day 3 and demand of quantity 100 on day 4

***Pegged Entities***




**Item A102 Pegging**

This table shows the demands, supplies, and pegging information for item A102. Demand priorities are in parentheses and pegged entities are connected by arrows.

Supplies in the first supply window [day 1] are pegged in the following order:

- On-hand of quantity 10 on day 1 and demand of quantity 200 on day 1
- Non-firm planned order of quantity 40 on day 1 and demand of quantity 200 on day 1

Supplies in the second supply window [day 2] are pegged in the following order:

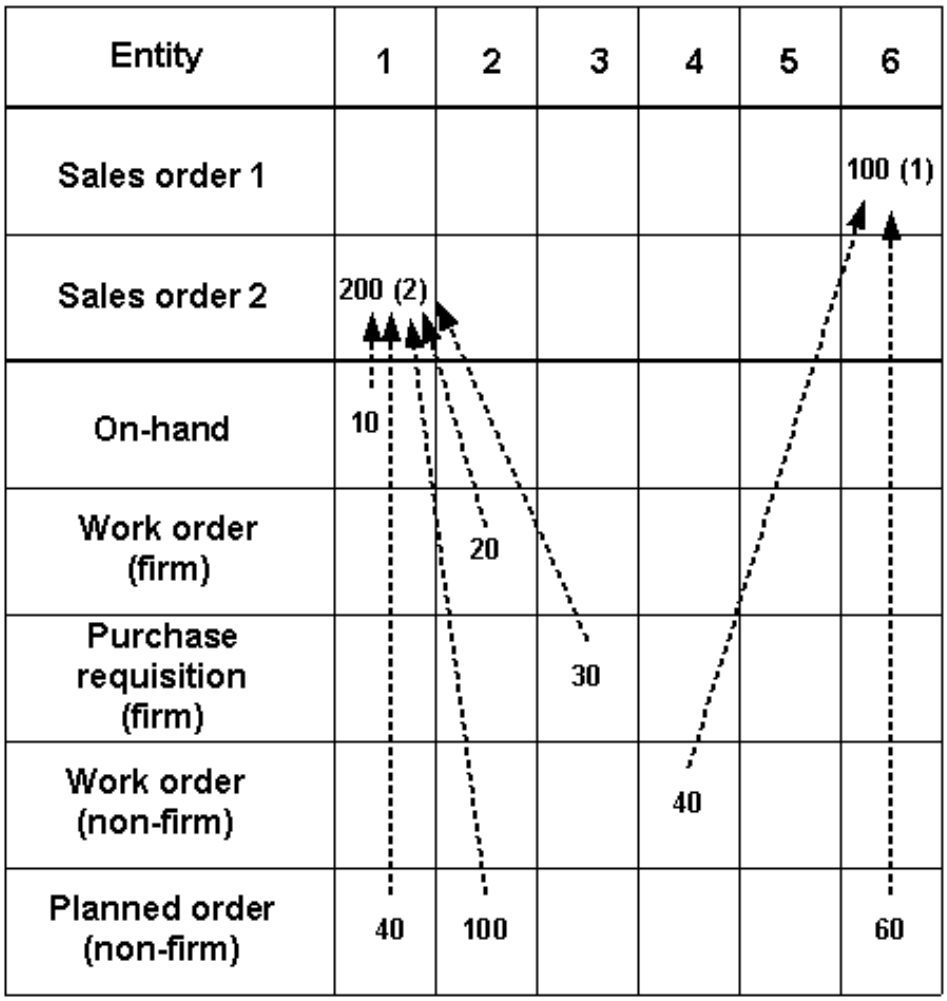
- Firm work order of quantity 20 on day 2 and demand of quantity 200 on day 1
- Non-firm planned order of quantity 100 on day 2 and demand of quantity 200 on day 1

Supply in the third supply window [day 3] is pegged as firm purchase requisition of quantity 30 on day 3 and demand of quantity 200 on day 1

Supply in the forth supply window [day 4] is pegged as non-firm work order of quantity 40 on day 4 and demand of quantity 100 on day 6

Supply in the sixth supply window [day 6] is pegged as non-firm planned order of quantity 60 on day 6 and demand of quantity 100 on day 6

***Pegged Entities***




## Priority Pegging

The priority pegging process makes three passes through the demands and supplies.

### First Pass

The planning engine starts with the demand of highest priority as specified by the plan's demand priority rule. It scans backwards the number of days in the site or item-specific firm supply allocation window (profile option MSO: Firm Supply Allocation Window (Backward days) and finds the first firm supply quantity to peg the demand to.

The planning engine scans backward and finds supplies. It organizes and pegs them as

follows:

- Sorts on-hand by the lot expiration date and then quantity in ascending order. Pegs demand to on-hand before other firm supplies of day 1 when the firm supply allocation window includes day 1.
- Firm supplies are not sorted on any given date.
- If you want firm planned orders included in the firm supply allocation window, set profile option MSC: Include Firm Planned Orders In Firm Allocation Window to Yes.

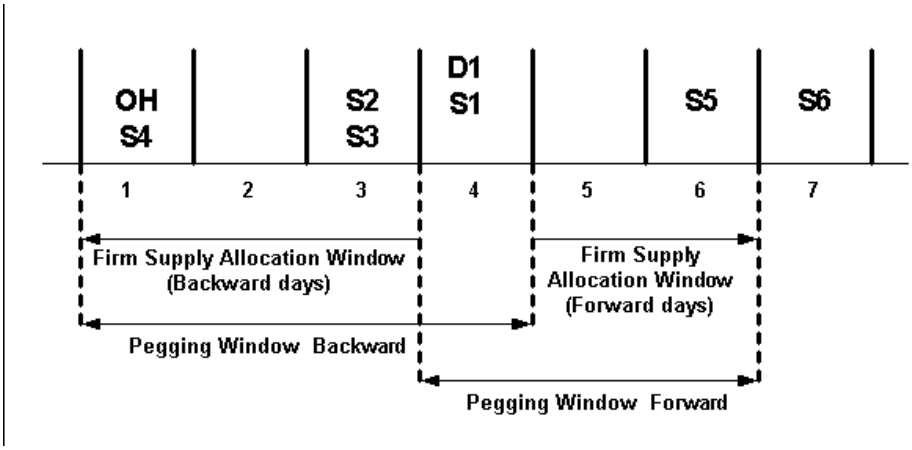
If it cannot find enough firm supply quantity to satisfy the entire demand quantity, it scans forwards the number of days in the site or item-specific firm supply allocation window (profile option MSO: Firm Supply Allocation Window (Forward days)) to find supplies to peg the demand to.

The pass ends when the demand is completely pegged to firm supplies or all firm supplies in the firm supply allocation windows are exhausted.

This diagram shows an example of the first pass:

- Demand D1 on day 4 is the highest priority demand
- MSO: Firm Supply Allocation Window (Backward days) is 3
- MSO: Firm Supply Allocation Window (Forward days) is 2
- Supplies S2 and S3 on day 3 are not sorted
- OH (on-hand) is sorted before supply S4 on day 1
- The order of supplies for pegging to demand D1 is:
  - Backward: S1, S2 and S3 randomly; OH; and S4
  - Forward: S5; D1 cannot peg to S6

*Priority Pegging First Pass Example*




#### Second Pass

For the remaining demands and supplies, the planning engine groups all demands into windows by using profile option MSO: Demand Window Size. The first window starts at the first demand date and ends after the number of days in the window size. The second window starts at the end of the first window and ends after the number of days in the window size. The last window ends at the end of the planning horizon.

For example, the demand window size is 50 days and the first demand date is due on day 1. The first demand window is from day 1 to day 49 and the second demand window is from day 50 to day 99.

Demands in each window are sorted by demand priority in ascending order.

The planning engine groups all supplies into windows by using profile option MSO: Supply Window Size. The first window starts at the first available supply date and ends after the number of days in the window size. The second window starts at the end of the first window and ends after the number of days in the window size. The last window ends at the end of the planning horizon.

For example, the supply window size is 50 days and the first supply is available on day 1. The first supply window is from day 1 to day 49 and the second supply window is from day 50 to day 99.

It sorts supplies in each window by type in the same manner as the standard pegging first pass.

#### Third Pass

The planning engine uses the standard pegging second pass.

#### Third Pass Example

This diagram shows an example of the third pass:

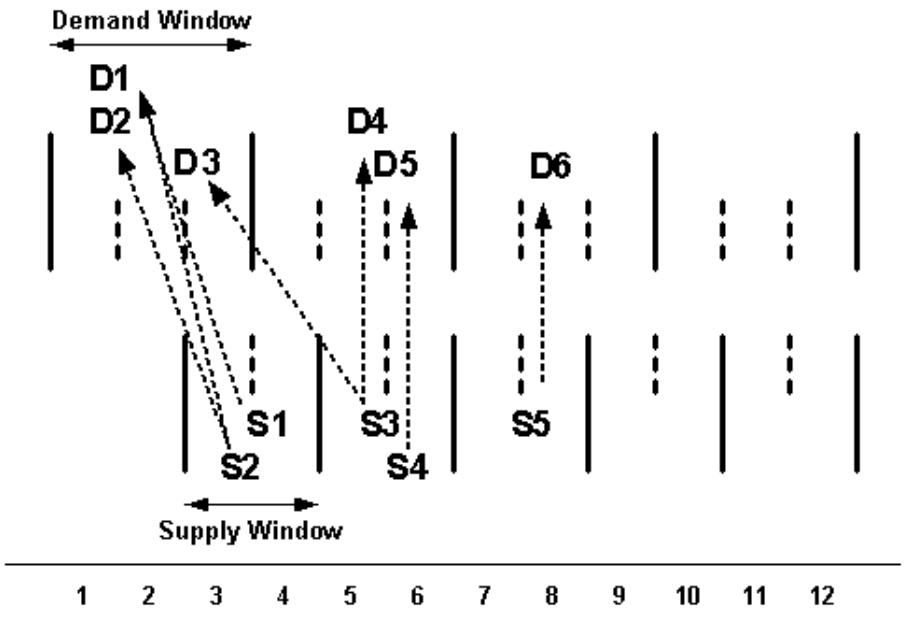
- MSO: Demand Window Size = 3

- MSO: Supply Window Size = 2
- Demands are sorted by priority in each demand window and supplies are sorted by type and date or quantity in each supply window

Note that:

- Demand D1 is pegged to multiple supplies S1 and S2
- Demands D3 and D4 both peg to supply S3
- Pegged entities are connected by arrows

***Priority Pegging Third Pass Example***




## Firm Supply Allocation Window

### Setting

You can set the firm supply allocation window in these ways:

- Site level: Use profile options MSO: Firm Supply Allocation Window (Backward days) and MSO: Firm Supply Allocation Window (Forward days) for all items.
- Item level: Use Cumulative Manufacturing Lead Time (make items) or Processing Lead Time (buy items) and the profile option MSO: Multiplier to Derive Supply Allocation Window to calculate an item specific value for backward calculations only.

If you specify a positive number for the value of profile option MSO: Multiplier to Derive Supply Allocation Window, then the planning engine ignores the profile option MSO: Firm Supply Allocation Window (Backward days). If you specify a zero, negative, or null number for the value of profile option MSO: Multiplier to Derive Supply Allocation Window, then the planning engine uses the profile option MSO: Firm Supply Allocation Window (Backward days).

#### Calculating

Oracle Advanced Supply Chain Planning derives a firm supply allocation window for each item based on its item attributes as follows:

- Make: Cumulative manufacturing lead-time. Either automatically calculate it or enter it. To automatically calculate it use either the Oracle Bills of Material Compute Lead Time calculation or the Lead Time Rollup concurrent processes.
- Buy: Processing lead-time

These are the formulas for the item-specific firm supply allocation window:

- Make item: Cumulative manufacturing lead-time * MSO: Multiplier to derive supply allocation window
- Buy item: Processing lead-time * MSO: Multiplier to derive supply allocation window

The value is rounded up to the integer. If the cumulative manufacturing lead-time or the processing lead-time is null or 0 and the multiplier is positive, the planning engine uses the item-specific firm supply allocation window which is 0.

For example:

- MSC: Multiplier to Derive Supply Allocation Window: 1.2
- Cumulative manufacturing lead-times for item A101: 12 days
- Cumulative manufacturing lead-times for item A102: 20 days
- Firm supply allocation window for item A101: 15 days (12 * 1.2 = 14.4)
- Firm supply allocation window for item A102: 24 days (20 * 1.2)

### Sizing Demand and Supply Windows

Very small or very large window sizes bring advantages and disadvantages to the results of the pegging process.

Some benefits of small demand window size are:

- Lower inventory and inventory carrying cost: Earlier demands are pegged to on-hand instead of higher priority later demands pegging to on-hand.

- Decrease in total demand lateness: It is more likely that early demands are satisfied before later demands.

A disadvantage of small demand window size is more late higher priority demands. Lower priority demands are satisfied before higher priority demands and low priority demands for safety stock peg to on-hand.

A benefit of large demand window size is higher priority demands having a higher probability of being satisfied earlier.

Some disadvantages of large demand window size are:

- Increased overall demand lateness.
- Increased inventory carrying cost as more inventory is held.

When you are sizing the supply window, note that selecting a large window size can result in the planning engine's pegging early demands to firm supplies or non-firm supplies at the end of the window (firm supplies sort by type and date, non-firm supplies sort by type and quantity). This results in increased lateness for the early demands.

#### Priority Pegging Examples

This example shows priority pegging for two items. It begins with various settings and then shows the pegging for each item.

Profile option settings:

- MSO: Firm Supply Allocation Window (Backward days): 5
- MSO: Firm Supply Allocation Window (Forward days): 1
- MSO: Multiplier To Derive Supply Allocation Window: 2
- MSO: Demand Window Size: 2
- MSO: Supply Window Size: 2
- MSC: Use FIFO Pegging: No

Plan option Peg Supplies by Demand Priority: Selected.

Item cumulative lead-times:

- A101: 2
- A102: 1

Item specific firm supply allocation window:

A101: 4 (2 * 2)

A102: 2 (2 * 1)

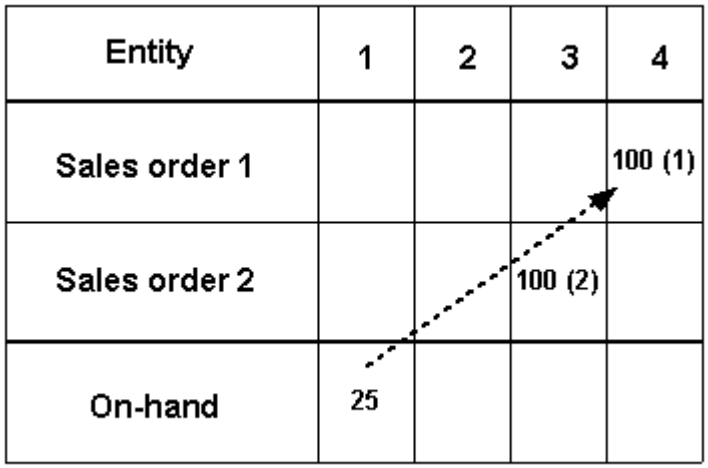
**Item A101 Pegging:**

**First Pass**

This diagram shows the demands, supplies, and pegging information for item A101 on the first pass. Demand priorities are in parentheses and pegged entities are connected by arrows. The order of the schedule entities is:

- Demand
- Pegging to on-hand and firm supplies within the firm supply allocation window. The planning engine starts with the highest priority demand on day 4 going backward and then forward.

***Pegging to On-hand and firmed supplies***




**Second Pass**

This diagram shows the demands, supplies, and pegging information for item A101 on the second pass. Demand priorities are in parentheses, pegged entities are connected by arrows, and split supply quantities are in brackets. The order of the schedule entities is:

- Demand position after of on-hand and firm supplies within the firm supply allocation window
- Pegging to supply outside the firm supply allocation window, firm supplies first

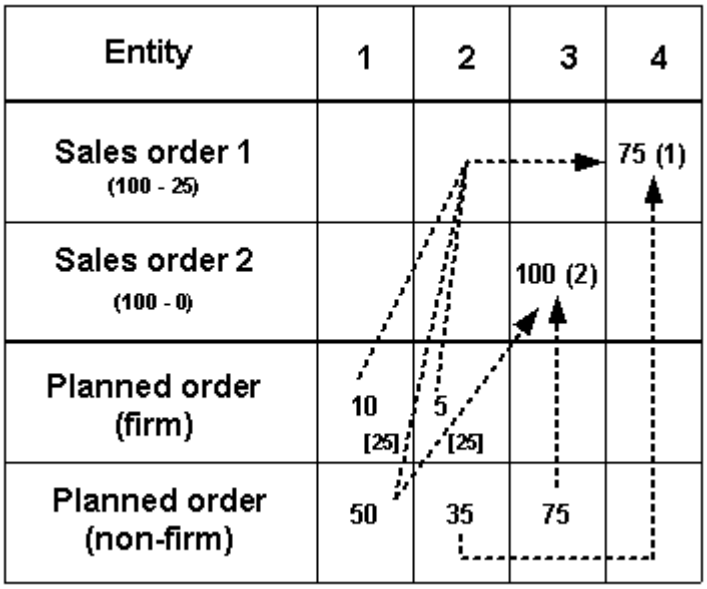
Note that non-firm planned orders are sorted by quantity in ascending order and firm planned orders are sorted by date in ascending order. Therefore, the planning engine:

- Pegs the non-firm planned order in bucket 2 for quantity 35 and the higher priority demand in bucket 4. Pegs the non-firm planned order for quantity 35 on day 2 and

the higher priority demand on day 4. Pegs the non-firm planned order for quantity 50 on day 1 and both the demand on day 4 (for quantity 25) and the demand on day 3 (for quantity 25).

- Pegs the firm planned order for quantity 10 on day 1 and the higher priority demand of day 4.

***Pegging of firmed planned order***




**Item A102 Pegging**

**First Pass**

This table shows the demands, supplies, and pegging information for item A102 on the first pass. Demand priorities are in parentheses and pegged entities are connected by arrows. The order of the schedule entities is:

- Demand
- Pegging to on-hand and firm supplies within the firm supply allocation window. The planning engine starts with the highest priority demand on day 6 going backward and then forward.

Note that the planning engine pegs to firm jobs and on-hand balances with respect to the firm supply allocation windows. No demand in the first pass pegs to the firm job on day 3 but the demand in bucket 1 for quantity 170 in the second pass does peg to it.

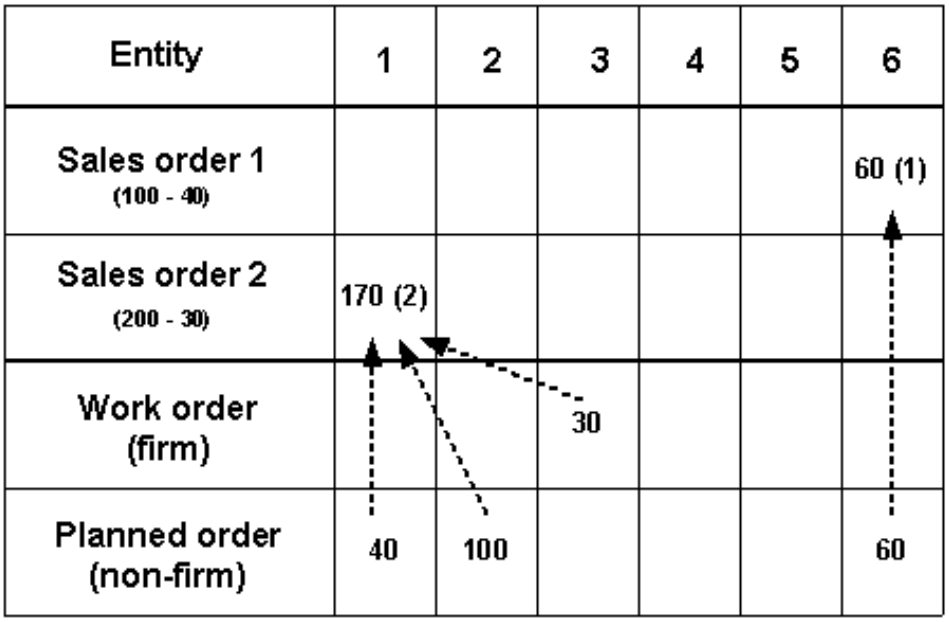
| Entity | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Sales order 1 | | | | | | 100 (1) |
| Sales order 2 | 200 (2) | | | | | |
| On-hand | 10 | | | | | |
| Work order (firm) | | 20 | 30 | 40 | | |

**Second Pass**

This table shows the demands, supplies, and pegging information for item A102 on the second pass. Demand priorities are in parentheses and pegged entities are connected by arrows. The order of the schedule entities is:

- Demand position after of on-hand and firm supplies within the firm supply allocation window
- Pegging to supply outside the firm supply allocation window, firm supplies first

*Pegging to supply outside firm supply*




## FIFO Pegging

For all demands and supplies, the planning engine:

- Pegs demands to supplies day by day. It does not sort each day's supplies and demands.
- When there are no more supplies or demands on one day, uses supplies or demands from the next day
- At the end of the planning horizon, posts unpegged supplies to excess.

### FIFO Pegging Example

This example shows FIFO pegging. It begins with various settings and then shows the pegging for each item. Daily supplies and demands are not sorted. Pegged entities are connected by arrows and split supply quantities are in brackets.

Profile option MSC: Use FIFO Pegging: Yes

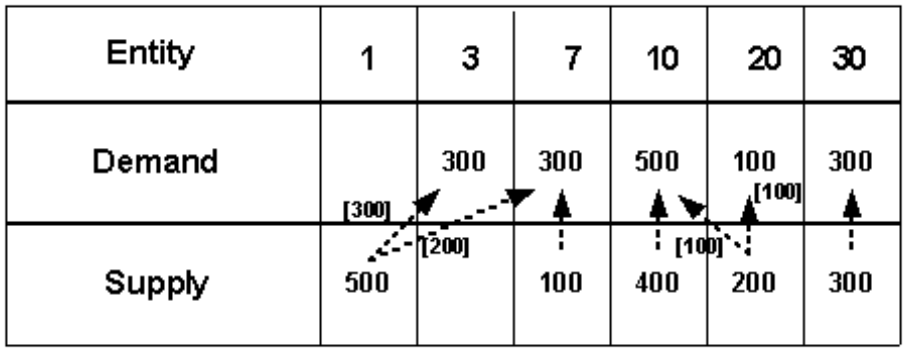
Plan option Peg Supplies by Demand Priority: Cleared

The pegging includes:

- The supply of quantity 500 on day 1 and the demand on day 3 for quantity 300 and the demand on day 7 for quantity 200.
- The supply of quantity 100 on day 7 and the demand on day 7 for quantity 100.

- The supply of quantity 400 on day 10 and the demand on day 10 for quantity 400.
- The supply of quantity 200 on day 20 and the demand on day 10 for quantity 100 and the demand on day 20 for quantity 100.
- The supply of quantity 300 on day 30 and the demand on day 30 for quantity 300.

***Pegging***




### Priority/FIFO Pegging

The priority/FIFO pegging process makes two passes through the demands and supplies.

#### First Pass

The planning engine uses the priority pegging first pass.

#### Second Pass

The planning engine uses the FIFO pegging pass.

### Priority/FIFO Pegging Example

This example shows priority/FIFO pegging. It begins with various settings and then shows the pegging for each item. Pegged entities are connected by arrows and split supply and combined demand quantities are in brackets.

Profile options:

- MSO: Firm Supply Allocation Window (Backward days): 5
- MSO: Firm Supply Allocation Window (Forward days): 1
- MSO: Multiplier To Derive Supply Allocation Window: 2
- MSC: Use FIFO Pegging: Yes

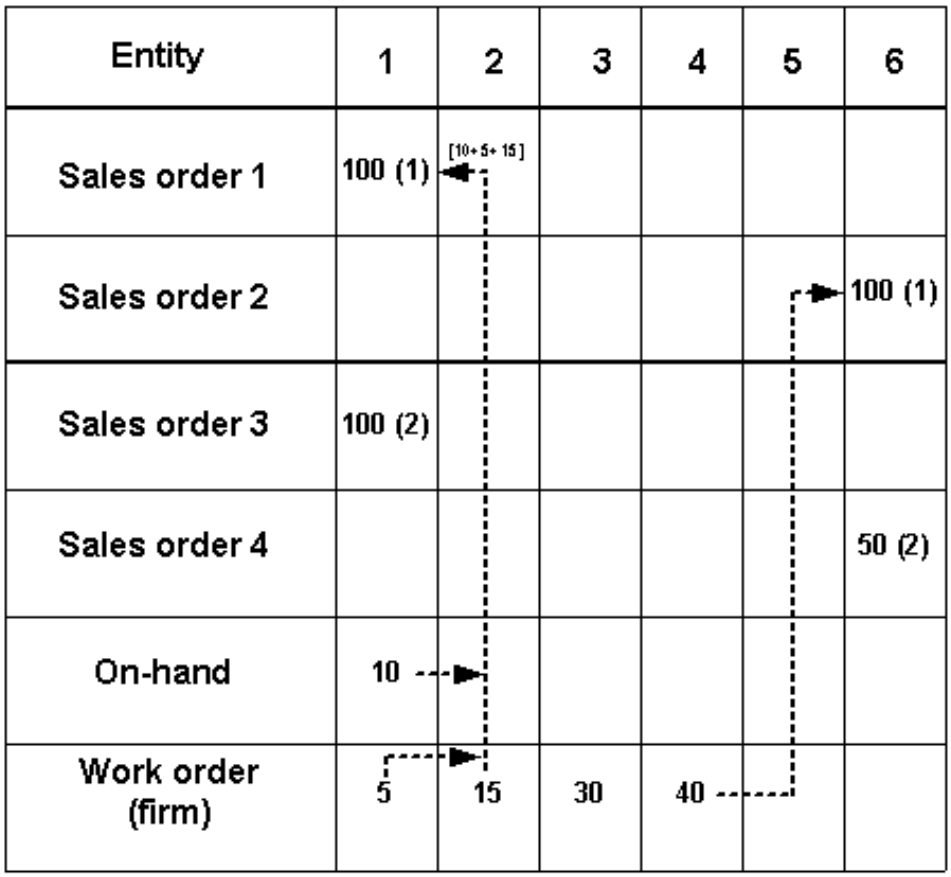
Plan option Peg Supplies by Demand Priority: Selected.

Item cumulative lead-time: 1

Item specific firm supply allocation window: 2 (2 * 1)

### First Pass

The planning engine pegs firm jobs and on-hand with respect to the firm supply allocation windows. It does not peg the firm work order for quantity 30 on day 3 to any demand in the first pass but to the demand on day 1 for 100 in the second pass.

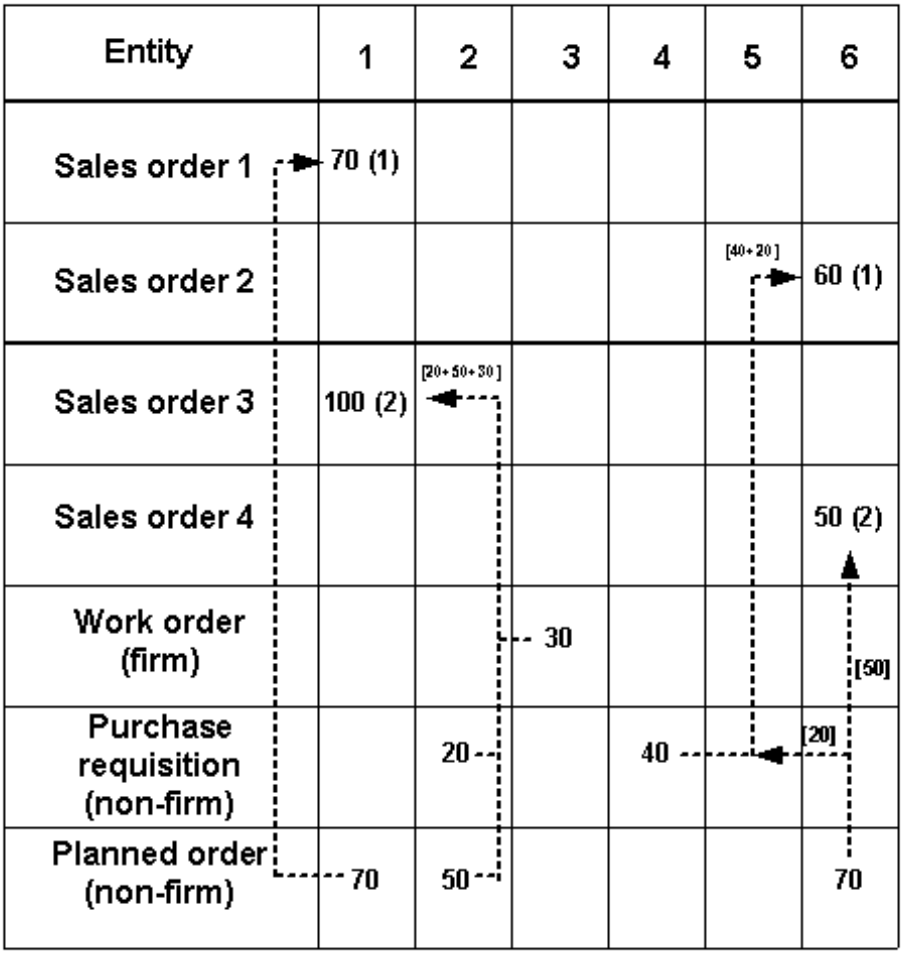



### Second Pass

The planning engine pegs:

- The demand for quantity 70 on day 1 to the planned order for quantity 70 on day 1.
- The demand for quantity 100 on day 1 to the purchase requisition for quantity 20 on day 2, then to the planned order for quantity 50 on day 2, and then to the work order for quantity 30 on day 3.

***Second Pass***

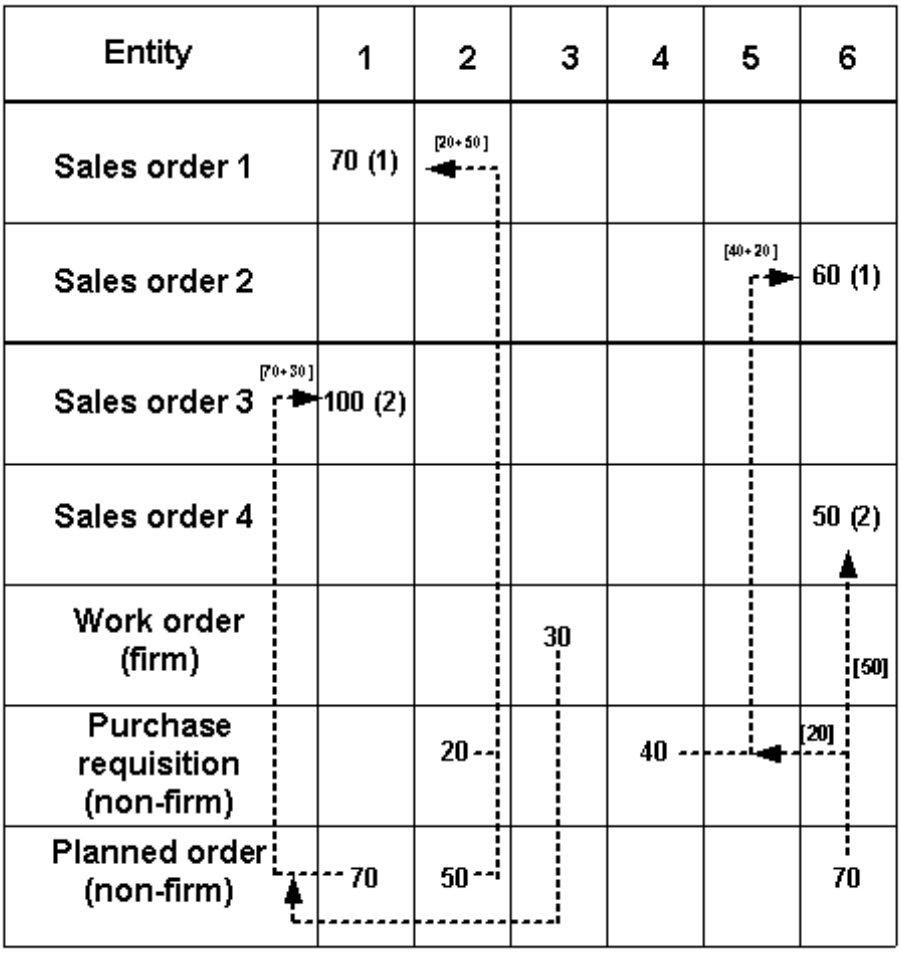



**Priority and FIFO/Priority Comparison**

This diagram shows the second pass as priority pegging schedules it. The planning engine pegs:

- The demand for quantity 70 on day 1 to the purchase requisition for quantity 20 on day 2 and then to the planned order for quantity 50 on day 2.
- The demand for quantity 100 on day 1 to the planned order for quantity 70 on day 1 and then to the work order for quantity 30 on day 3.

*Third Pass*




**Enabling Pegging Checklist**

1. Enable pegged items: In the Items form, MPS/MRP Planning tabbed region, Pegging field, select any value other than None. For more information, see *Oracle Inventory User's Guide.*

2. Enable plan pegging: In the Profile Options form, Main tabbed region, set Enable Pegging. This action enables standard pegging.

   Perform this checklist item if you want to use FIFO pegging or priority/FIFO pegging.

3. Enable plan FIFO pegging: In the Profile Options form, set MSC: Use FIFO Pegging to Yes.

Perform the next three checklist items if you want to use priority pegging or priority/FIFO pegging.

4. Enable priority pegging: In the Plan Options form, Main tabbed region, select Peg Supplies by Demand Priorities.

5. Set firm supply allocation windows: In the Profile Options form, attend to the following:

   - MSO: Firm Supply Allocation Window (Backward days): Number of days for searching backward from the demand date. The default value for this profile option is zero (do not search backwards). If you do not enter a value or enter a negative value, the planning engine also does not search backwards.

     - MSO: Firm Supply Allocation Window (Forward days): Number of days for searching forward from the demand date. The default value for this profile option is zero (do not search forwards). If you do not enter a value or enter a negative value, the planning engine also does not search forwards.

6. Set multiplier To Derive Supply Allocation Window: In the Profile Options form, set MSO: Multiplier To Derive Supply Allocation Window. You can use a decimal quantity.

   This profile option defaults to not entered, which instructs the planning engine to ignore it and base the backward search of pegging is on profile option MSO: Firm Supply Allocation Window (Backward days). If you enter a negative value or zero, the planning engine also ignores this profile option.

   Perform this checklist item if you want to use priority pegging.

7. Set demand and supply window sizes. In the Profile Options form, attend to the following:

   - MSO: Demand Window Size: Number of days for grouping demands into windows; it defaults to 1. If you do not enter a value, enter 0, or enter a negative value, the planning engine uses value 1.

     - MSO: Supply Window Size: Number of days for grouping supplies into windows; it defaults to 1. If you do not enter a value, enter 0, or enter a negative value, the planning engine uses value 1.

8. Set the profile MSC: Minimize Workorder crossovers during reschedules to Yes to avoid pushing any supply forward to complete a work order even if there is some excess. This ensures that the supply is not pegged to a safety stock and therefore, the safety stock date will be closer to the real demand date.

   For more details on the profile option, see MSC Profile Options, page A-13

## Safety Stock Pegging

To set up safety stock planning and to understand the safety stock planning process, see Safety Stock, page 4-129.

### Overview of Safety Stock Pegging

The planning engine plans to meet safety stock levels through a process of sequential phases:

- Safety stock smoothing: Smooths out fluctuations in safety stock. This phase is optional. The planning engine only performs safety stock pegging if profile option MSC: Use FIFO Pegging is No.

  Oracle recommends that you use priority pegging if your business uses safety stock.

- Inventory netting: Creates planned orders and recommendations to meet safety stock levels

- Pegging: Associates supplies and demands

- Scheduling: Detailed schedules safety stock supplies

This topic explains the Pegging phase. To understand the other planning phases, see Safety Stock, page 4-129.

To view the results of safety stock pegging, use theSupply/Demand Window, page 16-64.

### Safety Stock Pegging Phases

The planning engine plans to peg safety stock through a process of sequential phases:

- Peg to non-transient safety stock levels.

- Peg to demands

- Peg to transient safety stock levels

Non-transient safety stock levels are levels that you must hold throughout the planning horizon. They are safety stock levels without ending effectivity dates.

Transient safety stock levels are levels that you must hold for only a certain time during the planning horizon. They are safety stock levels with ending effectivity dates

The safety stock level for a day can be a combination of non-transient and transient safety stock levels for that day.

The planning engine pegs non-transient and transient safety stocks differently. For:

- Transient safety stock levels: It may dual-peg them to both satisfy a safety stock level and also to satisfy a future demand after the safety stock level has expired and safety stock level goes down

- Non-transient safety stock levels: It only pegs them to safety stock level, never to demand

In all examples, please assume:

- Profile option MSO: Demand Window Size is 1
- Profile option MSO: Supply Window Size is 1
- Demand dates are unconstrained demand dates. Unconstrained demand dates are demand dates calculated before scheduling. Scheduling of supplies occurs after pegging.

**Safety Stock Pegging Phase 1: Peg to Non-transient Safety Stock Levels**

You can choose to exclude non-transient safety stock demands from the pegging logic; set profile option MSC: Include Safety Stocks in Priority based Pegging to No. The pegging process:

- First pegs all non-transient safety stock levels to non-firm planned orders
- Then pegs other demands to supplies

If you set profile option MSC: Include Safety Stocks in Priority based Pegging to Yes, the pegging process does not give preferential treatment to the non-transient safety stock levels and pegs them at the same time as the demands.

**Safety Stock Pegging Phase 2: Peg to Demands**

The planning engine performs priority pegging logic using demands and supplies within each supply and demand window. It does not consider transient safety stocks. It does consider non-transient safety stocks if it has not pegged them in the previous optional phase.

**Safety Stock Pegging Phase 3: Peg to Transient Safety Stock Levels**

The planning engine performs priority pegging logic using transient safety stock levels and supplies. It pegs the supplies at quantity 0 because these supplies will eventually satisfy demands. It pegs the transient safety stock levels to the lowest priority supplies in the supply window.

This table shows pegging to a transient safety stock level. It details:

- D: Demand
- SSL(T): Transient safety stock level
- S1: Supply 1

The transient safety stock level pegs to Supply 1 from D1 to D9 at quantity 0. The demand on D10 for quantity 10 pegs to Supply 1 on D10 at quantity 10.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | - | - | - | - | - | - | - | - | - | 10 | - | - | - | - | - |
| SSL (T) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | - | - | - | - | - |
| S1 | 10 | | | | | | | | | | | | | | |
| S1 pegs to | SSL (T) | SSL (T) | SSL (T) | SSL (T) | SSL (T) | SSL (T) | SSL (T) | SSL (T) | SSL (T) | D | - | - | - | - | - |
| S1 peg qty | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | - | - | - | - | - |

**Other Safety Stock Pegging Principles**

Other safety stock pegging principles are:

- The planning engine can peg a safety stock level to more than one supply
- The planning engine can split planned orders to peg to different transient safety stock levels. To enable this, set profile option MSC: Split Planned Order to perform safety stock pegging to Yes or Yes But Do Not Violate Order Modifiers.
- The peg to a transient safety stock level expires either when the transient safety stock level expires or when the supply is consumed by demands.
- A supply that pegs to a transient safety stock level and also to multiple demands may contribute less to its pegged safety stock level over time. As time progresses, the demands consume a part of its quantity at different times; the remaining quantity remains pegged to the transient safety stock level.
- The planning engine can push out dependent demands of supplies that peg to safety stock levels: Use this method when your constraints tend to cause the scheduling phase of planning to push resource requirements out and result in unneeded safety stock at lower bill of material levels. To enable this, set a value for profile option MSO: Supply Reschedule Window Size for Safety Stock Pegging. The value is the number of reschedule that the pegging process estimates when it makes decisions against transient safety stocks.

This diagram shows an inventory netting scenario with pegging indicated. It chiefly shows the pegging of safety stock levels. The planning engine does peg other demands

and supplies that do not appear pegged here or do not appear completely pegged here.

It details:

- D: Demands
- OH: On-hand balance
- SR: Scheduled receipts
- PO: Planned orders
- SS(NT): Non transient safety stock levels
- SS(T): Transient safety stock level
- SSL: Safety stock level
- PAB: Projected Available Balance

In this diagram, the non-transient safety stock levels (quantity 10 beginning on day 1 and an additional quantity 5 beginning on day 7) peg to supplies due on day 3.

For transient safety stock:

- The quantity 10 on day 7 pegs to the planned order quantity 10 consumed on day 8.
- The quantity 10 on days 8 and 9 and the quantity 3 on days 10 and 11 peg to the planned order quantity 10 consumed on day 12
- The quantity 3 on day 12 pegs to the planned order quantity 3 consumed on day 14.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | | | 80 | | | | | 100 | | [10] | | 82 | | 83 | |
| OH | 20 | | | | | | | | | | [7] | | | | |
| SR | | | 50 | | | | | | | | | | | | |
| PO | | | 5<br>5<br>10 | | | | 15 | 90<br>10<br>[0] | | [0] | | 65<br>10 | [0] | 77<br>3 | [3] |
| SS (NT) | 10 | 10 | 10 | 10 | 10 | 10 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| SS (T) | | | | | | | 10 | 10 | 10 | 3 | 3 | 3 | | | |
| SSL | 10 | 10 | 10 | 10 | 10 | 10 | 25 | 25 | 25 | 18 | 18 | 18 | 15 | 15 | 15 |
| PAB | 10 | 10 | 10 | 10 | 10 | 10 | 25 | 25 | 25 | 18 | 18 | 18 | 15 | 15 | 15 |

### Forecast and Production Forecast Pegging

When you create a production plan during constrained master scheduling or, an unconstrained plan with pegging enabled, Oracle Advanced Supply Chain Planning allows you to see product family planned orders that are pegged to existing sources of supply including, On-hand, Work In Process jobs and firm planned orders if any. You can do this if:

- The planning method for product family item and the member items are the same
- You are performing constrained master scheduling in which the member items or some of their components are critical items. This ensures that both the product family and the member items reside in the same plan.

The planning engine does not generate pegging:

- Across different plans

  For example, if product family PF-1 is in production plan and you use that to drive manufacturing plan for member items M-A and M-B, the planning engine does not derive pegging in this scenario.

- For sales orders

  **Note:** Only demand that is pushed down from the aggregate demand statement is pegged.

  Product family push down demand = Total supply (Planned orders) - Sales order

demand (Rolled up sales orders at the product family level)

You can view the Pegging region of the Supply/Demand window to analyze the impact of changing a supply or demand order at any level of your bill of material.

**To generate pegging information**

1. Navigate to Plan Options > Main tab.
2. Select the Enable Pegging check box for an unconstrained plan.

Alternatively, you can choose to generate a constrained/optimized plan. In this case, the planning engine always generates pegging.

### Viewing Pegging Information

Using the pegging tree, you can trace demand and supply up or down from any bill of material level.

If you have any item in a supply chain bill marked for pegging, the planning engine pegs for the top level assembly.

For the planning engine to peg a component, you must mark its assembly for pegging.

### To display the pegging tree

1. Select the desired item in the Navigator.
2. Navigate Tools > Supply/Demand.
3. In the Supply/Demand window, the pegging tree appears in the bottom half of the window.

   The default display for viewing pegging from demand to supply is supply order details and end item demand order information. The default display for viewing pegging from supply to demand is supply order details, immediate parent demand information, and end item demand information.
4. To expand the entire pegging tree, select (highlight) the top pegging node (root), right-click, and select Expand All.

   You can explode each node to higher level or lower level nodes by clicking on the plus and minus signs. You can also jump to other detail windows by right-clicking the pegging node.

   To see a node's properties, highlight it, right-click it, and select Properties.

### Right-click Menu Options in the Pegging Region of the Supply/Demand Window

The following right-click menu options are available from the pegging region:

| Right-click Menu Option | Available For Demand Line or Supply Line | Description |
|---|---|---|
| Exception Details | Both | Use to navigate to the Exception Details window. |
| Horizontal Plan | Both | Use this to navigate to the Horizontal Plan window. |
| Vertical Plan | Both | Use this to navigate to the Vertical Plan window. |
| Items | Both | Use this to navigate to the Items window. |
| Resource Requirements | Supply Line | Use this to navigate to the Resource Requirements window. |
| Expand | Both | Use this to expand all the pegging lines below the line you highlight in the pegging tree. |
| Refresh Supply/Demand | Both | Use this option to refresh the information in the Supply/Demand region. The planning engine does not change the information in the pegging region. |
| Calendar | Both | Various Calendar options (such as Organization Shipping and receiving) are available. |
| Refresh | Demand Line | The planning engine refreshes the information in the pegging region. |

### Pegging Icons in the Supply/Demand Window

Pegging information is available in the pegging region of the Supply/Demand window. You can use the icons provided in this window to perform the following:

- Supply Pegging icon and Demand Pegging icon: View upstream (demand pegging)

and downstream pegging (supply pegging) for a particular supply or demand record in the same window. By default, a supply line has upstream pegging while a demand line has downstream pegging. You can change the pegging direction by clicking on these icons.

- Backward Navigation icon and Forward Navigation icon: Navigate forward or backward to multiple Supply/Demand windows to view pegging information for different items.
  - For example, while navigating a pegging tree, you may want to view the demand pegging for a different item in the pegging tree. To do this, highlight the pegging line of the item and click the Demand Pegging icon. The planning engine refreshes only the pegging region and creates the highlighted line in the pegging region as the root pegging line. You can use the Backward Navigation to return to the previous context in the pegging region. The state of the pegging region is maintained so that you return to the pegging region as you left it.
  - The history of your forward and backward navigation is cleared when you select a different node from the Navigator or the Query result window. In addition, the history of the navigation is cleared when you select a different supply or demand line from the supply and demand region of the Supply/Demand window.
  - After you select an item from a plan or from a query result window and open the Supply/Demand window, you may have subsequent different context in the Supply/Demand window as you drill through pegging and view supply/demand for a different item.
  - The planning engine saves a copy of the contents in the entire Supply Demand window when a different root node (different item) appears in the pegging region. However, the planning engine does not save a copy of the Supply Demand window if you change the context in the supply/demand region of the window by firming a supply, querying a subset of records, or refreshing supply/demand.
- Hide Dependant Demands and Show Dependant Demands toggle icon: This is a toggle icon and can be used to switch between hide and show of dependent demand pegging lines.
- Hide Operation/Resource and Show Operation/Resource toggle icon: This is a toggle icon and can be used to switch between hide and show operation and resource pegging lines. By default, the planning engine displays the operation and resource lines in the pegging tree.

#### Vendor Managed Inventory (VMI) Supplies

You can perform the following tasks to manage VMI supplies using the Planner

Workbench:

- Search for VMI supplies using the VMI Flag criterion in the Find Supply/Demand window. After you specify the condition for the VMI flag, the records that meet your criteria appear in the Supply/Demand window. You can view all supplies (planned orders, requisitions, purchase orders, in transit shipments) that are managed by a VMI-enabled supplier.

- Prevent the release of those planned orders that are sourced from VMI-enabled suppliers. You need not create a requisition for items managed by suppliers. To prevent the release of VMI items, clear the Release VMI Items check box in the Other tabbed pane of the Preferences window.

- Create forecasts for VMI items and publish them to your suppliers.

## Items Window

### View the Items Window

You can navigate to the Items window from various node types such as items an plans in the Navigator. In addition to the Navigator, you can also drill down to the Items window from other windows such as Vertical Plan.

#### To display the Items window

1. Select one or more nodes (using Ctrl- click) in the Navigator.

2. Select [right-click] > Items > Items.

#### Information Displayed in the Items Window

The Items window provides detailed information pertaining to items such as:

| Fields | Description |
|---|---|
| BOM Item Type | BOM item attribute |
| Pegging | MPS/MRP planning item attribute |
| Preprocessing LT | Lead times item attribute |
| Processing LT | Lead times item attribute |
| Postprocessing LT | Lead times item attribute |
| Fixed LT | Lead times item attribute. For buy items, this field displays item attribute Processing LT. |

| Fields | Description |
|---|---|
| Fixed Order Qty | General planning item attribute |
| Fixed Lot Mult | General planning item attribute |
| Min Order Qty | General planning item attribute |
| Max Ord Qty | General planning item attribute |
| ABC Class | ABC class code assigned to the item |
| ATP Components Flag | Oracle Order Management item attribute |
| ATP Flag | Oracle Order Management item attribute |
| Base Model | Bills of material item attribute |
| Buyer | Purchasing item attribute |
| Carrying Cost | General planning item attribute |
| Category | Planning category assigned to the item |
| Category Desc | Planning category description |
| Continuous Inter-Org Transfers | MPS/MRP planning item attribute |
| Convergent Supply Consumption | MPS/MRP planning item attribute |
| Create Supply Flag | MPS/MRP planning item attribute |

| Fields | Description |
| --- | --- |
| Critical Component | MPS/MRP planning item attribute<br><br>The planning engine can infer from the bottleneck resource group whether or not an item is a critical component. The Critical Component fields displays one of the following values:<br><br>- Null<br><br>- Item attribute<br><br>- Inferred<br><br>For example, sub-assembly B is created using an item A. You may not specify the item A as a critical component. However, if the resource for creating the sub-assembly B is a bottleneck, the planning engine considers the sub-assembly as a critical component at the time of planning for Item A in a production plan. |
| Demand Time Fence Date | The planning engine calculates this based on the sum of plan run date and demand time fence days. |
| Demand Time Fence Days | MPS/MRP planning item attribute |
| Description | Main item attribute |
| Discount | MRP: Plan Revenue Discount Percent profile option value |
| Divergent Supply Feed | MPS/MRP planning item attribute |
| Effectivity Control | Bills of material item attribute |
| Exception Set | MPS/MRP planning item attribute |
| Fixed Days Supp | MPS/MRP planning item attribute |
| Forecast Control | MPS/MRP planning item attribute |
| Inventory Use Up Date | The planning engine calculates this based on the engineering change order for the item. |

| Fields | Description |
| --- | --- |
| Make/Buy | General planning item attribute |
| Margin | The planning engine uses the following formula to calculate this:<br>(1 - Standard Cost/ Net Selling Price) * 100 |
| Net Selling Price | The planning engine uses the following formula to calculate this:<br>Selling Price * (1 - Discount) |
| Nettable Qty | Nettable inventory quantity |
| Non Nettable Qty | Non-nettable inventory quantity |
| PIP Flag | MPS/MRP planning item attribute |
| Planner | General Planning item attribute |
| Planning Method | MPS/MRP planning item attribute |
| Planning Time Fence Date | The planning engine compares the sum of the plan run date and planning time fence days with the natural time fence. The greater value of the two is used for calculating the planning time fence date.<br>If plan option Planning Time Fence is clear and the item has no firm discrete jobs, this field is blank.<br>For more information, see Lead Time and the Planning Time Fence, page 4-70 . |
| Planning Time Fence Days | MPS/MRP planning item attribute |
| Product Family Item | Product family item name (applicable to member items only) |
| Product Family Item Desc | Product family item description (applicable to member items only) |
| Repetitive | MPS/MRP planning item attribute |

| Fields | Description |
|---|---|
| Round | MPS/MRP planning item attribute |
| Safety Stock Days | General planning item attribute |
| Safety Stock Method | General planning item attribute |
| Safety Stock Percent | General planning item attribute |
| Selling Price | The planning engine considers the selling price based on the default price list associated with the profile option MRP: Plan Revenue Price List. |
| Service Level | Target service level for an item |
| Shrinkage Rate | MPS/MRP planning item attribute |
| Standard Cost | Item cost |
| Substitution Window | MPS/MRP planning item attribute |
| UOM | Main item attribute |
| Unit Volume | Physical attributes item attribute |
| Unit Weight | Physical attributes item attribute |
| Volume UOM | Unit of measure for quantity (volume) |
| WIP Supply Type | Work in process item attribute |
| Weight UOM | Item weight (unit of measurement) |

### Buttons in the Items Window

Various buttons are provided in the Items window. You can use these buttons to navigate to various other windows:

- Destinations
- Sources

- Where Used
- Components
- Co-Product
- Routing Operations
- Safety Stock
- Substitutes

### Right-click Menu Options in the Items Window

In addition to the folder options, the right-click pop-up menu displays the following options to navigate to other windows:

- Supply/Demand
- Supply
- Supplier Information
- Process Effectivity
- Exception Details
- Gantt Chart
- Horizontal Plan
- Vertical Plan

## Destinations Window

The Destinations window details information such as destination organization, sourcing, and assignment associated with items. You can access the Destinations window from the Items window and Supply Chain Bill.

The Destinations window consists of three tabs: Sourcing, Effectivity Dates, Assignment Information.

### Sourcing Tabbed Pane

The following table provides a description of the fields displayed in the Sourcing tabbed pane:

| Field | Description |
| --- | --- |
| Item | Item |
| Source Type | Sourcing rule, bill of distribution or item attribute |
| Destination Org | The receiving organization. |
| Supplier | Supplier name (not used in the Destinations window) |
| Supplier Site | Supplier site name (not used in the Destinations window) |
| Allocation % | Allocation % from the sourcing rule or bill of distribution |
| Rank | Rank from the sourcing rule or bill of distribution |
| Shipping Method | Shipping method from the sourcing rule or bill of distribution |
| Intransit Time | Indicates the intransit time from the sourcing rule or the bill of distribution. |

### Effectivity Dates Tabbed Pane

The following table provides a description of the fields displayed in the Effectivity Dates tabbed pane:

| Field | Description |
| --- | --- |
| From Date | Effectivity dates from the sourcing rule or bill of distribution |
| To Date | Effectivity dates from the sourcing rule or bill of distribution |
| Quantity | Indicates the conversion factor used during sourcing |

### Assignment Information Tabbed Pane

The following table provides a description of the fields displayed in the Assignment Information tabbed pane:

| Field | Description |
|---|---|
| Sourcing Rule Type | Sourcing rule or bill of distribution or item attribute |
| Sourcing Rule Name | Sourcing rule or bill of distribution name |
| Assignment Name | Buy from, make at or transfer from |

## Sources Window

The Sources window details information about sourcing and assignment associated with items. You can access the Sources window in one of the following ways:

- Click the Sources button in the Items window
- Right-click an item in the Navigator, select Supply Chain > Sources.

The Sources window consists of three tabs: Sourcing, Effectivity Dates, Assignment Information.

### Sourcing Tabbed Pane

The following table provides a description of the fields displayed in the Source tabbed pane:

| Field | Description |
|---|---|
| Assignment Use | Type of assignment set that uses this rule. For example, Sourcing Assignment or Global Forecast Distribution. |
| Source Type | Sourcing rule or bill of distribution |
| Source Org | Source organization from the sourcing rule |
| Supplier | Supplier from the sourcing rule or bill of distribution |

| Field | Description |
| --- | --- |
| Supplier Site | Supplier site from the sourcing rule or bill of distribution |
| Allocation % | Allocation % from the sourcing rule or bill of distribution |
| Rank | Rank from the Sourcing Rule or bill of distribution |
| Shipping Method | Ship Method from the sourcing rule or bill of distribution |
| Intransit Time | Indicates the intransit time from the sourcing rule or the bill of distribution. |
| Allocated Qty | The planning engine calculates the allocated quantity in the following manner<br><br>For each rank, the planning engine aggregates all historical allocations for the sources in that rank to calculate the total historical allocation.<br><br>The planning engine uses the rank quantity and the allocated quantity to calculate the quantity that is to be allocated to the source. The rank quantity is the planned order quantity that needs to be planned for each rank.<br><br>The allocated quantity is the quantity that is allocated to any source (allocated quantity). The planning engine also considers the allocation percent for the source at this rank.<br><br>The quantity that is to be allocated to the source = ((allocation percent /100) * (total historical allocation + rank quantity)) - quantity allocated from this source.<br><br>If the calculated quantity exceed the quantity required for this rank, the planning engine sets this value to the ceiling. |

### Effectivity Dates Tabbed Pane

The Effectivity Dates tabbed pane displays the following information:

- From Date
- To Date
- Quantity

For more information about these fields, see Destinations Window, page 16-121.

#### Assignment Information Tabbed Pane

The Assignment Information tabbed pane displays the following information:

- Sourcing Rule Type
- Sourcing Rule Name
- Assignment Type

For more information about these fields, see Destinations Window, page 16-121.

#### Buttons in the Sources Window

You can use the buttons provided in the Sources window to navigate to the following windows:

- Supplier Flexfences window
- Supplier Capacity window
- Supplier Variability window
- Items window
- Supply/Demand window

## Supplier Capacity Window

You can view the capacity details associated with a supplier in the Supplier Capacity window.

#### View Supplier Capacity Window

**To display your supplier capacity**

1. In the Navigator, view by supplier.
2. Drill down to highlight an item associated with a supplier or a supplier site.
3. Select [right-click] > Supplier Information.

   Alternatively, you can view by any other category and perform the following steps

to navigate to the Supplier Capacity window.

Highlight a supplier or a supplier site.

4. Navigate to the Items window.
5. In the Items window, click Sources.
6. In the Sources window, click Supplier Capacity.

#### Information Displayed in the Supplier Capacity Window

The Supplier Capacity window displays the following information:

| Fields | Description |
|---|---|
| Supplier | Supplier name |
| Supplier Site | Supplier site name |
| Item | Item name |
| Org | Organization |
| Processing Lead Time | Approved Supplier List processing lead-time |
| Minimum Order Quantity | Approved Supplier List minimum order quantity |
| Fixed Lot Multiplier | Approved Supplier List fixed lot multiplier |
| Penalty Cost Factor | Supplier capacity penalty cost factor |
| Supplier Price | Purchasing item attribute |
| Supplier Capacity Calendar | Approved Supplier List supplier capacity calendar |
| Capacity Accumulation Date | The planning engine calculates the capacity accumulation date based on the Supplier Capacity profile option. For more information, see Supply Chain Modeling, page 4-1 . |
| Category | Planning item category |
| Buyer | Purchasing item category |

| Fields | Description |
|---|---|
| Planner | General planning item attribute |
| Standard Cost | Item cost from the Oracle Cost module |

The Supplier Capacity window has two tabs:

- Supplier Capacity
- Supplier Flexfences

#### Supplier Capacity Tabbed Pane

A supplier may have different capacity on different dates. You can specify the supplier's capacity for specific time periods in this tabbed pane The planning engine assumes infinite capacity on:

- All days from the plan start date to the first day of defined capacity
- All days after the last day of defined capacity to the planing horizon

The following table provides a description of the fields displayed in the Supplier Capacity tabbed pane:

| Fields | Description |
|---|---|
| From | Specify the start date. |
| To | Specify the end date. |
| Capacity | Specify the capacity of the supplier (units per day) for the duration. A blank value indicates no capacity for all dates before any date with defined capacity. A blank value means infinite capacity for all dates that there is no future dates with defined capacity. |

For more information on setting supplier capacity, see Supply Chain Modeling, page 4-1.

#### Supplier Flexfences Tabbed Pane

On certain days, the supplier may have additional capacity. You can specify the tolerance (in percent) to an increase in capacity that the supplier may indicate. The fields in the Supplier Flexfences Tabbed pane include:

- Days: Approved Supplier List days in advance
- Tolerance (%): Approved Supplier List tolerance (in %) for days in advance

For more information on setting supplier flexfences, see Supply Chain Modeling, page 4-1.

## Supplier Variability Window

For information on setting supplier lead-time variability, see *Oracle Inventory Optimization Implementation and User's Guide*.

## Safety Stock Window

The Safety Stock window shows time phased safety stock levels that the planning engine used to plan. To access the Safety Stock window for an item, navigate to the Items window, select items, and click Safety Stocks.

The information displays by item, then by effective date. You can also update safety stock levels. To see safety stock levels calculated but Oracle Advanced Supply Chain Planning or Oracle Inventory Optimizaion, see Horizontal Plan, page 16-52

To see more detailed results of safety stock planning, see Supply/Demand Window, page 16-64, and Pegging, page 16-83.

The following table lists the information displayed in the Safety Stock window.

| Field | Description |
|---|---|
| Item | Item |
| Org | Organization |
| Effective Date | Effective dates of the safety stock quantity |
| UOM | Unit of measure |
| Description | Item description |
| Quantity | Safety stock quantity |
| User Defined Quantity | The planning engine populates this field with the value from the Inventory Safety Stock definition form. |

| Field | Description |
|---|---|
| User Defined Days of Supply | This is a user-defined quantity that indicates days of supply. |
| Days of Supply | The planning engine populates this field with the value from the General Planning Item attribute. |
| Safety Stock Methods | The planning engine populates this field with the value from the General Planning Item attribute. |
| Project | The planning engine populates this field with the value from the Inventory Safety Stock definition form. |
| Task | The planning engine populates this field with the value from the Inventory Safety Stock definition form. |

## Substitution Chain Window

You can navigate to the Substitution Chain window from:

- Items window > Substitutes.
- From the Navigator, right-click an item and select Items > Substitutes.

You can specify a customer and site to view the substitution chain for the item.

Substitition information is only available in Collections Workbench if the substitution set name is DEFAULT.

If you have more than one substitution set, you must running the plan with your substitution set specified in the plan options before you can see the substitution relationships here.

### Right-click Menu Options

When you right-click an item in the Substitution Chain window, the following options appear:

- Properties
- Horizontal Plan

The Properties window does not display the following information for the default substitution chain:

- Highest revision item
- Implied predecessor

For more information about the Substitution Chain window, see Business Topics, page 10-1.

## Resources Window

The Resources window displays resource-related information such as ship method, location, and resource cost.

### Viewing the Resources Window

**To navigate to the Resources window**

1. Select a resource in the Navigator.
2. Choose [right-click] > Resources.
3. The Resources right-click menu displays four options: Resources, Resource Availability, Resource Requirements, Gantt Chart.
4. Select Resources to view the Resources window.

   The Resources window appears.

The Resources window provides detailed information such as:

| Fields | Description |
|---|---|
| Dept/Line | Department or line designation |
| Resource | Resource name |
| Org | Organization |
| Owning Dept | Owning department of the resource |
| Dept Class | Department class to which the resource is assigned |
| Resource Type | Person, machine or miscellaneous |

| Fields | Description |
| --- | --- |
| Resource Group | Bottleneck resource group assignment |
| Min Rate | Line rate |
| Max Rate | Line rate |
| Resource Cost | Resource cost per resource UOM |
| 24 Hours Resource | Yes or No |
| Aggregate Resource | Yes or No |
| Base UOM | Resource UOM |
| Batchable | Resource batchable flag |
| Batchable UOM | Resource batchable UOM |
| Batching Window | Resource batching window |
| Bottleneck Flag | The planning engine calculates this based on the plan options for bottleneck resource groups. |
| Dept/Line Desc | Description |
| Efficiency % | Resource efficiency % |
| Exception Set | Resource exception set |
| Group Number | Activity group number |
| Inactive Date | Resource inactive date |
| Max Capacity | Resource batching maximum capacity |
| Min Capacity | Resource batching minimum capacity |
| Offset (%) | Resource offset percent |

| Fields | Description |
|---|---|
| Resource Desc | Resource description |
| Schedule | The valid values for this schedule flag are:<br>- Yes<br>- No<br>- Prior<br>- Next |
| Sequence | Resource sequence number |
| Utilization | Resource utilization % |

#### Right-click Menu Options

If you select a resource in the Resources window and right-click, the following options appear:

- Folder options (such as Show Field or Hide Field)
- Horizontal Plan

#### Buttons in the Resources Window

Based on the context, specific buttons are available in the Routing Operations window. You can use these buttons to navigate to other windows such as:

- Gantt Chart
- Items window
- Resource Availability Summary window
- Resource Requirements window

## Resource Availability Summary Window

You can navigate to the Resource Availability Summary window either from the Resources window or by using the Resources right-click popup menu in the Navigator.

#### To view the Resource Availability window

To view the available capacity, choose Resources > Resource Availability.

The Resource Availability Summary window appears.

### Information in the Resource Availability Summary Window

The following table lists the information displayed in the Resource Availability Summary window.

| Field | Description |
|---|---|
| Org | Organization |
| Dept/Line | Resource Owning Department or Line |
| Resource | Resource Name |
| From Date | Start Date for the Total Available |
| To Date | End Date for the Total Available |
| Total Available | Quantity based on the Resource UOM |
| UOM | Resource UOM |

### Buttons in the Resource Availability Summary Window

The following buttons are available in the Resources Availability Summary window:

- Requirements: You can navigate to the Resource Requirements window by clicking the Requirements button.
- Details: You can navigate to the Resource Availability window to view the details.

## Resource Availability (Details) Window

When you click the Details button in the Resource Availability Summary window, the Resource Availability window appears. You can view the details of the available capacity in the Resource Availability window.

### Information in the Resource Availability (Details) Window

The following table lists the information displayed in the Resource Availability window:

| Field | Description |
|---|---|
| Org | Organization |
| Dept/Line | Owning department or line |
| Resource | Resource name |
| Shift date | Shift date |
| Shift Num | Shift id |
| From Time | Shift start time |
| To Time | Shift end time |
| Capacity Units | Number of resources for this shift |
| Max Rate | Repetitive line max rate |

## Update Resource Availability

### To update resource availability

You can make changes to the resource availability in the Update Resource section.

1. Click the Update Mode drop-down menu to specify the mode in which you want to update the resource availability.

   The following options appear:

   - Add Capacity: Specify the number of units by which the current capacity needs to be increased with effect from a specific date.
   - Reduce Capacity: Specify the units by which the current capacity needs to be reduced with effect from a specific date.
   - Set Capacity: Specify the exact capacity units and the date from which the capacity change is effective.
   - Add Day: Add resource capacity for a non-working day.
   - Delete Day: Delete resource capacity for a workday.

   Based on your choice, the planning engine prompts you to specify the information.

2. After making changes, click Apply.

## Resource Requirements Window

You can navigate to the Resource Requirements window in one of the following ways:

- From the Resources window, click the Requirements button.
- From the Navigator, select a resource and choose Resource Requirements from the Resources right-click popup menu.

Oracle Advanced Supply Chain Planning does not:

- Plan and schedule repetitive items
- Detect duplicate resource requirements and decide to drop one. If you change a released discrete job bill of material, there may be requirements in two places. Change released discrete jobs to reflect bill of material and routing changes; Oracle recommends implementing engineering change orders to reflect changes on released jobs.

### Information in the Resource Requirements Window

The following table lists the information displayed in the Resource Requirements window.

| Field | Description |
|---|---|
| Dept/Line | Owning department or line |
| Resource | Resource name |
| Org | Organization |
| Firm Type | Firm status of the resource requirement. If the resource is from a job from Oracle Shop Floor Management if profile option WSM: Create Job Level BOM and Routing Copies is Yes, it is the Firm Type collected from that job. |
| Start Date | Requirement start date |
| End Date | Requirement end date |
| Resource Hours | Required resource hours based on the routing requirement |

| Field | Description |
| --- | --- |
| Schedule Quantity | Assembly quantity of the actual or planned make order |
| Using Assembly | Assembly with the resource requirement |
| Op Seq | Actual or planned operation sequence number for the requirement |
| Res Seq | Actual or planned operation resource sequence number for the requirement |
| Daily Rate | Daily rate for repetitive schedule. |
| Daily Hours | The planning engine divides the adjusted resource requirement by the number of days that the job is scheduled on the resource to derive an approximate average. |
| Touch Time | The planning engine calculates this as follows:<br>Resource Hours / Resource Efficiency % |
| Adjustable Resource Hours | The planning engine calculates this as follows:<br>Resource Hours / (Resource Efficient % * Resource Utilization %) |
| Assigned Units | Number of assigned resource units |
| Batch Number | Batch number |
| Earliest Allowable Completion Time | The planning engine calculates this to indicate the end of the scheduling window for those resource requirements that allow sufficient time for the upstream activities to be scheduled. |
| Earliest Possible Completion Time | The planning engine calculates this based on the constrained schedule for upstream activities. It is the earliest time in which the resource requirement can be completed. |

| Field | Description |
| --- | --- |
| Earliest Possible Start Time | The planning engine calculates this based on the difference between the earliest possible completion time and supply duration. |
| Hours Expended | This indicates the resource hours already expended for existing make orders. |
| Load Rate | This is used for lines only to indicate the load rate of the line. |
| Order Number | Order number |
| Order Type | Order type |
| Overloaded Capacity | This indicates the number of overloaded resource units. |
| Quantity Completed | This indicates the quantity of the make order that is completed. |
| Quantity in Queue | This refers to the quantity of the make order that is in queue for resource requirement. |
| Quantity Running | This indicates the quantity of the make order that is running on this resource. |
| Quantity Waiting To Move | This refers to the quantity of the make order that is complete and is ready to be moved. |
| Rate End Date | Line rate end date |
| Recalculated Reverse Cumulative Yield | For more information, see Network Routing Window, page 16-144. |
| Recommended | Yes or No |
| Required Capacity | The planning engine calculates this as follows:<br>Resource hours * Order quantity in weight/volume) |

| Field | Description |
| --- | --- |
| Schedule | The valid values for this schedule flag are:<br>- Yes<br>- No<br>- Prior<br>- Next |
| Schedule Date | This indicates the suggested due date for the supply. |
| Scheduling Sequence Number | This refers to the sequence dependent setup number. |
| Source Item | This is used for bills of resources to identity the source item for the resource requirement. |
| Unconstrained Earliest Possible Completion Time | The planning engine calculates this based on the unconstrained schedule for the upstream activities that allow minimum durations. |
| Unconstrained Earliest Possible Start Time | The planning engine calculates this based on the difference between the unconstrained earliest possible completion time and supply duration (Unconstrained Earliest Possible Completion Time - Supply Duration). |
| Unconstrained Latest Possible Completion Time | The planning engine calculates this based on the unconstrained schedule for the downstream activities that allow minimum durations. |
| Unconstrained Latest Possible Start Time | The planning engine calculates this based on the difference between the unconstrained latest possible completion time and supply duration. |
| Usage Rate | Indicates the usage rate for discrete and lot-based jobs. |
| Yield | This indicates the operation yield. |

### Buttons in the Resource Requirements Window

The following button is available in this window:

- Supply: Click this if you want to view the pegging information for supplies (Supply window).

## Supply Chain

The tree structure makes it easy to go down levels on a bill of material. When viewing by Organization, you can drill down to go down a level from a department, resource, or item level to the next level down.

The supply chain map also offers the Item/Location View. This view is available only at the item nodes and is the default for these nodes. This view displays a diagrammed flow view of all the sourcing rules and bills of distribution associated with the selected item. This view also serves as the indented bill of materials.

When you right-click an item in the Navigator, the pop-up menu displays the following options:

- Sources: Navigate to the Sources window. For more information, see Sources Window, page 16-123.
- Supply Chain Bill: View the Supply Chain Bill for an item. For more information, see Supply Chain Bill, page 16-139.
- Destinations: Navigate to the Destinations window. For more information, see Destinations Window, page 16-121.

## Supply Chain Bill

You can view contextual supply chain and where used information for an item graphically.

It shows items in the plan options assignment set.

You use this primarily to see bills of material that cross organizations. For example:

- If you have an item that you make 100% in one organization, you may not have assigned a sourcing rule in the assignment set. You don't see the item and its components in this context window.
- If the make item has components that you source from another organization, you most likely have a sourcing rule. You do see the item and its component in this context window.

#### To view Supply Chain Bill

1. Drill down to an end item in the Navigator.
2. Right-click the end item and select Supply Chain > Supply Chain Bill.

   A graphical representation of the item's supply chain bill appears.
3. To expand the entire Supply Chain Bill tree, select [right-click] > Expand.

   You can use the Expand menu option at all nodes of the Supply Chain Bill tree. When you click this menu option after selecting a particular node, the nodes in the selected node expand.

## BOM/Routing

The planning engine provides detailed BOM and routing information associated with an item. Right-click an item in the Navigator, select BOM/Routing. The right-click pop-up menu displays the following options to navigate to windows that display specific information:

- Components
- Routing Operations
- Where Used
- Process Effectivity
- Co-Products

## Components Window

You can navigate to the Components window from the Items window. It consists of three tabs: Effectivity and Quantity, Use Up Information, and Item Details.

#### Effectivity and Quantity Tabbed Pane

The following table provides a description of the fields displayed in the Effectivity and Quantity tabbed pane:

| Field | Description |
|---|---|
| Org | Organization |
| Item | Parent item name |

| Field | Description |
|---|---|
| Component | Component name |
| Effectivity Date | BOM effectivity date |
| Usage | BOM component usage |
| Alternate BOM | Alternate BOM name |
| Change Notice | Engineering change order name |
| Revision | Engineering change order revision number |

### Use Up Information Tabbed Pane

The following table provides a description of the fields displayed in the Use Up Information tabbed pane:

| Field | Description |
|---|---|
| Org | Organization |
| Item | Item name |
| Component | Component name |
| Use Up Item | Engineering change order use up item |
| Use Up | This indicates that it is a use up Engineering change order item. |
| Suggested Effectivity Date | This is the suggested effectivity date for a use up item. |

### Item Details Tabbed Pane

The following table provides a description of the fields displayed in the Item Details tabbed pane:

| Field | Description |
|---|---|
| Org | Organization |
| Item | Item name |
| Component | Component name |
| Op Sq | BOM Operation Sequence number |
| Supply Type | BOM supply type |
| Offset Percent | BOM offset percent |
| Planning Factor | BOM planning factor |
| Item Desc | Parent item description |
| Component Desc | Component item description |
| UOM | BOM UOM for the component |
| Enforce Int Req | BOM enforce Integer Requirements Parameter |
| Optional | BOM optional flag |

### Buttons in the Components Window

Based on the context, specific buttons may be available in the Components window. You can use these to navigate to other windows such as:

- Routing Operations window
- Substitution Chain window
- Items window
- Supply/Demand window

## Routing Operations Window

In addition to using the BOM/Routing right-click pop-up menu in the Navigator, you can navigate to the Routing Operations window from the Items window. The Routing window displays the following information, but it does not display information for

flow routings:

| Field | Description |
|---|---|
| Org | Organization |
| Item | Components required at the operation sequence |
| Assembly | Routing assembly item |
| Line | Routing line name |
| Alternate Routing | Alternate routing name |
| Alternate BOM | Alternate BOM name |
| Operation Seq | Routing operation sequence number |
| Operation Description | Routing operation description |
| Effectivity Date | Routing operation effectivity date |
| Disable Date | Routing effectivity disable date |
| From Unit Number | BOM unit effectivity start number |
| To Unit Number | BOM unit effectivity end number |
| Option Dependent | Routing operation dependent flag |
| Operation Type | Routing operation type |
| Minimum Transfer Qty | Routing minimum transfer quantity |
| Yield | Routing operation yield |
| Department | Routing department |
| Operation Lead Time | Routing operation lead-time |
| Cumulative Yield | Routing cumulative yield |

| Field | Description |
| --- | --- |
| Reverse Cumulative Yield | Routing reverse cumulative yield |
| Net Planning (%) | Routing net planning (%) |
| Setup Duration | Setup duration |
| Tear Down Duration | Tear down duration |
| UOM | Routing resource requirement UOM |
| Operation Code | Routing standard operation code |
| Effective | Routing effective date |

### Buttons in Routing Operations Window

Based on the context, specific buttons may be available in the Routing Operations window. You can use these buttons to navigate to other windows such as:

- Network Routing window
- Resources window

## Network Routing Window

You can navigate to the Network Routing window from the Routing Operations window. The Network Routing window displays the following information:

| Field | Description |
| --- | --- |
| From Seq + | Network routing from sequence number |
| Code | Network routing standard operation code |
| To Seq + | Network routing to sequence number |
| Code | Network routing standard operation code |
| Link Type | Network routing primary or alternate path |

| Field | Description |
|---|---|
| Planning % | Network routing planning (%) |

## Where Used Window

The Where Used window provides information about the items usage. In addition to using the BOM/Routing right-click pop-up menu in the Navigator, you can also navigate to the Where Used window from the Items window to find out where the item is used.

The Where Used window has three tabs: Effectivity and Quantity, Use Up Information, and Item Details.

### Effectivity and Quantity Tabbed Pane

The following table provides a description of the fields displayed in the Effectivity and Quantity tabbed pane:

| Field | Description |
|---|---|
| Org | Organization |
| Item | Component item name |
| Assembly | Parent item name |
| Effectivity Date | BOM effectivity date |
| From Unit Number | BOM unit effectivity start number |
| To Unit Number | BOM unit number end number |
| Usage | BOM usage |
| Alternate BOM | Alternate BOM name |
| Change Notice | ECO Name |
| Revision | ECO revision number |
| Disable Date | BOM component disable date |

### Use Up Information Tabbed Pane

For more information, see Use Up Information Tabbed Pane, page 16-140 (for Components window).

### Item Details Tabbed Pane

For more information, see Item Details Tabbed Pane, page 16-140 (for Components window).

You can navigate to the Items window and the Supply/Demand window from the Where Used window.

## Co-Product Window

In addition to using the BOM/Routing right-click pop-up menu in the Navigator, you can navigate to the Co-Product window from the Items window. The Co-Product window displays the following information:

| Field | Description |
|---|---|
| Co-Product | Network routing co-product name |
| Split (%) | Network routing split (%) |

## Process Effectivity

The Process Effectivity window provides information about the bills of material and routing header. It also provides easy access to detailed information associated with bills of material and routing.

### View the Process Effectivity Window

You can right-click an item in the Navigator, select BOM/Routing > Process Effectivity to navigate to the Process Effectivity window.

### Information Displayed in the Process Effectivity Window

The Process Effectivity window displays the following information:

| Field | Description |
|---|---|
| Org | Organization |

| Field | Description |
|---|---|
| Item | Item name |
| Effectivity Date | Routing effectivity date |
| Disable Date | Routing disable date |
| Minimum Quantity | Process manufacturing batch minimum quantity |
| Maximum Quantity | Process manufacturing batch maximum quantity |
| Priority | Process batch priority |
| Alternate Routing | Alternate routing name |
| Alternate BOM | Alternate BOM name |
| Total Product Cycle Time | Process Manufacturing product cycle time |
| Item Processing Cost | Process Manufacturing item processing cost |
| Line | Process Manufacturing line name |
| Primary Line | Process Manufacturing primary line flag |
| Line Rate | Process Manufacturing line rate |

### Buttons in the Process Effectivity Window

The following buttons in the Process Effectivity window enables you to navigate to other context windows:

- Routing Operations
- Components

## Key Indicators

The Key Indicators window is a summary chart that provides a graphical display of a plan's Key Performance Indicators (KPIs). At a glance, you can see how the plan performs relative to the following measures:

- Inventory Turns
- On-time Delivery
- Margin Percentage
- Planned Utilization
- Margin
- Cost Breakdown
- Service Level
- Inventory value
- Utilization by Weight/Volume

You can choose to see any four of these measures together. The availability of the KPIs depends on the type of plan chosen. For information on how these measures are calculated, please refer to, Key Performance Indicators., page 10-69

## Viewing KPIs

To view key performance indicators, select plan option, Main tab, Display Key Performance Indicators.

### To view KPIs

1. Select a Plan, an Item, an Org, or a Product Family from the Navigator.
2. Select Key Indicators in the pop-up menu.

   The Key Indicators window displays the KPIs for the selected Plan, Item, Org, or Product Family.

### To view an enlarged version of a KPI graph

Double-click on a sub-window to see an enlarged version of a KPI graph. Double-click again to return to the normal view.

Additional display options for each sub-window in the summary chart are available using the [right-click] menu. For instance, you can display KPI information in a trend chart.

### Inventory Turns

This graph compares the actual inventory turn values to the target values collected from the source. You can view overall inventory turns for a plan or select a node on the tree to see the node's inventory turns. You can view the inventory turns value over time to evaluate the plan throughout the planning period.

The Inventory Turns graph is displayed at the following nodes:

- Plans
- Organizations
- Product families
- Categories
- Individual items
- Components
- Planning groups
- Projects
- Tasks

#### On-time Delivery

The On-time Delivery Percentage graph is displayed at the following nodes:

- Plans
- Organizations
- Product families
- Categories
- Individual items
- Components
- Planning groups
- Projects
- Tasks

#### Planned Utilization

The Planned Utilization percentage is available at the following nodes:

- Plans
- Organizations
- Departments
- Resource groups

- Resources
- Production lines
- Transportation resources
- Approved suppliers

#### Margin Percentage

This graph compares the actual margin to the target values collected from the source. You can evaluate alternate plans based on the net difference between plan revenues and costs. Plan revenues are derived from forecasts and booked sales orders while costs account for planned production schedule expenses.

Margin percentage is available at the following nodes:

- Plan
- Organization
- Product family

#### Reviewing Item Planning Information

In the View by drop-down menu, select either Item or Organization, then drill down to an Item to view KPIs at the Item level.

#### Comparing KPIs for Multiple Plans

KPIs of multiple plans can be compared in the summary chart by selecting two or more plans in the Navigator (using Ctrl-Click).

## Select Worksheet (Export to Excel)

Use this window to export worksheets to Microsoft Excel. Before you do this, see Exporting Plan Results, page 3-83.

Navigate (M) Tools > Export Plan Worksheets to Excel.

Select a worksheet and click OK. Microsoft Excel opens and displays the information.

## Web Tools Pages

Web tools pages are browser pages. You can use them to perform analysis and release functions like some of the context windows

To see the web tool pages:

- Install WebLogic 11gR1
- Install Oracle Application Development Framework
- Set profile option MSC: ASCP Planning URL

**Item Simulation Set Page**

Use this view to make proposed adjustments to item attributes to simulate their effect on a plan results (run a simulation plan)

You can access this page from:

- Navigator > Web Tools
- The right-click menu of Planner Workbench context windows, for example, Items, Supply/Demand, and Sources, Orders
- Web tools page Orders

Run and analyze a supply chain plan, record your proposed changes, and launch the simulation plan using web tools Supply Chain Launch View.

If you have not made a simulation set for the plan you want to simulate, this page opens in create mode. You can name and start making entries to it.

If you have made a simulation set for the plan you want to simulate, this page opens in edit mode. You can change entries in it.

When you save the simulation set, it removes item/organization entries where you have not changed any item sttributes

**Orders Page**

Use this view to view and edit order attributes and release orders.

You can access this page from the right-click menu of Planner Workbench context windows, for example, Supply/Demand Pegging Tree, Items, and Sources.

**Organization Security Page**

Use this view to assign organizations to responsibilities.

You can access this page from Navigator > Web Tools.

Its functionality is similar to the Advanced Planning Administrator form Assign Organizations to Responsibilities.

**Supply Chain Launch Page**

Use this view to launch a supply chain plan online.

You can access this page from:

- Navigator > Web Tools
- The right-click menu of Planner Workbench context windows, for example,

Its functionality is similar to the concurrent process Launch Supply Chain Planning Process Request Set, Parameters window.

# Implementing Planning Recommendations

The Actions Summary view displays both recommendations and exceptions. The recommendations are divided into orders that must be released and future orders. In the Preferences window (Tools > Preferences), you can specify the time frame in days for which to show recommendations.

To implement planning recommendations, choose Tools > Preferences.

## Creating and Implementing Firm Planned Orders

### Accessing Planned Orders

You can access a subset of planned orders for a specified time period or other user defined sort criteria using the Supply/Demand window. You can release all planned orders using a Release All feature or you can individually select planned orders for release.

#### To access planned orders

1. In the View By Actions mode, drill down to the Recommendations node.
2. Drill down to items in Purchase Requisitions or Discrete Jobs.
3. Right-click an item, select Supply/Demand > Supply/Demand.
4. To firm a planned order, drill down to detail, then select the Firm check box.

   For detailed information about the fields in the Supply/Demand window, see Supply/Demand Window, page 16-64.

### Receiving Firm Planned Orders from Production Schedules

Production schedule planners can publish Oracle Production Scheduling work orders and planned orders to Oracle Advanced Supply Chain Planning. The orders in Oracle Advanced Supply Chain Planning are firm planned orders.

See Feeding a Production Schedule Back into ASCP, page 19-43.

### Purchase Orders

When you reschedule and firm a purchase order in ASCP, you can:

- Send the Firm Flag to the purchase order in the source instance
- Remove the Promise Date on the purchase order in the source instance

See Implementing Planning Recommendations, Releasing Recommendations, Release for Buy Orders

## Releasing Recommendations

You use the Supply/Demand context window to release recommendations to the execution systems.

If you are releasing recommendations to multiple operating units, set profile option MO: Operating Unit at the responsibility level.

**To release recommendations**

1. In the View By Actions mode (on the left pane), select the Recommendations node.
2. Drill down to the node that you want, for example, a plan, a planner, or an item.
3. Right-click an item, select Supply/Demand > Supply/Demand.
4. If you want to make changes to recommendations, navigate to the Release Properties tab, make them, and save your work. See Release for Buy and Make Orders and Release for Transfer Orders.
5. If you want to release a recommendation, select For Release. If you want to release all recommendations, select Edit > Select All.

   If you select For Release in the Orders tab before you make changes in the Release Properties tab, clear For Release, make your changes, and select For Release again.
6. From either the Orders tab or the Release Properties tab, press [right-click] > and select Release.

### Release for Buy and Make Orders

To change the supply Suggested Due Date, select a new date in Implement Date. You can select a non-workday. If you select a date in the past, the scheduled receipt or transfer order will have today's date.

To change the supply Qty/Rate, enter a new quantity or rate in Imp Qty/Rate.

If you want to firm a recommendation, select Firm. It becomes a firm planned order. See Creating and Implementing Firm Planned Orders, page 16-152.

When you release a planned order as buy from and do not change the recommended dates, the release process sets Need-by Date to the planned order Suggested Dock Date.

When you release a planned order as buy from and change the recommended dates, the release process calculates Need-by Date as follows:

- If Implement Date is a non-workday in the manufacturing calendar, moves it to the previous working day.
- Calculates Dock Date = Implement Date - Postprocessing lead time

- If Dock Date is a non-workday in the manufacturing calendar, moves it to the previous working day.
- If the organization has a receiving calendar and Dock Date is a non-workday in the receiving calendar, moves it to the previous working day on this calendar.
- Sets Need-by Date to Dock Date

When you release recommendations for make items using substitute components, the substitute components only appear on the discrete jobs if the discrete jobs are in daily buckets.

## Release for Buy Orders

When you reschedule and firm a purchase order in ASCP, you can:

- Send the Firm Flag to the purchase order in the source instance
- Remove the Promise Date on the purchase order in the source instance. Then, it is easy for you to see and enter new promise dates.

**Setup**

To enable setting the Firm flag on purchase orders in the source instance when you firm and reschedule them in ASCP, set profile option MSC: Release PO Firm Flag to Purchasing to Yes.

To enable removing Promise Date on purchase orders in the source instance when you firm and reschedule them in ASCP, set profile option MSC: Remove Promise Date for Rescheduled Purchase Orders to Yes.

**Collections**

When the collections process collects a firmed header, past due header, firmed shipment line, or past due shipment date from a purchase order in the source instance, it selects the Firm flag for all distribution lines belonging to that shipment line.

**Processing**

The ASCP Supply/Demand window displays purchase orders at the distribution line level. In the purchasing source, the purchase order Firm Flag is at the header and shipment line.

New Quantity for a distribution line defaults from its own line. You modify New Quantity for each distribution line separately.

Implement Date and Implement Quantity in the Release Properties tab default to New Date and New Quantity from the Order tab for any distribution line that you flag for release.

When you firm a distribution line of a shipment line in the ASCP, the release process:

- Firms its shipment line on the purchase order in the source instance

- Sets the shipment line Need By Date on the purchase order in the source instance from New Date from your firmed distribution line in ASCP.
- Firms all distribution lines belonging to that shipment line on the purchase order in the source instance. These are in addition to the distribution line that you firmed in ASCP.
- Defaults the New Date from your firmed distribution line in ASCP to all distribution lines belonging to that same shipment line on the purchase order in the source instance.

When you remove the firm flag from one of the distribution lines in the ASCP, the release process removes the firm flag from all distribution lines in that shipment line on the purchase order in the source instance.

**Analysis**

In the Release Summary Window, view field PO Firm Flag Release Process.

It displays the Request ID for the concurrent program that releases the Firm Flag and removes the Promise Date.

## Release for Transfer Orders

You transfer material by using internal sales orders and internal requisitions in pairs.

For release for transfer orders, your source instance must be at least release 12.1.1.

If your plan includes both the source and destination organizations, you can:

- Change the date and quantity on the internal requisition
- Change the date and quantity on the internal sales order
- Cancel the internal requisition
- Cancel the internal sales order

If your plan includes only the destination organization and not the source organization, you can:

- Cancel the internal requisition
- Cancel the internal sales order

Changes to the:

- Internal requisition pass automatically to the internal sales order
- Internal sales order pass automatically to the internal requisition

To change the internal requisition Suggested Due Date and the internal sales order

Suggested Ship Date, select a new date in New Date. You can select a non-workday. If you select a date in the past, the scheduled receipt or transfer order will have today's date

To change the supply Qty/Rate, enter a new quantity in New Quantity. To cancel an internal requisition and internal sales order, set New Quantity to zero.

The information in fields Implement Date and Imp Qty/Rate come from:

- If you have not firmed the recommendation, Suggested Due Date and Suggested Quantity
- If you have firmed the recommendation, New Date and New Quantity

If you mark a recommendation For Release and want to make further changes to New Date and New Quantity, clear For Release before you make the changes. Otherwise, make the changes directly.

When you execute the release, the fields that change the internal requisition and internal sales order are Implement Date and Imp Qty/Rate. Also, the process:

- Updates Ship Method on the internal sales order if the internal sales order is in the plan
- Performs an available to promise check on the internal sales order, if profile option MSC: Perform ATP check for Internal Sales Orders is Yes

This table shows the other Planner Workbench fields that pas to the transfer orders.

| Planner Workbench Field (from) | Transfer Order (to) | Transfer Order Field (to) |
|---|---|---|
| Implement Dock Date > | Internal requisition | Need-By Date |
| Implement Ship Date > | Internal sales order | - Schedule Ship Date<br>- Request Date<br>- Promise Date |
| Implement Dock Date > | Internal sales order | Schedule Arrive Date |
| Material Available Date > | Internal sales order | Earliest Ship Date |

Once you have released either the internal requisition or internal sales order, you cannot release the other one

If the passing of changes to the other order of the transfer pair fails, you receive a message in a concurrent process log file from:

- If your plan includes both the source and destination organizations, Oracle Order Management concurrent process Update Scheduling Results
- If your plan includes only the destination organization and not the source organization, Oracle Purchasing concurrent processes Reschedule Requisitions or Check ATP

## Publishing Plan Results to Oracle Order Management

One of the many decisions Oracle Advanced Supply Chain Planning can make is the selection of a facility to source the materials based on current conditions of supply and demand. The planning engine selects the sources based on global supply availability, constraints that you may have in the supply chain, costs involved in producing and procuring items etc. This information can be communicated to Order Management for effective execution.

As sales orders are accepted into the system, users may put in a fulfillment facility based on order promising or a preferred facility by default, but the facility chosen by the users may not be the correct facility given the ever evolving supply and demand picture through out the supply chain. As a result of plan run, you can determine the correct sources, and along with changed source you might have to change ship dates, ship methods etc. These change recommendations are published to Order Management

Oracle Advanced Supply Chain Planning checks for several conditions before releasing the updated sales orders to Oracle Order Management:

- A single sales order line cannot have multiple source organizations. Global forecasting can result in split recommendations for a sales order.
- Sales order lines in a ship set must have the same source organization. The implement date for all the lines in a ship set or an arrival set is the maximum date across all the lines in a ship set or an arrival set respectively.
- Sales order lines set to Ship Model Complete do not receive any release recommendations.
- Sales order lines for components of PTO models and kits do not receive any release recommendations.

The planning engine displays a release error for each incorrect selection of an order.

> **Note:** You cannot auto-release these recommendations to Oracle Order Management.

#### To setup plan results publishing to Oracle Order Management

1. Select the Advanced Supply Chain Planner responsibility.

2. Navigate to Supply Chain Plan > Names.

3. Select the Notifications check box for the plan that you want to publish result for.

4. Navigate to Supply Chain Plan > Plan Options > Organizations tab:

5. Verify that global forecasts are defined as Demand Schedules in the Global Demand Schedules region.

#### To firm sales orders in Oracle Order Management

Oracle Order Management provides a Firm option at the order line level. You can set the Firm option on a sales order line in three ways:

1. Firm based on the event

   Oracle Order Management provides different event values, which are set at organization level, to firm the demand lines:

   - Schedule: The sales order line is firmed the moment it is scheduled
   - Shipping Interfaced: The sales order line is firmed after it is interfaced to shipping.
   - None or Null: The sales order line is not firmed

2. Firm using a workflow

   Oracle Order Management provides a sub process to hold and firm sales order lines. You can customize their line flow and place this sub process anywhere in the flow based on your need. Shipped, closed, fulfilled, and cancelled sales order lines are firmed irrespective of the sub process position. Lines that reach the sub process wait until they are progressed further.

   You can manually progress the lines to continue their progress. Oracle Order Management provides a concurrent program to progress the sales order lines that are waiting at the sub process. You can schedule to run this concurrent program periodically to progress lines that are waiting at the sub process.

   Oracle Order Management firms the sales order lines and progresses the lines to the next activity.

3. Firm by manually setting the Firm option on the sales order.

   You can manually firm the sales order lines based on your need. However, you cannot update the firm option on closed, shipped, cancelled and fulfilled sales order lines.

**To publish plan results to Oracle Order Management**

1. Navigate to Supply Chain Plan > Workbench > Tools > Preferences > Other tab.
2. Select the Include Sales Orders check box.
3. Run a supply chain plan with global forecasts defined as demand schedules.
4. Review exception messages. The planning engine can generate the following exception message:
   - Changes recommended for sales order exception
5. Optionally, firm the sales order line:
   1. Navigate to Supply/Demand window > order tab.
   2. Select the Firm check box for the order line that you wish to firm.
6. Select the Release check box for each order or the Select all for release menu option to release the recommendations to update the sales orders.

   This initiates the Release sales order recommendations concurrent process to save the release selection and release the updated sales order information to Oracle Order Management.

   > **Note:** You can manually change the Implement Date in the Release Properties window to override the plan recommendations. When the sales order is released, the Implement Date is populated to the Schedule Ship Date on the sales order line in Oracle Order Management.

   When you release recommendations, the Release window appears as a confirmation with the following information:
   - Concurrent request number
   - Number of sales orders released
   - Number of sales orders affected
7. Click OK to complete the release process

The planning engine publishes the following information to the sales order line in Oracle Order Management:

| Fields from the Supply/Demand window in Oracle Advanced Supply Chain Planning | Fields that are updated on the Sales Order Line in Oracle Order Management |
|---|---|
| Source Organization | Warehouse |
| Suggested Ship Date | Scheduled Ship Date |
| Planned Arrival Date | Scheduled Arrival Date |
| Ship method | Shipping Method |
| Intransit lead-time | Deliver lead-time |
| Firm flag | Firm flag |
| Material availability date | Earliest ship date (Shipping) |

If the sales orders update in Oracle Order Management fails after the release by the planning engine, Oracle Advanced Supply Chain Planning initiates the following workflow notification:

- Sales order changes from Oracle ASCP not committed

Oracle Advanced Supply Chain Planning derives the CSR or sales representative details from the Created By field on the sales order header and sends the following details:

- Item - The item on the sales order line
  - Order number: Sales order number
  - Line Number: Sales order line number
  - Customer: Customer on the sales order
  - Override flag (from Oracle Order Management)
  - Old ship method and deliver lead-time
  - New ship method and deliver lead-time
  - Old schedule arrival date
  - New schedule arrival date
  - New schedule ship date

- Old schedule ship date
- Old source organization
- New source organization
- Request ID

> **Note:** You need to define the person named in the Created By field as a valid user in Oracle ERP to receive the workflow notifications.

You can use the request ID displayed on the workflow notification to bring up the reason codes for failure to update the sales order in Oracle Order Management.

For more details, see *Oracle Order Management User Guide.*

#### Example

This section provides an example of sales order update by Oracle Advanced Supply Chain Planning to Oracle Order Management.

Assume that a sales order line has:

- Request Date = D10
- Schedule Ship Date = D20

If the planning engine determines that the material availability date is:

- D22, then both the earliest ship date and schedule ship date are updated to D22.
- D8, the schedule ship date is updated to the request date, which is D10. The planning engine uses the earliest ship date to update the schedule ship date.

The updated schedule ship date can be vied in Oracle Order Management after the sales order is released by the Planning engine.

If you have firmed a sales order in Oracle Order Management, the planning engine does not provide any recommendation for source change. Oracle Advanced Supply Chain Planning sources the supplies only from the source provided on the sales order. If the sourcing causes resource overload at the source organization, the resources are still overloaded to honor the source mentioned on the sales order.

## Interactive Scheduling Using the Gantt Chart

Interactive scheduling provides a time-phased graphical interface to your plan's scheduled activities and resources to help resolve inevitable shop floor problems. It lets

you troubleshoot exceptions arising from resource or material constraints; overloaded or underloaded resources; absenteeism, or machine downtime. Use interactive scheduling to pinpoint affected jobs and operations and simulate changes towards effective, timely resolution.

You can use the Gantt Chart for plan type Constrained.

### To access the Gantt Chart

Follow the appropriate navigation path as shown in the table:

| Current Window | Navigation |
|---|---|
| Exception Details window | [Select any field] > [right-click] > Gantt Chart |
| Supply window | [Select any field] > [right-click] > Gantt Chart |
| Resources window | Click the Gantt Chart button |
| Navigator | Select a resource>[right-click]>Gantt Chart<br>Select a resource and click the Gantt chart button and the bottom of the navigator window. |

The title in the Gantt Chart window reflects the view selection that you make-- Orders View, Resource Activities View, or Supplier Capacity View.

When the Gantt Chart opens, there are two group boxes.

- The first group box displays "Gantt Chart" and the instance and organization selected.

  The icons provide options for various Gantt chart views.

  The Preference set determines the user preferences for Gantt chart display options.

  The Go To option enables you to go to a specific date when the Gantt chart is displayed, and the Today option enables you to view the current date.

- The next group box displays the view that is selected, with a left and a right pane.

  The folder icon enables you to save selected settings.

  The View field enables you to select a view.

The left pane displays a tree structure with multiple columns. The columns are dependant on the view that is selected.

Depending on the view selected, the left pane displays a list of resources, orders, or item suppliers.

To select a view, use the drop down menu in the left pane.

The right pane panels begin at the plan start date. To go to another date, you can:

- Scroll horizontally
- Enter a date and time in Go to: and press Enter. To go to today, click Today.

The right panel header also shows the planning granularity that was used for a certain portion of the planning horizon. This is different from the display granularity. For example, you may be viewing the Gantt chart in weekly buckets, but the portion of the planning horizon you are viewing may have been scheduled at the day level of granularity.

## The Order-Centric View

The order centric view displays the selected supplies. This view can be invoked from the Supply or Supply/Demand block of the Planner Workbench. For the selected supply (or supplies), if pegging actions are invoked, the Gantt Chart displays all the supplies that peg to the selected supply. This includes supplies at various levels in the bill of material. This is provided as a tool to view the impact on supplies across supply chain levels on a planner's scheduling changes.

From the end assembly, the Gantt chart first displays the operations and the requirements on the resources selected to perform the operations. Because material availability is just as important as resource availability, it is shown within the Gantt to make rescheduling more accurate. The dates when materials become available are displayed as milestones. Material is shown at the beginning of the operation where it is needed.

When accessed from the Resource Centric View, the Order-Centric view shows the orders that were originally in the Resource Centric View.

The Orders view also functions as the view where late demand diagnosis can be performed in the Gantt chart. When you enter the Orders view from a late demand, the Gantt chart displays the late demand and all the supplies that peg up to that late demand. You can choose display options to highlight the critical path or show just the critical path. You can view the unconstrained earliest and latest start and completion times to identify the effects of resource and supplier capacity constraints on demand lateness. Comparison of the constrained earliest and planned start and completions times along the various activities on the critical path, which enables you to identify the key bottlenecks on the critical path.

## The Resource-Centric View

This view can be accessed from the resource block of the Planner Workbench or by right clicking on a selected resource(s) in the left pane of Planner Workbench.

This view displays all the activities that are being worked on by the selected resource(s). The right pane shows resource availability as a backdrop. Resource activities that are

scheduled on the resource are shown in the foreground. A color scheme can be applied to distinguish activities with characteristics such as: late order, early orders, firm orders, or orders causing overloads.

Changeover times between activities are displayed in a separate color. Activities on batchable resources can be shown either as individual activities or as consolidated batches. Users can select activities and view the alternate or simultaneous resources used in those activities. Activities can be moved to those alternate resources. Within the same resource, users can drag and drop activities to earlier or later points in time. The Resource Activities view only displays the portion of the planning horizon that is scheduled to the minute level of granularity.

The Resource Hours view displays hours that are available compared with hours that are used. The detail displays hours spent on late orders, hours spent on early orders, hours spent on firm orders, and hours that overloaded and exceed available capacity. The most granular display possible in this view is daily buckets. When viewing in daily buckets you can only view the portion of the planning horizon that was planned in days. When viewing in weekly buckets you can see both the portion that was planned in days and weeks. When viewing in period buckets you can see the entire planning horizon.

The Resource Units view displays continuous time varying profile of the resource units that are available compared with units that are used. This view is useful if there are a large number of available units per resource and if the units available vary with time.

> **Note:** In both the order-centric and the resource-centric views, an activity that appears on the right pane and is not seen on the left pane can be brought in to the right pane by right clicking on that activity in the left pane and selecting **Jump** from the right-click option. This makes it easy to navigate to an activity.
>
> Rescheduling is not available within the Resource Hours and the Resource Units views.

## The Supplier Capacity View

This view displays the supplier capacity that is available and the supplier capacity that is used. It also tracks the cumulative capacity that is available. You can select a bucket and drill down into the supply details by selecting **Supply** from the right-click option. If the supplier capacity is infinite, or undefined, a dark background color is displayed.

A slider Scale option is available in the upper right portion of the chart, which controls the maximum value of the vertical dimension. This is useful when wanting to use different scales to identify the buld up of cumulative capacity versus the capacity available or used in any one bucket.

## Defining User Preferences - Gantt

The Preferences - Gantt page enables you to define display options for these view types:

- Orders
- Resource Activities
- Resource Hours
- Resource Units
- Supplier Capacity

### To access the Preferences - Gantt page

To access the Preference - Gantt page:

1. Navigate to the Planner Workbench.
2. Choose Tools > Preferences.
3. Select the Gantt tab.
4. Select a View Type.

### The Orders View Type

These fields are available on the Preferences - Gantt - Orders view type page:

- Row Height: Select the desired height for each row in the view. One is the smallest and five is the largest.
- Show Pegging with Material Flow Details: Select to display pegging arrows to and from each supply segment.

  **Important:** Select this option only if you have enables segment level pegging for the plan. To see regular pegging between supplies and demands, you should not select this option.

- Timescale Display: Select the timescale that will appear by default when the Gantt Chart is displayed.
- Text Format: Select the text that displays within each type of bar.
- Color Settings: Select the color that displays for each type of bar.

### The Resource Activities View Type

The fields on the Resource Activities view type are similar to the Orders view type with the exception of the Display Tolerances field. In the Display Tolerances field, enter the tolerance for the number of days late that an order needs to be for it to be color coded as late when displayed in the Gantt chart. Also enter the tolerance of the number of days early that an order needs to be for it to be color coded as early. An order displays with the late color setting if it is late by more than this tolerance. The same applies to early orders.

## Find Window

The Find window can be used to view subsets of data by selected criteria, such as by time, by items, by organizations within the Gantt chart. The Find window can be used with all views, but the fields that are available are dependant on the specific view. A Find condition can be saved as part of a folder.

> **Tip:** The only way to save the find condition as a folder in the Gantt chart view is when the find window is open. Once you close the find window, you are not allowed to save as a folder.

To display the Find window, select View>Find.

## Right-Click Menu Options

The Gantt Chart provides easy access to important information and tasks related to operations. The following options are available if you right-click with your cursor over an operation:

| [Right-Click] Menu Options | Description |
|---|---|
| View Alternate/Primary Resource | View Alternate/Primary Resource for this operation |
| Load Alternate/Primary Resource | Load Alternate/Primary Resource for this operation |
| View Simultaneous Resources | View Simultaneous Resources for this operation. If in the Resource Activities view, the selected simultaneous resource, and all of its associated instances is added to the list of displayed resources. |
| Firm/Unfirm Operation | Firm/Unfirm Operation for this operation |

| [Right-Click] Menu Options | Description |
|---|---|
| Reschedule | Reschedule |
| Supply/Demand | Open the Supply/Demand window |
| Exception Details | Open the Exception Details window |
| Items | Open the Items window |
| Resource Capacity | Open the Resource Capacity window |
| Resource Requirements | Open the Resource Requirements window |
| Resources | Open the Resources window |
| Batches | Open the Batches window |
| Charges | Open the Charge Details window |
| Material Flow Details | Open the Material Flow Details window |
| Horizontal Plan | Open the Horizontal Plan window |
| Hide/Show Resource | Temporarily hide or display a resource. |
| End Pegged Demands | Open the End Pegged Demands window |
| Save Layout | Save the list of displayed columns and their relative order to the current folder. |

## Viewing Information on an Operation

You can view information on orders and operations via the Properties window or resource Tool Tips.

### To display the Properties window

1. Select an order or operation from either pane.
2. Right-click and select Properties. If the Properties window is already open and you select another order or operation, you do not need to perform this step; the properties of your new selection replace the properties of your previous selection in

the existing Properties window.

The Properties window appears.

> **Note:** Most of the relevant properties are already available as folder columns in the Orders view. This enables you to view these properties for all the orders at the same time instead of opening the properties window one order at a time.

The Property window displays a host of information about the selected operation. Choose tabs to access different types of information.

When you double click on the Gantt chart bar on the right panel (or the labels on the left panel), a Property window appears with three tabs: resource, supply order, and end demand.

The properties for the Resource tab (only for the activity node) are: department/line, resource name, org/instance, operation sequence, resource sequence, alternate number, firm type, start time, end time, assigned units, and total hours required.

The properties for the supply order tab (only for the supply node) are: job number, job type, item, quantity, firm flag, suggest due date, ship date, need by date, unit number, project, task, alternate BOM, alternate routing, and time fence.

The properties for the end demand tab (only for the supply node) are: demand date, demand satisfied date, pegged quantity, demand name, demand qty, demand type, demand priority, customer, customer site, and item

The resource tool tip for an operation is a subset of the Properties window; to see it, rest your cursor over the operation in the right panel.

## Specify Resources to Plot in the Lower Pane

#### To select resources to plot

- From the Resource view, select resources using the Find window.
- From the Orders view, select and order and then select **Show Resources**.

## Specifying Time Buckets

#### To display a different time bucket for the right pane

1. Right-click on any day.
2. Choose from the following intervals:
   - Periods

- Weeks
- Days
- Hours
- Thirty Minutes
- Fifteen Minutes

  If the planning mode of the plan is Constrained (Without Detailed Scheduling):

  - Gantt chart views are available only in the planning buckets (Day, Week, Period). The system does not allow the zoom level to be less than a day (minutes and hours are disabled). You can to zoom from Week to Day and from Period to Week and Day. The entire planning horizon is displayed.
  - In the Orders View the start of an order is set to the beginning of the planning bucket and the end of the order is set to the end of the planning bucket in which the order is completed.
  - In the Resources View the start of an activity is set to the beginning of the planning bucket and the end of the activity is set to the end of the planning bucket in which the activity is completed.

## Rescheduling Operations

You can reschedule a job from the Resource Activities view by using the Reschedule window, or by dragging and dropping the bar in the right pane. You can also reschedule a job in the Orders view by editing the left pane.

### To reschedule an operation using the Reschedule window

1. In the left pane of the Gantt chart, right click on one of the nodes.

   The related activity appears in the right pane.

2. [Right-click] on the bar in the right pane.

   A list of tasks or options appears.

3. Select Reschedule.
4. Select a new start or end date for the activity.
5. Click OK.

The activity's new start or end date is reflected in the Gantt Chart. After moving an activity, you can firm it by the new start or end date, or by resource.

#### To change the duration of an activity

1. Specify a new start or end date using the instructions above.
2. Select the Resize check box.
3. Click OK.

   The activity's new duration is reflected in the Gantt Chart. After changing an activity's duration, you can firm it by the new start or end date, or by resource.

#### To reschedule an activity graphically

1. Select the activity you wish to reschedule.
2. Drag the activity to a new date or time.

   The activity's new start or end date is reflected in the Gantt Chart.

   After moving an activity, you can firm it by the new start or end date, or by resource.

#### To resize an activity graphically

1. Select the activity.
2. Drag the right end of the activity bar to a desired end date. After resizing, the activity can be firmed.

## Firming an Operation

#### To firm an operation

1. Place your cursor over the operation you wish to firm.
2. Choose [right-click] > Firm/Unfirm Operation > [Firm option].

## Resolving Overload of an Operation

There are three ways to resolve overload of an operation. You can:

- Reschedule the operation to a time when sufficient resources are available.
- Select alternate resources for the operation.

- Add extra capacity to complete the operation with your current resources.

**To reschedule an operation**

- Use the Reschedule window
- Drag and drop the operation in the Gantt Chart

**To load an alternate resources**

1. Place your cursor over the operation you wish to offload.
2. Choose [right-click] > Offload to Alternate Resource.
3. Choose an Alternate resource.

   A new resource is listed for the operation in the left pane. In the right pane, the operation's shading changes to reflect that it is updated.

**To add capacity**

1. From the Resource or the Orders view, select an operation for which you wish add capacity.
2. Choose [right-click] > Resource Capacity.

   The Resource Capacity window appears.
3. Select a date for which you'd like to add capacity.
4. Add capacity for a set duration for a particular shift.
5. Click Apply.

   You can then run the online planner to see the results of adding capacity for this date. Your changes are also dynamically reflected in the Gantt Chart.

   When any changes are made in the Gantt chart, including offloading, adding capacity, rescheduling, or increasing time duration for an activity, these changes do not take effect until the Online Planner is run.

## Gantt Chart Icon Options

The following table shows the icon options for the Gantt chart and what happens when a particular option is selected.

| Icon Option | Gantt Chart Display |
| --- | --- |
| Peg Up and Down | Displays upstream supplies and downstream supplies relative to the selected supply or demand. |
| Peg Up | Displays all downstream supplies relative to the selected supply going all the way up to the end demand. |
| Peg Down | Displays all upstream supplies that relate to the selected supply or demand. |
| Back or Forward | Select to navigate back and forth between prior results from pegging actions taken within the Orders view. |
| Show Pegging for Selected | Displays pegging for the selected supply. Inbound and outbound material flow is displayed. |
| Show Pegging for All | Displays all pegging relationships for displayed supply and demand. |
| Hide Pegging | Turns off all pegging arrows that are displayed. |
| Show or Hide Intra Routing | Displays the flow of material between operations within a routing. |
| Select All | Selects all rows in the Orders view.<br>**Note:** This can be done only when the Orders view is displaying all supplies. For example, if the Orders view is displaying a full list of supplies only, the Select All option selects all of the supplies. However, if the Orders view is showing a demand and the supplies pegged to that demand, the Select All option does not select anything. |
| Collapse All | Collapses all of the expanded options to the highest level. |

| Icon Option | Gantt Chart Display |
|---|---|
| Expand Selected Supplies to Operations | All selected supplies are expanded to the operation level. |
| Expand Selected Supplies/Operations to Activities | All selected supplies are expanded to the resource activity level. |
| Show Critical Path Only | Displays only critical activities. |
| Highlight Critical Path | Displays all activities with critical activities highlighted. |
| Constrained Earliest Times | Displays constrained earliest possible start and end times. |
| Unconstrained Earliest Times | Displays unconstrained earliest possible start and end times. |
| Unconstrained Latest Times | Displays unconstrained latest possible start and end times. |
| View Batches/Hide Batches | Displays consolidated activities that are part of the same batch for a batchable resource, which is a resource with multiple activities that can be scheduled together as batches. |
| Show Charges | Displays an activity split based on the number of charges planned within the activity duration. For activities scheduled on chargeable resources, this option displays constituent charges of a single resource requirement. The start and end dates of each charge is shown as a thin white line within the bar that represents the resource activity. |
| Hide Charges | Removes the charges display from the bar graph. |

### Gantt Chart Pegging

Gantt Chart pegging is specific to the Orders view. For supplies that you specify, the Gantt chart pegging view links related end assembly orders, subassembly orders and purchased material orders together in a hierarchical display. For the entire hierarchy, the timing of all production operations and purchased material arrivals are displayed.

Material arrivals are shown as milestones. The hierarchy may be flexibly collapsed (with collapsed operations and material arrivals appearing as rolled up bars, as is commonly seen in project plans) and expanded. This view provides a consolidated view of all operation and material arrival dependencies for a particular end assembly order. You can drill down to any desired level and view further details.

**To display Gantt Chart pegging**

1. From the Planner's Workbench, select a plan.
2. Right click on the plan and select Supply and Demand, Supply and Demand.

   The Supply/Demand window appears.
3. Select a demand.
4. Right click and select Gantt Chart.

   The Gantt chart appears with the pegging information in the left pane. It displays the demand and all of the supplies pegged to that demand.

   Alternatively, you can select a supply or a set of supplies and enter the Gantt chart. The Gantt chart only displays these supplies. Then you can select one of the supplies and perform a pegging action, which results in the related supplies being displayed.

### Gantt Chart Two Views

It is possible to pass information between two open views of the Gantt chart. For example, when viewing the Resource Activities view, you can add the Orders view along the horizontal plain.

**To display two views**

1. Navigate to the Gantt chart, Resource Activities view as an example.
2. Select a resource activity along the timeline for one of the resources displayed in the view.
3. Click the Show Orders icon.

   The Orders view is displayed below the Resource Activities view and is displays the order that you selected in the Resource Activities view.

## Accessing Planner Workbench From Oracle Collaborative Planning

Suppliers can view specific information in the Planner Workbench by using the Planner Workbench tabbed region in Oracle Collaborative Planning. Based on whether you model the supplier as an organization or as a supplier for planning purposes, the

information displayed to the supplier varies.

If you model the supplier as an organization, the following information appears in their Planner Workbench:

- Plans for which the supplier is modeled as an organization
- Supplier organization name
- Product families, categories, departments, lines, and transportation resources in the supplier organization
- Items and details such as components, where used, and approved suppliers within each product family
- Organization-specific supply and demand information

Your suppliers can use the Planner Workbench - Supplier Administrator responsibility to view the following left-pane nodes and related right-pane tabbed regions in the Planner Workbench:

| Left Pane Nodes | Right Pane Tabs |
|---|---|
| Organization | Key Indicators, Actions |
| Category | Key Indicators, Actions |
| Item | Key Indicators, Horizontal Plan, Vertical Plan, Actions, |
| Component | Key Indicators, Horizontal Plan, Vertical Plan, Actions, |

The following table lists the right-click menu options available in Planner Workbench that your suppliers can use:

| Function Name | Menu Options |
|---|---|
| Exceptions | Actions, Exception Details, Related Exceptions, Save Actions |
| Resources | Resources, Resource Requirements, Resource Availability |

| Function Name | Menu Options |
| --- | --- |
| Supplier | Supplier Capacity, Supplier Flex Fences, Supplier Variability |
| Routings | Routing Operations, Operation Networks |
| Key Indicators | Key Indicators |
| Pegging | Pegging, Critical Activities, End Pegged Supplies |
| Horizontal Plan | Horizontal Plan |
| Vertical Plan | Vertical Plan |
| Gantt Chart | Gantt Chart |
| Supply Chain Bill | Supply Chain Bill |
| Items | Items |
| Components | Components |
| Where Used | Where Used |
| Sourcing | Sourcing |
| Destination | Destination |
| Process Effectivity | Process Effectivity |
| Co-products | Co-products |
| Safety Stocks | Safety Stocks |
| Substitutes | Substitutes |
| Online Replan | Start Online Planner, Stop Online Planner, Online Replan, Online Planner Status, Batch Replan, Launch New Plan, Copy Plan, Purge Plan |

| Function Name | Menu Options |
|---|---|
| View Notifications | Notifications |
| Launch Notifications | Launch Notifications |
| Plan Options | Plan Options |
| Release | Select All for Release, Release |
| Collaborate | Publish Order Forecast, Publish Supply Commits |
| Preferences | Preferences |
| Undo | Undo Summary, Add Bookmark |
| Plan Comparison Report | Compare Plans |
| Supply/Demand | Supply, Demand, Supply/Demand, On-hand |

If you model the supplier as a supplier in the Planner Workbench, this information appears in their Planner Workbench:

- Plans for which the supplier is modeled as a supplier
- Supplier name and supplier sites
- Categories and items associated with the supplier
- Supply and demand information specific to the supplier

Suppliers can use the Planner Workbench - Supplier User responsibility to view the following left-pane nodes and related right-pane tabbed regions in the Planner Workbench:

| Nodes | Tabs |
|---|---|
| Supplier | Key Indicators, Actions |
| Category | Key Indicators, Actions |

| Nodes | Tabs |
| --- | --- |
| Item | Key Indicators, Horizontal Plan, Actions |

The following table lists the right-click menu options available in Planner Workbench that your suppliers can use:

| Function Name | Menu Options |
| --- | --- |
| Items | Items |
| Substitutes | Substitutes |
| Resources | Resources, Resource Requirements, Resource Availability |
| Supply Chain Bill | Supply Chain Bill |
| Sourcing | Sourcing |
| Destination | Destination |
| Exceptions | Actions, Exception Details, Related Exceptions, Save Actions |
| Horizontal Plan | Horizontal Plan |
| Vertical Plan | Vertical Plan |
| Supply/Demand | Supply, Demand, Supply/Demand, On-hand |
| Plan Comparison Report | Compare Plans |
| Safety Stocks | Safety Stocks |
| View Notifications | Notifications |

•

| Colors | Description |
|---|---|
| Dark Blue | Required |
| Cyan | Available |
| Magenta | Overload |
| Pink | Updated |
| Green | Firmed |
| Pink with Green Border | Updated/Firmed |
| Blue with Green Border | Required/Firmed |

## Displaying Suppliers Modeled as Organizations

Oracle Advanced Supply Chain Planning provides you with the flexibility of modeling a supplier and its sites as an inventory organization. You can use this option if you want to:

- Net through the supplier's supply chain bill in order to provide the supplier's supplier with advance visibility to their order forecast.
- Constrain your supply chain plan on the basis of a lower level material or resource constraint within the supplier.

In such cases, Oracle Advanced Supply Chain Planning plans the supplier's site like any other internal inventory organization. When a planner views such an external organization in the Planner Workbench, it is distinguished as a supplier site as opposed to an internal organization through supplemental information.

Display of supplier site information provides you with advanced visibility to suppliers beyond your immediate suppliers by creating a multi-company supply chain plan. For example, if you source assemblies from a contract manufacturer with critical components being furnished by a tier 2 supplier, then you may want to create a multi-company plan. In such a plan, you can model your immediate suppliers as inventory organizations, and have the supply chain plan net through this organization in order to create demand for the tier 2 supplier. You can then publish the output of this plan as forecasts for both your immediate and tier 2 suppliers.

You can create an external organization and associate it to the supplier site representing the contract manufacturer in Oracle Inventory. Once the organization has been defined,

you can create the reference setup information for planning purposes in this organization like items, bills of material, routings, resources, and operations.

For more details on setting up a supplier site as an inventory organization, see *Oracle Inventory User's Guide*.

### To review plan information with suppliers modeled an organizations

1. Run a supply chain plan.
2. Navigate to Supply Chain Plan > Workbench to view plans by supplier organizations.
3. You can view the supplier icon and the supplier's company and site names in the Navigator window of Planner Workbench. The supplier sites that are modeled as organizations are graphically distinguished as external organizations in the Navigator window.
4. Highlight an organization, right-click, and select Supply/Demand.
5. The Supply/Demand window displays the Source Supplier and Source Supplier Sites in addition to the organization code for the modeled organization.

# 17

# Supply Planning Work Area

This chapter covers the following topics:

- Overview
- Header Area
- Plans Tab
- Plan Inputs Tab
- Distribution Planning Work Area
- Analyzing Master Production Scheduling Plans

## Overview

The Supply Planning Work Area is a workbench that is similar to Planner Workbench. You can use it to view and change plan data.

The Supply Planning Work Area includes pages with the same functionality as their corresponding Forms windows, but with a web-based look and feel. You enter this area by clicking the Supply Planning Work Area responsibility.

For a general understanding about using the Supply Planning Work Area for supply chain modeling see the section Overview of Supply Chain Modeling n chapter Supply Chain Plan Modeling.

**Main Tabs**

When you navigate to Supply Planning Work Area, a page appears with two main tabs:

- Plans Tab: The name may show as Supply Planning or as a plan name. See Plans.
- Plan Inputs Tab: See Plan Inputs.

Both of these main tabs display two panes:

- Left pane: See Left Pane Characteristics.

- Right pane: See Right Pane Characteristics.

See also: Common Tab Features

## Left Pane Characteristics

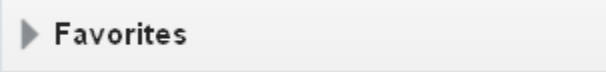
The left pane shows accordion panels.

The accordion panels are like menus.

You expand them to see their links.

The links navigate to pages (sub-tabs) in the right pane where you can view and change plan data.

To expand or collapse accordion panels, click the disclosure icon (triangle) at the left of the accordion panel.




To see accordion panels that are not in view, click the icons Show previous panels and Show next panels. They look like double arrowheads pointing up and down.

## Right Pane Characteristics

The right pane has two regions:

- Search, at the top: Use this region to search for data to display in the data region.
- Data, at the bottom: Use this region to view and change plan data. It begins with a menu bar and the data appears underneath. In pages with no search region, click the Search icon in the Data region menu--it is a white arrow in e gray circle.

**Search**

For basic searches, enter snfgle values

## Common Tab Features

Grid View: Displays data in a table format on the Home page.

Vertical Tabs: Small icon tabs typically in the upper left or right side of the page. They function the same as horizontal tabs.

Infotile: Expandable menu items in the left pane. When you select them, they display content in the right pane.

Status Meter: A color graphic display of a threshold indicator, for example, a thermometer.

Flexfields: When you select a list item, a descriptive panel pops up or appears

underneath with more data and/or controls.

Tables: Display data in a grid format. You can scroll vertically and horizontally and freeze columns and rows.

Header: Global information and controls.

## Header Area

The header area across the top has controls for controlling the page layout and navigating active tabs. You can select a previously-saved layout from the Page Layout drop-down list. You can save the current layout by selecting Save As from the Save Layout dropdown list, then entering a name, selecting whether the layout will be publically available or not, checking whether it will be the default layout, and hitting the Ok button. You can then see the new layout in the Page Layout dropdown list.

Tabs normally appear horizontally, but you can position them vertically in order to view two different tabs at the same time. The active tab has a highlighted bar across the tab. If you select "Move Down Active Tab", that tab will appear halfway down the page. You can have multiple tabs in the upper and lower positions. If you select "Move Up Active Tab", that tabl will move back to the top of the display area.

You can update the current layout to be like current display by selecting the Save Changes button.

At the upper right are several icons for going to the Home screen or logging out. The gear-shaped icon allows you to set preferences, described below.

**Planner Preferences**

You can customize the Planner Workbench from the Preferences window. When you open this window, IO retrieves stored settings on the seeded data for Default Preferences Profile.

### To set planner preferences

1. Click the Preferences icon, located in the top-right corner of the window.

   The User Preferences window appears.

2. Set any of the following options:

| Option | Description |
|---|---|
| Category Set | Use this drop-down list box to specify the default category set. |
| Default Plan | Use this drop-down list box to set the default plan. |

3. Click Save or Save and Close to keep your settings.

# Plans Tab

The Plans Tab contains these four accordion panels:

- Plans
- Favorites
- Plan Links
- Plan Actions

## Favorites

Below the Plans tile is the Favorites tile. Favorites are queries, and the queries shown here correspond to the Queries Tabbed Pane, page 16-36 of the Workbench.

The available types of queries correspond to the subitems displayed in the workbench under Personal Queries or Public Queries (Queries Tabbed Pane). These are:

| Personal Query Type | Results View |
|---|---|
| Items | List of Item Orgs (no attributes) |
| Resources | List of Resources (no attributes) |
| Suppliers | List of Suppliers (not attributes or items) |
| Orders | No results view. Navigates to Supply and Demand. |
| Exceptions | List of exceptions with an ability to "group by" attributes. |

For a list of possible criteria values when creating queries on Item, Resources, or Suppliers, see the chapter Viewing Output.

When a tile is expanded, its header displays an expanded set of controls.

- **Type** - The Type dropdown is a list of types that can be used for filtering which

queries are displayed in the tile. For example, if you select Exception, then only exception queries will be displayed.

- **Add** - Click the Add icon (plus sign) to create a new Favorite query. A dialog appears allowing you to configure the query criteria.
- **Edit** - Click the Edit icon (pencil) to select a select a Favorite for editing.
- **Refresh** - Click the turned arrow icon to refresh the Favorites list.

## Pivot Table Views

You can create views in Pivot Table format (in addition to the Table format) for Exception Type favorites only. This feature is not applicable for other types of favorites.

### Setup

Before you run a plan that you expect to run Favorites queries against, select plan option Display Key Performance Indicators.

If you have already run a plan without selecting the plan option and you do not see Favorites data:

- Select its plan option Display Key Performance Indicators
- Run concurrent process Generate Plan Summary against it

## Metrics

The Supply Planning Work Area includes the Metrics query type. The possible metrics include:

1. Current Scheduled Receipts
2. Exception Count
3. Exception Days
4. Exception Quantity
5. Exception Ratio
6. Fill Rate
7. Forecast
8. Gross Margin
9. In-Receiving

10. Internal Requisitions
11. In-Transit
12. Inventory Turns
13. Manual Demand
14. Manufacturing Cost
15. On-time Delivery %
16. Planned Orders
17. Planned Orders - Buy
18. Planned Orders - Make
19. Planned Orders - Transfer
20. Purchase Orders
21. Purchasing Cost
22. Resource Availability
23. Resource Requirements
24. Resource Utilization
25. Revenue
26. Safety Stock
27. Supplier Capacity
28. Supplier Requirementsl
29. Supplier Utilization
30. Total Demand
31. Total Supply
32. Work Orders

The Supply Planning Work Area supports the following metrics, with the drills specified:

| Graph Filter Criteria Type | Measures | Drill Context | Drill To |
|---|---|---|---|
| Items | • Planned Orders - Buy<br>• Planned Orders - Make<br>• Planned Orders - Transfer<br>• Planned Orders<br>• Work Orders<br>• Forecast<br>• In-Transit<br>• In-Receiving<br>• Purchase Orders<br>• Internal Requisitions<br>• Manual Demand | All filter criteria from the favorite + Group by + | Supplies and Demands (filter to relevant Order type of the measure)<br>Material Plan |
| Items | • • Projected Available Balance - Quantity<br>• Projected Available Balance - Value | All filter criteria from the favorite + Group by | Supplies and Demands (all order types)<br>Material Plan |
| Items | • Current Scheduled Receipts<br>• Total Supply | All filter criteria from the favorite + Group by + all supplies | Supplies and Demands (all supplies)<br>Material Plan |
| Items | • Total Demand | All filter criteria from the favorite + Group by + all demands | Supplies and Demands (all demands)<br>Material Plan |

| | | | |
|---|---|---|---|
| Items | • Revenue<br>• Purchasing Cost<br>• Safety Stock | No drill supported | No drill supported |
| Items | • Gross Margin<br>• Manufacturing Cost<br>• On-time Delivery %<br>• Fill Rate<br>• Inventory Turns | No drill supported | No drill supported |
| Resources | • Resource Availability<br>• Resource Requirements<br>• Resource Utilization | All filter criteria from the favorite + Group by | Resource Plan |
| Suppliers | • Supplier Capacity<br>• Supplier Requirements<br>• Supplier Utilization | All filter criteria from the favorite + Group by | Supplies and Demands (buy orders only: POs, Reqs, Buy Planned Orders)<br>Material Plan |
| Exceptions | • Exception Count<br>• Exception Days<br>• Exception Quantity<br>• Exception Ratio | All filter criteria from the favorite + Group by | Exception Details<br>Supplies and Demands (if item/org/order context is not available). For example, drilling to Resource Exceptions will not bring any orders) |

## Search

### Search Operators

Basic searches do not include operators, but advanced search criteria may include the following Operators:

- Starts With
- Ends With
- Equals
- Does Not Equal
- Between
- Not Between
- Contains
- Does not Contain
- Is Blank
- Is Not Blank

From the Items view, you can drill to Product Definitions, Supply Chain Bill, Supplies and Demands, Material Plan and Exceptions. The context that is used to drill these views is:

- Drilling to Material Plan, Supplies and Demands, Exceptions: The drill context is based on the 'Scope' selector in the toolbar.
    - If Scope is set to item, IO uses the item-organization context
    - If Scope is set to Supply Chain, IO uses all components in the Bill of Materials (BOM) (including alternates), except for any substitute components. The listed components are only at the next level (not all levels).
- Drilling to Product Definition, Supply Chain Bill: The drill context is always based on selected item-organization row(s). Since these UI views always show the BOM structure, the scope choice is not relevant.

If you open the Items page from a favorite, IO uses the criteria of the favorite, and ignores saved searches with the same criteria. The Search region is collapsed.

There is an "Application Default" layout with the same fields as the current default folder in IO. The complete list of columns will be same as the list of columns in the Items window of IO.

#### Entering Dates Manually

You should use the date picker for entering date values. If you do not use the date picker, enter a time value after the date value. Otherwise, you may receive an incorrect date value.

| Format | You enter | Resulting Value |
|---|---|---|
| dd/mm/yyyy | 10/04/2016 | October 4, 2016 (this reverts to mm/dd/yyy) |
| dd/mm/yyyy | 10/04/2016 12:00:00 | April 10, 2016 |

#### Item Search

You can search the Items results region. Available search criteria are:

- Basic Search:
  - Item
  - Organization
  - Category
  - Planner
- Advanced Search (in addition to the above):
  - Description
  - Planning Method
  - BOM Item Type

#### Resource Search

You can search the Items results region. Available search criteria are:

- Basic Search:
  - Department
  - Resource
  - Organization
  - Resource Group
- Advanced Search (in addition to the above):

- Resource Type
- Owning Department

## Plans

You view plans in two separate folders in the Plans accordion panel, one for Supply Plans and the other for Distribution Plans. The Favorites and Plan Links accordion panels show different options depending on which type of plan is selected.

**Supply Plans Folder**

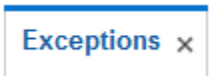
When you open the Supply Planning Work Area, you see the Plans accordion panel expanded and displaying successfully run plans. This list of Plans corresponds to those displayed in Inventory Workbench Navigator > Plan Tabbed Pane , page 16-2.

Click a plan name to see its information in the right pane.

The tabs across the top correspond to selections in the Plan Links accordion panel.

**Right Pane Controls**

To remove a tab, click the x to the right of the name.




To widen and shorten the content display, click the triangle on the left.



To expand and contract a chart, click the disclosure icon (triangle) to the left of its header.

**Distribution Plans Folder**

This folder contains Distribution Plans. For more information see the section Distribution Planning Work Area.

## Plan Links

### Exceptions

In the Plan Links tile, selecting the Exceptions link displays the Exception Details screen. The Exception Details screen allows you to query by Exception type and pull up each exception detail record. The available columns in the Exception Details screen are the same as the available columns in the Forms-based Exception details screen.

For detailed information on the different types of available exceptions see the section Understanding Exceptions in the chapter Supply Chain Plan Exception Messages..

The search criteria on this screen includes: Item, Org, Category, Department, Resource, Supplier, Customer, Exception Type, Order Type, Action Taken. The operators for these search criteria are:

| Column | Default Operator | Available Operators |
|---|---|---|
| Organization | Starts with | Starts with, Contains, Equals |
| Category | Starts with | Starts with, Contains, Equals |
| Item | Starts with | Starts with, Contains, Equals |
| Order Type | Starts with | Equals |
| Customer | Starts with | Starts with, Contains, Equals |
| Customer Site | Starts with | Starts with, Contains, Equals |
| Supplier | Starts with | Starts with, Contains, Equals |
| Supplier Site | Starts with | Starts with, Contains, Equals |
| Department | Starts with | Starts with, Contains, Equals |
| Resource | Starts with | Starts with, Contains, Equals |
| Exception Type | Equals | Equals |
| Project | Equals | Equals |
| Exception Date | On or Before | Equals, On or after, On or before, Before, After, Between |

| | | |
|---|---|---|
| Order Date | On or Before | Equals, On or after, On or before, Before, After, Between |
| Action Taken | Equals | Equals |

**Creating Exception Message Filters**

You can create Personal Queries that show only the exceptions you want to view. For more information, and a procedure for doing it, see Exception Message Filters in the Viewing Exceptions section of the chapter Supply Chain Plan Exception Messages.

**Analyzing Exceptions**

From an Exceptions Personal Query you can drill down and perform analysis

1. Create an Exceptions Personal Query to include the set of exceptions that you are interested in seeing once the plan has run
   - Select appropriate group by levels at which the exception information should be displayed
2. Execute Exceptions Personal Query
3. Review results of Exceptions Personal Query
4. Drill down to
   - Material Plan for Item Exceptions
   - Resource Plan for Resource Exceptions
   - Orders / Pegging details for Order Exceptions
   - Exception details (as needed)
5. Take appropriate exception resolution actions within the three screens mentioned above

**Items**

The Product Definition page is accessed from the following pages:

1. Items
2. Supplies and Demands
3. Exception Details

Product Definition UI cannot be directly started and must be launched from one of the

above pages. The context of this window depends on which Item-Organization is selected in the above pages. If there are multiple rows selected during the navigation the Product Definition displays for the first one and users can switch to the other assemblies using the drop-down list box.

There is no corresponding Oracle Forms window for this page.

The Product Definition page consists of five sections that are explained in detail below:

- Components
- Substitute Components
- Routing Operations
- Operation Resources
- End Item Substitutes

**Components**

The Components view displays the first level components for the selected assembly.

The Components view displays a single Assembly-Organization at a time. However, all the selected assemblies and organizations used as a context to invoke the Product Definition page are available in the drop-downs at the top. Use these drop-downs to switch to a different assembly and organization.

Each click of the Toolbar down arrow icon displays the next level components. It adds additional rows in the table by fetching the components of every item (wherever available). The additional rows are displayed below the respective subassemblies. Components at the next level appear indented with a hyphen character followed by a space.

The corresponding forms window is called Components Window. Its description is in the section Components Window of the Planner Workbench chapter.

**Substitute Components**

The Substitute Components view displays all substitutes only for components at the first level.

The corresponding forms window is called Substitution Chain Window. Its description is in the section Substitution Chain Window of the Planner Workbench chapter.

**Routing Operations**

The Routing Operations view displays routing operations.

The corresponding forms window is called Routing Operations Window. Its description is in the section Routing Operations of the Planner Workbench chapter.

**Operation Resources**

The Operation Resources view displays operation resources.

The corresponding forms window is called Resources Window. Its description is in the section Resources Window of the Planner Workbench chapter.

**End Item Substitutes**

The End Item Substitutes view displays end item substitutes.

The End Item Substitutes view only shows three levels of the chain at a given time with current item in the center, the items it replaces on the left, and the items that supersede it on the right.

If there are more than three items that precede or supersede the current item, the End Item Substitutes view displays with a More link at the top and bottom to go forward or back in the list of the items. Clicking on the More link refreshes the tab with next set of items shown for that level.

The corresponding forms window is called Substitution Chain Window. Its description is in the section Substitution Chain Window of the Planner Workbench chapter.

**Material Plan**

The Material Plan allows you to conduct a typical planning flow within the application without having to navigate to other Value Chain Planning (VCP) applications, such as ASCP.

The corresponding forms window is called Horizontal Plan. Its description is in the section Horizontal Plan of the Planner Workbench chapter*Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

For information about the Material Plan, see Understanding the Editable Material Plan, *Oracle Advanced Planning Command Center User's Guide*.

**Material Plan: Setup**

Use the Material Plan tab Setup to specify Material Plan parameters.

Its tabs are General, Layout and Global Forecast Layout.

**Material Plan: Global Forecast**

The section Global displays all types of global forecasts.

The corresponding Forms measures are in the Global Org section. Its description is in the section Horizontal Plan of the Planner Workbench chapter.

The following table lists the corresponding measure names in the two locations.

| Material Plan Global Section (ADF) Measures | Horizontal Plan Global Org Section (Forms) Measures |
|---|---|
| Gross Forecast | Original |
| Cumulative Gross Forecast | Cumulative Original |

| | |
|---|---|
| Consumption | Consumed |
| Cumulative Consumption | Cumulative Consumed |
| Forecast | Current |
| Cumulative Forecast | Cumulative Curren |
| Expired Forecast | Expired |

To select the global forecast measures to display, navigate to window Material Plan Setup, tab Global Forecast Layout. To select the local forecast measures to display, navigate to window Material Plan Setup, tab Layout.

Material Plan: Setup

Use the Material Plan tab Setup to specify Material Plan parameters. Its tabs are General, Layout and Global Forecast Layout.

**Material Plan: Custom Measures**

You can add five custom measures to the Material Plan:

- Specify the meaning of each measure in the EBS Lookup page (codes 10001-10005)
- Specify the aggregation of each measure in table `MSC_HP_MEASURES` as either `SUM` or `AVG`.
- At scheduled times, (1) Partition `MSC_CUST_ITEMS_F` by `plan_id`. (2) Use your own program to populate the plan measures into table `MSC_CUST_ITEMS_F` as numbers. Each table row contains Plan ID, instance, organization, item, bucket start date, and the attribute 1 – 5 values.

**Resource Plan**

Resource plans provide critical information about the utilization of critical resources. They allow you to identify and track resources that are underutilized and overutilized.

The corresponding forms window is called Capacity Plan. Its description is in the section Horizontal Plan of the Planner Workbench chapter, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

For more information about Resource Plans, see Understanding the Editable Resource Plan, *Oracle Advanced Planning Command Center User's Guide*.

**Resources**

You manage resources such as equipment or employees with the Resources window.

The corresponding forms window is called Resources. Its description is in the section

Resources Window of the Planner Workbench chapter, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

**Items**

Use this page to see information about items.

The corresponding forms window is called Items. Its description is in the section Items Window of the Planner Workbench chapter, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

**Safety Stocks**

The Safety Stocks window shows time-phased safety stock levels that the planning engine uses.

To display the Safety Stocks window, select an item on the Items page, then open the Drill to menu icon and click Safety Stock.

The corresponding Oracle Forms window is called Safety Stocks. Its description is in the chapter Planner Workbench, section Safety Stock Window.

**Supplies and Demands**

The Supplies and Demands view displays information about supplies and demands and shows pegging information

For information about this view, see the sectionSupply Demand Window , page 16-64 in the Planner Workbench chapter, *Oracle Advanced Planning Command Center User's Guide*.

In the Supplies and Demands view, the following icons are available:

| Toolbar Item | Type | Description |
|---|---|---|
| Create | Iconic button | Launches Create Order dialog. |
| Delete | Iconic button | Deletes order. Only available for orders that were manually created. |
| Drill To | Text button | Passes context of selected rows into either Exceptions (order number context) or Material Plan (item/org context). |
| Show Table | Iconic button | When selected shows flat table view. |

| Toolbar Item | Type | Description |
|---|---|---|
| Demand Pegging / Supply Pegging | Iconic buttons (only one displayed at a time) | When pegging from supply to demand, the Down arrow id present to toggle to supply pegging. When pegging from demand to supply, the Up arrow is present to toggle to demand pegging. |
| Layout | Combo List | Automatically refreshes the table layout based on selected pre-seeded layout. |
| Freeze | Iconic text button | Freezes the selected column and any columns to the left of the selected column, so they stay fixed on the visible page when the user scrolls horizontally. |
| Detach | Iconic text button | Expands the table to encompass the whole window. Pressing detach a second time returns the back to its original position. |
| Go Up | Iconic button | Used in a tree to move the user up a node level. |
| Go to Top | Iconic button | Used in a tree to move the user to the top of a tree. |
| Show as Top | Iconic | Shows the selected node of a tree as the new top (or root) node. |
| Wrap | Iconic text button | Wraps the text of the selected column so that it displays on multiple lines. |

In the Supplies and Demands view, the Actions list allows you to perform the following:

| List Item | Description |
|---|---|
| Create | Launches Create Order dialog. |
| Delete | Deletes order. Only available for orders that were manually created. |
| Drill to | Passes context of selected rows into either Exceptions (order number context) or Material Plan (item/org context). |
| Select Top Nodes | Selects the root nodes only. User can use the ADF select all action (selecting the first cell in the table, in other words the column header of the row header) to select both root and child nodes. |
| Mark For Release | Applies to selected rows. Updates the release status of all selected rows and updates the fields Implement As, Implement Date, and Implement Qty. If you need to update other implement fields, use Planner Workbench. |
| Unmark for Release | Applies to selected rows. Updates the release status of all selected rows and clears the set of implement fields. |
| View Demand Pegging/View Supply Pegging | Toggles between Demand Pegging and Supply Pegging views. When Supply Pegging view is displayed, the View Demand Pegging action is visible, and when the Demand Pegging view is displayed, the View Supply Pegging action is visible. |
| View End Demands Only | Only shows end/independent demands, not dependent demands. |
| View Exceptions Only | Only displays orders with associated exceptions. |
| Export to Excel | Export to Excel Exports all the data in the table to a Microsoft Excel spreadsheet. |

You can add exception-based columns to the Supplies and Demands Demand view. These columns are only visible in Plan mode (not Plan Inputs mode) and are read-only

(not editable). The following columns may be added to custom table layouts:

| Column | Description |
|---|---|
| Actual Lead Time | The Actual Lead Time of associated "Order with Insufficient Lead Time" exception type.<br><br>Applicable order types: All supply orders except on hand (for example, planned order, work order, purchase order, purchase requisition, and so on.) |
| Minimum Lead Time | The Minimum Lead Time of associated "Order with Insufficient Lead Time" exception type.<br><br>Applicable order types: All supply orders except on hand (for example planned order, work order, purchase order, purchase requisition, and so on). |
| Minimum Remaining Shelf Life Shortfall | The Minimum Remaining Shelf Life Shortfall associated with the "End Item Minimum Remaining Shelf Life" exception type.<br><br>Applicable order types: Sales Orders and Forecasts |
| Over Consumed Quantity | The over-consumed quantity associated with the "Items with Forecast over Consumption" exception type.<br><br>Applicable order type: Forecast |
| Planned Inventory Point | The Planned Inventory Point of the associated "Orders Scheduled to Next Inventory Point" exception type.<br><br>Applicable order type: Planned Order |
| Quantity Not Satisfied | The quantity from the associated "Demand Quantity not Satisfied" exception type.<br><br>Applicable order types: Sales Orders and Forecasts |
| Supplier Capacity Overload | The capacity overload value of associated "Order Causes Supplier Capacity Overload" exception type.<br><br>Applicable order types: Planned Orders (for buy items with supplier capacity), purchase orders, purchase requisitions |
| Volume Capacity Overload | The capacity overload value of associated "Order Causes Transportation Volume Capacity Overload" exception type.<br><br>Applicable order types: Planned Orders (for transfers), internal |

| | |
|---|---|
| Weight Capacity Overload | The capacity overload value of associated "Order Causes Transportation Weight Capacity Overload" exception type.<br><br>Applicable order types: Planned Orders (for transfers), internal requisitions. |

**Supply Chain Billl**

The Supply Chain Bill view provides the users with a complete, multi-level view of the supply chain for any end item. This includes the Bill of Materials and component sourcing across the supply chain including make, buy and transfers across the organizations and suppliers based on the assignment set used in the plan.

The corresponding forms window is called Supply Chain Bill. Its description is in the section Supply Chain Bill of the Planner Workbench chapter.

**Enterprise View**

Use this page to see supply and demand information by Planning Group, Project, and Project-Task, including payback.

The corresponding Forms window is Enterprise View. Its description is in the chapter Integrating with Planning and Manufacturing Environments, Oracle Project Manufacturing.

**Vertical View**

Use this page to see activity by item over time in a vertical format (non-bucket). The corresponding Forms window is Vertical Plan. Its description is in the section Vertical Plan of the Planner Workbench chapter.

**Co-products View**

Use this page to see network routing co-product names and splits.

The corresponding Forms window is Co-Product. Its description is in the section Co-Product Window of the Planner Workbench chapter.

**Components View**

Use this page to see the components of assemblies.

The corresponding Forms window is Components. Its description is in the section Components Window of the Planner Workbench chapter.

**Network Routing View**

Use this page to see dependency types and offsets within process manufacturing complex routings.

The corresponding Forms window is Network Routing. Its description is in the section Network Routing Window of the Planner Workbench chapter.

**Sources View**

Use this page to see information about sourcing and assignment associated with items.

The corresponding Forms window is Sources. Its description is in the section Sources Window of the Planner Workbench chapter.

**Destinations View**

Use this page to see information such as destination organization, sourcing, and assignment associated with items.

The corresponding Forms window is Destinations. Its description is in the section Destinations Window of the Planner Workbench chapter.

**Process Effectivity View**

Use this page to see process manufacturing information associated with bills of material and routing, including process effectivity dates, use ups, model/unit numbers, supply start dates, manufacturing recipe, and formulae.

The corresponding Forms window is Process Effectivity.

Its description is in the section Process Effectivity of the Planner Workbench chapter.

**Forecast Consumption Details View**

Use this page to see forecast consumption.

The corresponding Forms window is Consumption Details.

Its description is in the section Setting Up the Supply Chainn of the Supply Chain Plan Modeling chapter.

**Resource Batches**

Use this page to see information about process manufacturing batchable resources.

The corresponding Forms window is Batches. Its description is in the section Interactive Scheduling Using the Gantt Chart, Right-Click Menu Options of the Planner Workbench chapter.

**Resource Charges**

Use this page to see process manufacturing resource charges

The corresponding Forms window is Charge Details.

Its description is in the section Resource, Scheduling Resource Charges of the Planner Workbench chapter.

**Resource Instances**

Use this page to see information about resource instances used in sequence-dependent setups.

The corresponding Forms window is Resource Instances. Its description is in the section Sequence Dependent Setups of the Supply Chain Constraint-Based Planning chapter.

**Setup Transitions**

Use this page to see information about transitions.

The corresponding Forms window is Setup Transitions. Its description is in the section Setting Up the Supply Chain of the Supply Chain Plan Modeling chapter.

## Plan Actions

This accordion panel contains links for taking actions on plans. The actions are:

- Create Plan: See Advanced Supply Chain Planning Setup and Business Flows > Create A Plan.
- Copy Plan: See Defining Supply Chain Plans > Copying Supply Chain Plans.
- Plan Options: See Defining Supply Chain Plans > Setting Plan Options..
- Launch Plan: See Advanced Supply Chain Planning Setup and Business Flows >the section Launch the Plan.
- Release Plan: See Advanced Supply Chain Planning Setup and Business Flows > Release or Firm Orders.

**Delete Plan**

Use this link to delete a supply plan

To delete a service plan, use the Service Planning Work Area.

The corresponding Oracle Forms window in Planner Workbench is Navigator > select node type Plan > right click a plan > select Delete.

To delete a supply navigate to Plan Links and click Delete Plan.

A pop-up appears with a list of values that contains all supply including those you have not run—except plans that you have open.

Select a plan and the planning engine runs concurrent process Purge Plan that deletes the plan.

# Plan Inputs Tab

With the Plan Inputs tab you can access:

- Favorites specifically for this area
- Plan Input Links for managing specific aspects of a plan, like the Sourcing Rules or Bills of Distribution

## Favorites (Plan Inputs)

You can save and access your Plan Inputs Favorites here.

## Plan Input Links

Use the Plan Input Links accordion panel, on the Plan Inputs tab, to access these links. They are organized into categories.

Supplies and Demands: The same page as in Plan Links.

Items: The same page as in Plan Links.

Sourcing

- Manage Sourcing Rules
- Manage Bills of Distribution
- Manage Assignment Sets

Setup

- Manage Instances
- Manage Organization Parameters
- Manage Organization Security
- Manage Parts Classification
- Manage Inventory Levels
- Manage Transit Times
- Manage Service Level Sets
- Manage Policy Parameter Sets
- Manage Storage Capacities
- Manage Budgets

## Sourcing

**Manage Sourcing Rules**

Click the Manage Sourcing Rules link to view the Sourcing Rules tab in the content area.

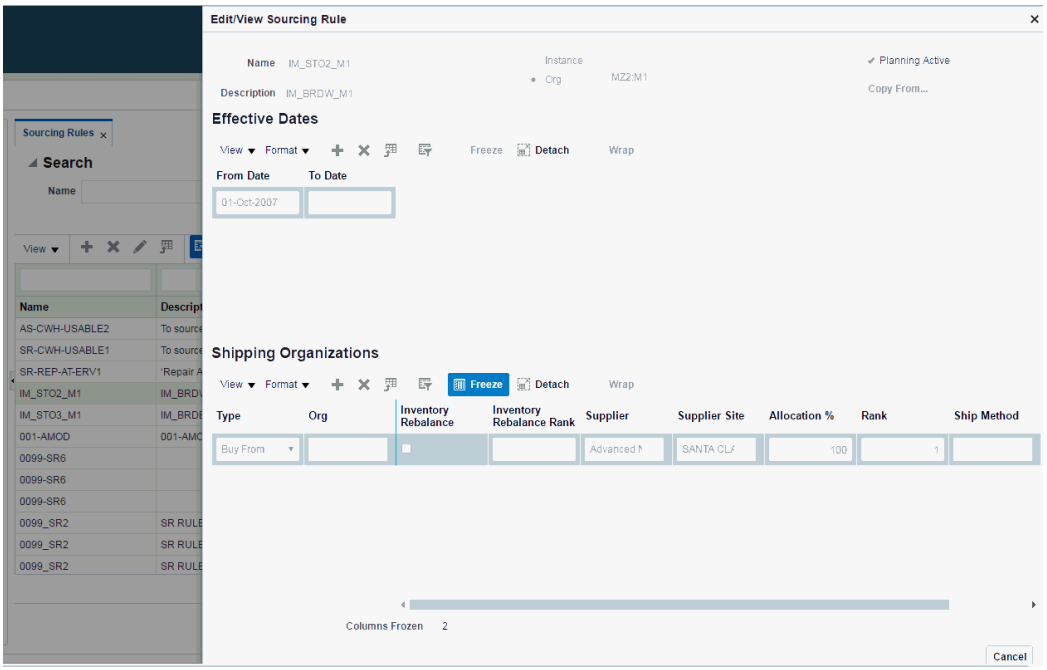
Use Manage Sourcing Rules to define and edit sourcing rules. You can define sourcing rules that specify:

- The source of supply for items in an organization.

- A rank for each source of supply named in the sourcing rules and bills of distribution.

You can specify a sourcing percentage for each source within a rank. This allocates a portion of the total orders to each source.

Sourcing rules and bills of distribution both describe supply sources. Sourcing rules can specify how to replenish all organizations, for example, when the entire enterprise gets a subassembly from a particular organization. The planning engine evaluates alternate ship methods specified in the sourcing rules and recommends the appropriate option. It can also release a ship method to the sales order that is different from the one in the Transit Times page.




The corresponding forms window is called Sources. Its description is in the section Sources Window of the Planner Workbench chapter, and the section Defining Sourcing Rules of the Setting Up Distribution Planning chapter.

**Manage Bills of Distribution**

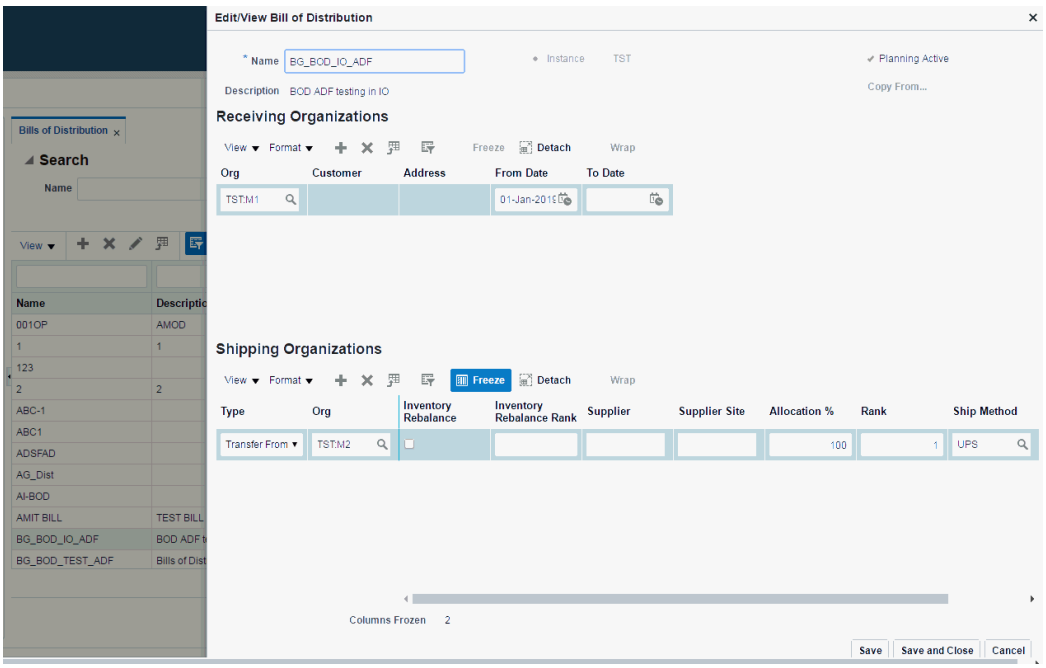
Click the Manage Bills of Distribution link to view the Bill of Distribution tab in the content area.

Use Manage Bills of Distribution to define and edit bills of distribution, multilevel replenishment networks of warehouses, distribution centers, and manufacturing plants. You can specify:

- Receiving organization parameters
- Shipping organization parameters

- A rank for each source of supply
- A sourcing percentage

The planning engine evaluates alternate ship methods specified in the Bill of Distribution page and recommends the appropriate option. It can also release a ship method to the sales order that is different from the one in the Transit Times page.




The corresponding forms window is called Bill of Distribution. Its description is in the section Bills of Distribution of the Supply Chain Plan Modeling chapter.

**Manage Assignment Sets**

Click the Manage Assignment Sets link to view the Assignment Sets tab in the content area.

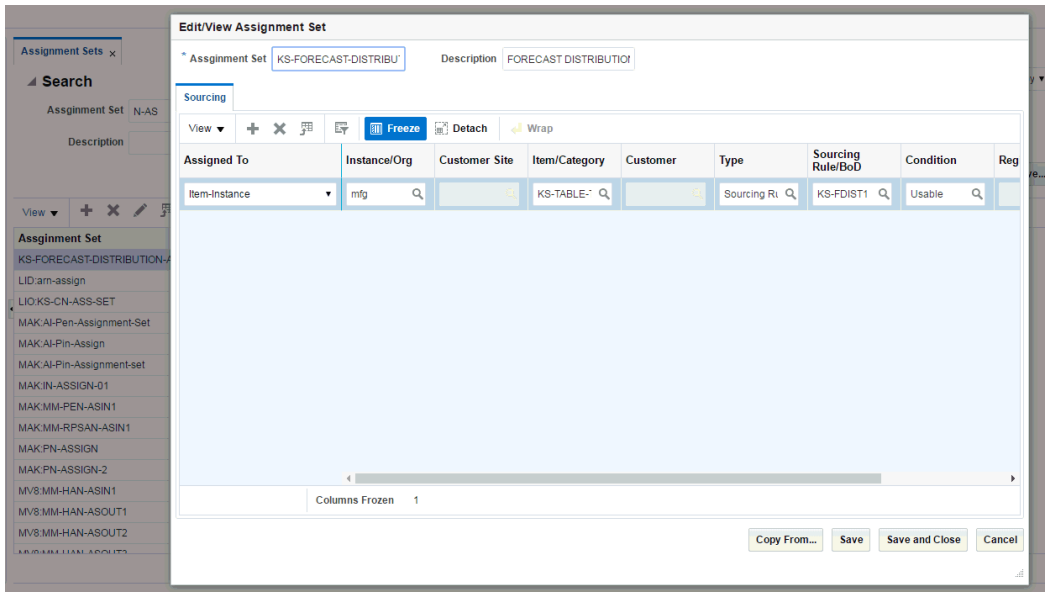
Use Manage Assignment Sets to define and edit assignment sets. Defining assignment sets in the destination instance improves planning efficiency because you don't have to run collections every time you need to define or edit an assignment set. Each assignment set represents a selection of organizations and items you want planned. You must include an assignment set in your plan options.

Once you have defined your sourcing rules and bills of distribution, you must assign them to particular items and organizations. The planning engine groups assignments into assignment sets and this is where various sourcing strategies define a particular supply chain network.

In an assignment set, you can assign your sourcing rules and bills of distribution at the following levels:

- Item-instance-organization
- Category-instance-organization
- Category-instance
- Item-instance: If the Item field is empty, use the Reduce Criteria Window to restrict the selection.
- Instance-organization
- Instance

You can assign replenishment rules to items. For example, define item category Packaging Material and create a sourcing rule for it.




The corresponding forms window is called Sourcing Rule / Bill of Distribution Assignments. Its description is in the section Bills of Distribution of the Supply Chain Plan Modeling chapter.

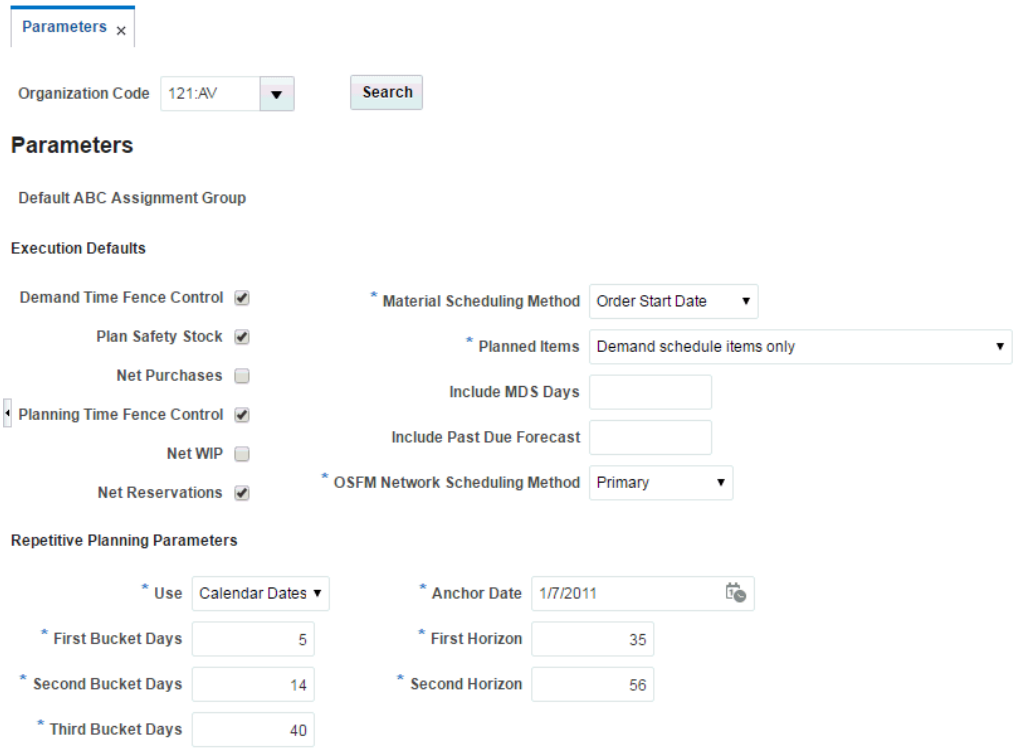
## Setup

### Manage Organization Parameters

Click the Manage Organization Parameters link to view the Parameters tab in the content area.

You use Manage Organization Parameters to specify organization-specific planning parameters in the Parameters tab. Here you can revise Planning Parameters and analyze plan results without running a new collection. The parameters in this tab override corresponding values collected from the source instance.

You see these parameters as default values in the Create Plan window.




The corresponding forms window is called Planning Parameters. Its field descriptions are in the Setting Plan Options section of the Defining Supply Chain Plans chapter.

### Manage Demand Priority Rules

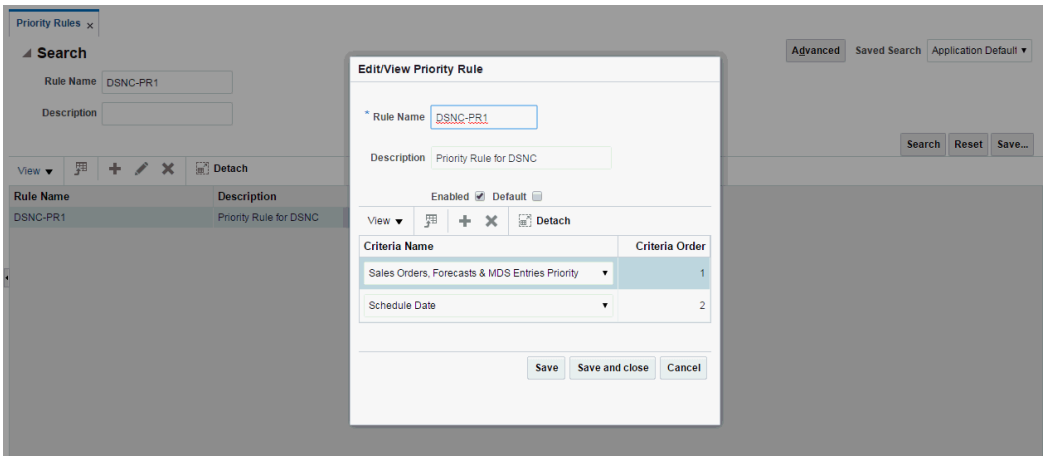
Click the Manage Demand Priority Rules link to view the Priority Rules tab in the content area.

Use Manage Demand Priority Rules to configure demand priority rules. The planning engine fills higher priority demands before lower ones. This improves fill rate for the most important customers.

You can prioritize demand based on the following criteria:

- Gross margin
- Promise date
- Schedule date
- Request date
- Sales orders, forecasts, & MDS entries priority

You can only define demand priority rules on the planning server.




The corresponding forms window is called Priority Rules. Its description is in the section Demand Priority Rules of the Defining Supply Chain Plans chapter.

## Manage Transit Times

### Manage Transit Times

Click the Manage Transit Times link to view the Transit Times tab in the content area.

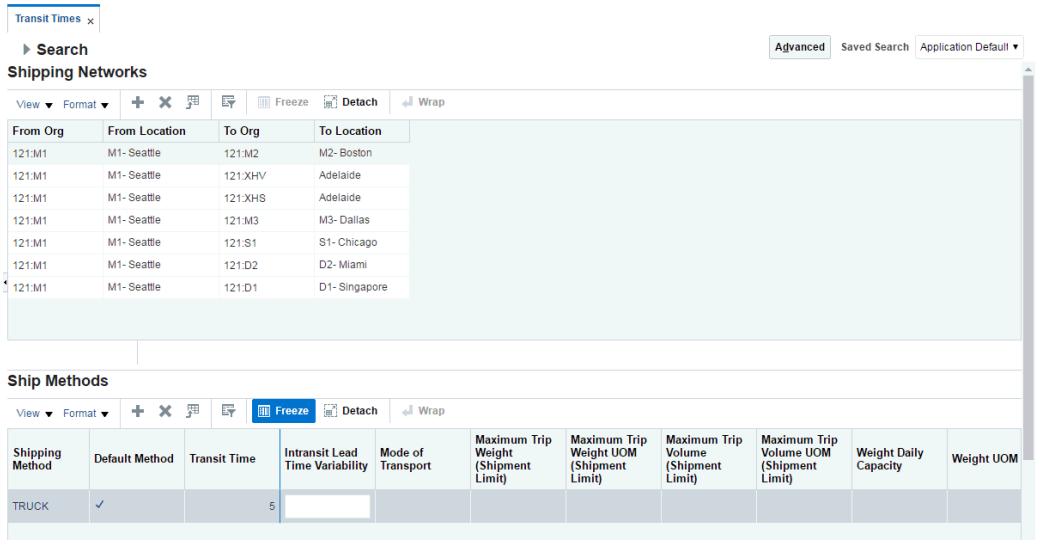
You use Manage Transit Times to define and modify:

- Shipping networks
- Shipping methods

Cross Instance Versus Source Instance

You can define cross instance shipping networks using the Transit Times tab. With this tab you can also define new shipping networks and ship methods for existing shipping networks.

You can only define same instance shipping networks in the planning instance. The planning system uses these new definitions without running a new collection. Use the Transit Times page




The corresponding forms window is called Transit Times. Its description is in the section Modeling Cross-Instance In-transit Lead-times of the Supply Chain Plan Cross-Instance Planning chapter.

### Manage Item Simulation Set

Use this view to make proposed adjustments to item attributes to simulate their effect on a plan results (run a simulation plan).

The corresponding Web Tools page window is called Item Simulation Set. Its description is in the section Item Simulation Set Oage of the Planner Workbench chapter

### Manage Bill of Resources

See Master Production Scheduling Using Rough-Cut Simulations.

### Manage Organization Security

This section shows the impact of organization security on Supplier Planning Work Area pages. Your responsibilities determine which organizations you are authorized to access. Generally, you cannot see information on Service Planning Work Areas pages that you are not authorized to access.

**Items Page**

On the Items page, you can only search, view, and access items in organizations you are authorized to access.

**Example: Authorized Organizations**

You have access to the following organizations, as defined by your responsibilities:

- SLC:M1
- SLC:M2

Plan1 plans the following organizations:

- TST:M1
- TST:M2
- TST:M3
- SLC:M1
- SLC:M2

When you view the Items window, you cannot see any items in these organizations:

- TST:M1
- TST:M2
- TST:M3

**Exception Page**

On the Exceptions page, you can only search, view, and access exceptions of items from organizations that you are authorized to access.

> **Note:** Exception page organization security is also applicable to related exceptions.

**Supply Chain Bill Page**

Organization security applies to the root node of the Supply Chain Bill. In other words, only organizations you're authorized to access appear underneath the root node. However, organization security does not apply to the underlying tree tables, so at these levels the structure you see includes view-only non-authorized organizations.

**Product Definition Page**

When viewing the Product Definition page, you only see information associated with organizations you are authorized to access. This includes the following:

- Components
- Substitute components
- Routing operations
- Operations resources
- End Item substitutes

**Notes Page**

You can only view item notes of those items in organizations that you are authorized to access.

**Material Plan Page**

On the Material Plan page, you can only search, view, and access orders from Organizations that you are authorized to access. This applies to all pages accessed through the Material Plan page.

The list of values for the organization field in the tool bar only includes those Organizations that you are authorized to access. Also, the displayed Grand Total is only for the Organizations that you are authorized to access.

**Supplies and Demands Page**

On the Supplies and Demands page, you can only search, view, and access orders from Organizations that you are authorized to access. This also applies all pages accessed through the Supplies and Demands page.

Organization security also applies to pegging. You can only search, view, and access items in the pegging tree from organizations you are authorized to access. As you move down the pegging tree, once you reach an item in an organization that you are not authorized to access, you cannot see any items at that level or below.

**Pegging Examples**

You have access to the following Organizations:

- SLC:M1
- SLC:M2
- SLC:M3

**Example 1**

Item A, in Organization SLC:M1, has the following pegging tree.

| Item | | | Organization | Visibility |
|---|---|---|---|---|
| A | | | SLC:M1 | Visible |
| | B | | SLC:M2 | Visible |
| | | B1 | SLC:M2 | Visible |
| | | B2 | SLC:M2 | VisibleVisible |
| | C | | SLC:M2 | Visible |

| Item | | | | Organization | Visibility |
|---|---|---|---|---|---|
| | | C1 | | SLC:M2 | Visible |
| | | C2 | | SLC:M4 | Not Visible |
| | | | C21 | SLC:M4 | Not Visible |
| | | | C22 | SLC:M4 | Not Visible |

Pegging displays only the pegging tree items from visible organizations. You are not authorized to access Organization SLC:M4, so those items are not shown.

**Example 2**

Item D in Organization SLC:M1 has the following pegging tree. The planning system displays only the pegging rows marked visible for Item D. Item E2 belongs to Organization TST:M1, which you are not authorized to access. As a result, you do not see the pegging tree section below E2, even though you are authorized to access the items below E2.

| Item | | | | Organization | Visibility |
|---|---|---|---|---|---|
| D | | | | SLC:M1 | Visible |
| | E | | | SLC:M2 | Visible |
| | | E1 | | SLC:M2 | Visible |
| | | E2 | | TST:M1 | Not Visible |
| | F | | | SLC:M3 | Not Visible |
| | | F1 | | SLC:M3 | Not Visible |
| | | F2 | | SLC:M3 | Not Visible |
| | | | F21 | SLC:M3 | Not Visible |
| | | | F22 | SLC:M3 | Not Visible |

**Plan Options Page**

When viewing or configuring Plan Options, you can only view and configure organizations that you are authorized to access. You can only view plans associated with organizations that you are authorized to access. Also, the Organizations list of values in the Organizations tab only shows organizations that you are authorized to access.

**Queries**

Organization security does not limit your ability to set up queries. However, the results of queries only display information associated with organizations that you are authorized to access.

**Delete Plan**

You can only delete plans whose owning organization is an organization that you are authorized to access.

#### Manage Instances

Use the Manage Instances page to configure and display information about instances.

To display the Manage Instances page, select the Plan Inputs tab, navigate to the Plan Input Links accordion panel, and click the Manage Instances link.

The corresponding Oracle Forms window is Application Instances. See chapter Setting Up Source and Destination Instances, section Creating a VCP Destination Instance, in *Oracle Value Chain Planning Collections Implementation Guide.*

#### Manage Supplier Capacity Flexfences

Use this page to specify the tolerance (in percent) to an increase in capacity that a supplier may indicate.

The corresponding Oracle Forms window is Supplier Capacity, Supplier Flexfences. Its description is in the chapter Planner Workbench, Supplier Capacity Window, Supplier Flexfences Tabbed Pane.

#### Collect Flat File Data – Self Service

Use this page to access self-service collections.

It opens the page Load Data Files.

For collections information, see Overview of Value Chain Planning Collections in *Oracle Value Chain Planning Collections Implementation Guide*.

# Distribution Planning Work Area

## Overview

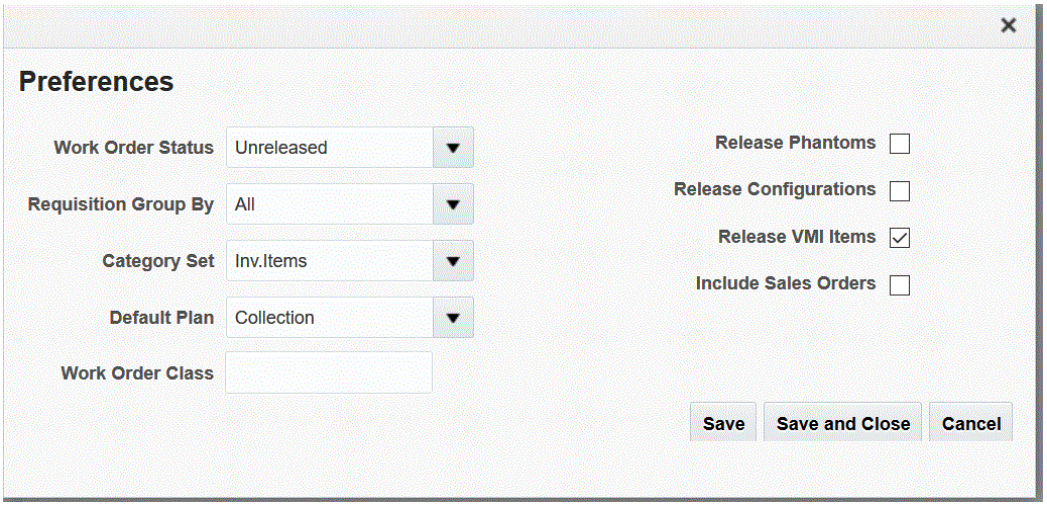
You use the Distribution Planning Work Area for distribution plans. Its overall look-and-feel is the same as the Supply Planning Work Area. However, some of its options

and features are different. These changes occur when you select a distribution plan in the distribution folder of the Plans accordion panel.

## Header

The Header section for the Distribution Planning Work Area functions the same as the Supply Planning Work Area.

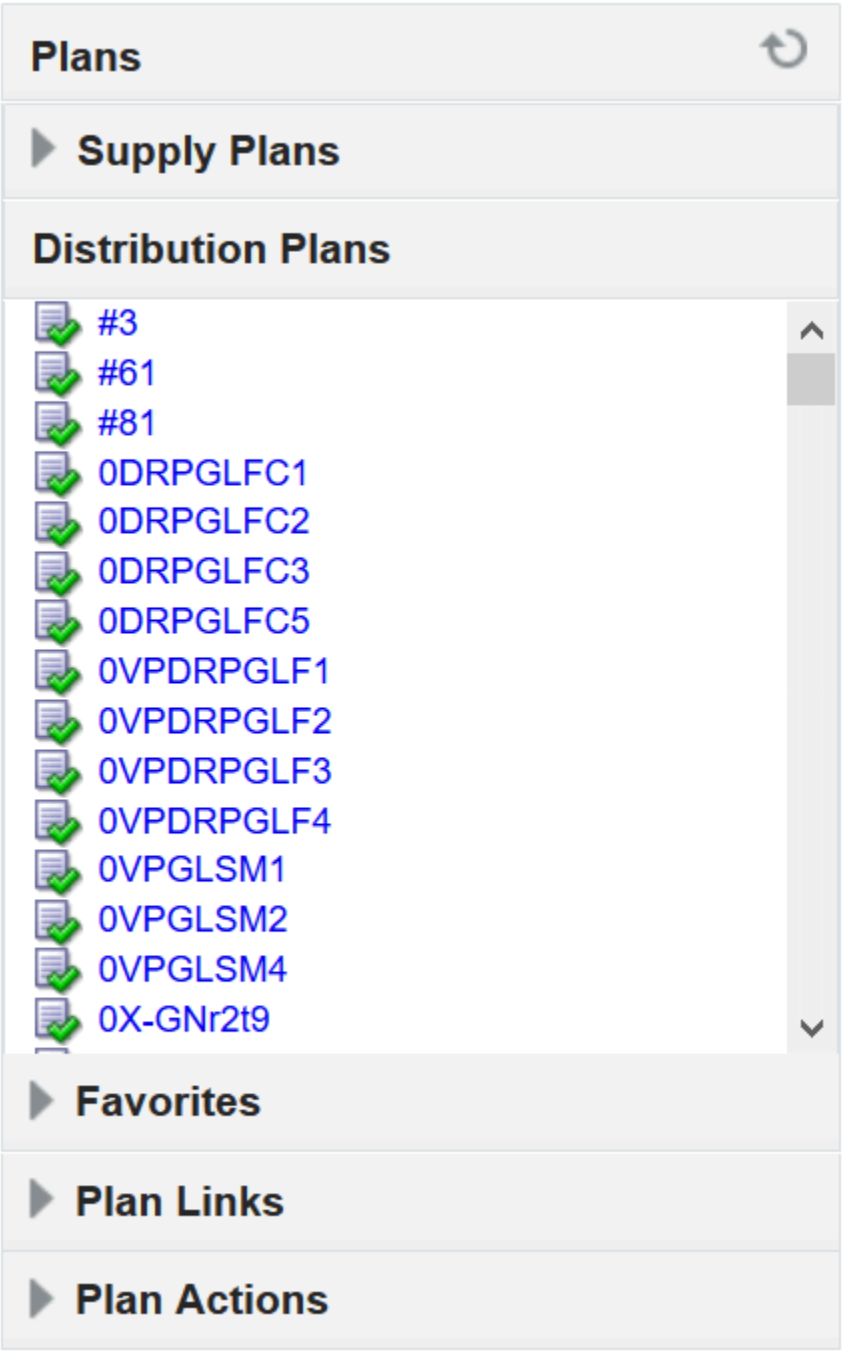
You view the preferences window by selecting the gear icon at the upper right of the header section.




## Plans Tab

### Plans

The Plans accordion panel has two folders: one for Supply Plans and one for Distribution Plans. When you select a distribution plan, the distribution plan features and options become available.




### Favorites

DRP Favorites function the same as SPWA Favorites. For more information, see the section Favorites in the chapter *Supply Planning Work Area.*

You will see the Distribution Planning Work Area query results displayed in a regular

table.

## Plan Links

You display different types of views with the Plan Links accordion panel

The available DRP plan links are:

- Exceptions
- Items
- Material Plan
- Supplies and Demands
- Supply Chain Bill
- Trips
- Vertical Plan

### Exceptions

The Exception Details screen allows you to query by Exception type and pull up each exception detail record.

For information on the Exception Details window, see Exception Details Window in the chapter Supply Chain Plan Exception Messages and the chapter Planner Workbench.

For a listing of DRP exceptions and exception groups, see Distribution Plan Exception Groups in the chapter *Running and Analyzing Distribution Plans*.

The table below lists available columns in the default Exception Details window. The user can add columns to the window and save the layout.

| Column |
| --- |
| Organization |
| Category |
| Item |
| Order Type |
| Customer |

| |
|---|
| Customer Site |
| Supplier |
| Supplier Site |
| Exception Type |
| Exception Date |
| Order Date |
| Action Taken |

From the Drill To dropdown list you can drill to these other windows:

- Material Plan
- Resource Plan
- Orders
- Related Exceptions (see below)

**Related Exceptions Screen**

The Related Exceptions screen is the same as the Exception Details screen but without the Search section. It opens up as a new tab when you drill down to it from a row (or rows if multi selected) in the Exception Details screen.

You can also drill down to the Related Exceptions screen from a row (or rows if multi selected) in the Orders screen.

For example:

- If you select "Related Exceptions" in the Orders screen from a row corresponding to a sales order that is late, you will see the list of related exceptions for the Late replenishment for sales order exception.
- If you select "Related Exceptions" in the Orders screen from a row that corresponds to a purchase order that has an "Order with insufficient lead time" exception, you will see the list of sales orders / forecast at risk exceptions that are related exceptions of Orders with insufficient lead time.

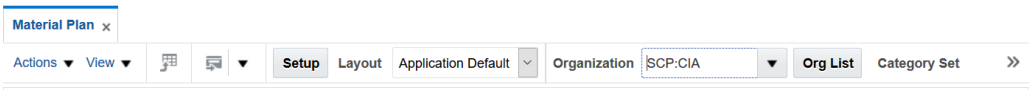
### Items

This displays the Items window for a distribution plan.

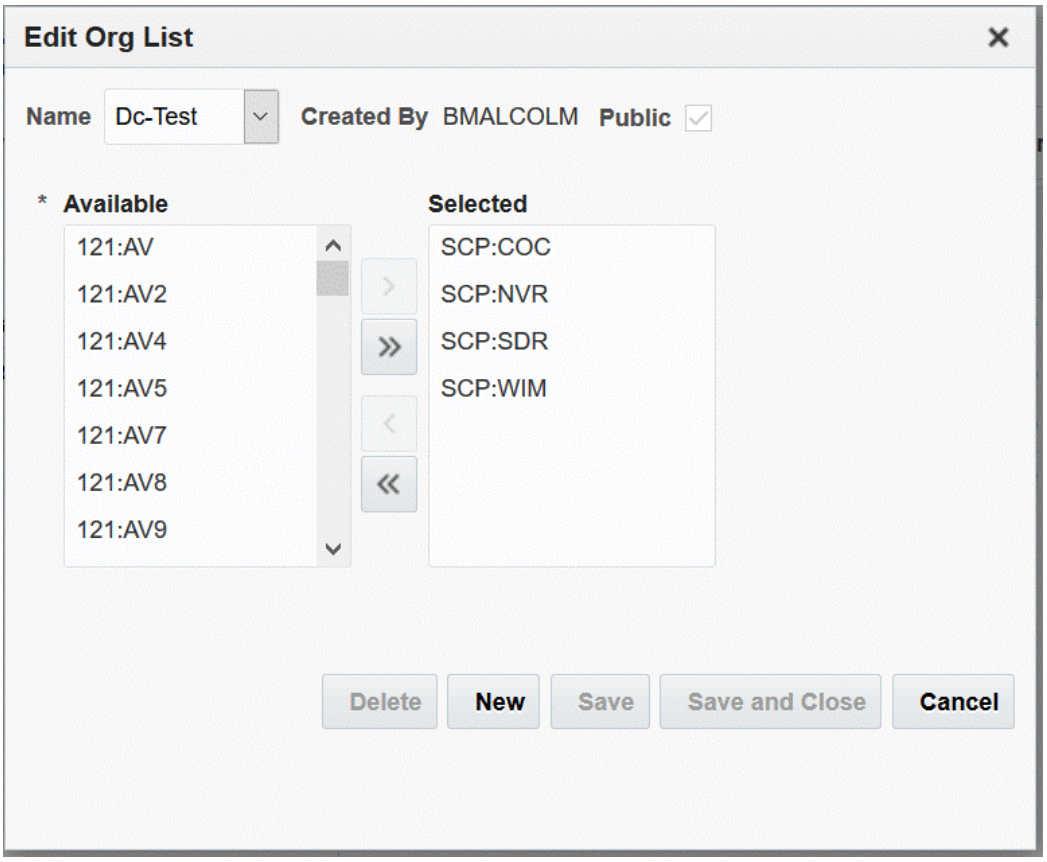
## Material Plan

Distribution planning supports a multi-org material plan with an org selection list much like the org selection list available in the SPP Service Planning Work Area. The material plan bar for distribution plans contains the same controls as the one for supply plans. However, some menu options are different (see below).

Material plan output is impacted by the organizations selected in the organization dropdown list.




To create and manage organization lists, select the Org List button.

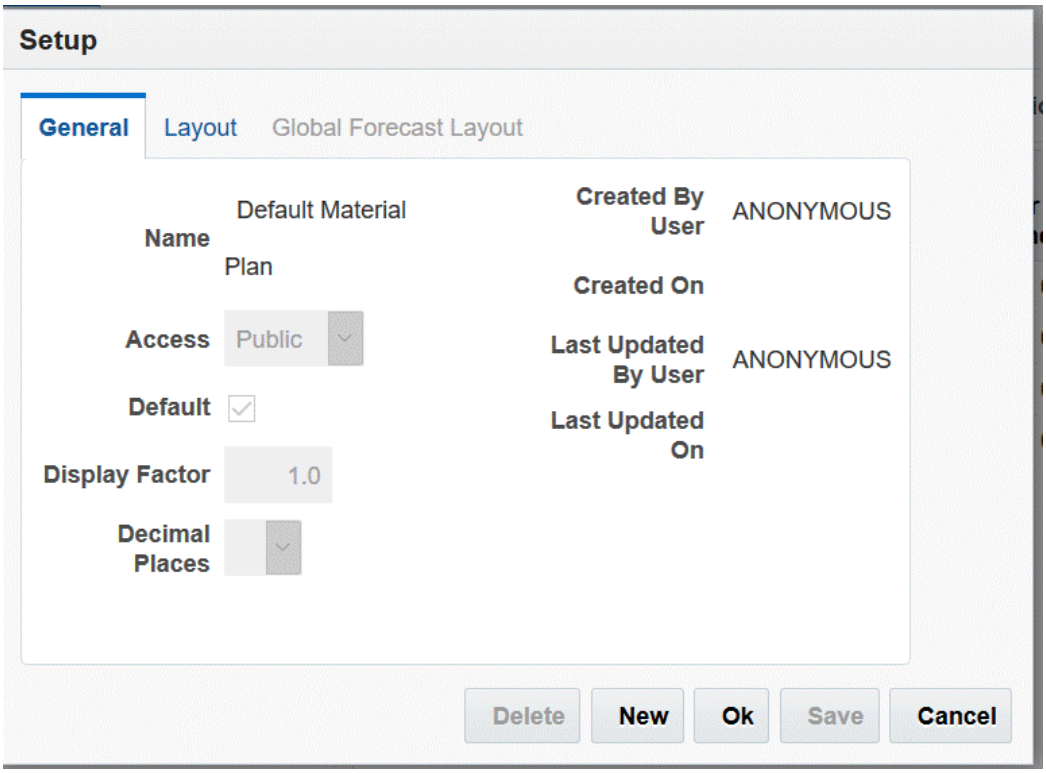



### Material Plan Menu Options

Material Plan > Actions

- Setup
- Export to Excel

Selecting Setup displays the Setup window.




**Material Plan > View**

- Hide Totals
- Show Transfer Organizations Details
- Include Internal Shipments
- Horizontal View

**Drill To**

- Items
- Exceptions
- Supplies

**Layout**

- Default Material Plan

Other notes regarding Distribution Material Plans:

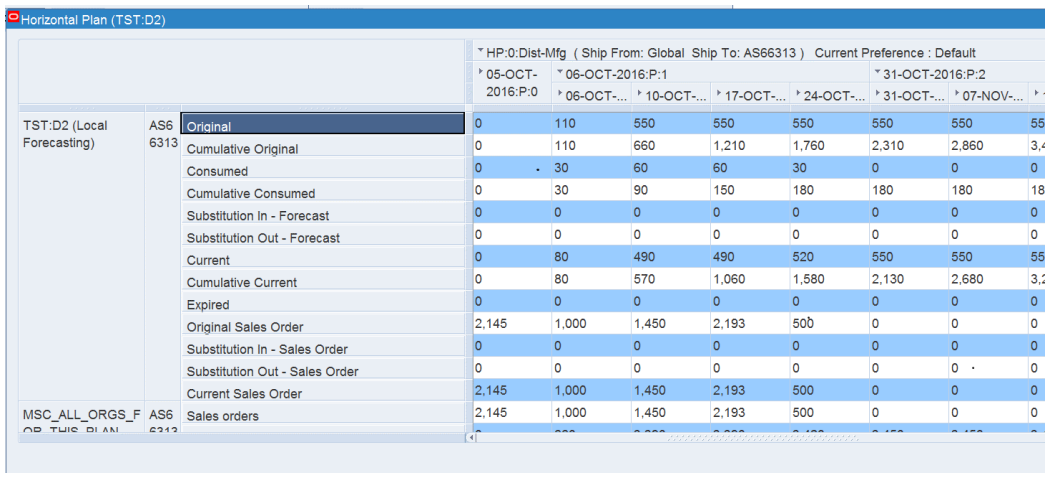
- In addition to using the expand collapse feature, you can create a material plan with the "Transfer Organizations" column.

- When the measure is Outbound Shipments, Requested Outbound Shipments, or Outbound in Transit, the organizations shown are "transfer to" organizations.
- When the measure is Inbound Shipments, Requested Inbound Shipments, or Inbound in Transit, the organizations shown are "transfer from" organizations.

#### Global Forecast

The Global Forecast Material Plan contains the following rows:

- Original
- Cumulative Original
- Consumed
- Cumulative Consumed
- Current
- Consumed Current
- Expired Forecast




For more information on global forecasting, see the section Global Forecasting in the chapter *Running and Analyzing Distribution Plans*.

### Supplies and Demands

The Supplies and Demands view displays information about supplies and demands associated with the current distribution plan. For more information see the section Supplies and Demands of this chapter.

### Supply Chain Bill

Select this link to see a muli-level view of the supply chain for an end item. For more

information see the section Supply Chain Bill in this chapter.

## Plan Actions

Select Plan Options to display the Plan Options window for viewing and editing plan options.

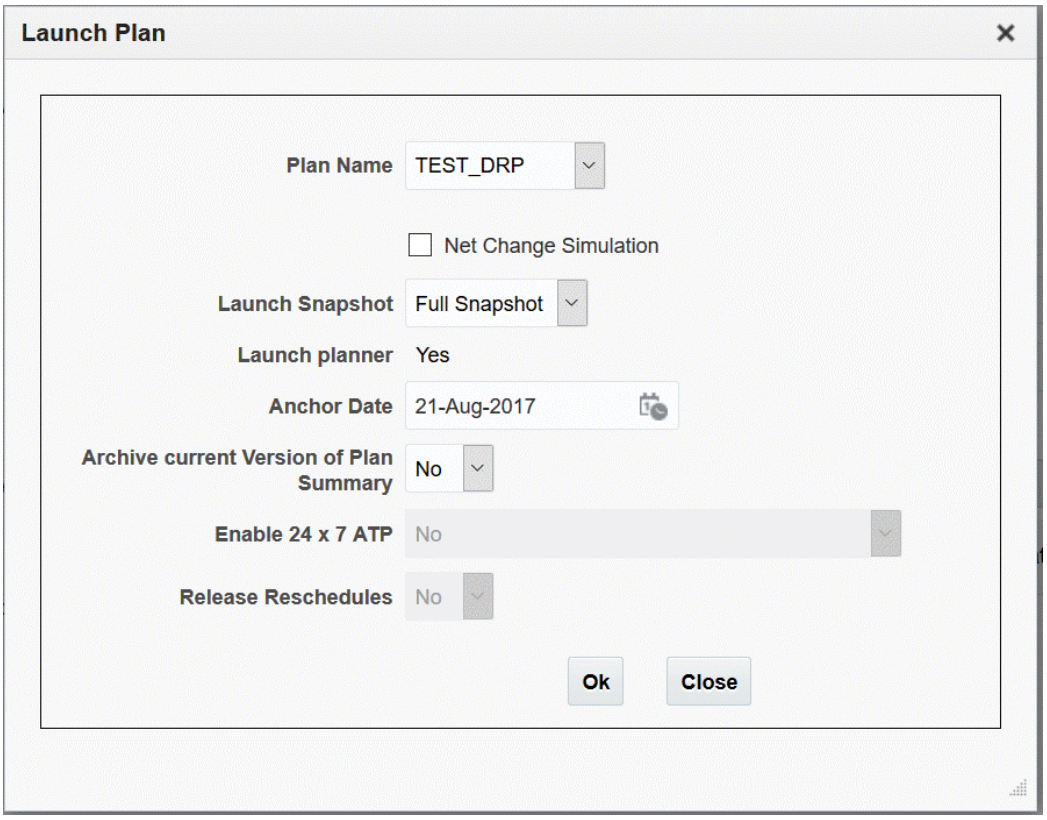
The Plan Options window has four tabbed areas:

- Main tab
- Aggregations tab
- Organizations tab
- Decision Rules tab

For detailed information on DRP plan options see Setting Distribution Plan Options in the chapter *Defining Distribution Plans.*

### Launch Plan

You view the Launch Plan window by selecting Launch Plan under Plan Actions.




#### Net Change Simulation

On the Launch Plan window check Net Change Simulation (see previous image) to run a net change simulation plan.

For more information, see the section Net Change Replan in the chapter *Supply Chain Plan Simulations.*

#### Release Plan

Select Release Plan to release the plan to production.

#### Delete Plan

Select Delete Plan to delete the current plan.

## Plan Inputs Tab

The Plan Inputs tab contains two accordion panels:

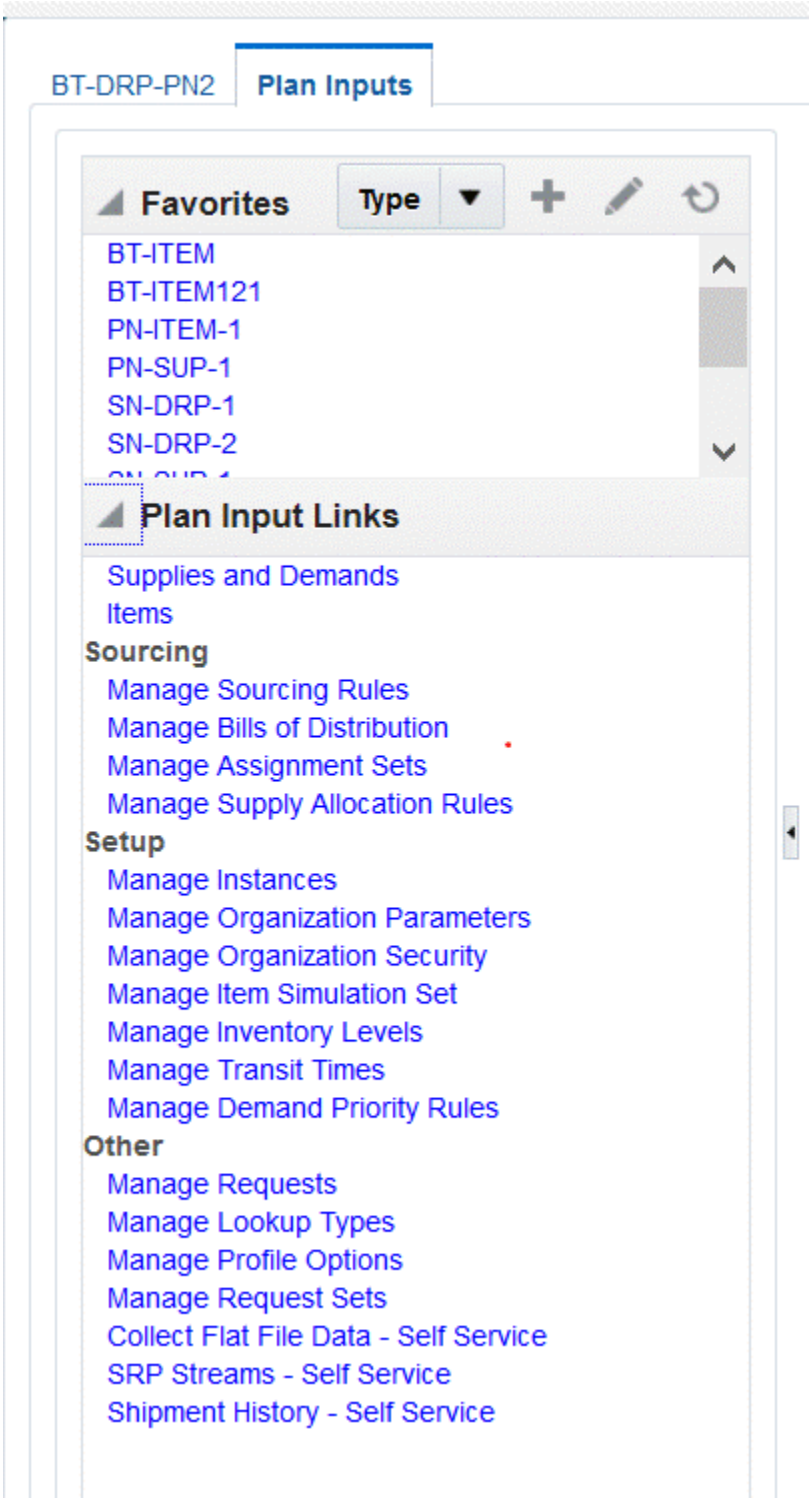
- Favorites
- Plan Input Links

### Favorites

You can store Favorites here as well as in the Plans Tab.

### Plan Input Links

Expand the Plan Input Links accordion panel to display the available plan links. Plan Input Links for distribution plans are the same as those for supply plans.


BT-DRP-PN2
Plan Inputs
Favorites
Type
BT-ITEM
BT-ITEM121
PN-ITEM-1
PN-SUP-1
SN-DRP-1
SN-DRP-2
Plan Input Links
Supplies and Demands
Items
Sourcing
Manage Sourcing Rules
Manage Bills of Distribution
Manage Assignment Sets
Manage Supply Allocation Rules
Setup
Manage Instances
Manage Organization Parameters
Manage Organization Security
Manage Item Simulation Set
Manage Inventory Levels
Manage Transit Times
Manage Demand Priority Rules
Other
Manage Requests
Manage Lookup Types
Manage Profile Options
Manage Request Sets
Collect Flat File Data - Self Service
SRP Streams - Self Service
Shipment History - Self Service

## Analyzing Master Production Scheduling Plans

To analyze the MPS Plan, you use these pages:

- Build Plan: A combination of the material and resource plans for end assemblies. See Build Plan.
- Gantt Chart: A visual representation of the load on resources that are on the bill of resources. It displays the information grouped into time slots (buckets). See Gantt Chart for Master Production Scheduling

You can only use these pages for plans in which you select plan option Aggregation > MPS In-line recalculation.

You cannot release planned orders from the MPS plan.

### Inline Recalulation

Inline recalculation is a quick replan of the MPS plan after you make changes using:

- Build Plan: Modify planned order quantities for end assemblies and/or resources.
- Gantt Chart: Move slots to a different week or alternate slot.

To start inline recalculate, click Recalculate.

Inline recalculation is not a complete engine rerun. The following example indicates the nature of the inline recalculation process.

Aero-Power Generation Unit (EX-HV-493) is the top level MPS item, with a BOR containing other MPS items:

- Aero Engine PW-404 (quantity 1)
- Turbine Trailer (quantity 2)
- Turbine Base (quantity 3)
- Control House (quantity 1)
- Generator Trailer (quantity 1)

Aero Engine PW-404 is supplied from an internal organization. The BOR lists all MPS items on EX-HV-493. The recalculation scope may include:

1. Quantity Change: An increase or decrease in EX-HV-493 quantity (a top level finished good item). The recalculation process calculates required assembly quantities, based on the BOR at various levels. Each of the key component quantities are inflated/deflated according to the BOR.

Resource requirements for all upstream and downstream resources are recalculated, and the overloads indicated on the Resource Plan in red.

2. Resource Availability Change: An increase in resource availability on the Resource Plan ensures that the overload is removed and MPS feasibility improves.

3. Creating New Planned Orders: When you update an empty (zero quantity) planned order field, recalculation creates a new planned order for the item.

## Build Plan

The ASCP Build Plan is a combination of the typical MRP Material and Resource plans and is used in MPS planning to modify planned order quantities for end assemblies and/or resources. Users are also able to use a filter to select the end assemblies that they want to view in the build plan. Users are able to view changes in planned orders and resource overloads after performing inline calculations.

> **Note:** This functionality is only available with Master Production Scheduling Inline Recalculation.

For more information, see Defining Supply Chain Plans > Master Production Scheduling Using Rough-Cut Simulations.

There is no directly corresponding Forms window. This page has information similar to the information in windows called:

- Material Plan. Its description is in the section Material Plan of the Planner Workbench chapter.
- Resource Availability (Details). Its description is in the section Resource Availability (Details) Window of the Planner Workbench chapter.
- Resource Requirements. Its description is in the section Resource Requirements Window of the Planner Workbench chapter.

**Accessing the Build Plan**

- Navigate to the Supply Planning Work Area.
- Select a plan and then click the Build Plan link.

The Build plan is invoked from the link on the left of the Supply Planning Work Area and a pop-up window will be used to select the end items / categories for which the build plan will be displayed by moving them from the available area to the selected area.

**Synching the Build Plan**

The Material Plan and Resource Plan portions of the Build Plan can be scrolled

horizontally independent of each other. To view the same time buckets on the Material Plan and Resource Plan, click the Synchronization button.

**Editing the Build Plan**

You can edit and change the planned order quantities on the build plan. The UI will also permit updating of resource availability prior to running the on-line recalculation process.

Also, the current method of creating new planned order will also be supported on the material plan portion of the build plan.

**Impact of Planned Order Edits on the Build Plan**

Planners view and edit planned order quantities on the Build Plan. They will also be able to insert a new planned order where one does not exist

Changing the assembly quantity also changes the component dependent demand, but not the component planned orders. ASCP uses the BOR offset to figure out where to place the dependent demand.Calendars are ignored while trying to derive the offset.

Since updating the dependent demand may lead to negative PAB at the component level, this will help planners figure out that re-balancing needs to be done. You can rebalance supply at the lower level by either updating the component quantities or by performing a plan run / batch replan.

The measures displayed on the build plan that needs to be updated include Dependent Demand and Gross Requirements Updated planned orders are firmed automatically when edits are complete.

While modeling using the BOR, the constraints that only the Organizations that are on the BOR will be displayed on the build plan.

# 18

# Integrating with Planning and Manufacturing Environments

This chapter covers the following topics:

- Overview of Integration with Planning and Manufacturing Environments
- Common Features in Hybrid Manufacturing Environments
- Oracle Project Manufacturing
- Oracle Flow Manufacturing
- Oracle Process Manufacturing
- Oracle Shop Floor Management
- Material Planning for Oracle Complex Maintenance Repair and Overhaul
- Integrating with Oracle Demantra Demand Management
- Integrating with Oracle Demantra Sales and Operations Planning
- Asset Intensive Planning

## Overview of Integration with Planning and Manufacturing Environments

Oracle Advanced Supply Chain Planning integrates with:

- Mixed-mode manufacturing environments
- Other planning and manufacturing environments

### Mixed-Mode Manufacturing Environments

Mixed-mode manufacturing lets you plan distribution and manufacturing operations for hybrid environments. You can plan for the full range of discrete, repetitive, process, project, and flow manufacturing environments. You can also plan to make to stock, make to order, assemble to order, and configure to order products simultaneously, using a single plan across all methods. This features enables you to use the most

efficient process to build each product.

Mixed-mode manufacturing is supported by the following combination of Oracle Applications: Oracle BOM (for discrete manufacturing), Oracle Flow Manufacturing, Oracle Project Manufacturing, and Oracle Process Manufacturing. These serve primarily to provide process plan (routing) data to the Oracle ASCP engine. They also provide the user interfaces with which users of the different manufacturing modes view the output of the planning process.

> **Note:** Repetitive manufacturing environments are supported in unconstrained planning, but not in constrained or optimized planning. For repetitive manufacturing environments that require constrained or optimized planning, it is recommended that you use flow schedules in Oracle Flow Manufacturing.

The planning engine adjusts the lot based job supply quantities displayed in the Planner Workbench by the Reverse Cumulative Yield (RCY) figures. Since the job quantity in the execution system represents the quantity of the current operation of the job, the final supply quantity in the planner workbench that represents the quantity coming out of the last operation of the routing is different.

**Other Planning and Manufacturing Environments**

Other planning and manufacturing environments that integrate with Oracle Advanced Supply Chain Planning are::

- Oracle Complex Maintenance and Overhaul, see Material Planning for Oracle Complex Maintenance and Overhaul
- Oracle Strategic Network Optimization, see Integrating Strategic Network Optimization
- Oracle Production Scheduling, see Integrating Production Scheduling
- Oracle Demantra Demand Management, see Integrating with Oracle Demantra Demand Management
- Oracle Demantra Sales and Operations Planning, see Integrating with Oracle Demantra Sales and Operations Planning

## Common Features in Hybrid Manufacturing Environments

Oracle ASCP includes full support for by-products, co-products, lot expirations, and formula effectivity dates. In some plan types, repetitive manufacturing features are supported.

## Phantom Routings

Phantoms are non-stocked assemblies that let you group together material needed to produce a subassembly. Oracle ASCP explodes requirements through a phantom subassembly to the components as if the components were directly tied to the parent assembly. No planned orders are generated for phantom assemblies. Routings for phantom items are used to generate resource requirements. However, the planning engine does not support phantom routings for constrained plans.

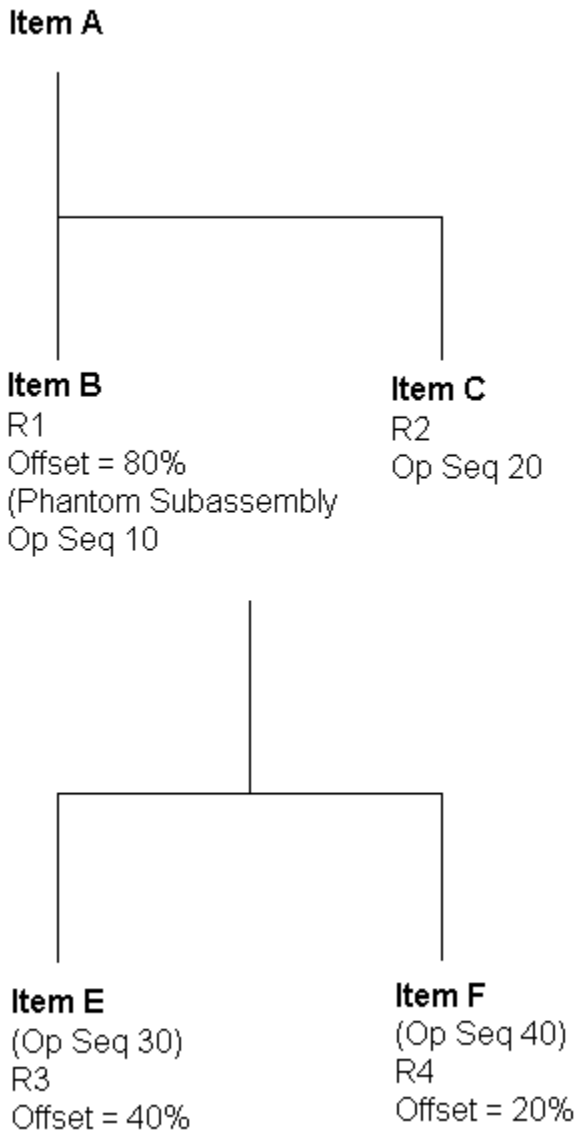
Phantom Routings are included for all phantom items in an organization based on the settings of the Organization level parameter use phantom routings in Oracle Bills of Material. An additional parameter inherit phantom operation sequence set at the inventory organization level in Oracle Bills of Material determines whether components of phantom items will retain their operation sequence or inherit them from the parent

.

> **Note:** The combination of use phantom routings = Y and inherit phantom operation sequence = N is not supported.

The following figure and table summarize the different behavior of a phantom item and its components associated with settings of the two parameters, according to the example that follows.

*Bill of Material Structure for Assembly A*




| Use Phantom Routing | Inherit Phantom Op Seq | Behavior |
|---|---|---|
| Yes | Yes | Not supported |
| Yes | No | Not supported |

| Use Phantom Routing | Inherit Phantom Op Seq | Behavior |
|---|---|---|
| No | Yes | Resource requirements generated for R1 and R2, but not R3 and R4. Due dates of Items E and F are calculated based on offset percentage of Op Seq 10. |
| No | No | Resource requirements generated for R1 and R2, but not R3 and R4. Due dates of Items E and F are calculated based on offset percentages of Op Seq 30 and 40, respectively. |

For more details, seeDefining Bills of Material Parameters, *Oracle Bills of Material User's Guide* and Phantoms, *Oracle Bills of Material User's Guide*.

Oracle Shopfloor Manufacturing (OSFM) does not use the phantom routing's operation sequence for the exploded phantom component requirements. The planning engine uses value No for organization parameter Inherit phantom op seq when it creates planned orders for Oracle Shopfloor Manufacturing (OSFM) lot based jobs.

## Utilization and Efficiency

Utilization and efficiency occur in capacity planning. Routings are used to generate capacity requirements for planned orders and suggested repetitive schedules by the planning engine. You can define utilization and efficiency on a department resource within Bills of Materials. For Flow Routings, the utilization and efficiency of individual resources used on a line in the Mixed Model Map definition are considered for determining the line rate. For repetitive schedules, it is assumed that the efficiency and utilization are factored into the user definition of line rate.

Utilization is a percentage. Enter a number between 0 and 100; for example, enter 91 for 91% utilization.

Efficiency is a percentage. Enter a number between 0 and 100; for example, enter 91 for 91% utilization.

The adjusted resource hours for each resource requirement planned on a department resource takes into account the utilization and efficiency of the resource. The adjusted resource hours of the resource requirement is Resource required hours / (Utilization * Efficiency).

You can view utilization and efficiency in the Resources window in the Planner Workbench.

For more details, see Assigning Resources to a Department, *Oracle Bills of Material User's Guide*

## Routing Effectivity

Routing Effectivity is incorporated into Capacity Planning with Oracle Planning Products.

Routings are used to generate capacity requirements for Planned Orders and Suggested Repetitive schedules by the planning engine. With the new functionality, resource requirements are generated using routings which are effective on the start date of the planned order or suggested repetitive schedule.

Each routing has an effective date and a disable date which indicates the date range for which the routing is effective. This is defined in Oracle Bills of Material. Routings are used to list the different resources which are required at each operation for an item.

For more details, see Creating a Routing, *Oracle Bills of Material User's Guide*

## Simultaneous, Aggregate, and Alternate Resources

This flexfield can be used to enter data for planning and scheduling: Cost of using Alternate BOM / Routing, which is defined via a flexfield in the Bills of Material form.

The following cases can be used as a reference during implementation.

### Example 1

An operation has three activities. The resource in each activity is individually replaced by an alternate resource.

| Primary Resource Seq | Primary Schedule Seq | Primary Resource | Primary Principal | Primary Substitute Group Number | Alternates Substitute Group Number | Alternates Schedule Seq | Alternates Replacement Group | Alternates Resource | Alternates Principal |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | M1 | Y | 1 | 1 | 10 | 1 | M1-1 | Y |
| 30 | 20 | M2 | Y | 2 | 2 | 20 | 1 | M2-1 | Y |
| 50 | 30 | M3 | Y | 3 | 3 | 30 | 1 | M3-1 | Y |

### Example 2

An operation has three activities. The resource in each activity is replaced by more than one alternate resources.

| Primary Resource Seq | Primary Schedule Seq | Primary Resource | Primary Principal | Primary Substitute Group Number | Alternates Substitute Group Number | Alternates Schedule Seq | Alternates Replacement Group | Alternates Resource | Alternates Principal |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | M1 | Y | 1 | 1 | 10 | 1 | M1-1 | Y |
| 30 | 20 | M2 | Y | 2 | 1 | 10 | 2 | M1-2 | Y |
| 50 | 30 | M3 | Y | 3 | 2 | 20 | 1 | M2-1 | Y |
| | | | | | 2 | 20 | 2 | M2-2 | Y |
| | | | | | 3 | 30 | 1 | M3-1 | Y |

**Example 3**

An operation has three activities. Each activity has a principal and a simultaneous resource. Each pair of principal and simultaneous resource is replaced by an alternate pair of principal and simultaneous resource.

| Primary Resource Seq | Primary Schedule Seq | Primary Resource | Primary Principal | Primary Substitute Group Number | Alternates Substitute Group Number | Alternates Schedule Seq | Alternates Replacement Group | Alternates Resource | Alternates Principal |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | M1 | Y | 1 | 1 | 10 | 1 | M1-1 | Y |
| 20 | 10 | L1 | | 1 | 1 | 10 | 1 | L1-1 | |
| 30 | 20 | M2 | Y | 2 | 2 | 20 | 1 | M2-1 | Y |
| 40 | 20 | L2 | | 2 | 2 | 20 | 1 | L2-1 | |
| 50 | 30 | M3 | Y | 3 | 3 | 30 | 1 | M3-1 | Y |
| 60 | 30 | L3 | | 3 | 3 | 30 | 1 | L3-1 | |

**Example 4**

An operation has three activities. Each activity has a principal and a simultaneous

resource. Each pair of principal and simultaneous resource is replaced by alternate sets of resources. Some of these alternate sets have more resources than the primary sets they are replacing. Other alternate sets have fewer resources than the primary sets they are replacing.

| Primary Resource Seq | Primary Schedule Seq | Primary Resource | Primary Principal | Primary Substitute Group Number | Alternates Substitute Group Number | Alternates Schedule Seq | Alternates Replacement Group | Alternates Resource | Alternates Principal |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | M1 | Y | 1 | 1 | 10 | 1 | M1-1 | Y |
| 20 | 10 | L1 | | 1 | 1 | 10 | 1 | L1-1 | |
| 30 | 20 | M2 | Y | **2** | **1** | **10** | **1** | **L1-2** | |
| 40 | 20 | L2 | | 2 | 2 | 20 | 1 | M2-1 | Y |
| 50 | 30 | M3 | Y | 3 | 2 | 20 | 1 | L2-1 | |
| 60 | 30 | L3 | | **3** | **3** | **30** | **1** | **M3-1** | **Y** |

### Example 5

An operation has three activities. Each activity has a principal and a simultaneous resource. When alternate resources are chosen for the first activity, alternate resources should also be chosen for the second and third activities. This synchronous selection of alternate resources is enabled by specifying the same substitute group number across all three activities.

| Primary Resource Seq | Primary Schedule Seq | Primary Resource | Primary Principal | Primary Substitute Group Number | Alternates Substitute Group Number | Alternates Schedule Seq | Alternates Replacement Group | Alternates Resource | Alternates Principal |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | M1 | Y | 1 | 1 | 10 | 1 | M1-1 | Y |
| 20 | 10 | L1 | | 1 | 1 | 10 | 1 | L1-1 | |
| 30 | 20 | M2 | Y | 1 | 1 | 20 | 1 | M2-1 | Y |

| Primary Resource Seq | Primary Schedule Seq | Primary Resource | Primary Principal | Primary Substitute Group Number | Alternates Substitute Group Number | Alternates Schedule Seq | Alternates Replacement Group | Alternates Resource | Alternates Principal |
|---|---|---|---|---|---|---|---|---|---|
| 40 | 20 | L2 | | 1 | 1 | 20 | 1 | L2-1 | |
| 50 | 30 | M3 | Y | 1 | 1 | 30 | 1 | M3-1 | Y |
| 60 | 30 | L3 | | 1 | 1 | 30 | 1 | L3-1 | |

**Example 6**

This example illustrates examples of data setups that are inconsistent.

| Primary Resource Seq | Primary Schedule Seq | Primary Resource | Primary Principal | Primary Substitute Group Number | Alternates Substitute Group Number | Alternates Schedule Seq | Alternates Replacement Group | Alternates Resource | Alternates Principal |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | M1 | Y | 1 | 1 | 10 | 1 | M1-1 | Y |
| 20 | 10 | L1 | | 1 | 1 | 20** | 1 | L1-1 | |
| 30 | 20 | M2 | Y | 2 | 2 | 20 | 1 | M2-1 | Y |
| 40 | 20 | L2 | | 2 | 2 | 20 | 1 | L2-1 | |
| 50 | 30 | M3 | Y | 3 | 3 | 30 | 1 | M3-1 | Y |
| 60 | 30 | L3 | | 4* | 3 | 30 | 1 | L3-1 | |

* Substitute group number cannot be different for two records that have the same schedule sequence numbers.

** A schedule sequence number within a replacement group under a given substitute group number cannot be different from one of the schedule sequence numbers of the primaries defined under that same schedule.

## Co-products

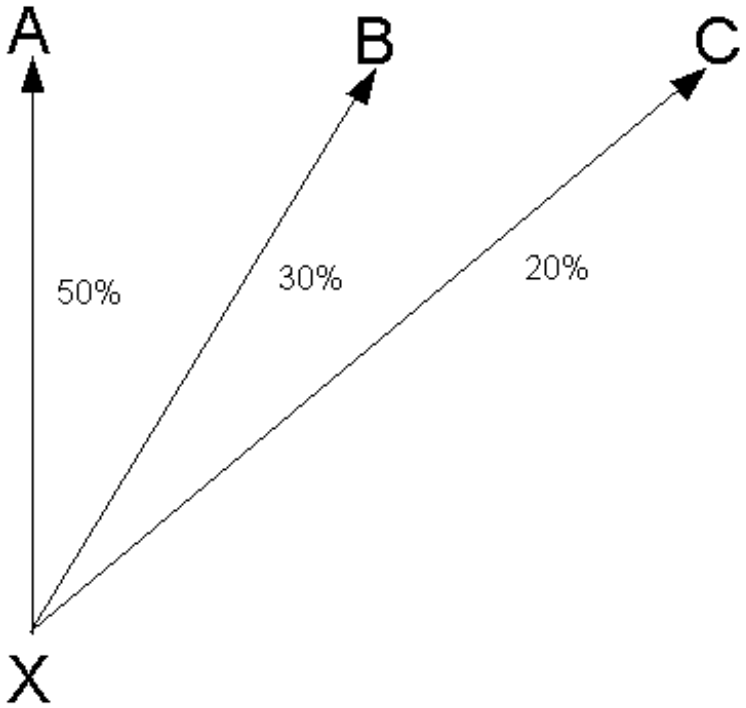
In some production environments, an item may turn into one or more parent items depending on factors such as process control, test results, and raw material quality. The parent items are called co-products.

Both Oracle Shop Floor Manufacturing (OSFM) and Oracle Process Manufacturing use co-products

**Identifying Co-products**

You identify co-products as a bill of material structure. In this diagram, assembles A, B, and C are co-products produced from raw material X. The percentage figures represent the expected mix of production of the co-products.

*Co-products*




**Coproducts**

**Co-products and Order Promising**

Order promising considers co-product supplies for order promising as long as the demand is later than the co-product supply date. Using this product structure:

- On day 25, you have scheduled receipts for 10 item A, 6 item B, and 4 item C
- On day 10, you take a sales order against item B that is due on day 35. Order promising considers the scheduled receipt for quantity 6 as available to satisfy the sales order.
- On day 10, you take a sales order against item C that is due on day 20. Order promising does not consider the scheduled receipt for quantity 4 on day 25 as available to satisfy the sales order.
- On day 10, you take a sales order against item A for quantity 15 due on day 25.

Order promising considers the scheduled receipt for quantity 10 as available to satisfy the sales order; however, there is a shortage of quantity 5

- Capable-to-promise calculates that you need 10 item X to result in 5 item A (production of quantity 1 of item X results in production of quantity 0.5 of item A, 5 / 0.5 = 10)

- If there is enough item X available to result in 5 item A by day 25, order promising creates supply against item A for quantity 5 due on day 25, supply against item B for quantity 3 due on day 25, and supply against item C for quantity 2 due on day 25.

**Co-products and the Planning Process**

The collection process collects co-product information.

The planning engine calculates supply for the co-product assemblies and demand and supply for the components based on the demand for any one of the co-product assemblies. It uses any component-level yield factors that you have specified when calculating component demand.

It plans co-products on a daily basis and nets co-product supplies before creating planned orders to minimize inventory.

In Planner Workbench, you can:

- Identify co-products in the Navigator by a unique icon that differentiates them from components

- Release planned orders for the assembly for which you realized demand

- Track the production for all the co-products by viewing supplies against the other co-products

To view a co-product relationship, navigate to the Items window, then press the Co-products button to view the related co-products and their planned percentages.

In the example, if you intend to produce 10 units of assembly A, the planning engine calculates demand for X as 20 units of X (10 units / 0.5 co-product percentage). The supply of 20 X plans for production of 10 units of supply for A, 6 units of supply (20 * 0.3) for assembly B, and 4 units of supply (20* 0.2) for assembly C.

The supply orders for the co-product assemblies are of types Planned order and Planned order co-product / by-product.

This table shows the supply/demand picture as a result of the demand against assembly A for 10 units on Day 25

| Demand or Supply | Day 10 | Day 25 | Day 35 |
|---|---|---|---|
| Demand (A) | 0 | 10 | 0 |
| Supply (A) | 0 | 10 (Planned order) | 0 |
| Demand (B) | 0 | 0 | 0 |
| Supply (B) | 0 | 6 (Planned order co-product/by-product) | 0 |
| Demand (C) | 0 | 0 | 0 |
| Supply (C) | 0 | 4 (Planned order co-product/by-product) | 0 |

This table shows the supply/demand picture after you get demand against assembly B for 2 units on Day 35.

| Demand or Supply | Day 10 | Day 25 | Day 35 |
|---|---|---|---|
| Demand (A) | 0 | 10 | 0 |
| Supply (A) | 0 | 10 | 0 |
| Demand (B) | 0 | 0 | 2 |
| Supply (B) | 0 | 6 | 0 |
| Demand (C) | 0 | 0 | 0 |
| Supply (C) | 0 | 4 | 0 |

This table shows the supply/demand picture after you get demand against assembly C for 10 units on day 10. The planning engine does not move Planned order co-product / by-product supply either in or out to support other demands; it sets their due date on the same day as the planned order due date.

| Demand or Supply | Day 10 | Day 25 | Day 35 |
|---|---|---|---|
| Demand (A) | 0 | 10 | 0 |
| Supply (A) | 25 | 0 | 0 |
| Demand (B) | 0 | 0 | 2 |
| Supply (B) | 15 | 6 | 0 |
| Demand (C) | 10 | 0 | 0 |
| Supply (C) | 10 | 4 | 0 |

If you release the planned order for assembly A, Planner Workbench creates a supply for quantity 20 to account for the production of assemblies A, B, and C from the material requirements of X for 20. The actual supply open for assembly A within the planning engine is 10.

The next time you run the plan, the planning engine uses supply of 10 units for assembly A and co-product / by-product supply for assembly B of 6 units and assembly C for 4 units. If you do not want to maintain the co-product / by-product supplies, clear the Co-products supply flag on the supply and the planning engine does not create co-product / by-product supplies.

**Co-products and Safety Stock**

You may have an operation that produces both a supply and a co-product supply. If the planning engine pegs the supply to a safety stock, it marks the related co-product supply as low priority. This:

- Causes the pegging process to peg the co-product supply to low priority demands for the co-product
- Eliminates conflicting scheduling objectives on the operation

See Safety Stock, page 4-129.

## Oracle Project Manufacturing

Oracle Project Manufacturing is designed to support companies that manufacture products for projects or contracts. It provides robust project tracking, billing, and budgeting. You can plan in a project or contract environment by segmenting all sources of supply and demand by project. This allows the planning process to identify components as shared or project specific, track existing inventories by project, and provide visibility to all supply and demand associated with the project.

Oracle Project Manufacturing also supports Seiban production. Seiban is a Japanese management practice. The word sei means production, and the word ban means number, thus implying a production number. A manufacturing plan is therefore managed by a Seiban number. All demand and supply for the manufacturing plan is associated with the Seiban number (via its project number).

Oracle Project Manufacturing is also designed for engineer-to-order (ETO) environment and a assemble-to-order environment. This enables a manufacturer to track supply and demand with a particular product, project, or customer.

Oracle ASCP supports Oracle Project Manufacturing through Project Planning. With Project Planning you can:

- Include project or project-task or Seiban numbers in forecast, MPS, and MDS entries.
- Load, copy or merge forecast, MPS, and MDS entries with project or project-task or Seiban numbers.
- Recognize and allocate supply according to project or project-task or Seiban numbers.
- Combine project or project-task and Seiban related supply and demand with common supply and demand in the same plan or schedule.
- Perform netting by planning groups, project or Seiban, and tasks
- Generate planned orders with project or Seiban, and task references
- Execute a plan in the Planner Workbench by planning group, project or project-task, and Seiban.
- Perform net change simulation in a project environment.
- Generate planned orders with project or project-task or Seiban.
- Implement planning suggestions by planning group, project or project-tasks, or Seiban numbers.

Oracle Project Manufacturing is integrated with Oracle ASCP. Oracle ASCP supports constraint-based supply chain planning and optimization with online simulations for Engineer-to-Order (ETO) manufacturing typical in the Aerospace and Defense Industry. It features the following:

## Hard and Soft Pegging

The hard and soft pegging feature is fully supported by Oracle ASCP. An item's attribute can be set to any of the following pegging levels which are elaborated below:

#### Soft Pegging

The planning process allocates supply at the project or project-task level (or Seiban) to demand at the project or project-task level (or Seiban) according to the reservation level set in the plan level options.

All reservations of supply to demand records is for a single item. Common, nonproject supply is used to satisfy project demand. For a soft pegged demand, excess project supply (or common supply) is always available for another project's demand.

No project references are made to planned orders issued to soft pegged items.

(Choose the End Assembly/Soft Pegging option for both soft pegging and end assembly pegging. End assembly pegging traces the end assembly to which the item is pegged at the top of the bill of material.)

#### Hard Pegging

In this option, the planning process allocates supply at the project or project task level (or Seiban) to demand at the project or project task level (or Seiban), according to the reservation level set in the plan level options. Excess common supply from one project can only be shared among projects in the same planning group, if reservation level is set at planning group.

Project references are attached to planned orders for hard pegged items.

(Choose the End Assembly/Hard Pegging option for both hard pegging and end assembly pegging).

#### Common Supply Netting

The new netting logic for Project Planning also takes into account excess common supply for project demand for hard pegged items. This netting logic is available only if the reservation level option for the plan is set to Planning Group.

For the above, you can generate a graphical pegging display. If none is used for pegging, project material allocation, end assembly pegging, and graphics are disabled.

## Supply Chain Project Planning with Hard Pegging

In situations where projects are executed across multiple organizations, Oracle ASCP provides you with the same useful features for managing demand and supply across multiple organizations in the supply chain.

It uses similar logic as Project Manufacturing planning to plan projects in multiple organizations and ensures that the project information is permeated to all organizations in the Supply Chain. Supply for a project belonging to multiple organizations can be netted against the demand for the same project in a single planning run.

Project Supply Chain Planning provides you with a visibility across the entire supply chain. You can use the same features to obtain project specific information from the Planner Workbench.

**Note:** The project control level for all project manufacturing organizations must be the same for all organizations in the supply chain project planning scenario.

### Group Netting

The netting logic can include a group of projects. Excess supply in one project can be reserved against demand for another project belonging to the same planning group. For this, set the reservation level to planning group. If reservation level is set to project then it is not group netting.

### Borrow Payback

Two order types have been created in Project Planning to distinguish demand and supply resulting from a borrow/payback transaction in Project Manufacturing:

- Payback Demand
- Payback Supply

You can search for borrow/payback demand/supply using these order types. You can also see these order types on the Planner Workbench.

### Planner Workbench

You can view payback demand created in the borrowing project and payback supply created in the lending project for an Item in the horizontal material plan and the Supply/Demand window in the Planner Workbench.

A scheduled payback transaction is considered as a new type of supply called payback supply for the lending project and a new type of demand called payback demand for the borrowing project. The scheduled payback date is used as the supply and demand date.

In the Preferences window, you can choose to display the payback demand and payback supply for the horizontal material plan.

The supply/demand picture can be viewed. No changes are allowed here, for example rescheduling or changing the quantity.

In the enterprise view, the payback supply is in a separate column. Payback demand is included in the other independent demand column. Payback supply is included in total supply. Payback demand is included in gross requirements. In addition, payback supply is included in current schedule receipts.

### Pegging

You can view the borrow and payback relationships in the pegging window.

Please see the *Oracle Project Manufacturing Implementation Manual* for more information on Borrow/Payback in Project MRP.

## Default Project for Supplies Pegged to Excess

Oracle Advanced Supply Chain Planning allows you to manage planned supplies pegged to excess inventory when re-planning in a project manufacturing environment. You can specify a valid project as a default project for all supplies pegged to excess by using the MSC: Default Project for Supplies Pegged to Excess profile option.

> **Note:** Oracle Advanced Supply Chain Planning assigns the default project for supplies pegged to excess only to hard pegged items.

#### To setup a default project

1. Define a project that is valid for all organizations that will be listed in the plan options. It will be used for assigning supplies that are pegged to excess. An existing project can also be used.

   See the *Oracle Projects Users Guide* for more information on defining projects.

2. Set the value of the profile option MSC : Default Project for Supplies Pegged to Excess to the project code defined in step 1.

   This profile can be setup at the Site, Application, Responsibility, or User Level

3. To setup at the User Level for the user that launches the plan, navigate to Edit > Preferences > Profiles

   The Personal Profile Values form appears.

4. Specify a default project code for the profile option MSC: Default Project for Supplies Pegged to Excess.

### Example

Consider an assembly item A with sub assembly item B, which uses component item C.

The quantity per assembly for components B and C is 1.

An order quantity of 1 is placed for item A against project P1.

The planning system generates a planned order demand of 1 for item B. The order multiplier for item B has been set to 4. This results in a planned order of 4 for item B.

The planning system generates a planned order demand of 4 as well as a planned order of 4 for item C. The system splits the planned order based on the project codes:

1 - Planned order quantity of 1 pegged to project P1.

2 - Planned order quantity of 3 pegged to excess (no project code).

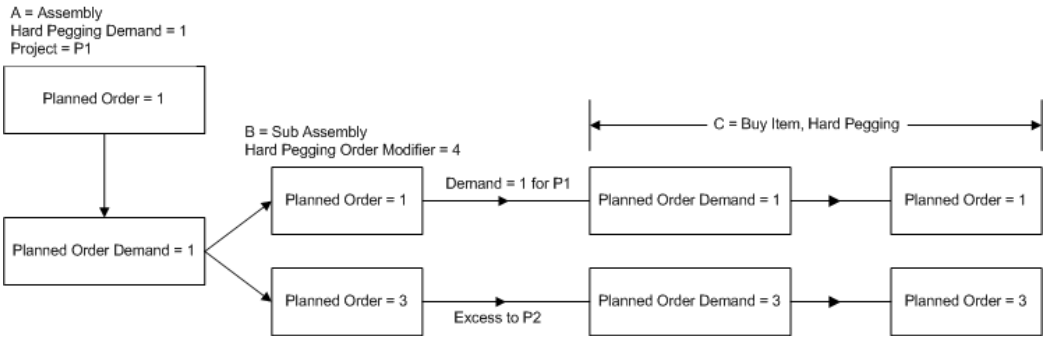
If the planned order for excess is released without a project code it will be rejected in purchasing (release fails, no purchase order will be created).

**Scenario 1:**

Project with demand = P1

Default project code = P2

***Scenario 1***




The planned orders are split into two parts:

- The planned order quantity of 1 is pegged to the project with demand, which is P1.
- The planned order quantity of 3 is pegged to excess with the default project code, which is P2.

Explanation:

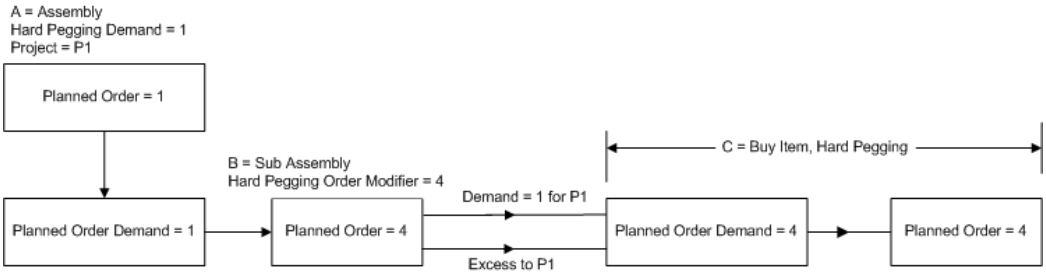
- The total supply order is 4 based on the order modifier. The supply is split into two planned orders because of the fact that some part of the supply is pegged to the project demand and some part of the supply is pegged to excess.
- In case of soft pegging, a planned order is not referenced to a project.

**Scenario 2:**

Project with demand = P1

Default Project = P1

***Scenario 2***




The planned orders are not split because the default project is the same as the project with demand.

## Model/Unit Effectivity (Serial Effectivity)

Oracle ASCP supports Model/Unit Effectivity.

### Items

Items can be set for effectivity control method. The full pegging attribute for the item must not be set to no pegging if the item is under model effectivity control. It must be set to soft pegging or hard pegging.

### Define MDS/MPS Entries by Unit Numbers

You can enter schedule entries by Model Unit Number. The unit number that you enter is validated against the master list of unit numbers that are eligible for that end item. If the item on the entry is a orderable subassembly, used in the bills of other end items, the entry can be associated with the unit numbers of its end item.

### Unit Numbers in Sales Orders

You can load sales orders into a MDS, and have the unit number specified against the sales order.

### Effectivity in the BOM

You can snapshot bills for items under unit effectivity in addition to those under date effectivity. The Engineering Changes Information snapshot as a part of the BOM can have the component effectivity specific to an end item unit number or a range of item unit numbers.

The snapshot tasks include end item unit number for different supply and demand entities used in the planner.

### Generating Planned Orders

You can net all supply for a End Item Unit number to the demand for the end item.

Oracle ASCP generates planned orders with Unit Number specified on them. Demand for components can be created with model/unit number effectivity in addition to components with date effectivity. Oracle ASCP does not generate suggested repetitive schedules with Unit Number specified on them.

#### Planner Workbench

You can view the unit numbers of all items under unit number effectivity in the demand, supply, items, end assemblies. In the Find window you can specify the unit numbers while viewing items, supply/demand or exceptions. You can enter unit number information for new planned orders and MDS entries in the Planner Workbench. However, you cannot modify existing unit numbers tied to planned orders/MDS records from the Planner Workbench.

#### Pegging

You can view the unit number information in the pegging views.

#### WIP Mass Load / PO Requisitions Interface

When you implement Planned Orders in the Planner Workbench, you can pass on the unit number information to WIP and PO.

#### Flow Line Scheduling

You can view the unit numbers of all unscheduled orders under unit number effectivity in the Line Scheduling Workbench Unscheduled Orders window (Oracle Flow Manufacturing Workbench). When you create new schedules based on an unscheduled order unit number effectivity, the resulting flow schedule contains the unit number reference.

You can create new flow schedules under unit number effectivity and view the numbers for existing schedules in the Line Scheduling Workbench Detail window. You can create and update flow schedules under unit number effectivity using the API.

## Project Specific Safety Stock

The planning engine plans safety stock within:

- Projects
- Planning groups

Use this feature if your business has supplies and demands segregated by ownership of inventory and if you operate in a projects/seiban or contracts environment.

The planning engine uses item attribute Reservation Level to determine netting and pegging behavior. If Reservation Level is:

- Project/Task: The planning engine follows non-project netting and pegging logic. See Safety Stock, page 4-129.

- Higher than Project/Task: The planning engine meets safety stock levels of the combined requirements at that Reservation Level. For example, if Reservation Level is Project, the planning engine sums the safety stock requirements from all of the tasks in each project and meets that safety stock level for the project.

You can see safety stock information with project/task references in the:

- Planner Workbench, Horizontal Plan window, Projects view; see Horizontal Plan, page 16-52: The safety stock numbers that display are for all of the projects in a period. For example, day 5 includes safety stock of 10 units for project P1 and 15 units for project P2; the safety stock row in the horizontal plan shows 25 units for the item.

- Pegging information; see Pegging Overview, page 16-83: For supplies, the pegging Properties window shows the project and task reference of the safety stock demand.

- Planner Workbench and Collections Workbench, Safety Stock window; see Safety Stock Window, page 16-128.

### Non-MRP planned Safety Stock

When you specify safety stock levels by project in Oracle Inventory, specify the project along with the effective date and stock level. If the project control level is project-task, specify any task in the project; the planning engine does not plan safety stock by task number.

If a large portion of your safety stock demands relate to one project, specify the project as the value for the profile option MSC: Safety stock project. The project value defaults in each safety stock level entry but you can override it.

You should generally specify safety stock levels on workdays. If you specify a safety stock level on a non-workday, the planning engine compares the safety stock level on the non-workday and the previous workday and sets the safety stock level of the previous workday to the greater of the levels. For example:

- You specify safety stock level on a workday as 10. You specify safety stock level on the next day, a non-workday as 11. The planning engine sets the workday safety stock level to 11 and the non-workday safety stock level to 0.

- You specify safety stock level on a workday as 13. You specify safety stock level on the next day, a non-workday as 10. The planning engine sets the workday safety stock level to 13 and the non-workday safety stock level to 0.

- You specify safety stock level on a workday as 0. You specify safety stock level on the next day, a non-workday as 12. The planning engine sets the workday safety stock level to 12 and the non-workday safety stock level to 0.

#### Examples

This table shows safety stock calculations for item A7 with projects P1 and P2. Plan

reservations is set to the project level and hard pegging level is set to the project level. Item pegging attribute is set to hard pegging.

The safety stock requirements are:

- Item: A7, Project/Seiban: P1, Quantity: 50, Effective date: <blank>
- Item: A7, Project/Seiban: P1, Quantity: 150, Effective date: 1 November

The on-hand balances are:

- P1: 10
- P2: 5

| Schedule Entity | 20 October | 30 October | 1 November | 1 December |
|---|---|---|---|---|
| Demand | 50 (P1) | 40 (P2) | 20 (P1) | 10 (P2) |
| Safety stock demand | 50 (P1) | - | 150 (P2) | - |
| Scheduled receipts | 25 (P2) | 5 (P1) | - | - |
| Planned orders | 85 (P1) | 10 (P2) | 20 (P1)<br>150 (P2) | 10 (P2) |
| Projected available balance | 50 (P1) | 50 (P1) | 50 (P1)<br>150 (P2) | 50 (P1)<br>150 (P2) |

This table shows safety stock calculations for item A7 with projects P1 and P2. Plan reservations is set to the planning group level and hard pegging level is set to the project level. Item pegging attribute is set to hard pegging. If you have supplies within a bucket for projects belonging to same planning group, the allocation of supply to demand is completely random across projects.

The safety stock requirements are:

- Item: A7, Project/Seiban: P1, Quantity: 50, Effective date: <blank>
- Item: A7, Project/Seiban: P1, Quantity: 150, Effective date: 1 November

The on-hand balances are:

- P1: 10
- P2: 5

| Schedule Entity | 20 October | 30 October | 1 November | 1 December |
|---|---|---|---|---|
| Demand | 50 (P1) | 40 (P2) | 20 (P1) | 10 (P2) |
| Safety stock demand | 50 (P1) | - | 150 (P2) | - |
| Scheduled receipts | 25 (P2) | 5 (P1) | - | - |
| Planned orders | 55 (P1) | 40 (P2) | 20 (P1)<br>150 (P2) | 10 (P2) |
| Projected available balance | 50 (P1) | 50 (P1) | 50 (P1)<br>150 (P2) | 50 (P1)<br>150 (P2) |

This table shows safety stock calculations for item A7 with projects P1 and P2. Plan reservations is set to the project-task level and hard pegging level is set to the project level. Item pegging attribute is set to hard pegging.

The safety stock requirements are:

- Item: A7, Project/Seiban: P1, Quantity: 50, Effective date: <blank>
- Item: A7, Project/Seiban: P1, Quantity: 150, Effective date: 1 November

The on-hand balances are:

- P1, T1: 10
- P2, T2: 5

| Schedule Entity | 20 October | 30 October | 1 November | 1 December |
|---|---|---|---|---|
| Demand | 50 (P1,T2) | 40 (P2,T1) | 20 (P1,T2) | 10 (P2, T1) |

| Schedule Entity | 20 October | 30 October | 1 November | 1 December |
|---|---|---|---|---|
| Safety stock demand | 50 (P1,T1) | - | 150 (P2,T2) | - |
| Scheduled receipts | 25 (P2,T1) | 5 (P1,T1) | - | - |
| Planned orders | 50 (P1,T2)<br>35 (P1,T1) | 15 (P2,T1) | 20 (P1,T2)<br>145 (P2,T2) | 10 (P2,T1) |
| Projected available balance | 50 (P1,T1) | 50 (P1,T1) | 50 (P1,T1)<br>150 (P2,T2) | 50 (P1,T1)<br>150 (P2,T2) |

This table shows safety stock calculations for item A7 with projects P1 and P2. Plan reservations is set to the project level and hard pegging level is set to the project level. Item pegging attribute is set to hard pegging.

The safety stock requirements are:

- Item: A7, Project/Seiban: P1, Quantity: 50, Effective date: <blank>
- Item: A7, Project/Seiban: P1, Quantity: 150, Effective date: 1 November

The on-hand balances are:

- P1: 10
- P2: 5

| Schedule Entity | 20 October | 30 October | 1 November | 1 December |
|---|---|---|---|---|
| Demand | 50 (P1) | 40 (P2) | 20 (P1) | 10 (P2) |
| Safety stock demand | 50 (P1) | - | 150 (P2) | - |
| Scheduled receipts | 25 (P2) | 5 (P1) | - | - |

| Schedule Entity | 20 October | 30 October | 1 November | 1 December |
|---|---|---|---|---|
| Planned orders | 85 | 10 | 170 | 10 |
| Projected available balance | 50 | 50 | 200 | 200 |

#### MRP planned Safety Stock

Specify the safety stock bucket days and the safety stock percent. The planning engine uses these parameters for the safety stock calculation for each project.

With planning group reservations, the planning engine uses the parameters for the safety stock calculation for the projects in each planning group.

With both planning group reservation level and projects reservation level, the associates each safety stock supply to the project and task of the last demand in the safety stock bucket days window. For example, safety stock bucket days is 3. When the planning engine is calculating safety stock for day 1, it includes the demands for days 1, 2, and 3 in the calculation. Supply suggestions created to satisfy safety stock demand for day 1 show the project and task identifiers of the last demand on day 3.

If you plan in either weekly or period buckets, specify a safety stock bucket days value that is long enough to reach to the end of week or period buckets since those demands are due at the end of the week or period.

#### Example

This table shows safety stock calculations for item A7 with projects P1 and P2. Plan reservations is set to the project level and hard pegging level is set to the project level. Item pegging attribute is set to hard pegging.

The safety stock parameters are:

- Safety stock bucket days: 4
- Safety stock percent: 10

The on-hand balances are:

- P1: 10
- P2: 5

The safety stock calculations for day 20 , project P1 is:

- Demands in the next four days (safety stock bucket days) for project P1: 70 (50 on day 20 + 20 on day 22)

- Average daily safety stock demand: 18 (70 / 4 = 17.5)
- Safety stock supply needed: 2 (18 * 0.1) = 1.8)

| Schedule Entity | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|
| Demand | 50 (P1) | 40 (P2) | 20 (P1) | 10 (P2) | 85 (P1)<br>10 (P2) | 40 (P1)<br>100 (P2) |
| Scheduled receipts | 25 (P2) | 5 (P1) | - | - | - | - |
| Planned orders | 37 (P1) | 1 (P1)<br>12 (P2) | 21 (P1) | 11 (P2) | 80 (P1)<br>10 (P2) | 40 (P1)<br>100 (P2) |
| Projected available balance | 2 (P1) | 3 (P1)<br>2 (P2) | 4 (P1)<br>2 (P2) | 4 (P1)<br>3 (P2) | 4 (P1)<br>3 (P2) | 4 (P1)<br>3 (P2) |

## Workflow Based Project Exception Messages

Along with the other Exception Messages, Project Planning provides the following project related exception messages that can help monitor project material plans. Like other exception messages, these exception messages are also workflow enabled for better supply chain coordination. The Project Manager or Task Manager (if defined) are also be notified of these plan exceptions.

- Items with Excess inventory in a project-task: This exception message enlists all items with excess inventory in a project or project-task. This exception occurs when the projected on-hand quantity of the item in a project or project-task exceeds zero or safety stock by more than the value you entered in Excess Quantity in the exception set for the item.
- Items with Shortage in a project-task: This exception message highlights the items whose demand exceeds supply for that project or project-task. For items with a shortage in a project-task, an exception message is generated when the projected on hand quantity for an item in a project is negative or below the safety stock.
- Items allocated across project-task: This exception message indicates items where supply for one project or project-task is used to satisfy demand for another project or project-task.

- Reschedule In
- Reschedule Out
- Cancellation

The planning engine always issues the reschedule and cancel exception messages but only issues the issues the excess, shortage, and cross-allocation exception messages when profile option MSC: Compute Project Exception is Yes.

## Project Planning Implementation Steps

The steps to set up, run and view a plan in a project environment are as follows.

### Oracle Project Manufacturing Setup

1. Define projects and tasks directly in Oracle Project Manufacturing, manually using Entry Project, or using the Project Manufacturing Seiban Number Wizard, or define Seiban numbers in Project Manufacturing using the Seiban Number Wizard.
2. Define planning group Quick Code.
3. Associate a project/Seiban to a planning group (in the project parameters form)

   Refer to the *Oracle Project Manufacturing User's Guide* for detailed setup instructions.

### Oracle Inventory Setup

Define item pegging attributes. The following item pegging attributes can be used:

- Soft pegging, or End Assembly/Soft Pegging: In this case excess project or common supply is available to satisfy project demand of any project irrespective of plan options chosen. Planned orders do not carry project and task references.
- Hard Pegging, or End Assembly/Hard Pegging: In this case excess supply in one project can be used for demand of a different project in the same planning group if reservation is set to planning group. Excess common supply is also available for project demand only if the reservation level is planning group. Planned orders carry project and task references as defined by the hard pegging level plan option.
- None: Disables project material allocation. Also, planned orders do not carry any project or task reference irrespective of the hard pegging level plan option.

Refer to *Oracle Inventory User's Guide* for detailed setup instructions.

### Oracle ASCP Setup

1. Define Plan Options. Either:

- Go directly from the Navigator, Supply Chain Plan > Options
- Access the Plan Names form, select a plan, and click Plan Options.

2. Complete the following options in the Pegging window.

| Option | Description |
|---|---|
| Reservation Level | This option determines the method of pre-allocation of project supply to project demand. You can choose to reserve based on:<br>• Planning Group<br>In this case the plan reserves project-specific supply at the planning group level. Excess supply in one project can be reserved against demand for another project belonging to the same planning group. Excess common supply is also allocated to project demand.<br>• Project<br>In this case, project specific supply is used for demand specific to that project only. This allows cross-allocation across tasks within the same project.<br>• Task<br>This reserves supply for a project-task against demand for the same project-task only. No cross-allocation of material belonging to the same project but different tasks is allowed.<br>• None<br>This is a nonproject plan. |

| Option | Description |
| --- | --- |
| Hard pegging level | This option determines if the project or project-task references will be added to planned orders. This is applicable to hard pegged items only for which the pegging attribute must be hard pegging or End Assembly / Hard Pegging. For soft pegged items, no project references are associated. These work independent of the reservation level options. |

3. Launch a plan.

   Refer to Defining Plans, page 3-1 for more information on defining plan options and launching plans.

   The planning engine does not perform project planning in Constrained (Without Detailed Scheduling) planning mode.

   When running targeted refresh for entity Trading partners, also collect entity Calendars. This ensures that the Oracle Project Manufacturing organizations are set up as organization type process so that the release process from Oracle Advanced Supply Chain Planning to Oracle Project Manufacturing succeeds.

## Project Planning Logic

Refer to the *Oracle Project Manufacturing Implementation Manual* for Project planning logic. Netting Logic with examples of hard pegging with common supply netting and the pegging logic is explained here.

**Note:** Order modifiers are applied before project netting calculations.

You cannot use end item substitution in project planning.

If you have demands without project references and you want their planned orders without project references, set all the items in their supply chains to use hard pegging.

### Project Validation

Oracle Advanced Supply Chain Planning verifies project and task information with Oracle Project Manufacturing when it operates on planned orders and scheduled receipts during:

- Release
- Run online planner

### Verification Checks

When it finds project information in a planning entity, it verifies the following:

- Project manufacturing is enabled in the inventory organization.
- The project in the planning entity is enabled in the inventory organization and has its own effective date range.
- The project in the planning entity is chargeable.
- The transaction dates in the planning entity are within the project effective date range.
- Whether you control the inventory organization at the task level.

When it finds task information in a planning entity, it verifies that you control the inventory organization at the task level.

When you control the inventory organization at the task level, it verifies the following:

- The transaction has a task reference.
- The task in the planning entity is enabled in the inventory organization and has its own effective date range.
- The task in the planning entity is chargeable.
- The transaction dates in the planning entity are within the task effective date range.

### Release Validation Situations

Oracle Advanced Supply Chain Planning performs the verification checks in the following cases during releases. It checks manual transactions in both Collections Workbench and Planner Workbench. If the project or project-task reference when you leave a transaction is the same as when you entered, there is no verification check:

- It encounters a project or project-task reference on a sales order.
- You change project or project-task reference on a master demand schedule entry in the source instance.
- It encounters a project reference for safety stock demand from profile option MSC: Safety Stock Project.
- You change project or project-task reference on a manual master demand schedule entry (Navigate to Supply/Demand window, change on Projects tabbed region).
- You change project or project-task reference on a supply, including the case where you firm the supply (Navigate to Supply/Demand window, change on Projects

tabbed region).

- You change project or project-task reference on a supply while releasing (Navigate to Supply/Demand window, Select Release, change on release Properties tabbed region).
- You use the select all for release (Navigate to Supply/Demand window, select Plan menu option, select Select All for Release)
- It encounters a project or project-task reference on a supply selected for auto-release.

#### Online Planner Validation Situations

Oracle Advanced Supply Chain Planning performs the verification checks in the following cases during online planner runs. It checks manual transactions in both Collections Workbench and Planner Workbench. If the project or project-task reference when you leave a transaction is the same as when you entered, there is no verification check:

- Project or project-task reference on a manual master demand schedule entry (Navigate to Supply/Demand window, change on Projects tabbed region).
- Project or project-task reference on a supply in either the Collection Workbench or in the Planner Workbench, including the case where you firm the supply (Navigate to Supply/Demand window, change on Projects tabbed region).

Oracle Advanced Supply Chain Planning does not perform the verification checks in the following cases during online planner runs. The release verification process performs them at that time:

- Project or project-task reference on a sales order.
- Change project or project-task reference on a master demand schedule entry in the source instance.
- Project reference for safety stock demand from the profile option MSC: Safety Stock Project.

#### Validation Errors

When the verification check process finds invalid conditions or data, it does the following:

- For many online operations on supplies and demands, the process displays an error window and asks you to correct the data before it continues. This occurs for manual master demand schedule entries, planned order and scheduled receipt entries in the Supply/Demand window, and planned order and scheduled receipt entries in the Release Properties tabbed region.

- For the select all for release and auto-release features, the process makes an entry in the Release Errors field. In select all for release, it does not select the row. In auto-release, it does not auto-release the supply.

If you receive errors, make sure that the following transaction items meet the criteria for the verification checks:

- Org
- Project
- Task
- Implement Project
- Implement Task
- Suggested Due Date
- New Date
- Implement Date

## Advanced Project Planning Logic

You control the planning process for hard-pegged items with these settings:

- Plan option Apply order modifiers
- Plan option Enable Pegging
- Plan option Reservation Level
- Plan option Hard Pegging Level
- Plan option Use Common supplies for project demands
- Profile option MSC: Minimize Project Cross Peg within Window

Common supplies are supplies with no project/task reference.

Common demands are demands with no project/task reference.

Borrow/payback transactions are transactions that relate to the lending and return of material between projects.

Choose the value of plan option Reservation Level from:

- Planning Group

- Project
- Project/Task
- None

Choose the value of plan option Hard Pegging Level from:

- Project
- Project/Task
- None

**Summary of Project Planning Logic**

Step 1: Pre-allocate common supplies to common demands, including common safety stock.

Step 2: Pre-allocate on hand and scheduled receipts to project demands based on Reservation Level.

- Include common supplies if you select plan option Use Common supplies for project demands.
- Minimize cross project and cross-task pegs if you set profile option MSC: Minimize Project Cross Peg within Window to Yes.
- Use ASCP priority pegging logic: Profile option MSC: Use FIFO Pegging set to No and plan option Peg Supplies by demand priority selected.

Step 3: Create planned orders based on Hard Pegging Level.

- Use excess created due to order modifiers before generating planned orders for the next member of the level, if you set plan option Apply Order Modifiers to At Reservation Level. For example, Reservation Level is Project and Hard Pegging Level is Project/Task. Net Project 1/Task 1. When you net Project 1/Task 2, first use excess from Project 1/Task1 netting due to order modifiers, then create planned orders.
- Allocate to safety stock based on Hard Pegging Level

Step 4: Net remaining, unallocated common demands to common supplies.

**Examples**

The grids for these scenarios indicate the sequence of decisions that the planning engine makes. The:

- Demands are in the columns
- Supplies are in the rows

- Pegging relationships are in the grid

In the grid, the numbers within [] indicate the order of pegging decisions. For example [1] means the first decision.

Common scenario 1:

- Reservation Level: Project/Task
- Hard Pegging Level: Project/Task
- Use Common Supplies for Project Demands: Selected

In this scenario, the planning engine makes these decisions in these steps:

- Step 1: [1]
- Step 2: [2], [3], [4], [5], [6], and [7]
- Step 3: [8] and [9]
- Step 4: None

| | | | | | Demands | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Common Demands | | | | Project 1 / Task 1 Demands | | | | | | |
| | | | | | D1 | D2 | D3 | D4 | D1 | D2 | D3 | D4 | D5 | | |
| | | | | | | 10 | | | 15 | 15 | 15 | 15 | 15 | | |
| | | | | | Supply Allocations to Demands | | | | | | | | | | |
| Project | Task | Order Type | Date | Qty | | | | | | | | | | | |
| Existing Supplies | | | | | | | | | | | | | | | |
| Common | | On Hand | D0 | 15 | | 10 [1] | | | | | 5 [6] | | | | |
| Common | | Firm WO | D3 | 10 | | | | | | | | 10 [7] | | | |
| P1 | T1 | On Hand | D0 | 20 | | | | | 15 [2] | 5 [3] | | | | | |
| P1 | T1 | Firm WO | D3 | 10 | | | | | | 10 [4] | | | | | |
| P1 | T1 | Non Firm WO | D2 | 10 | | | | | | | 10 [5] | | | | |
| Planned Orders | | | | | | | | | | | | | | | |
| P1 | T1 | Planned Order | D4 | 5 | | | | | | | | 5 [8] | | | |
| P1 | T1 | Planned Order | D5 | 15 | | | | | | | | | 15 [9] | | |

Common scenario 2:

- Reservation Level: Project
- Hard Pegging Level: Project/Task
- Use Common Supplies for Project Demands: Selected

In this scenario, the planning engine makes these decisions in these steps:

- Step 1: [1]
- Step 2: [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], and [13]

- Step 3: [14]
- Step 4: None

| | | | | | Demands | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Common Demands | | | | | Project 1 / Task 1 Demands | | | | | Project 1 / Task 2 Demands | | | | |
| | | | | | D1 | D2 | D3 | D4 | | D1 | D2 | D3 | D4 | D5 | D1 | D2 | D3 | D4 | D5 |
| | | | | | | 10 | | | | 15 | 15 | 15 | 15 | 30 | 15 | 15 | | | |
| | | | | | Supply Allocations to Demands | | | | | | | | | | | | | | |
| Project | Task | Order Type | Date | Qty | | | | | | | | | | | | | | | |
| Existing Supplies | | | | | | | | | | | | | | | | | | | |
| Common | | On Hand | D0 | 15 | | 10 [1] | | | | | | | | 5 [12] | | | | | |
| Common | | Firm WO | D3 | 10 | | | | | | | | | | 10 [13] | | | | | |
| P1 | T1 | On Hand | D0 | 20 | | | | | | 15 [2] | 5 [3] | | | | | | | | |
| P1 | T1 | Firm WO | D3 | 10 | | | | | | | 10 [4] | | | | | | | | |
| P1 | T1 | Non Firm WO | D2 | 10 | | | | | | | | 10 [5] | | | | | | | |
| P1 | T2 | On Hand | D0 | 10 | | | | | | | | | | | 10 [6] | | | | |
| P1 | T2 | Firm WO | D3 | 10 | | | | | | | | | | | 5 [7] | 5 [8] | | | |
| P1 | T2 | Non Firm WO | D2 | 30 | | | | | | | | 5 [10] | 15 [11] | | | 10 [9] | | | |
| Planned Orders | | | | | | | | | | | | | | | | | | | |
| P1 | T1 | Planned Order | D5 | 15 | | | | | | | | | | 15 [14] | | | | | |

Common scenario 3:

- Reservation Level: Project
- Hard Pegging Level: Project/Task
- Use Common Supplies for Project Demands: Selected
- Apply order modifiers: At Reservation Level

In this scenario, the planning engine makes these decisions in these steps:

- Step 1: [1]
- Step 2: [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], and [13]
- Step 3: [14], [15], [16], [17], and [18]
- Step 4: None

FIXED ORDER QTY = 25

| Demands | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Common Demands | | | | Project 1 / Task 1 Demands | | | | | Project 1 / Task 2 Demands | | | | | |
| D1 | D2 | D3 | D4 | D1 | D2 | D3 | D4 | D5 | D1 | D2 | D3 | D4 | D5 | |
| | 10 | | | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 20 | 15 | |

| Project | Task | Order Type | Date | Qty | Supply Allocations to Demands | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Existing Supplies | | | | | | | | | | | | | | | | | | | |
| Common | | On Hand | D0 | 15 | | 10 [1] | | | | | 5 [12] | | | | | | | | |
| Common | | Firm WO | D3 | 10 | | | | | | | | 10 [13] | | | | | | | |
| P1 | T1 | On Hand | D0 | 20 | | | | | 15 [2] | 5 [3] | | | | | | | | | |
| P1 | T1 | Firm WO | D3 | 10 | | | | | | 10 [4] | | | | | | | | | |
| P1 | T1 | Non Firm WO | D2 | 10 | | | | | | | 10 [5] | | | | | | | | |
| P1 | T2 | On Hand | D0 | 10 | | | | | | | | | | 10 [6] | | | | | |
| P1 | T2 | Firm WO | D3 | 10 | | | | | | | | | | 5 [7] | 5 [8] | | | | |
| P1 | T2 | Non Firm WO | D2 | 30 | | | | | | | | | | | 10 [9] | 15[10] | 5 [11] | | |
| Planned Orders | | | | | | | | | | | | | | | | | | | |
| P1 | T1 | Planned Order | D4 | 25 | | | | | | | | 5 [14] | 15 [15] | | | | 5 [16] | | |
| P1 | T2 | Planned Order | D4 | 25 | | | | | | | | | | | | | 10 [17] | 15 [18] | |

### Other Scenarios

Most other Reservation Level/Hard Pegging Level scenarios are similar to the three common scenarios.

Although uncommon, you can use scenarios where:

- Reservation Level is Planning Group, Project, or Project/Task
- Hard Pegging Level: None.

These processes create planned orders at the item level.

Oracle does not support these scenarios:

- Reservation Level is Project-Task and Hard Pegging Level is Project.
- Reservation Level is None and Hard Pegging Level is Project.
- Reservation Level is None and Hard Pegging Level is Project/Task.

### Planning for Safety Stock in a Projects Environment

The planning engine pegs safety stock at the same time that it pegs to real demands. It pegs:

- Common safety stock when it pegs to common demands
- Project safety stock when it pegs to project demands

For safety stock that is:

- Transient: The planning engine pegs onhand and scheduled receipts to real demands, then creates planned orders, then pegs the planned orders to real demands, then pegs supplies consumed by real demands after the supply due dates to transient safety stock.
- Non-transient: The planning engine pegs onhand and scheduled receipts first. It

does not use those pegged supplies to peg to real demands.

### Viewing the Plan

The plan can be viewed from the Planner Workbench. You can view planning information by project and implement manufacturing plans in the workbench by project.

Use the Supply, Demand or Supply/Demand window of the Planner Workbench to view information about the plan's supply and demand. Planning Group, Project Number and/or Task Number may be used as the search criteria.

You could also use customizable folders in the Supply, Demand or Supply/Demand screens to query planning information for a particular project or project-task.

The Horizontal Plan and Enterprise View windows enable you to view supply and demand information by Planning Group, Project, and Project-Task. You can also choose to see the planning status of all the material or only common material in these forms.

The Planner Workbench also generates Reschedule In, Reschedule Out and Cancel action messages for project supply. It follows the current Planning Time Fence and Acceptable Days Early logic to generate these messages.

## Oracle Flow Manufacturing

Oracle Flow Manufacturing is a demand driven production system with balanced production lines and processes designed to produce a constantly changing mix of products at a steady rate. Flow manufacturing uses schedules for mixed model production instead of work orders to drive production. The mixed model schedules are sequenced based on scheduling rules and material is replenished, or pulled through the sequence, using kanbans.

This is in contrast to a traditional discrete environment where the Master Production Schedule and MRP are used to explode requirements and create planned orders that are converted into purchase orders and work orders. There are some cases in which Oracle ASCP may be used effectively. For example - you have a seasonal business, and you use Oracle ASCP to create planned orders during your slow period to build up inventory to satisfy your peaks in demand. In these cases, planned orders may be converted into flow schedules.

When there is a hybrid of manufacturing methods, for example if a flow manufacturing system feeds to a discrete manufacturing plant, Oracle ASCP may be used effectively, because Oracle ASCP can consider a flow schedule as a supply.

You can define operations and resources for flow routings. In:

- Unconstrained plans, the planning engine makes a resource requirement for the flow line and resource requirements for each resource in the routing.

- Constrained plans, the planning engine makes a resource requirement for the flow line but not for resource requirements

## Supply Chain Synchronization

Oracle ASCP can improve supply-chain throughput and reduce inventories by improving synchronization of operations between facilities. In turn, Oracle Flow Manufacturing increases manufacturing plant throughput by dramatically decreasing manufacturing times and removing in-process and finished goods inventory.

## Support for Flow Schedules

If you specify line capacity, Oracle ASCP can constrain by that capacity to create plans. If demand is more than what can be manufactured, then Oracle ASCP creates a plan considering the constraints. These planned orders may be converted into flow schedules.

> **Note:** You need to run the Push Plan Information concurrent program to see planned orders as valid inputs for flow schedules.

Oracle ASCP includes flow schedules to be considered as supplies.

The processes to define, implement, and maintain Oracle Flow Manufacturing are:

- Demand Management
- Line Design & Balancing
- Line Scheduling & Sequencing
- Production Execution
- Product Families
- Release Flow Schedules

Planning plays an important part in the design phase of an Oracle Flow Manufacturing implementation.The derived demand of components is used to establish size requirements.

Generally the same forecast, MDS or MPS is used to design a mixed model production line and for Kanban planning. They are only used for planning purposes for line design and Kanban sizing.

Oracle Advanced Supply Chain Planning uses the snapshot of inventory for on-hand quantity and safety stock.

External to the enterprise, the forecasts are communicated with suppliers so that they may, in turn, plan their operations.

## Demand Management

Oracle Flow Manufacturing forecast tools, Master Demand Schedules, and Master Production Schedules with Oracle ASCP are used for managing demand. Similar products are grouped into families to allow for planning at an aggregate level. The creation of forecasts, MDS/MPS are used for line design and Kanban planning. If you are not building directly to customer demand, Oracle Flow Manufacturing can create schedules from the planned orders generated by the above tools.

The following planning capabilities need to be set up: Forecasting & Master Demand Schedules. Oracle Flow Manufacturing uses the Demand Management tools provided in Oracle MPS/MRP or Oracle ASCP to plan production volumes.

> **Note:** Demand Management, *Oracle Flow Manufacturing Implementation Manual*

## Line Design and Balancing

Line Design includes grouping products into product families, defining the processes, and events required to produce each product, and re-grouping events into line operations to approximate TAKT time (German for target cycle time). The statement of demand established in Demand Management, whether it is from a forecast, MDS, or MPS, is critical to the line design function. The demand sets the upper limit of production capacity and becomes the basis for balancing procedures.

For more details, see:

- Line Design and Balancing Procedures, Flow Manufacturing Line Balance, *Oracle Fkow Manufacturing User's Guide*
- Defining Flow Manufacturing Standard Processes, *Oracle Flow Manufacturing User's Guide*
- Defining Flow Manufacturing Standard Events, *Oracle Flow Manufacturing User's Guide*
- Defining Flow Manufacturing Standard Line Operations, *Oracle Flow Manufacturing User's Guide*

## Product Families

Flow uses product families to plan at an aggregate level. Oracle ASCP supports product family items. You can define different planning horizons for product families or item level. Resources can be planned at the product family level.

For more details, see Products and Parts Setup, *Oracle Flow Manufacturing Implementation Guide* and Assigning Product Family Members, *Oraclel Bills of Material*

*user's Guide*.

### Release Flow Schedules

The planning engine suggests flow schedules. You process them using sequence planning--an entirely different process than planned order release from Planner Workbench.

Sequence planning creates a flow that is timed to the minute and indicates which product follows which other product. You perform this in the Flow Manufacturing menu, Line Scheduling Workbench.

Theoretically correct flow manufacturers release sales orders rather than planned orders because they make against sales demand rather then a forecast-driven plan. In Line Schedule Workbench, you can pool orders to be scheduled from either the sales orders or the planned orders allows you to select either sales orders or planned orders.

Line Scheduling Workbench does not recognize the difference between planned orders that satisfy sales orders, forecasts, or dependent demand. Watch out for double counting in this case. Line Scheduling Workbench does not recognize the difference between planned orders that satisfy sales orders, forecasts, or dependent demand. Watch out for double counting in this case.

You typically schedule and load lines for the next few days, depending on the total product cycle time. Use the planning process to plan and to provide supplier schedules for the long-term and you Line Schedule workbench to schedule and load lines in the short-term.

If you schedule using a pool of planned orders:

- Use an MRP plan, not an MPS or an MPP plan
- Select Production
- After running the plan, push the planned orders to the transaction system

## Oracle Process Manufacturing

The Oracle Process Manufacturing (OPM) user is fully integrated with Oracle ASCP and can plan based on plan objectives and use the materials and resources optimally. There is no need to execute OPM P/MRP.

Oracle ASCP provides an integrated plan for multiple modes of process manufacturing including batch, continuous, and packaging operations. It incorporates a formula-based, process unique requirements including co-products, and scaling.

The data used to plan materials and capacity exists in the OPM schema, and is used by the Oracle ASCP Planning Server. Oracle ASCP uses Production, Formula, Planning, and Sales data from OPM, as well as Inventory and Purchasing data from Oracle Applications. The user can run multiple plans and manage materials and resources.

Once satisfied with the plan, it can be executed in the Production Module.

### License Capabilities

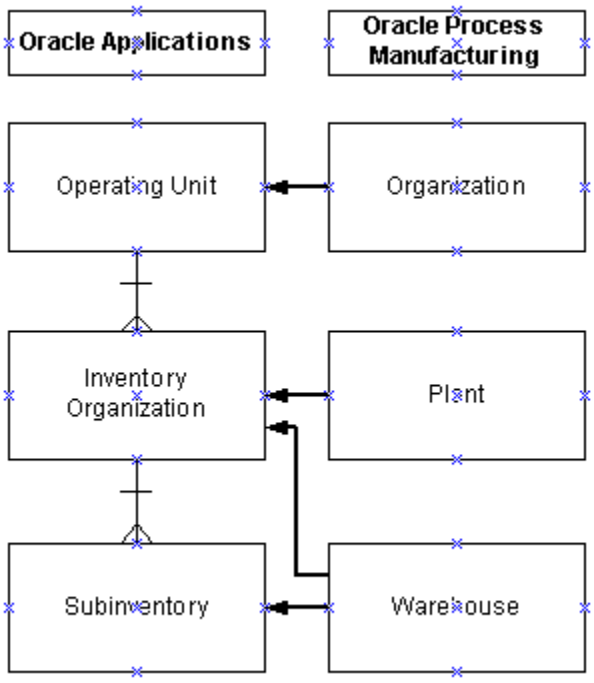
As of Oracle ASCP R12, ASCP unconstrained planning replaces OPM MRP. This table illustrates what you will received based on your upgrade path:

| Upgrade Path | Type of Customer | | |
|---|---|---|---|
| | OPM-MRP | OPM-ASCP | Non-OPM |
| Upgrade/Install R12 OPM (and not R12 ASCP) | Single-instance Multi-org ASCP | Multi-instance Multi-org ASCP | Single-instance Single-Org ASCP |
| Upgrade/Install R12 ASCP | Multi-instance Multi-org ASCP | | |

## Merged Organization Structure

The OPM structure merges with the Oracle Applications structure, as shown.

*OPM and Oracle Applications Structures*




OPM production batches and planning functions occur at the plant level. These are merged to production and planning data at the inventory organization level.

OPM demand is placed at the warehouse level and planning can occur at this level as well. These are merged to the inventory organization level.

OPM on-hand balances are stored at the warehouse or location level. Stock allocation and nettability takes place at the warehouse level. These are merged to the subinventory level of Oracle Applications.

The above data and transactions can also occur at the location level in OPM. The corresponding level in Oracle Applications is the locator level, but Oracle ASCP plans at the subinventory level. All OPM location data therefore must be merged into the warehouse and mapped at the subinventory level.

If you want to issue material to a batch from another inventory organization, use a transfer sourcing rule to move the material from the storing organization to the consuming organization.

## Differences Between Production in OPM and Oracle Applications

In Oracle Applications, at the Inventory Organization level, site locations are used for vendors and customers, and departments are used to control resources. In OPM, the

resources are defined at the plant level.

A work order (a WIP job, in Oracle Applications) is roughly equal to a production batch in OPM. Both work orders and production batches consume resources. In Oracle Applications, a work order (created at the inventory organization level) can only draw from resources available in the inventory organization for which the work order was created. In OPM, a batch may only access resources for the plant.

Plant warehouse effectivity in OPM allows a production batch to draw from materials available outside the plant (WIP Warehouse) in which the production batch was created. OPM also lets you specify the warehouses from which to pull inventory to complete a production batch. You can define multiple allocation parameters for an item. This allows you to allocate inventory from multiple warehouses.

In Oracle ASCP, the ingredients for a batch must come from a single warehouse. OPM works around this issue by using the work-in-process warehouse or the resource warehouse, if available, as the single source of ingredient inventory when the batch has multiple sources or destinations. The work-in-process warehouse or the resource warehouse shows Oracle ASCP from where to allocate inventory.

## Recommended OPM Organization Structure for Oracle ASCP

The following OPM organization structure is recommended in order for OPM data to smoothly merge with Oracle ASCP. Navigation paths are included:

- Each OPM production plant has only one associated warehouse called the Resource Warehouse. Production is assumed to take place in that warehouse. (For more information, see Organizations Field Reference in *Oracle Process Manufacturing System Administration User's Guide.* The navigation path to the screen in the OPM application is OPM > System Administration > Organizations > Resource Warehouse Field.)

- There can be only one warehouse per plant. (For more information, see Organizations Field Reference in *Oracle Process Manufacturing System Administration User's Guide.* The navigation path to the screen in the OPM application is OPM > System Administration > Organizations > Resource Warehouse Field.)

- Multiple production plants can draw raw material inventory from common warehouses to meet their production demand. (For more information, see Setting Up Plant Warehouse Relationships in *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide.* The navigation path to the screen in the OPM application is OPM > Planning > MPS > Setup > Plant Warehouse.)

- Multiple production plants can supply common warehouses (distribution center). (For more information, see Setting Up Plant Warehouse Relationships in *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide.* The navigation path to the screen in the OPM application is OPM > Planning > MPS > Setup > Plant Warehouse.)

- Each OPM warehouse must have a corresponding inventory organization in Oracle Applications. (For more information, see Organizations Field Reference in *Oracle Process Manufacturing System Administration User's Guide.* The navigation path to the screen in the OPM application is OPM > System Administration > Organizations > Resource Warehouse Field.)

- If multiple production plants use the same warehouse as their raw material inventory source, then the production for these plants should be planned together.

## Merging Effectivities, Formulas, and Routings

Oracle ASCP expects organization-specific formulas and routings.

Oracle ASCP includes the following OPM functionality:

- Effectivities

- Scaling

- One-level circular references

One-level circular references allow the definition of formulas that have a product or by-product listed as an ingredient in the same formula. For example, when making sourdough bread, you save a small portion of the dough to use as a starter for the next batch. Therefore, when defining a sourdough bread formula, the dough is a product, but it is also an ingredient.

## Creating a Resource Warehouse

In Oracle ASCP, capacity planning occurs at the inventory organization, department, or resource level. OPM needs to perform capacity planning at the plant level. To bridge this gap between OPM and Oracle ASCP, one warehouse is defined for each production plant that requires capacity planning. These warehouses are called Resource Warehouses. Oracle ASCP recognizes Resource Warehouses as production facilities that require capacity planning.

### To create a resource warehouse

Use the following navigation path in the OPM application:

1. OPM > Planning > MPS > Setup > Plant Warehouse. For more information, see Setting Up Plant Warehouse Relationships in *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide.*

2. OPM > System Administration > Organizations. For more information, see Organizations in *Oracle Process Manufacturing System Administration User's Guide.*

## Unit of Measure

You can define item units of measure in OPM that are four characters long, but the value will be truncated to three characters once the unit of measure is copied into Oracle Applications. You can automatically convert UOMs from OPM to Applications.

This also applies for OPM organizations where OPM allows four characters and Applications allows three characters.

For additional information, seeEditing Units of Measure, *Oracle Process Manufacturing System Administration User's Guide*. The navigation path to the screen in the OPM application is OPM > System Administration > Units of Measure).

## Setting Up and Using OPM Data

The OPM data that must be set up are:

- OPM organizations & warehouses
- OPM items, Unit of Measure, and conversions
- Effectivities, formulas and routings
- Resources
- MPS Schedules for Oracle ASCP
- Batches, FPOs, sales orders, forecasts, and on-hand inventory

For detailed instructions on setting up OPM data refer to the *Oracle Process Manufacturing User's Guide*.

Besides the points stated in the previous section, some of the other areas which link to Oracle ASCP are described below.

## OPM Organizations

If you plan to use the capacity planning function in Oracle ASCP, each OPM production plant must own one resource warehouse.

## Effectivity, Formulas, and Routings

### Effectivity

OPM uses global effectivities by organization, as opposed to effectivities for a specific plant or resource warehouse. An organization's effectivities then apply to all plants and warehouses associated with that organization.

The following effectivity functions can be used with Oracle ASCP: min and max

quantities, start and end effective dates, formula and routing assignments, and preferences.

(For additional information, please refer to Editing Recipe Validity Rules in the Oracle Process Manufacturing New Product Development User's Guide. The navigation path to the screen in the OPM application is OPM > Development > Formula Management > Effectivities.)

### Formulas

Oracle ASCP can accept one product per formula. If an OPM formula has multiple effectivities for a product or for co-products, a different formula is effectively viewed by Oracle ASCP. Oracle ASCP expects one product per bill of material (in our case, a formula) and this causes the co-products and by-products to be reported as components with negative quantities. Also, linear and fixed scaling is implementable.

(For additional information, please refer to Entering Formula Details in the Oracle Process Manufacturing New Product Development User's Guide. The navigation path to the screen in the OPM application is OPM > Development > Formula Management > Formulas.)

### Routings

The routing/formula combination must be unique. The routing quantity uses the base UOM of the effectivities product. An OPM step is equivalent to an Operation. An OPM activity is equivalent to an Operation Resource Sequence. A routing resource is equivalent to an Operation Resource.

With OPM CRP, you have the option of using alternate resources. Resources are assigned a Plan Type indicating primary (1), auxiliary (2), or secondary (0) on the Operations form. In Oracle ASCP, only the primary and auxiliary resources are used. Secondary resources are ignored.

Oracle ASCP uses resource count and usage quantity information. You record resource count and usage quantity information in the Operations form. For example, if two identical blenders are used for mixing, enter 2 in the Count field. If the resource can mix 200 gallons per hour, enter 200 in the Process Quantity field and 1 in the Usage Quantity field.

Oracle ASCP enables you to use more than one resource at the same time during an operation, but you can not complete more than one operation in a routing at the same time. Oracle ASCP enables you to overlap an operation with another operation, but this restricts OPM's functionality of allowing concurrent operations and multiple dependent operations. Concurrent operations are not allowed with Oracle ASCP.

(For additional information, please refer to Understanding Routings in the Oracle Process Manufacturing New Product Development User's Guide. The navigation path to the screen in the OPM application is OPM > Development > Formula Management > Routings.)

## Complex Routings

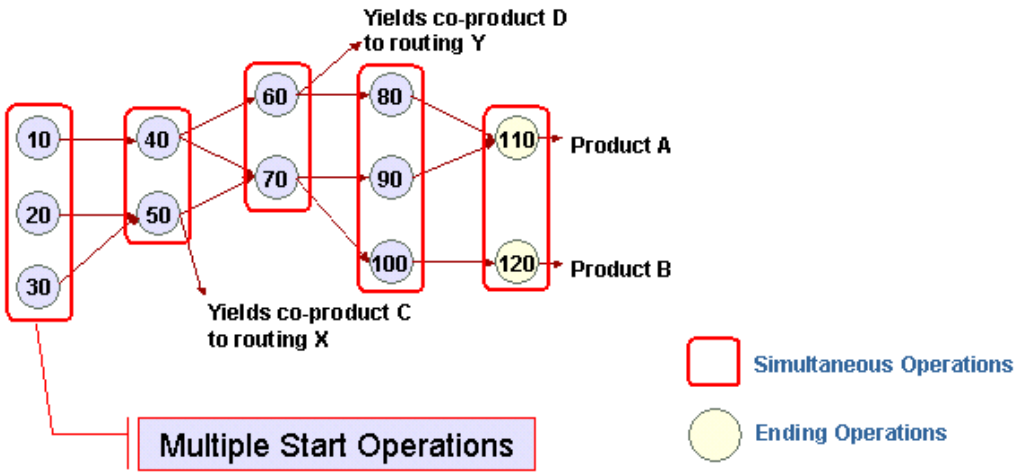
In process manufacturing, production is often based on complex routings that consist of simultaneous operations, multiple operations yielding multiple co-products, and multiple operations terminating with the production of main products. A complex routing has these characteristics:

- Multiple start operations
- Multiple end operations
- Parallel operations
- Different types of temporal dependencies between related operations.
- Ingredients consumed and products yielded by multiple operations.

### Example: Complex Routing

An example of a complex routing is the tasks of baking a cake. The dry ingredients: flour and baking powder are sifted together. The moist ingredients: water, eggs, butter, and flavorings are mixed together. The output from both operations is added together gradually to make the batter. Both the dry and the moist operations should be performed during the same time frame, and then slowly added together. If the operation of sifting the dry ingredients waited until the completion of the moist operation, the dry ingredients might begin to cake together. And, if the moist operation waited for the completion of the dry to be sifted, the moist ingredients could begin to separate.

This diagram illustrates a complex routing with multiple starting operations, simultaneous operations, multiple ending operations, and multiple products:




When scheduling routing operations, the Oracle Advanced Supply Chain Planning scheduling process takes into account operation dependencies that are defined in Oracle

Process Manufacturing. In forward scheduling phases, operations are scheduled based on their dependencies on preceding operations. In backward scheduling phases, operations are scheduled based on succeeding operations.

Operation dependency constraints are applied to the activities of upstream and downstream operations with two dependency types:

- **Start-to-Start** dependency type, which is applied to the first scheduled activity of the upstream operation and the first scheduled activity of the downstream operation.

- **Finish-to-Start** dependency type, which is applied to the last scheduled activity of the upstream operation and the first scheduled activity of the downstream operation.

Step dependencies are defined as:

- Finish-to-start with no offset, to indicate that a process step begins immediately after the completion of its preceding step. For example, a consecutive addition of ingredients is required without interruption.

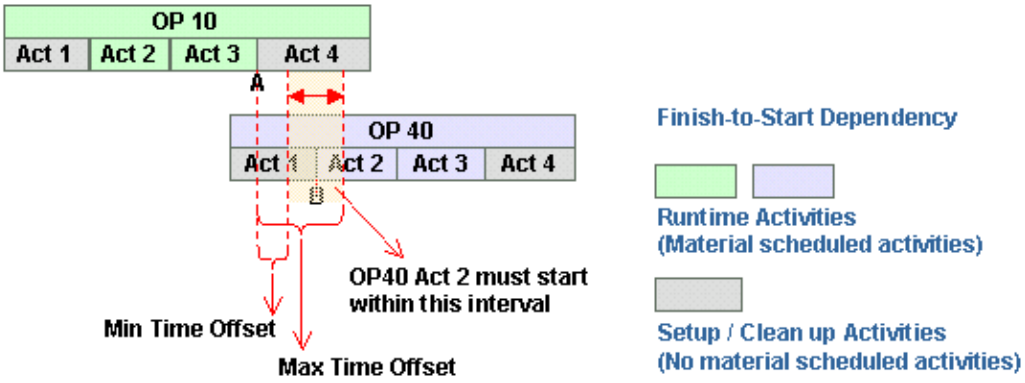
- Finish-to-start with positive offset, to indicate that a process step begins at a specified period of time after the completion of its preceding step. For example, time is required to rest material before the addition of another ingredient.

- Finish-to-start with negative offset, to indicate that a process step begins at a specified period of time before the completion of its preceding step. For example, a production device needs to be activated before the addition of the next ingredient.

- Start-to-start with no offset, to indicate that a process step begins at the same time as the step it depends on. For example, there is a need for the simultaneous addition of ingredients without interruption.

- start-to-start with positive offset, to indicate that a process step begins at a specified time after the start of its preceding step. This is similar to finish-to-start with negative offset, buy by specifying that the dependency is start-to-start, you can ensure the positive offset is maintained if the previous dependent step finishes early.

This diagram illustrates a finish-to-start dependency for operations 10 and 40 of the diagram above:




#### Setting Up Complex Routings

The primary setup steps are:

1. Define complex routings, step dependencies, and time offsets.
2. Define inter-routing minimum time quantity (MTQ) and time offsets.
3. Define other data elements required for ASCP plans such as items, formulas, routings, recipes, validity rules, and sourcing rules.

#### To define complex routings

1. Select the Oracle Process Manufacturing responsibility.
2. Navigate to Process Engineer > Routings.
3. In the Process Routings Details window, select a routing step and click Step Dependencies.
4. In the Routing Step Dependencies window, specify these fields:
   - Dependency Type: Finish-to-Start or Start-to-Start.
   - Standard Delay. This value represents the minimum time offset between operations.
   - Max Delay. this value represents the maximum time offset between operations.
   - Transfer Percent. This value represents the percentage of material that flows from an upstream to each of its downstream operations.
   - Apply Per Charge. Select this option to indicate that the operation step dependency and time offsets apply to charges in the operations.

#### To define inter-routing minimum transfer quantity and time offsets

1. Select the Oracle Process Manufacturing responsibility.

2. Navigate to Process Engineer > Recipes.

3. From the Recipe Details window, select the Step/Material Association button.

4. On the Step/Material Association window, enter a value in the Minimum Transfer Quantity, Minimum Delay, and Maximum Delay fields.

   - The minimum transfer quantity (MTQ) represents the operation at the downstream routing that consumes product A and produces product X. It can start after the production of MTQ of product A and the appropriate application of minimum and maximum time offsets.

   - The Minimum and Maximum Delay fields represent the minimum and maximum time offsets between routings.

#### Processing Complex Routings

To process complex routings:

1. Run the ASCP plan.

2. Analyze the ASCP output.

   - Verify that the start and end times of each operation within the complex routing is as per the prescribed step dependencies.

   - Verify the timing of inflows and outflows of material from the routing.

   You can verify this information by using the Network Routing window or the Co-products window in the planner workbench.

3. Release planned orders to OPM.

4. Run OPM Batch.

ASCP released planned orders are converted to OPM batches:

- Automatically by setting the GMP: Auto Implement APS Suggestions profile option to **Yes** in the Personal Profile Values window.

- Manually through the ASCP New Batch window.

#### To view step dependencies and time offsets

1. Select the Advanced Supply Chain Planner responsibility.

2. Navigate to Supply Chain Plan > Workbench.

3. Right-click on a plan and choose Items > Items from the menu.

4. In the Items window, select an item and click Routing Operations.

5. In the Routing Operations window, click: Network Routing.
   - Network Routing, which displays dependency types and offsets within the complex routing.
   - Co-Product, which displays MTQ and time offsets for products yielding from the routing.

## Contiguous Operations

In process manufacturing, the slack time between operations can be critical to the process. For example:

- , in an injection molding process, dry materials are grounded and then mixed in the proper proportion. In the next step they are mixed and heated with a liquid catalyst in a vat. When the material has reached the proper temperature, it has five minutes to be injected into molds. If the injection process is not finished in five minutes (maximum delay), the mixture starts to harden. In 15 minutes the mixture hardens to the point that the vat needs to be removed and cleaned with chisels. This can happen if the molding station is not available when the mixture is ready. This is the maximum delay or maximum time offset.
- In a process, the catalyst is mixed in with the inert materials and there needs to be at least 15 minutes before the mixture can be passed to the next operation. This is the minimum delay or minimum time offset
- In many processes, the materials used (raw or intermediate) have specific shelf life and they need to be consumed before they are expired. This is specially a major issue for food manufacturers working with perishable materials

. These can become a costly problems if:

- Materials are wasted
- Machines are idle or have to be taken down for maintenance
- Customer orders are late
- Customer orders are lost

In order to support planning according to common practices of contiguous processing from raw materials to finished products, Oracle Advanced Supply Chain Planning can enforce minimum and maximum time offsets (slack time constraints)

- Between operations within the same routing
- Across routings

- Across operations in different routings across organizations

This enforcing action respects:

- Wait time constraints for material going from one operation to the next
- Minimum and maximum slack time allowed between operations
- Item shelf life constraints

**Contiguous Processing Within a Routing**

Within a routing, you model the time-offset constraint between the:

- Finish of the first operation and the start of the second operation
- Start of the first operation and the start of the second operation

**Contiguous Processing Between Routings and Organizations**

Across routings and across organizations, you model minimum and maximum time offsets between the last scheduled activity of the upstream operation (feeding routing) and the first scheduled activity of the downstream operation (consuming routing).

**Minimum and Maximum Time Values**

You can specify minimum and maximum time offsets between operations for each dependency type.

This table illustrates the minimum and maximum time values for the finish-to-start dependency type:

***Finish-to-Start Dependency Type***

| Minimum and Maximum Time Values | Description |
|---|---|
| 0 | The downstream operation begins immediately after the preceding operation ends. This time offset might be used if a consecutive addition of ingredients is required without interruption. |

| Minimum and Maximum Time Values | Description |
| --- | --- |
| >0 | The downstream operation begins within a specified period of time after the completion of its preceding step. If both minimum and maximum time values are positive, then the downstream starts after the minimum time value, and before the maximum time value.<br><br>This time offset might be used if the material must rest, but another ingredient needs to be added before it gets too hard. |
| <0 | The downstream operation begins at the specified period of time before the completion of its preceding step.<br><br>**Note:** Offsets are between material scheduled activities of the upstream and downstream operations. For example, the upstream operation runtime activity and the downstream operation runtime activity.<br><br>This time offset might be used if a production device must be activated before the next ingredient is added. For example, the downstream runtime activity starts with an ingredient, and later in the process receives material from the upstream activity. |

This table illustrates the minimum and maximum time values for the start-to-start dependency type:

*Start-to-Start Dependency Type*

| Minimum and Maximum Time Values | Description |
|---|---|
| 0 | The downstream operation begins at the same time as the step it depends on. The first material scheduled activity of the downstream operation will receive the material from the last material scheduled of the upstream operation at some point during its process.<br><br>This time offset might be used if ingredients must be added at the same time without interruption. |
| >0 | The downstream operation begins at a specified time after the start of the preceding step. If both minimum and maximum time values are positive, then the downstream operation starts after the minimum time value, and before the maximum time value. |

### Hard Link Constraints

If the upstream operation has a Minimum Transfer Quantity (MTQ) specified, the offsets are calculated from the point in time when the upstream operation has finished processing this transfer quantity. These are called hard link constraints.

Hard link constraints are applied to upstream and downstream operation activities with the following criteria:

- The minimum transfer quantity specified at the upstream operation is applied between the last scheduled activity of the upstream operation and the first scheduled activity of the downstream operation.
- In case of supply split or a demand split, minimum transfer quantity and offsets is applied to supply segments of the last scheduled activity of the upstream operation and demand segments of the first scheduled activity of the downstream operation.
- All scheduled activities of the upstream operation are overlapped based on the minimum transfer quantity
- Any activity that is not scheduled is not overlapped with the preceding and following activities.
- Use profile option MSO: Overlap Activities by MTQ to prevent overlapping activities inside one operation.

To track hard link between batches, use the Enforce Step Dependency flag. The Oracle Process Manufacturing planner can modify the Planned Start Date or Planned Quantity of Oracle Process Manufacturing batches without violating step dependency or hard link constraints. If this flag is not turned on, modifying batches can result in violating step dependency or hard link constraints. The Enforce Step Dependency flag can be set in the Oracle Process Manufacturing Routing Details window or Batch window.

If there are no minimum and maximum time offsets, Oracle Advanced Supply Chain Planning uses the item shelf life at the upstream routing as the maximum time offset to model the hard link constraints. The minimum time offset is zero. All constraints mentioned in this section are valid with respect to these minimum and maximum time offset values. No hard link constraints are modeled if the shelf life is also Null.

The shelf life is used as the maximum time offset if profile option MSO: Use Item Shelf Life Days in Scheduling Buy or Make Orders is Yes. .For more information on setting the shelf life for an item, see MPS/MRP Planning Attribute Group, *Oracle Inventory User's Guide*

The planning engine calculates a minimum start date and time and a maximum start date and time for the downstream operations with hard links to completed upstream operations. These are based on the collected information of the completed upstream operations for a given supply

The collections process collects the:

- Actual Start Date/Time and Actual End Date/Time of the last value added activities of the completed upstream operations (material schedule flag for the activity is ON) with hard links to downstream operations in WIP or Pending status (not completed). The completed operations always have values for the Actual Start Date/Time and Actual End Date/Time fields.

- Dependency Type, Standard Delay, and Max Delay of the completed upstream operations with hard links to downstream operations.

**Transfers**

You can model the inter-organizations transfers as:

- Continuous transfer: The downstream process receives material in lot sizes of 1 from the upstream process. The transfer starts on or after the completion of the minimum transfer quantity at the upstream process

- Non-continuous transfer: The downstream process receives material in discrete increments (typically more than 1 at a time) from the upstream process.

**Setting Up Contiguous Operations**

Set these profile options:

- MSO: Enable Hard Links Globally

- MSC: Enforce Hard Links
- MSO: Use Item Shelf Life Days in Scheduling Buy or Make Orders
- MSO: Continuous transfer across organizations
- MSO: Upper Limit for Maximum Time Offset for Hard Links
- MSO: Transfer Quantity Threshold for Enforcing Hard Links
- MSO: Hard link scheduling window
- MSO: Maximum number of pulls/push for hard linked operations
- MSO: Hard link scheduling window expansion factor
- MSO: Overlap Activities by MTQ

Define inter-routing material transfer quantity and time offsets. In the Step/Material Association window, specify:

- Minimum transfer quantity: The operation at the downstream routing can start after the production of the minimum transfer quantity at the upstream routing with respect to minimum and maximum time offsets.
- Minimum and maximum time offsets: These represent the minimum and maximum time offsets between routings on top of minimum transfer quantity.

For the modeling to take place, the planning engine must have access to this information from Oracle Process Manufacturing:

- Standard Delay (Intra routing minimum time offset)
- Max Delay (Intra routing maximum time offset)
- Minimum Time Offset (Inter routing)
- Maximum Time Offset (Inter routing)
- Dependency Type
- Minimum Transfer Quantity
- Transfer Percent. This field represents the material transfer percentage from one operation to another. This field is in the Routing Step Dependencies form.
- Material quantity yielded from a step: This value is calculated based on the Step - Quantity field in the Step / Material Association form. The yield is subtracted from the step quantity and the transfer percentage is applied to the remainder. Co-

products and byproducts are not included in the material transferred from a step, and are not part of this calculation.

- Actual Start Date/Time and Actual End Date/Time: Of the last value-added activities of the completed upstream operations (material schedule flag for the activity is selected) with hard links to downstream operations. These fields are in the Batch Steps form.

- Dependency Type, Standard Delay, and Max Delay: Of the completed upstream operations with hard links to downstream operations. These fields are in the Routing Step Dependencies form.

- Breakable: This field indicates whether an activity can be broken and scheduled at each side of a break. This field is in the Operation Details, Activities form.

**Analyzing Contiguous Operations**

View material transfer quantity and time offsets in Planner Workbench, Items, Co-Products window.

View and analyze time offsets by order in Planner Workbench Gantt Chart, Orders window

Note these exception messages:

- Item Exceptions exception group, Operation hard link violation: Navigate to the Supply/Demand and the Resource Requirements windows to identify causes and possible solutions

- Supply Problems for Late Sales Orders and Forecasts exception group, Requirement causes resource overload: One of the causes for this exception is the Operation Hard Link Constraint displayed in the Cause field in the Exception Details window. Rescheduling operations and/or adding capacity to resources can eliminate the resource overload problem.

- Item Exceptions Exception Group, End item supply shelf life violation: The planning engine issues this exception message if the remaining shelf life of a product will be smaller than the minimum remaining shelf life when it arrives at the customer site.

## Resources

When you complete the Resource Information form, you define a relationship between a plant and the resource. Because Oracle ASCP acknowledges the plant via the resource warehouse associated with the plant, Oracle ASCP views the resource as having a relationship with a resource warehouse instead of with a plant. Because a resource warehouse is mapped to a department in an inventory organization in Oracle Applications, the resource is essentially mapped to a department in an inventory organization via the plant resource form.

You can use Oracle ASCP to develop capacity plans for your resources. The resource warehouse for the plant indicates to Oracle ASCP the need to perform capacity planning. The Oracle ASCP capacity planning function assumes that all resource capacity is measured in hours. The Assigned Quantity field (the navigation path to this screen in the OPM application is OPM > Planning > Capacity Planning > Setup > Plant Resources) indicates the number/quantity of the resource used in the specified plant for which you are defining production costs and usage availability. The number you enter depends on how broad a resource categorization you are defining. For example, if you defined the resource as Blender 1 (a specific machine) you would enter 1. If you use three blenders in the production line, and you defined the resource as Blenders (rather than defining each individual machine) enter 3.

The cost of using a resource for one unit of measure (for example, the cost of running a mixer for one hour) that you define in OPM Cost Management is also used by Oracle ASCP, but this cost must be recorded in the nominal cost value for the resource. Oracle ASCP assumes the unit of measure for all resources is an hour.

To set capacity planning, from the Navigator, choose Capacity Planning > Setup > Resources.

### Scheduling Resource Charges

In process manufacturing , the resource used in an operation determines the capacity of the operation. When the resource capacity is less than the required amount, the resource must run repeatedly with smaller amounts to complete the required batch. These iterations are called "charges". Oracle Advanced Supply Chain Planning can plan multiple charges to complete required batch quantities.

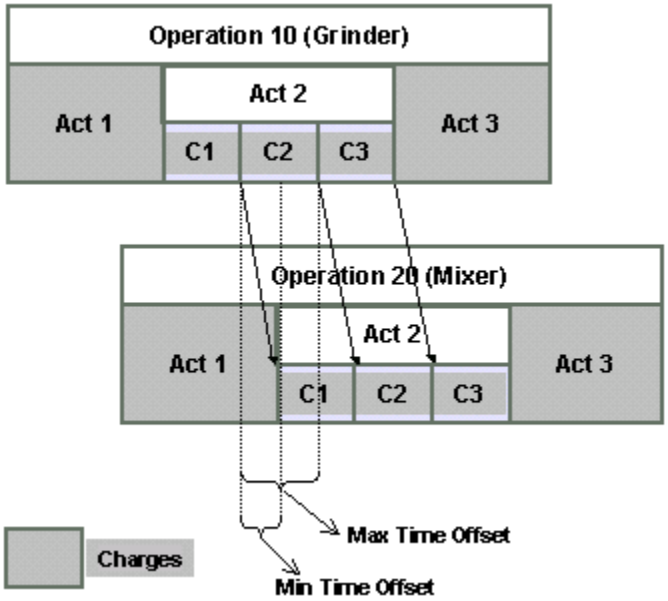
To determine the number of charges required for a batch, Oracle Advanced Supply Chain Planning divides the batch quantity by the maximum resource capacity and rounds up to the nearest integer. For example, if a resource has a maximum capacity of 1000 gallons, and a batch requires 4500 gallons, the operation must run five times to complete the required amount (4500/1000=4.5; rounds up to 5).

Although the last charge for completing a batch might be for a smaller quantity than the resource can handle, the amount of time that the operation runs is fixed. For example, if a mixer is only half full, it still requires the full operation time to complete the operation.

When a charge does not reach maximum capacity for an operation, Oracle Advanced Supply Chain Planning does not combine charges from different orders. A batch or work order that requires less than the maximum capacity of a resource is not processed with a charge for a different order.

Oracle Advanced Supply Chain Planning schedules charges as continuous processes; a single charge cannot split across manufacturing calendar breaks or gaps.

*Scheduling Resource Charges*




Oracle Advanced Supply Chain Planning does not schedule gaps between charges for a batch unless this scheduling is necessary for filling a firm order. For example, if a batch requires 5 day-long charges on a resource and the resource is unavailable on Saturdays and Sundays, the system tries to schedule the charges on consecutive days without a break over the weekend. However, if the resource is unavailable for Monday and Tuesday in a week and the item is required to fill a firm order on the following Wednesday, Oracle Advanced Supply Chain Planning schedules the charges for Wednesday, Thursday, and Friday of Week 1 and Monday and Tuesday of Week 2.

Oracle Advanced Supply Chain Planning can recommend feeding material incrementally to charges. If an item base or chargeable activity feeds a chargeable activity, the planning engine splits the activity into as many segments as the number of consuming charges. This ensures that a charge can run as soon as sufficient material is available, rather than waiting for material for all charges in the activity. If the feeding activity is not proportionately scaled (scale type of fixed), it cannot feed charges incrementally.

Similarly, if a chargeable activity feeds an item base or chargeable resource activity, the planning engine splits the consuming activity into as many segments as the number of feeding charges. The consuming activity then can begin before all feeding activity charges are complete. If the consuming activity is not proportionally scaled, it cannot be fed incrementally.

Oracle Advanced Supply Chain Planning can apply minimum and maximum time offsets between operations in a routing to the operation's charges.

When you release planned orders from Oracle Advanced Supply Chain Planning, Oracle Process Manufacturing imports the charge quantity and the start date and the

end date of charges as well as all operation resources. You cannot change any of this information. An OPM planner can execute a batch step as a whole and not its individual charges. Users can view charge information in the Resource Charges window, which is accessible from the Tools > OPM Batch Steps form.

You can set up data required for scheduling charges in Oracle Process Manufacturing. You can then run collections to populate the data in Oracle Advanced Supply Chain Planning, and enable charges scheduling.

### Setting Up Resource Charge Scheduling

To setup resource charge scheduling:

- Set up resources for scheduling charges.
- Specify chargeable activities.
- Enable charges scheduling.

#### Setting Up Resources for Scheduling Charges

In Oracle Process Manufacturing (OPM), for each resource for which you want to schedule charges, you must define the resource as chargeable and specify the maximum capacity of the resource.

You can set up chargeable resources for all organizations or for a particular organization. If you define a chargeable resource for all organizations, the resource is chargeable in any organization where you create it. For example, if you define a chargeable resource called "Mixer" for all organizations and then create a "Mixer" resource in a particular organization, the organization-specific mixer is automatically defined as chargeable.

**To set up a chargeable resource for all organizations**

1. Select the Oracle Process Management responsibility.
2. Navigate to Process Engineer > Setup > Generic Resources.
3. In the Resources window, create or find a resource for which you want to schedule charges.
4. Select the Calculate Charges option.
5. Enter the maximum resource capacity in the Maximum field.

**To set up a chargeable resource for a specific organization**

1. Select the Oracle Process Management responsibility.
2. Navigate to Process Engineer > Setup > Plant Resources.
3. In the Resource Information window, create of find the resource for which you want to schedule charges.

4. Select the Calculate Charges option.

5. Enter the maximum resource capacity in the Capacity Range field.

#### To specify chargeable activities

1. Select the Oracle Process Management responsibility.

2. Navigate to process Engineer > Process Operations.

3. In the Process Operation Details: Activities window, select an activity.

4. Click the Resources button.

5. In the Process Operation activity page, on the Scheduling Information tab, specify the Scale Type of By Charge for each chargeable resource.

#### To enable charges scheduling

To schedule resource charges in Oracle Advanced Supply Chain Planning, you must set the MSO: Global Chargeable Flag to Yes. If this flag is set to No, charges are not scheduled and resource loads are not influenced by charges. The default value is No. For more information, see MSO Profile Options, page A-84

### Viewing Resource Charge Information

In Oracle Advanced Supply Chain Planning, you can:

- View whether resources are chargeable. This information is specified in Oracle Process Manufacturing and collected into Oracle Advanced Supply Chain Planning.

- View charges for a resource activity.

- View planned activity charges in the Gantt chart. You can view charges for planned orders and existing batches in the ASCP Gantt Chart Orders view and Resource - Activities view. For more information, see Interactive Scheduling using the Gantt Chart, page 16-161

- View exceptions related to charges. Oracle ASCP generates two new exceptions in the Material and resource capacity exception group with respect to chargeable resources.

  - Resource charge was started with less than minimum capacity.

  - Resource charge was started with more than maximum capacity. For more information about exception messages, see Supply Chain Planning Exception Messages, page 15-1

#### To view whether resources are chargeable

1. Select the Advanced Supply Chain Planner responsibility.

2. Navigate to Supply Chain Plan > Workbench.

3. In the Navigator, right-click a plan and choose Resources > Resources.

   In the Resources window, the Chargeable option is selected for chargeable resources.

**To view charges for a resource activity**

You can view charges information for planned orders and existing batches in the Planner Workbench.

1. Select the Advanced Supply Chain Planning responsibility.

2. Navigate to Supply Chain Plan > Workbench.

3. In the Navigator, right-click a plan and choose Resources > Resources.

4. In the Resources window, click the Requirements button.

5. In the Resource Requirements window, click Charges.

   The Charges window shows the planned charge dates and quantities.

## MPS Schedule

### Integrating MPS Schedule Parameters With Oracle ASCP

When you define your master production schedule (MPS) parameters, you indicate which plants are included in a schedule and select the criteria for including different sources of inventory supply and demand. The MPS schedule parameters serve the same purpose in Oracle ASCP and are used to create the Oracle ASCP master demand schedule. The Oracle ASCP master demand schedule includes all plants linked to the MPS schedule in the MPS Schedule Parameters form detail (the navigation path to this screen in the OPM application is OPM > Planning > MPS > Setup > Scheduler).

For more information, see Defining an MPS Schedule in *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide*.

The MPS schedule must have a unique, five character name. The Oracle ASCP master demand schedule name consists of the MPS schedule name and the warehouse name. For example, a MPS schedule named SCHD1 for resource warehouse RSW1 would result in a master demand schedule named SCHD1/RSW1.

The Make to Stock field on the MPS Schedule Parameters form enables you to choose whether or not to include forecasts as a source of demand. The Make to Order field allows you to choose whether or not to include sales orders as a source of demand. The Plant Warehouses form defines the items and warehouses from which to pull the demand for each plant linked to the MPS schedule.

### Integrating Forecasts With Oracle ASCP

The setup steps necessary to use forecast consumption for Oracle ASCP are the same setup steps you must complete when using forecast consumption in OPM.

#### To use forecast consumption

1. Create Forecast by using the following navigation path in the OPM application: OPM > Planning > Forecasting > Forecast. For more information, see Forecasting in *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide*.

2. Associate forecast with Schedule by using the following navigation path in the OPM application: OPM > Planning > Forecast > Schedule Association. For more information, see Forecast Schedule Association Field References in *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide*.

   Forecast information created and linked to an MPS schedule in OPM is used by Oracle ASCP to create the master demand schedule. The forecasts used by the MPS schedule are specified on the Forecast Schedule Association form. A forecast can contain any number of items in various warehouses, but the schedule only uses those items that are valid to consume for a warehouse according to the Plant Warehouses form.

   > **Note:** Because one forecast can be used in multiple MPS schedules, be careful not to duplicate the demand for an item in a warehouse.

### Integrating Production Orders With Oracle ASCP

Oracle ASCP views pending OPM production orders as a source of supply and demand. Oracle ASCP can only view pending OPM production orders (firm planned orders, pending batches, and work-in-process batches) for those items that have a item/warehouse/plant relationship defined on the Plant Warehouses form.

You must turn on Production Operations Control (POC) for a plant and you must define a resource warehouse for a plant if you want to create capacity plans for the plant. Do this for the desired Organization on the OPM Organizations form. (For more information, see Organizations in *Oracle Process Manufacturing System Administration User's Guide*. The navigation path to the screen in the OPM application is OPM > System Administration > Organizations).

If POC is turned on, Oracle ASCP collects the plant's routing and resource requirements once a batch is created and the batch information is transferred to Oracle ASCP. If a plant does not have a resource warehouse, routing and resource data is not transferred to Oracle ASCP.

The ingredients for a batch must come from a single warehouse. OPM works around this issue by using the work-in-process warehouse or the resource warehouse, if available, as the single source of ingredient inventory when the batch has multiple sources or destinations. The work-in-process warehouse or the resource warehouse

shows Oracle ASCP from where to allocate inventory.

The quantity of a batch product is reported in the converted primary unit of measure of the item.

Firm planned orders are viewed by Oracle ASCP the same as batches, except the firm planned order routing and resource requirements are not considered. Routing and resource requirements are considered once a firm planned order is converted into a batch.

Production rules (defined in OPM Inventory) are not required, but they do ensure that batches created meet fixed and variable lead-time requirements.

The process of creating production batches or firm planned orders from planning suggestions remains the same, regardless of whether or not the planning suggestions was created in Oracle ASCP or OPM. Any user can create production batches or firm planned orders from Oracle ASCP planning suggestions as long as the plant is listed in their security schema.

### Integrating On-hand Inventory With Oracle ASCP

Oracle ASCP sees the on-hand inventory of item/warehouse combinations defined for the plant that is attached to the MPS schedule. If a lot has expired, Oracle ASCP does not consider the lot as available inventory. It also does not suggest that you use the available lot that is closer than the other lots to expiring. Oracle ASCP observes lot statuses and does not consider a lot for consumption unless the lot status identifies the lot as nettable.

## Co-products

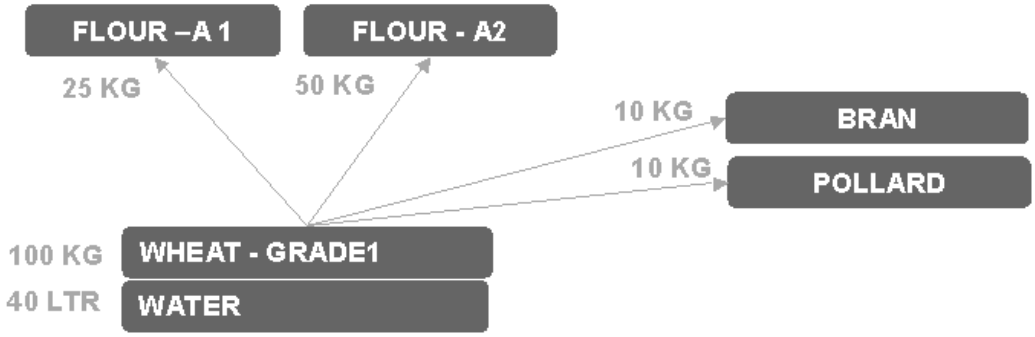
See Common Features in Hybrid Manufacturing Environments, page 18-2, Co-products section for basic co-product information. For more details, see the Oracle Process Manufacturing documentation.

Process manufacturing industry environments, the manufacturing focus is on:

- Formula
- Recipe
- Validity Rules

For example, ingredients 100 kilograms of grade 1 wheat and 40 liters of water combine to produce co-products 25 kilograms of A1 flour and 50 kilograms of A2 flour.

*Flour formula*




The formula specifies the ingredients (components) that you use to make the product. The planning engine represents co-products produced with negative usages (similar to by-products). In the Formula By-Product Lines window, you can specify a scaling type (fixed or proportional).

The recipe specifies the process to make the product. You can specify alternate uses of the same formula by specifying it in multiple recipes that have different validity rules.

Validity rules associate with recipes and specify criteria such as:

- Start and end effectivity date ranges
- Minimum and maximum quantities
- Co-product to give preference to in ties

| Item | Quantity | Day 1 | Day 3 |
|---|---|---|---|
| Flour A1 | 25 kg | - | -200 |
| Flour A2 | 50 kg | -100 | - |
| Bran | 10 kg | - | - |
| Pollard (fixed) | 10 kg | - | - |
| Flour A1 | - | 50 (co-product) | 150 (planned order) |
| Flour A2 | - | 100 (planned order) | 300 (co-product) |
| Bran (by-product) | - | 20 (by-product) | 60 (by-product) |

| Item | Quantity | Day 1 | Day 3 |
|---|---|---|---|
| Pollard (by-product) | - | 10 (by-product) | 10 (by-product |
| Demand for Wheat | 100 kg | -200 | -600 |
| Demand for Water | 40 l | -80 | -240 |

Co-product items can have different units of measure.

The planning engine plans for the situation in which you produce the same product at multiple operations.

Consider these co-product issues when you select plan type. All plan types simultaneously plan all items to utilize co-product supplies created on the same day:

- Unconstrained plans use the process (formula, routing) with the highest priority and lowest preference that is effective for the date and quantity range
- Constrained plans with decision rules respect effective date and maximum quantity ranges. They use the process with the highest priority and lowest preference that has adequate capacity.
- Optimized plans respect effective date and maximum quantity ranges. However, they select the best process (formula and recipe) that both respects capacity constraints and minimizes inventory and costs. You must specify costs for the alternate bill of material/routing pairs.
- While constrained plans with decision rules and optimized plans consider minimum quantity ranges, the results may not be minimized. The optimization process may select a process that violates the minimum quantity condition but that the planning engine later corrects. In this case, the results honor the process quantities but may not have chosen the best process.

**Co-products and Substitution Relationships**

Co-products structures can be utilized with item substitution and component substitution functionality in constrained plans. This means that you may define that the co-product items have a substitute relationship. ASCP may use the substitute supplies on the same day that they are produced.

## Supply Tolerances

Use supply tolerances to instruct the planning engine not to exactly match supply to demand at all times through the planning horizon.

You can apply supply tolerancing for an item either globally or at the item-organization

level, depending on where you set the item attributes that control it.

**Supply Shortage Tolerance**

The planning engine applies the supply shortage tolerance when it pegs. A demand is fully pegged if its supply quantity is the same as or more than the supply shortage tolerance [({Pegged supply quantity / Demand quantity} * 100) >= Supply shortage tolerance].

The supply shortage tolerance does not influence the netting process, it influences the pegging and order scheduling processes.

For example, there is Fixed order quantity of 20,000.

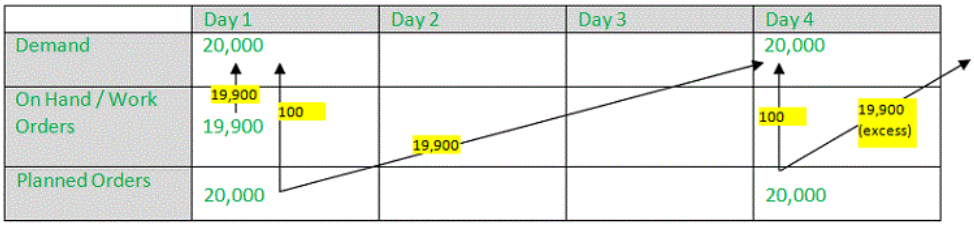
This is the horizontal plan before netting.

| | Day 1 | Day 2 | Day 3 | Day 4 |
|---|---|---|---|---|
| Demand | 20,000 | | | 20,000 |
| On Hand / Work Orders | 19,900 | | | |
| Planned Orders | | | | |

This is the horizontal plan after netting.

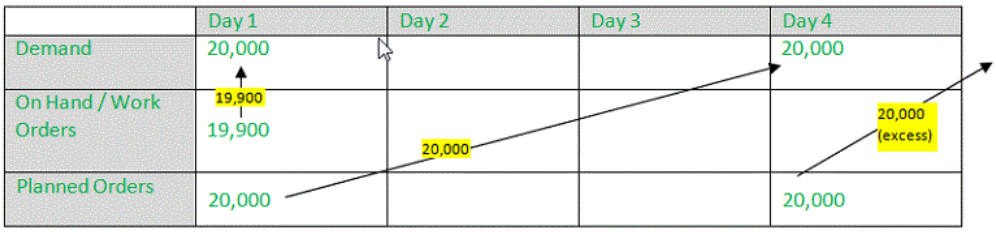
| | Day 1 | Day 2 | Day 3 | Day 4 |
|---|---|---|---|---|
| Demand | 20,000 | | | 20,000 |
| On Hand / Work Orders | 19,900 | | | |
| Planned Orders | 20,000 | | | 20,000 |

This is the pegging if you do not use supply shortage tolerance.



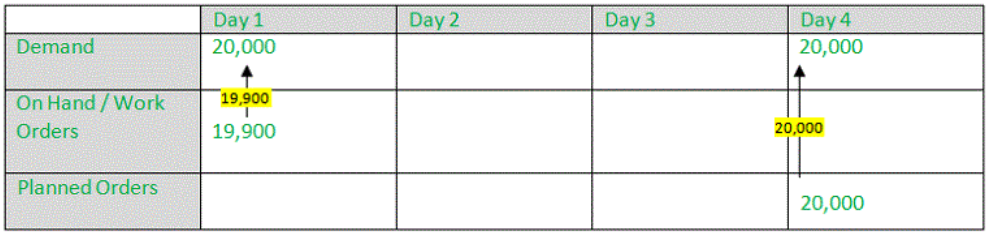

This is the pegging if you use supply shortage tolerance 99%. [((19900 / 20000) * 100) >= 99%, 99.5% >= 99%].

When the supply shortage tolerance is 99%, the planning engine fully pegs the demand on day 1 to the onhand/work order on day 1. It fully pegs the demand on day 4 to the planned order on day 1 and pegs planned order on day 4 to excess.




This is the horizontal plan after scheduling. During the scheduling phase, the planning engine moves the planned order from day 1 to day 4 and the planned order from day 4 to the planning horizon date.

The planning engine doesn't have create a planned order on day 1 that satisfies a small shortfall and that creates a two-day excess.




To instruct the planning engine to use supply shortage tolerance for an item, either

- Enter a percent value in profile option MSC: Demand Satisfied Percent Threshold for Pegging
- Enter a percent value for it in the Item Attributes Mass Maintenance form only as an item-organization attribute Shortage Tolerance Percent.

If you want the planning engine to exclude planned orders from supply shortage tolerance and supply excess tolerance, set profile option MSC: Apply shortage and excess tolerance percentages to planned orders to No.

A value in this item attribute overrides the setting of profile option MSC: Demand Satisfied Percent Threshold for Pegging. You can control whether this tolerance applies to planned orders by setting a value for profile option MSC: Apply shortage and excess tolerance percentages to planned orders.

**Supply Excess Tolerance**

The planning engine applies the supply excess tolerance when it pegs. A supply is available to fully peg to a demand if its unpegged quantity supply is the same as or more than the supply excess tolerance [({Unpegged supply quantity / Demand quantity} * 100) >= Supply excess tolerance].

The supply shortage tolerance does not influence the netting process, it influences the pegging and order scheduling processes.

For example, there is Fixed order quantity of 20,000.

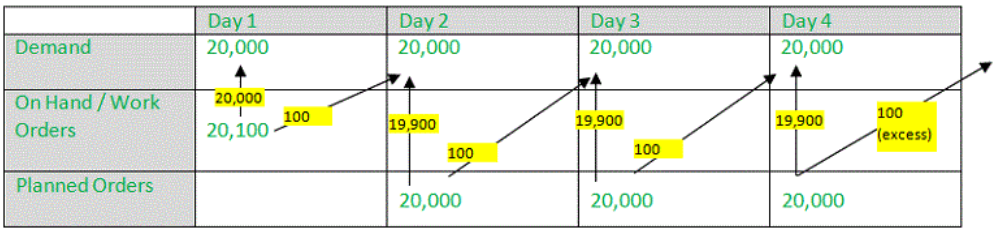
This is the horizontal plan before netting.

| | Day 1 | Day 2 | Day 3 | Day 4 |
|---|---|---|---|---|
| Demand | 20,000 | 20,000 | 20,000 | 20,000 |
| On Hand / Work Orders | 20,100 | | | |
| Planned Orders | | | | |

This is the horizontal plan after netting.

| | Day 1 | Day 2 | Day 3 | Day 4 |
|---|---|---|---|---|
| Demand | 20,000 | 20,000 | 20,000 | 20,000 |
| On Hand / Work Orders | 20,100 | | | |
| Planned Orders | | 20,000 | 20,000 | 20,000 |

This is the pegging if you do not use supply excess tolerance.




This is the pegging if you use supply excess tolerance 1%. [((100 / 20000) * 100) < 1%, 0.5% < 99%].

The planning engine fully pegs the demand on day 1 to the onhand/work order on day 1. The unpegged onhand/work order quantity is 100. The planning engine cannot peg this unpegged quantity to the demands on days 2, 3, or 4, so the planning engine pegs the unpegged quantity to excess. The planning engine fully pegs the planned orders on days 2,3, and 4 fully to the demands on days 2,3, and 4.

The planning engine avoids pegging where each demand is satisfied by a small quantity of one supply and a large quantity of another supply.

| | Day 1 | Day 2 | Day 3 | Day 4 |
|---|---|---|---|---|
| Demand | 20,000 | 20,000 | 20,000 | 20,000 |
| On Hand / Work Orders | 20,000<br>20,100 100 (excess) | 20,000 | 20,000 | 20,000 |
| Planned Orders | | 20,000 | 20,000 | 20,000 |

To instruct the planning engine to use supply excess tolerance for an item, either:

- Enter a percent value in profile option MSC: Minimum Supply/Demand Percent for Pegging.
- Enter values for it in the Item Attributes Mass Maintenance form as item-organization attribute Excess Tolerance Percent. This item attribute overrides profile option MSC: Minimum Supply/Demand Percent for Pegging.

**Small Demands Delayed Fulfillment**

You indicate the typical production run size for an item by specifying a fixed order quantity. You indicate your tolerance for delaying small orders as a percentage of the fixed order quantity.

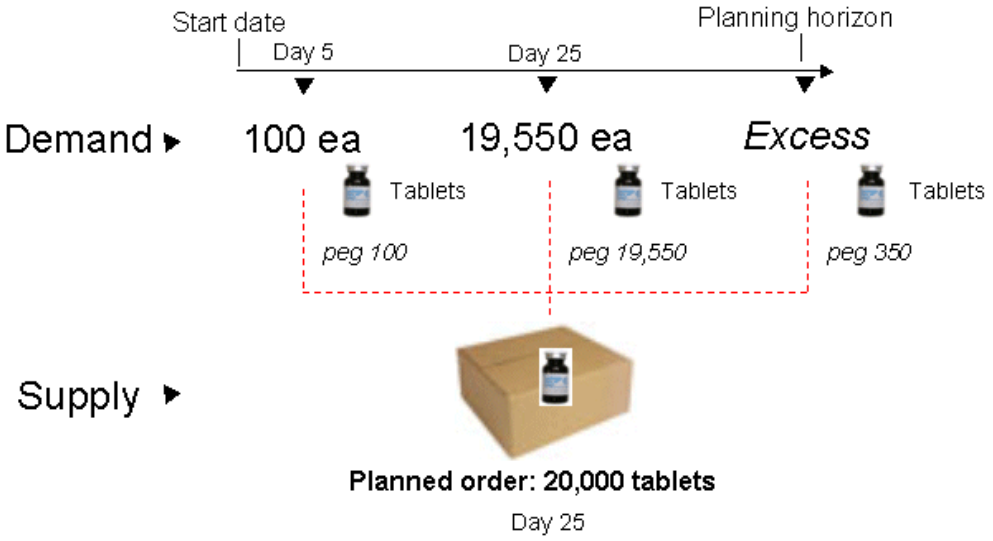
When the planning engine notices small demands for an item, it looks forward and attempts to find a demand for the same item that is closer to the typical production run size. It suggests that you satisfy all demands with one production run even though the smaller one will be late. Small demands are demands whose total quantities are lower than your tolerance for delaying small orders.

Use this tolerance if you do not like to hold excess inventory to satisfy small orders and are willing to satisfy small orders late as needed. If you do not use this feature, the planning engine may recommend making a full production run quantity to satisfy the smaller, earlier orders. This results in your holding the remaining inventory for a larger, later order.

For example:

- You have an item that you make in lots of 20,000
- You have an unsatisfied demand factor of 0.1. Therefore, supplies that have total quantities below 2000 may be subject to small demands delayed fulfillment [20,000 * 0.1]
- There is a demand on day 5 against that item for quantity 100
- There is a demand on day 25 against the same item for quantity 19,550
- The planning engine identifies the demand on day 5 for quantity 100 as subject to small demands delay fulfillment [100 < 2000]

- The planning engine identifies the demand on day 25 for quantity 19,550 as not subject to small demands delay fulfillment [19,550 > 2000]
- The planning engine recommends producing quantity 20,000 of the item due on day 25
- The demand on day 5 for quantity 100 should be satisfied late on day 10
- The demand on day 10 for quantity 19,550 should be satisfied on time on day 10
- The planning engine pegs the excess quantity of 450 on day 10 to excess




To instruct the planning engine to use small demands delayed fulfillment, set profile option MSO: Delay fulfillment of small demands to Yes

Then either:

- Enter a quantity value in item attribute Fixed Lot Multiplier
- Enter factor`UNSATISFIED_DEMAND_FACTOR` through the `MSC_SYSTEM_ITEMS` table in the planning server (operational data store, `plan_id` = -1). This factor is any number between 0 and 1 and refers to a percentage of item attribute Fixed Lot Multiplier; the default value is NULL.
- Enter values for it in the Item Attributes Mass Maintenance form as item-organization attribute Unsatisfied Demand Factor

To instruct the planning engine to use small demands delayed fulfillment for an item at the global level, set a value for profile option: MSO: Delay fulfillment of small demands. You can also enter values for this in the Item Attributes Mass Maintenance form only as an item-organization attribute; use attribute Unsatisfied Demand Factor.

Implementation Guidelines

To instruct the planning engine whether to use supply shortage tolerance and supply excess tolerance against planned orders, set profile option MSC: Apply shortage and excess tolerance percentages to planned orders to No.

Oracle recommends that you use supply shortage tolerance and supply excess tolerance when your business is like this:

- Demand quantities that are a constant large number or multiples of it.
- Supply quantities match 1:1 to the demand quantities with small differences because of yield due to process imperfections. You typically use order modifiers fixed order quantity and fixed lot multiple.
- Supply shortage tolerance is large, for example, larger than 98%, and supply excess tolerance small number, for example, smaller than 2%)

If you use them for situations not like these, you might have demands and supplies left unpegged. These examples are of situations where you can misuse supply shortage tolerance and supply excess tolerance.

Example 1:

- Sales order quantity is 10,000.
- Fixed Order Quantity is 100.
- Supply Shortage Tolerance is 5%.
- The netting process creates 100 planned orders of quantity 100 [100 * 100 = 10,000].
- During pegging, the process calculates Supply Excess Tolerance for each supply: ((100 / 10000) * 100) >= 5%, 1% < 5%
- The demand and supplies remain unpegged.

Example 2:

- Work order on day 1 has quantity 150.
- Demand on day 1 is quantity 100.
- Demands on Days 2 and after are each more than quantity 5000.
- Supply Excess Tolerance is 5%.
- The planning engine will first peg the work order on Day 1 to the demand on Day 1.
- During pegging to the other demands, the process calculates ((50 / 5000) * 100) >=

5%, 1% < 5%.

- The 50 unpegged units remain unpegged to any of the other demands.

### Preventing Early Builds

To prevent the planning engine from planning early builds, use profile option MSO: Allow early builds to consume existing supplies of phased-out components and sources.

### Make Item Postprocessing Lead Time

You can set Postprocessing lead time for make items. See Lead-time, page 4-71.

## Oracle Shop Floor Management

Oracle Shop Floor Management is a module which bridges planning and execution systems. It provides the following capabilities:

Manage Complex shop floor lot transactions

- Lot split and merge
- Update of lot name, product, routing, quantity
- Bonus lots creation

Enable dynamic routings

- Routing determined on the fly
- Routing movements enforced based on legal next operations
- Jumps allowed to any operation

Provide end-to-end genealogy of your products

- Product tracking all the way back to raw material
- Forward and backward genealogy surfing

Model and track operation yield based cost for your products.

- Operation level yields
  - Yielded cost of product
  - Cost variance at operations

Enable integration of ERP with third-party MES systems.

- Seamless integration with Oracle Applications

Co-Product modeling

- Modeling of co-products

Oracle ASCP integrates seamlessly with OSFM to provide the following capabilities:

## Lot-Based Jobs

Lot-Based Jobs is an execution entity in Oracle OSFM designed to handle Lot-Based production. You can implement planned orders for items with Network Routings as Lot-Based Jobs. Follow the instructions specified in Implementing Planning Recommendation, page 16-152 to select and release planned orders from Planner Workbench. The release process checks the setting for network planning method in the Planning Parameters form at the time of release to see if it is Primary.

You can implement Reschedule In, Reschedule out, and Cancellation recommendations in addition to releasing the planned orders. Implementing recommendations uses a concurrent program called Import Lot Based Jobs at the source.

You may not be able to release planned orders as lot based jobs if you do not:

- Select plan option Plan Capacity.
- Provide a WIP Accounting Class in the Oracle Work in Process parameters
- Provide Accounting Class in the Oracle Shopfloor Manufacturing (OSFM) parameters. You can also set Accounting Class in Oracle Advanced Supply Chain Planning Planner Workbench Preferences form, Others tab, Job Class field; however, this value applies to all instances
- Set planning parameter OSFM Network Scheduling Method to Primary for the organization

You can pass job name, job start and completion dates, start quantity, BOM and Routing designators, demand class, and WIP class, etc. For the quantity, the planning engine uses the start quantity, all of the transactions against the job, and the reverse cumulative yield at the current operation. The planning engine considers lot-based jobs as supplies.

You can pass the demand for the components of the assembly from Lot-Based Jobs, and calculate resource requirements. The planning engine considers efficiency and utilization in calculating resource requirements for intermediate operations.

You can see the results of the transactions on a Lot-Based Job; for example, Issues, Moves, Completions, etc. Oracle ASCP schedules the Lot-Based Jobs based on the availability of resources considering the current load of the shop floor. If you progress the job through move transactions at the source, the next time plan runs, Oracle ASCP schedule the rest of the operations in the network.

The Firm Type field for the resource in the Oracle Advanced Supply Chain Planning Planner Workbench Resource Requirements window displays the Firm Type from Oracle Shopfloor Manufacturing (OSFM). The Oracle Advanced Supply Chain Planning scheduling process does not override this flag. For example, if only the start date of a resource is firmed, the Oracle Advanced Supply Chain Planning scheduling process does not reschedule the start date but it may reschedule the end date.

If you firm a resource of an Oracle Shopfloor Manufacturing (OSFM) job in the Oracle Advanced Supply Chain Planning Planner Workbench Resource Requirements window and release it, the process transfers the Firm Type flag to the Oracle Shopfloor Manufacturing (OSFM) source.

> **Note:** Lot-based Jobs are referred to as Discrete Jobs in the Planner's Work Bench

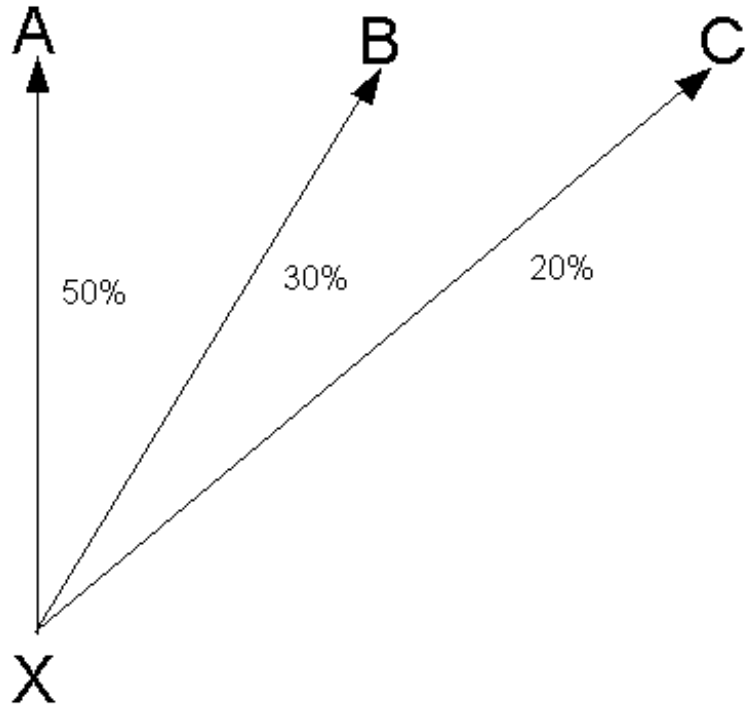
## Coproducts

This feature is available with the integration of APS and Oracle Shop Floor Management (OSFM).

In some production environments, an item may turn into one or more parent items depending on the process control, test results, raw material quality, etc. Such a relationship is defined by defining coproducts. OSFM allows you to specify multiple possibilities of assemblies (parents) that may be derived from a single part.

You can set up coproducts using Oracle OSFM. To explain this with an example, consider the diagram below. A, B, and C are coproducts produced from raw material X. The figures in % are the expected mix of production of coproducts.

*Coproducts*



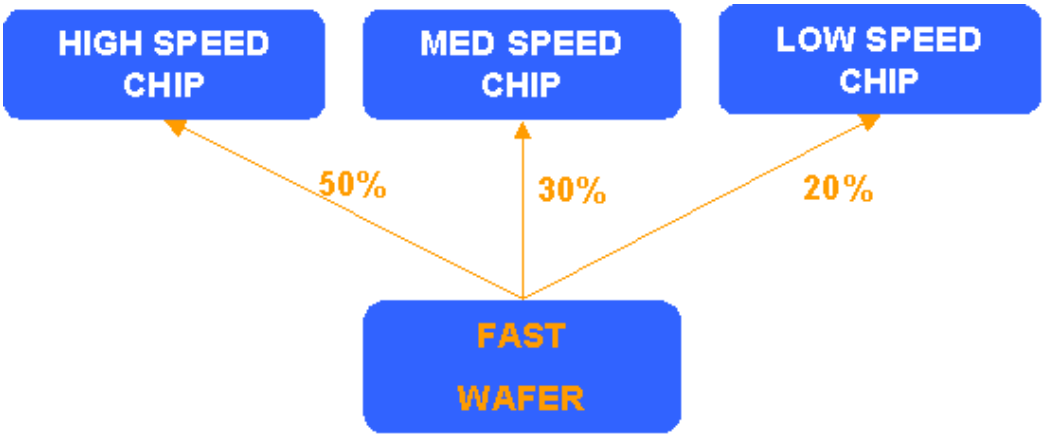

**Coproducts**

### Co-products Support in Planning

See Common Features in Hybrid Manufacturing Environments, page 18-2, Co-products section for basic co-product information. For more details, see the Oracle Shop Floor Manufacturing (OSFM) documentation.

In the semiconductor, electronics and metals industries, the focus is the primary component that is processed to become individual products. For example, A Fast Wafer may become a Low Speed Chip, Medium Speed Chip, or High Speed Chip.

*Wafer-chi: Primary bill of material*



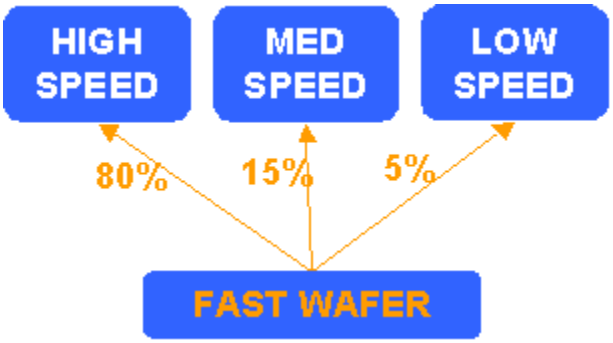

Use the Define Co-products form to specify co-products made from the primary component. Then, click Split Percentages and enter the percentage distribution for each co-product on the Define Time Phased Split Percentages form. You can specify effectivity date ranges for percentage distributions; the planning engine uses the percentage distributions effective on the plan launch date throughout the planning horizon.

You can build the same products from different components by using alternate bills of material/routing pairs during co-products setup. For example:

- Primary: Fast wafer component > Low Speed Chip 20%, Medium Speed Chip 30%, High Speed Chip 50%
- Alternate 1: Fast wafer component > Low Speed Chip 5%, Medium Speed Chip 15%, High Speed Chip 80%
- Alternate 2: Medium wafer component > Low Speed Chip 30%, Medium Speed Chip 60%, High Speed Chip 10%

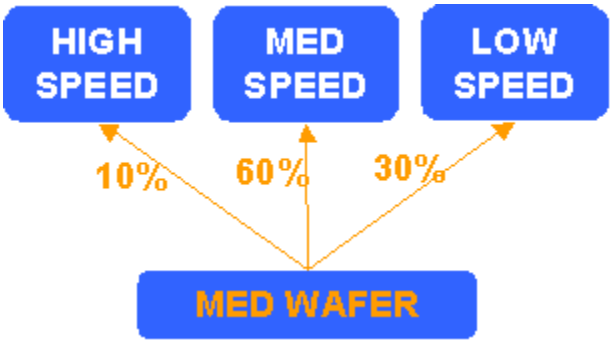
This diagram shows alternate bill of material 1. The process uses the same Fast Wafer as the primary bill of material. However, the process is tuned to produce different percentages of co-products from those the primary bill of material.

***Wafer-chip: Alternate bill of material 1***




This diagram shows alternate bill of material 2. The process uses a different wafer--Med Wafer--from the one in the primary bill of material. It produces different percentages of co-products from those the primary bill of material.

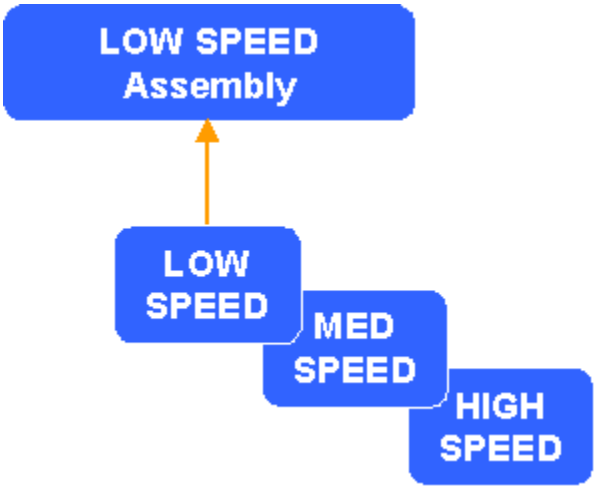
***Wafer-chip: Alternate bill of material 2***




You can specify end-item substitutes for end item co-products and component substitutes for co-products used as components.

***Co-product end item substitution***

*Co-product component substitution*




The issues that you consider when you select plan type apply to co-products also. All plan types simultaneously plan all items to utilize co-product supplies created on the same day:

- Unconstrained plans utilize the Primary bill of material and routing only for creating planned orders. However, the planning engine honors alternate bill of material/routing pairs on scheduled receipts.

- Constrained plans with decision rules select the primary bill of material/routing first. If capacity remains, they select each alternate bill of material/routing and use it if it has capacity. Once the bill of material and routing selection is made then planning process is continued to minimize inventory.

- Optimized plans will select the best bill of material and routing that both respects capacity constraints and minimizes inventory and costs. You must specify costs for all alternate bill of material/routing pairs, all items, and all resources.

The planning process does not consider the sequence of demands in an attempt to minimize supply. For example,

- High Speed Chip has demand due for quantity 100 on day 1

- Medium Speed Chip has demand due for quantity 60 on day 2

- Low Speed Chip has demand due for quantity 40 on day 3

The planning engine creates a planned order against High Speed Chip, the first demand, for quantity 100 and the co-product supplies to be made that day for quantity 60 and quantity 40 fulfill the demands on day 2 and day 3.

| Item | Percent/Quantity | Day 1 | Day 2 | Day 3 |
|---|---|---|---|---|
| High Speed Chip | 50% | -100 | - | - |
| Medium Speed Chip | 30% | - | -60 | - |
| Low Speed Chip | 20% | - | - | -40 |
| High Speed Chip | - | 100 (planned order) | - | - |
| Medium Speed Chip | - | 60 (co-product supply) | - | - |
| Low Speed Chip | - | 40 (co-product supply) | - | - |
| Demand for Fast Wafer | 0.01 | -1 | - | - |

The planning engine can use alternate bill of material/routing pairs to resolve resource and material constraints. It may partially satisfy a later demand with a co-product produced from supply from an earlier demand, and then satisfy the remaining quantity with a later supply against that co-product. For example:

- Medium Speed Chip has demand due for quantity 60 on day 1
- High Speed Chip has demand due for quantity 100 on day 2

The planning engine creates a planned order against Medium Speed Chip, the first demand, for quantity 60 on day 1 using bill of material/routing pair ALT2. This production should create a co-product supply against High Speed Chip for quantity 10 on day 1. The planning engine then creates a planned order against High Speed Chip for quantity 90 on day 2.

| Item | Percent/Quantity | Day 1 | Day 2 | Day 3 |
|---|---|---|---|---|
| High Speed Chip | 10% | - | -100 | - |

| Item | Percent/Quantity | Day 1 | Day 2 | Day 3 |
|---|---|---|---|---|
| Medium Speed Chip | 60% | -60 | - | - |
| Low Speed Chip | 30% | - | - | -40 |
| High Speed Chip | - | 10 (co-product supply) | 90 (planned order) | - |
| Medium Speed Chip | - | 60 (planned order) | 540 (co-product supply) | - |
| Low Speed Chip | - | 30 (co-product supply) | 270 (planned order) | - |
| Demand for Medium Wafer | 0.01 | -1 | -9 | - |

### Requirement Integer Quantities

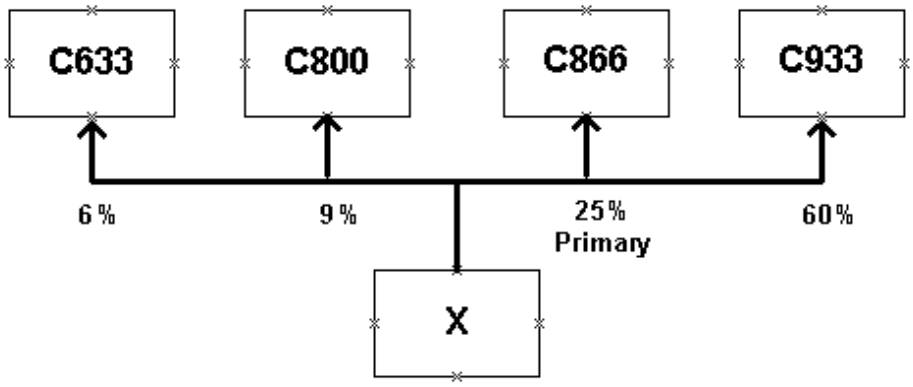
You can instruct the planning engine to round dependent demand quantities for components; see Requirement Integer Quantities in Items on page 1-1.

If you instruct the planning process to round all the items in a multiple co-product relationship either up or down, the results may show a difference between total supply quantity and total demand quantity among the items.

To avoid this, in Oracle Shop Floor Management (OFSM), specify one of the co-products as the primary co-product. The planning engine increases the primary co-product requirements and decreases the other co-product requirements to balance the rounding. It creates at least a quantity of 1 for each co-product

This diagram shows a co-product bill of material.

*Co-product Bills of Material*




All co-products are marked Enforce Integer Req either Up or Down.

The planning engine receives demand for 25 C933.

It calculates requirements for X as 42 [25 * 0.6 = 41.666, round to 42].

It calculates requirements for the co-products:

- C633: 2.49 [41.666 * 0.06]
- C800: 3.74 [41.666 * 0.09]
- C866: 10.41 [41.666 * 0.25]
- C933: 25

It rounds down requirements for the co-products:

- C633: 2
- C800: 3
- C866: 10
- C933: 25

It calculates the difference between demand and supply as 2 less demand than supply [42 - (25 + 10 + 3 + 2)].

It increases the primary component by 2 to make the co-product requirements equal the supply of 42:

- C633: 2
- C800: 3

- C866: 12
- C933: 25

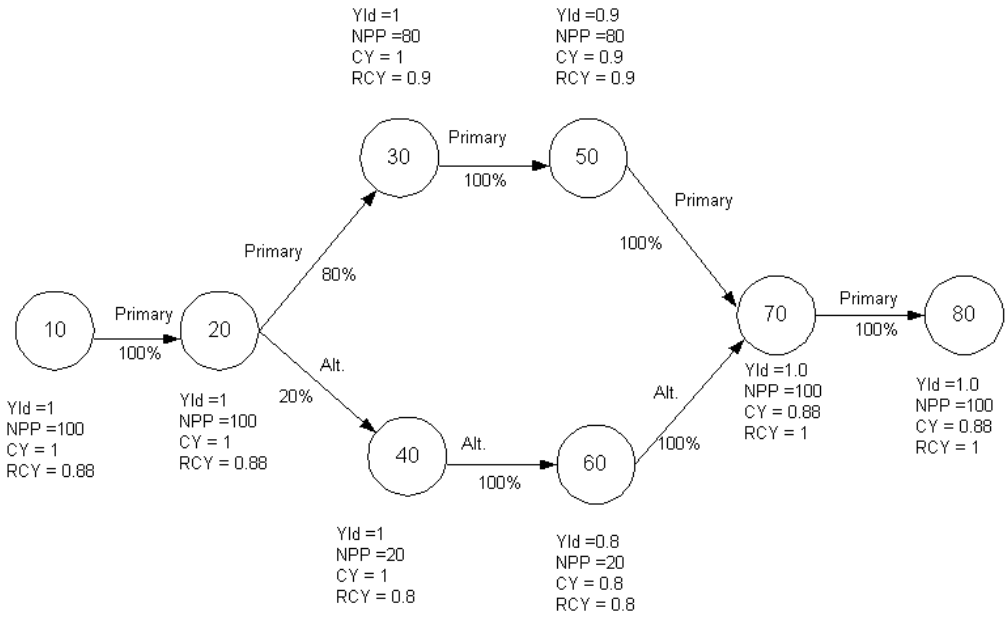
If the demand is for the primary co-product, the planning engine rounds down all of the other co-products and randomly selects one of them to increase to balance supply and demand. It does not increase the primary co-product.

## Operation Yield

If you can attribute significant amount of materials loss to a specific production process, then identifying the process and managing the yield at an operation level is essential. Yields specified at operation sequence is often needed to calculate the amount of raw materials or sub assemblies and measure performance.

Consider a production process as described in the diagram below.

***Production Process***




In order to calculate raw materials needed at the start of each operation, cumulative yields, reverse cumulative yields, and net planning percentages need to be calculated. The diagram above shows you the calculations. Cumulative Yields are shown as CY, Reverse Cumulative Yields are shown as RCY, and Net Planning Percent is shown as NPP on the diagram. Net Planning Percent is the expected percentage of the flow of materials at a given node. Cumulative yield is the multiplication of yields in the forward direction. Reverse Cumulative Yield is the multiplication of yields in the reverse direction. Please refer to the diagram above for detailed calculations.

You can specify the yields at operation sequence level in the Network Routings using

Oracle OSFM. The system can automatically calculate Cumulative Yields, Reverse Cumulative Yields, and Net Planning Percentages by using Calculate Cumulative Yield from the Tools menu on Network Routing form.

If you use the Planned percent or Optimize methods, run Oracle Shop Floor Management (OSFM) concurrent process Calculate operation yields from the routings on the source. The planning engine calculates the reverse cumulative yield values for every order to account for time phased yields and needs Net Planning % from the source in the calculation.

#### Operation Yield Support in Order Promising

Oracle Global Order Promising considers operation yield when calculating component and resource requirements during capable-to-promise. The calculation is the same as in ASCP.

#### Operation Yield Support in Planning

If you need to calculate materials needed at operation sequence 10, you need to divide the order quantity by Reverse Cumulative Yield and multiply it by Net Planning Percent at Operation sequence 10.

If you need item A at operation sequence 10, and you have an order quantity of 100, the component demand for A should be 100/.88*100%, which is 113.63. Oracle ASCP consumes resources at various operation sequences based on the inflated order quantity which accounts for the operation yield. In our example, resources at operation sequence 10 are scheduled for a quantity of 113.63.

If you decide to scrap or reject some of the items on a Lot-Based Job, you can apply yields for the rest of the pending operations. If you reject 20 units out of a total order of 100 at Operation sequence 20 and assume that there were no losses at operation sequence 10, you can determine the component requirements based on a quantity of 80 and the reverse cumulative yield at operation sequence 20.

If you have network routings where you have multiple nodes joining a single node, the cumulative yield calculation is based on the weighted average of the yields from the nodes that join to form a single node.

#### Operation Yield and Discrete Jobs

The planning engine reduces component and resource requirements for future operations based on the operation yield defined in the discrete routing. The supply quantity for the job or planned order are also reduced based on the anticipated yield loss at future operations.

For accurate costing with operation yield, consider using Oracle Shop Floor Management.

Considering operation yield for existing discrete jobs improves the planning response time in recognizing the effect of actual yields on existing jobs. The operation yields defined in the routings are estimates. When the actual scrap transactions occur, the planning engine considers the current job quantity and the future planned yield loss to

determine the reduced supply quantity. This dynamic recalculation of the supply quantity allows Oracle Advanced Supply Chain Planning to calculate future planned order quantities more accurately.

It also improves the planning accuracy by estimating the effect of yield loss on:

- Supply quantity, which improves visibility to Oracle Global Order Promising and the planner of the effect of operation yield on existing jobs.
- Component requirements, which lowers inventory by more precise calculation of component requirements for later operations.
- Resource requirements, which improves the ability to implement constrained planning

If an item's routing has yield loss for any operation, the planning engine:

- Recalculates the component and resource requirements of a WIP job during data collection to reflect the current position of the WIP job (operation and inter-operation step) and the operation yield loss for the remaining operations.
- Calculates the supply quantity based on the current quantity and position of the job and the reverse cumulative yield still to be considered at future operations. The planning engine does not calculate the WIP job supply quantity as MRP Net Quantity - Completed Quantity - Scrapped Quantity.

If an item's routing does not include planned yield loss for any operation, then the component and resource requirements are collected and used by Oracle Advanced Supply Chain Planning.

**Calculating Scheduled Quantity and Supply Quantity**

The scheduled quantity at every operation is reduced by the estimated yield loss at the previous operation. Since, the component and resource requirements are calculated using the operation scheduled quantity, these are also reduced to the quantity expected at that operation.

The job's supply quantity is also reduced to account for operation yield at all planned operations.

For planned orders, the operation yield is taken into account by increasing the job start quantity and the scheduled quantity at each operation.

For discrete jobs,

Scheduled quantity = Sum (quantity at Queue, Run, and previous operation To Move) + (Scheduled quantity from previous operation x operation yield from previous operation)

Therefore, if a routing has operation yield, the planning engine calculates the scheduled quantity instead of using the discrete job values.

This table shows scheduled quantity calculations for a discrete job example. You can see

material requirement calculations for the same discrete job example in section Calculating Material Requirements and resource requirement calculations for the same discrete job example in section Calculating Resource Requirements.

| Operation Number | To (Q) ueue / (R) un / (M) ove | Quantity Completed | Quantity Scrapped | Operation Yield (%) | Reverse Cumulativ e Yield (%) | Scheduled Quantity |
|---|---|---|---|---|---|---|
| 10 | - | 100 | - | 100 | 72.9 | 0 |
| 20 | 20 (M) | 100 | 50 | 90 | 72.9 | 0 |
| 30 | 15 (R) | 15 | 10 | 100 | 81 | 35 |
| 40 | 3 (Q), 2 (M) | 2 | - | 90 | 81 | 38 |
| 50 | - | - | - | 100 | 90 | 36.2 |
| 60 | - | - | - | 90 | 90 | 36.2 |
| 70 | - | - | - | 100 | 100 | 32.58 |

**Calculating Material Requirements**

The material requirements is calculated as:

Quantity required = min ((scheduled quantity + quantity completed) * usage - quantity issued, 0)

During for material requirements calculations, users can manually issue materials to jobs using the Material Requirements window. Therefore, the quantity of components calculated for each operation takes quantity issued into account.

This table shows material requirement calculations for the discrete job example in section Calculating Scheduled Quantity and Supply Quantity. You can see resource requirement calculations for the same discrete job example in section Calculating Resource Requirements. In this table:

- The issue of component A at operation 10 is an over-issue caused by breakage (component yield)
- The issues of component B at operation 20 and component D at operation 40 are manual under issues. Similar under issues could occur in any component with type Assembly pull.
- The issue of component E at operation 60 has been performed in advance

| Operation Number | Scheduled Quantity | Quantity Completed | Component | Usage | Quantity Issued | Quantity Required | Open Requirement |
|---|---|---|---|---|---|---|---|
| 10 | 0 | 100 | A | 1 | 120 | 100 [0+100)*1] | 0 [Max (100-120,0)] |
| 20 | 0 | 100 | B | 1 | 0 | 100 [0+100)*1] | 100 [100-0] |
| 30 | 35 | 15 | C | 1 | 15 | 50 [(35+15) *1] | 35 [50-15] |
| 40 | 38 | 2 | D | 1 | 11 | 40 [(38+2*1] | 39 [40-1] |
| 50 | 36.2 | - | - | - | - | - | - |
| 60 | 36.2 | - | E | 1 | 30 | 36.2 [36.2 *1] | 6.2 [36.2-30] |
| 70 | 32.58 | - | - | - | - | - | - |

**Calculating Resource Requirements**

The resource requirement calculation for item basis is

Resource requirements (operation) = max (((scheduled quantity (operation) + quantity completed) * usage - applied resource hours), 0)

The resource requirement calculation for lot basis is

Resource requirements (operation) = usage - applied resource hours

This table shows material requirement calculations for the discrete job example in section Calculating Scheduled Quantity and Supply Quantity. You can see material requirement calculations for the same discrete job example in section Calculating Material Requirements

| Operation Number | Scheduled Quantity | Quantity Completed | Resource | Usage | Basis | Applies Hours | Hours Required | Open Hours Required |
|---|---|---|---|---|---|---|---|---|
| 10 | 0 | 100 | R1 | 1 | Item | 100 | 100 | 0 |
| 20 | 0 | 100 | R2 | 1 | Lot | 1 | 1 | 0 |
| 30 | 35 | 15 | R2 | 1 | Item | 15 | 50 [(35+15) *1] | 35 [50-15] |
| 40 | 38 | 2 | R2 | 2 | Lot | 2 | 2 | 0 |
| 50 | 36.2 | - | R3 | 1 | Item | - | 36.2 | 36.2 |
| 60 | 36.2 | - | R3 | 1 | Item | - | 36.2 | 36.2 |
| 70 | 32.58 | - | R3 | 1 | Item | - | 32.58 | 32.58 |

**To use Operation Yield for Discrete Jobs**

1. Navigate to BOM > Routing.
2. Enter yield for specific operations.
3. Navigate to Workbench > Items.
4. Click the Routing Operations button.
5. View the operation yield for the routing.
6. Click the Resources button.
7. In the Resources window, click the Requirements button.
8. View the current quantity at each inter-operation step.

   For more details on the information displayed in the Resource Requirements window, see Resource Requirements Window, page 16-135

   The Resource Requirements window only displays operations that have scheduled resources where the resource schedule attribute is set to Yes. If the WIP job is in an operation with no scheduled resources, the job is scheduled correctly but you cannot view the quantity at the inter-operation step on the Resource Requirements window.

## Network Routings

Alternate ways of producing an item often demands flexible definition of Routings. Network Routings give you the flexibility of defining multiple manufacturing paths. Network Routings are defined using Oracle OSFM at the source. When you set up Network Routings, you can specify the estimated percentage of the orders that need to be processed on a specific path. This is called the planning percent.

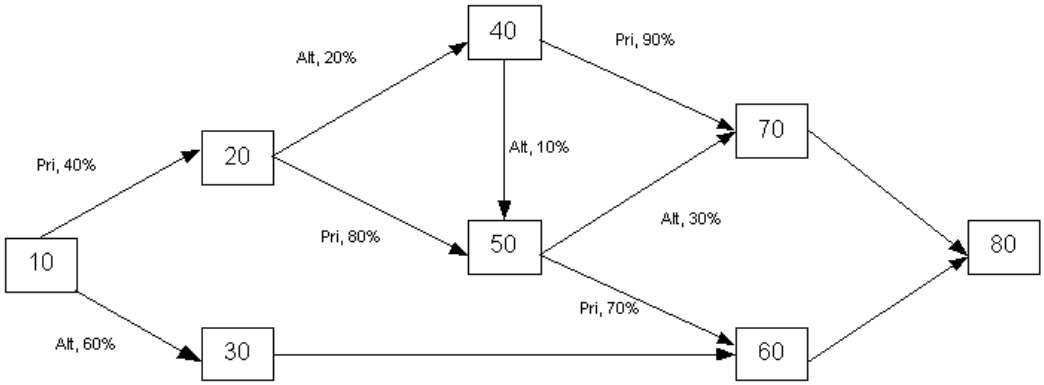
### Network Routing Support in Planning

You can collect the Network Routings into the planning server using the APS Collection program. You can snapshot the Network Routings and use them to calculate and schedule resource requirements for existing Lot-Based Jobs and planned orders when you run a plan. You can choose to schedule orders using Network Routings with the primary path:

To make your selection, navigate to form Setup and Use Parameters and set OSFM Network Scheduling Method to Primary

This diagram shows Network Routings.

***Network Routing***




**Primary Path (default)**

As the name suggests, you can schedule orders on primary path. In this case, Oracle ASCP calculates the Reverse cumulative yields and Net Planning Percent based on the Primary path.

The following situations constitute an incomplete network routing and may affect plan results:

- You have a network routing, use a bottleneck resource group, and do not include at least one resource on the bottleneck resource group.
- You turn off scheduling for all resources at an operation and then instruct network routings to use this operation.

The resource hours calculation is subject to profile option MSO: Floating Point Precision for Usage in Routings. For example:

- The routing for an item uses a resource for 0.05 hours per piece or 3 minutes per piece - Efficiency and utilization are both 90%
- A supply order for quantity 680 is scheduled on that resource
- The expected resource consumption is 34 hours [680 pieces * 0.05 hours per piece]
- MSO: Floating Point Precision for Usage in Routings is 100
- The planning engine calculates the resource requirement considering utilization and efficiency as 41.933333:
  - Resource requirement for one piece: 3.70 minutes with precision factor 100 [3 / (0.9 * 0.9)]
  - Resource requirement for 680 pieces: (3.70 * 680) / 60
- MSO: Floating Point Precision for Usage in Routings is 10,000
- The planning engine calculates the resource requirement considering utilization and efficiency as 41.975266::
  - Resource requirement for one piece: 3.7037 minutes with precision factor 10,000 [3 / (0.9 * 0.9)]
  - Resource requirement for 680 pieces: (3.7037 * 680) / 60
- MSO: Floating Point Precision for Usage in Routings is 1,000,000
- The planning engine calculates the resource requirement considering utilization and efficiency as 41.975300 :
  - Resource requirement for one piece: 3.703703 minutes with precision factor 1,000,000 [3 / (0.9 * 0.9)]
  - Resource requirement for 680 pieces: (3.703703 * 680) / 60

#### Network Routing Support in Order Promising

Global Order Promising considers net planning percent (NPP) when it calculates resource and material requirements during capable-to-promise. In the diagram above, the resource and material requirement needed at node 30 is: Order Qty * RCY * 0.8 (NPP) * Qty Per Assembly.

## Future Operation Details

The integration with planning provides an option of storing the future operation details for a specific lot based job. The details for future operations can be updated for specific jobs in Oracle ShopFloor Manufacturing (OSFM). Oracle Advanced Supply Chain planning then utilizes the future operation details from the specific shop floor job during planning.

When you create a lot-based job, it receives its own copy of the network routing with the following details:

- All possible network flows. This data exists for future operations from the current operation. All routing information associated with the operation such as operation yield and planning percentage are stored in the job details.
- All possible alternate resources
- All possible substitute components
- The recommended network flow, resources, and components to be utilized
- The schedule date for the resources on the recommended path

You can update the recommended path for the specific job in Oracle ShopFloor Manufacturing (OSFM). It ensures that a complete recommended path exists for the lot based job. The planning engine interprets this as the primary path for the specific job and utilizes it for this job in the next planning cycle.

The planning engine releases scheduling details to Oracle ShopFloor Manufacturing (OSFM) for the primary path. This includes the recommended schedule dates, resources, and components. You can update the details to reflect decisions made for the specific job. For rescheduling existing jobs, the planning engine utilizes the updated information of the operation yield, recommended components, and recommended path.

Certain planning capabilities work with Oracle ShopFloor Manufacturing (OSFM) You can:

- Provide alternate resources for future operations of an existing job. This affects constrained plans only.
- Apply order modifiers to either the start quantity or the completion quantity for planned orders.
- Consider the current operation's resources as firm according to Firm Type of each resource (when profile option WSM: Create Job Level BOM and Routing Copies is Yes. If the job is in the inter-operation run step, the current operation is considered as Firm All (firm Start Date, End Date, Resource, and Assigned Units) . The planning process uses Firm Type in its scheduling for constrained plans only. For example, if the resource is Firm Start Date, the planning engine does not reschedule

the start date but the scheduling process may move the end date.

#### To set up future operation details

1. Navigate to Supply Chain Plan > Setup > Parameters.

2. Set the organization's planning method to primary path.

   If you set the planning method to Planned percentage or Optimize, the planning engine schedules quantities on all possible paths. This may not be useful for detailed scheduling because the shop floor usually executes only one path.

3. Set the profile WSM: Create Job Level BOM and Routing Copies to Yes to control whether job details are stored on the shop floor job.

   This profile option setting effects all shop floor organizations. You can select only one behavior for your business. For multiple source instances, you must use the same behavior for all shop floor organizations.

4. Ensure that the job's completion date is within the daily bucketed horizon.

5. Set the following profile options to suit your business requirements:

   - MSC: Legacy Collections Using Lot Based Job Details
   - MSC: Apply Order Modifier to Start Quantity
   - MSC: Release WIP Dtls if Order Date different then BOM Revision Date
   - MSC: Released Only By User
   - MSC: Inflate WIP Resource Requirements

   For more details on the above profiles, see MSC Profile Options, page A-13.

#### To use future operation details

In Oracle Advanced Supply Chain Planning, you can release details for planned orders and for reschedules. If the planning method is set to primary path and the job is scheduled to complete within the daily planning horizon, then the planning engine can release details to Oracle ShopFloor Management (OSFM).

1. Release discrete jobs and planned orders in Planner Workbench

   You can update the order details for the planned orders using the Release Properties tab of the Supply/Demand window. If you change the quantity or date for a planned order, the order details do not reflect these decisions and are not released. The planning engine then releases the job header information only and Oracle ShopFloor Management (OSFM) explodes the bills of material and routing to provide the details.

If you firm the resource of a job in the Oracle Advanced Supply Chain Planning Planner Workbench Resource Requirements window, the release process transfers Firm Type to the Oracle Shopfloor Management (OSFM) job.

2. To view the operation details, navigate to OSFM > Lot Based Job.

3. Query the job.

4. Select Tools > Plan Details.

   The Plan Details page appears.

5. To view and update the yield for a specific operation, click the Details icon at the end of the operation row.

6. To view and update a resource for a specific operation, drill down to operation details to view the primary and alternate resources.

7. Navigate to OSFM > View Resource Scheduling.

8. Define your Preferences to specify the resources that you want to view. The resources are displayed based on the amount of time they are utilized by existing jobs.

   View supplies that are utilizing a resource and resource overloads.

9. Select the job in the Gantt chart, right-click, and select Choose Alternate Resources.

10. Select the supply, then right-click to select the alternate resource.

    This updates the copy stored on the job that this resource is recommended. The planning engine then utilizes this as the primary resource in subsequent plans.

11. To view and update component requirements, select the Components subtab in the Plan Details > Operations page.

12. Query the job name.

13. Drill down to review component details.

14. Change the component requirements and select the substitute component to be used.

    When you change the component requirement at an operation, the component yield is updated to reflect your desired change.

    You can also update the components required for the current operation using the Material Requirements form.

15. To update the recommended path, navigate to OSFM > Run Requests > Refresh

Open Jobs Copies.

This is interpreted as the primary path for this specific job. Oracle Advanced Supply Chain Planning utilizes the recommended path as the primary path for this job in the next planning cycle.

Oracle ShopFloor Management (OSFM) stores a copy of the bills of material and routing on the specific lot based job. If you make changes to the bills of material and routing for existing jobs, you can update such jobs using the Refresh Open Jobs Copies concurrent process.

After data collection, the planning engine utilizes the job specific details that you have updated.

If the job is firmed, The planning engine will not change the resources. For non-firm jobs, the planning engine may utilize alternate resources for future operations.

The planning engine uses the recommended resources from the lot based job.

If the recommended path has changed, the planning engine may need to reschedule all operations because the alternate path will not have any existing schedule dates to be firmed.

## Material Planning for Oracle Complex Maintenance Repair and Overhaul

Oracle Advanced Supply Chain Planning is integrated with Oracle Complex Maintenance Repair and Overhaul for planning and scheduling material requirements that are associated with routine and non-routine maintenance requirements. Oracle Advanced Supply Chain Planning also takes into account integrated forecast of material requirements from Oracle Demand Planning and safety stock demand from Oracle Inventory Optimization while planning for the material requirements that are linked to scheduled visits.

The planning engine collects all the inputs mentioned above and generates replenishment recommendations for moving or procuring material. These recommendations help you to plan materials well in advance to accommodate fluctuations in demand and supply for both planned (material requirements tied to routine maintenance) and unplanned (material requirements tied to non-routine maintenance) material requirements. You can also maintain optimum stock to meet specific service levels under the defined inventory budget constraints.

When a material requirement cannot be met, the planning engine generates an exception. Oracle Advanced Supply Chain Planning allows you to send back the recommended dates and the exceptions back to Oracle Complex Maintenance Repair and Overhaul.

### To plan for Complex Maintenance Repair and Overhaul operations:

Oracle Advanced Supply Chain Planning allows you to perform the following material planning functions:

1. Navigate to Supply Chain Plan > Names to create or modify a supply chain plan.
2. Specify the following plan options in Plan Options > Organization tab:
    1. In the Global Demand Schedules region, select the names of either global or local (organization specific) demand planning scenarios that drive the plan.
    2. In the Organization region, select the Include Sales Order check box to include the material requirements, which are associated with scheduled visits in Complex Maintenance Repair and Overhaul. These consume the total material requirements forecast from Oracle Demand Planning.
    3. In the Demand Schedules region, specify the Inventory Optimization plan, which contains the safety stock targets prescribed by Oracle Inventory Optimization in response to the forecast and forecast variability output from Oracle Demand Planning.
3. Navigate to Collections > Oracle Systems > Standard Collection to run collections.

    The Planning Data Collection window appears.
4. Select the Parameters field for the Planning Data Pull program.

    The Parameters window appears.
5. Set up the following parameters to collect data from Oracle Complex Maintenance Repair and Overhaul:
    1. Select the applicable Complex Maintenance Repair and Overhaul instance from the Instance list of values.
    2. Select Yes from the Sales Orders list of values.

        The planning engine collects data from the following sources of demand:
    3. Material requirements associated with scheduled visits from Complex Maintenance Repair and Overhaul.
    4. Integrated forecast of material requirements from Oracle Demand Planning
    5. Safety stock demand from Oracle Inventory Optimization
6. Navigate to Supply Chain Plan > Launch to run the plan.
7. Navigate to Supply Chain Plan > Workbench.

    The Planner Workbench form appears.
8. Select a record, right-click and select Supply/Demand window to view the supplies pegged to the Complex Maintenance Repair and Overhaul demands.

Oracle Advanced Supply Chain Planning displays the material requirement associated to a scheduled visit as a sales order. These sales orders are displayed as firm because the visit is already planned for in Oracle Complex Maintenance Repair and Overhaul and associated to an organization.

The sales order number is displayed as:

<visit number>.<task number>.Complex MRO

For example, if a material requirement A has:

- Visit Number = 170
- Task Number = 2

  The Order Number displayed for A in the Supply/Demand window = 170.2. Complex MRO

9. Navigate to Planner Workbench > Exception Details window. Since, scheduled visit tasks are modeled as sales orders in Oracle Advanced Supply Chain Planning, you need to view the sales order reschedule recommendations to determine how the material, transportation, and calendar constraints, which are considered by the planning engine, affect the material availability and the scheduled dates of the visit tasks in Complex Maintenance Repair and Overhaul.

10. Release the sales order to update the material schedule dates in Complex Maintenance Repair and Overhaul.

### To release recommendations to Complex Maintenance Repair and Overhaul

1. Navigate to User Preferences > Other tab and select the Include Sales Orders check box to release the material available date of each sales order back to the Complex Maintenance Repair and Overhaul as the schedule date of the material requirement in Complex Maintenance Repair and Overhaul.

2. Navigate to Planner Workbench > Supply/Demand window.

3. Select the Release check box for the planned order that you want to release.

4. Select Plan > Release menu option.

   Oracle Advanced Supply Chain Planning sends back the material available date calculated for that sales order to Oracle Complex Maintenance Repair and Overhaul as the new scheduled date for the appropriate visit task.

### To view the updated schedule dates in Complex Maintenance Repair and Overhaul

1. Select the Oracle Complex Maintenance, Repair, and Overhaul responsibility.

2. Navigate to Planning > Long Term Planning > Visits.

3. Select the appropriate visit for which you want to check the scheduled materials and dates and click the Plan Visit button.

   The Schedule Visit page appears.

4. Select Scheduled Materials from the left-hand menu.

   The Scheduled Materials page appears.

   You can view the scheduled dates and quantities in this page. The exception dates returned by Oracle Advanced Supply Chain Planning, i.e. the dates on which the material is required but are not available are also displayed.

   For more details, see *Oracle Complex Maintenance, Repair, and Overhaul User's Guide* and *Oracle Demand Planning Implementation and User's Guide*.

## Integrating with Oracle Demantra Demand Management

The key elements of the Oracle Demantra Demand Management integration with Oracle Advanced Supply Chain Planning are:

- Collection of: data from Oracle Advanced Supply Chain Planning for Oracle Demantra Demand Management. This is reference data that comes to Oracle Advanced Supply Chain Planning from the EBS source instance using the standard collections or from legacy systems using legacy collections:
  - Hierarchy data
  - Manufacturing and fiscal calendars
  - Level values for hierarchies: Product category, product family, demand class
  - Level values for locations: Zone, customer class, business group, legal entity, sales channel
- Collection of data from the EBS source instance into Oracle Demantra Demand Management
  - Shipment and booking data (history series data)
  - Return history
  - Currencies and currency conversion rates
  - Units of measure and unit of measure conversions
  - Price lists

- Movement of approved final forecasts, forecast accuracy MAPE, and demand priorities from Oracle Demantra Demand Management into Oracle Advanced Supply Chain Planning:
  - Local forecast: Item, organization, week
  - Global zone forecast: Item, zone, week
  - Local forecast with demand class: Item, organization, week, demand class
  - Global zone forecast with demand class: Item, zone, week, demand class

See *Oracle Demantra Implementation Guide*, Demantra Demand Management to EBS Integration.

## Integrating with Oracle Demantra Sales and Operations Planning

The key elements of the Oracle Demantra Sales and Operations Planning (S&OP) integration with Oracle Advanced Supply Chain Planning are:

- A seeded Demantra export integration profile to expose the Consensus Fcst series to Oracle Advanced Supply Chain Planning.
- The ability to define in Oracle Advanced Supply Chain Planning a list of plans that are visible to Oracle Demantra Sales and Operations Planning. An Oracle Demantra workflow takes a list of these eligible plans.
- A workflow that imports the following streams from a single Oracle Advanced Supply Chain Planning plan:
  - Planned production
  - Constrained shipment forecast
  - Available supplier capacity
  - Required supplier capacity
  - Available standard (resource) capacity
  - Required (resource) capacity
  - Beginning on-hand
  - Dependent demand
  - Planned shipments

- Safety stock

See *Oracle Demantra Implementation Guide*, Demantra Sales and Operations Planning to Advanced Supply Chain Planning Integration.

# Asset Intensive Planning

You use asset intensive planning if you have a large supply chain responsible for asset lifecycle management.

You have both routine and non-routine asset maintenance visits. To drive material through the supply chain:

- Plan for the routine assembly maintenance visits based on operational history
- Forecast demand for non-routine assembly maintenance visits and components (both routine and non-routine) for the disassembly based on usage history

You disassemble assets and determine the components that do not need replacement and the components that need replacement

For the components that need replacement, you can:

- Repair them and replace them
- Use a replacement buy item
- Use a refurbished subassembly

For the components that need repair, you can repair them:

- Internally
- Externally

## Asset Intensive Planning Integration with Oracle Enterprise Asset Management

The purpose of this functionality is to plan asset intensive maintenance.

Oracle Advanced Supply Chain Planning considers the preventative maintenance activities managed in Oracle Enterprise Asset Management and generates the supply chain plan for both rebuildable and consumable items. The Oracle Enterprise Asset Management Maintenance Scheduler considers factors to the maintenance effort that Oracle Advanced Supply Chain Planning does not consider, for example, usage, meter readings, and calendar days.

**Process Overview**

Rebuildable items (rebuildables) are assets that you install, remove, overhaul, and reinstall, for example, engines, control boxes, and computer boards. Other components

that you remove, discard, and replace are consumables.

Maintenance activities, for example, inspection, overhaul, lubrication, repair, servicing, and cleaning, are the templates of work orders. The activities have an activity structure—the material requirements (maintenance bill of material) and operations and resource requirements (activity routing) that you need to perform the maintenance.

You associate activities with assets.

The preventative maintenance scheduler uses asset and rebuildable utilization meters and associated activities to forecast maintenance work orders (budget forecast template). The maintenance work orders forecast the material, resource, and budgetary requirements to maintain the assets for the budget horizon.

You can also create routine work orders and easy work orders manually. Oracle Quality and Oracle Service create work orders as well.

When you release repair work orders:

- The material and labor associated with the activity becomes part of the work orders.
- They pass to Oracle Production Scheduling for execution.

**Source Setup**

Define rebuildable items (asset group, asset type).

Define rebuild activities.

Define rebuildable item repair yields.

Define rebuildable item repair lead times.

Define repair activity bills of material.

Define repair activity routings.

Associate rebuildable items and rebuild activities (activity type).

See *Oracle Enterprise Asset Management Implementation Guide*.

## Collections: Oracle Enterprise Asset Management Rebuildable Activity Structures

Assets have Asset Type of Rebuildable Inventory.

Rebuildable items have:

- Item attribute Inventory Item selected
- User Item Type of Asset Activity

The activity is the type of maintenance activity you are performing.

- The collections process collects items from Oracle Enterprise Asset Management with asset-activity type.

- The planning process plans the asset items, and you specify the activities associated with an asset in item attribute Rebuild Activity.

You define values for activities on the source in Oracle Enterprise Asset Management and in the destination in Oracle Advanced Supply Chain Planning. Oracle recommends the values be the same in both places.

The activity structure from Oracle Enterprise Asset Management becomes the Oracle Advanced Supply Chain Planning repair structure.

### Collections: Oracle Enterprise Asset Management Production Work Orders

The process uses net change collections.

The process collects into order types:

- Maintenance Work Order
- Maintenance Work Order Demand

The work orders item in Oracle Enterprise Asset Management is the activity item. In Oracle Advanced Supply Chain Planning, the work order item becomes the related inventory item of:

- For assets, Asset Group
- For rebuildables, Rebuildable Item

The process collects work order with these statuses:

- Unreleased
- Released
- On Hold
- Pending Scheduling
- Draft

The process collects these Oracle Enterprise Asset Management work order attributes:

- Rebuild or Asset Activity: The maintenance activity being executed.
- Produces to Stock: Asset work orders do not make supply, rebuildable work orders make supply.
- Class Code: The expense accounts for the work.
- Maintenance Plan: The forecast name of the budget forecast that this work order belongs to

- Activity Type: The type of maintenance activity performed
- Priority
- Project: Project and task

### Collections: Oracle Enterprise Asset Management Aggregate Budget Forecasted Work Orders

Oracle Enterprise Asset Management budget forecasted work orders occur:

- In forecast sets
- When the maintenance planner assigns preventative maintenance schedules to assets/activities and rebuildables/activities. From these come projected material, resource and budget requirements.

The process collects them in to the same order types and collects the same work order attributes as the Oracle Enterprise Asset Management production work orders.

The collections process buckets these aggregate budgeted forecasted work orders into one work order per period, grouped by

- Month
- Item
- Oaganization
- Maintenance Plan
- Asset Group
- Class Code
- Produce to Stock

You can control this collection with these parameters

- EAM Forecast: To collect them, select Yes
- Start Date
- End Date

Oracle recommends that you collect budgeted forecasted orders at least up to the Oracle Advanced Supply Chain Planning planning horizon.

ASCP collects aggregate forecasted work orders with these key attributes:

- Rebuild or Asset Activity

- Asset Group: The item
- Class Code: The expense accounts
- Priority
- Project
- Maintenance Plan: Forecast name

The collections process uses each order start date to assign the aggregate planned repair order to a period.

The due date of the order is the last day of that period.

The material and resource requirements are on the first day of that period. They include all of the components and resources on the detailed planned repair orders.

These work orders are firm and cannot have substitute components.

## Make Resource Unavailable

The collections process determines shut down times of the production resources that correspond to the assets.

**Asset and Production Resource Link**

Equipment items are resources. You can link an asset to an equipment item.

You identify an equipment item by:

- In EAM, Asset Number,. You do not identify it by Equipment Item nor Serial Number
- In ASCP, Resource Code

**Shutdown Type**

When your asset is not available during maintenance, ASCP can make dummy work orders to use up the asset resource capacity. The duration is the shutdown specified on the rebuild activity / operation.

The process decides to make a resource unavailable to production scheduling by looking at attribute Shutdown Type.

If it is:

- Required, the resource is not available
- Not required, the resource is available

You can enter Shutdown Type against work orders and operations:

- If you enter Required for a work order, the process ignores operation Shutdown

Type and makes all resources available or unavailable for the time of the work order

- If you enter Not Required for a work order, the process ignores work order Shutdown Type and makes each resource available or unavailable according to operation Shutdown Type for the time of its operation

If the asset is available during maintenance, set the value of work order Shutdown Type to Not Required. If the asset can generally be available during maintenance except during certain operations, set the value of:

- Work order Shutdown Type to Not Required
- Operations Shutdown Type to Required

Forecast work orders do not have operations, so you cannot mark operation-level shutdowns.

The shutdown duration is from Scheduled Start Date to Scheduled Completion Date. If the work order has started, the resource unavailability starts on Actual Start Date.

The dummy maintenance work orders:

- Have work order numbers end with –R
- Are firm
- Have no components
- Can span the time of more than one EAM work order, for example, one for battery change and one for daily maintenance

### Maintenance Plans

Each Oracle Enterprise Asset Management work order has attribute Maintenance Plan with values:

- Production for the production work orders
- <forecast name> for the budget forecast work orders
- <simulation set name> for Oracle Complex Maintenance, Repair, and Overhaul simulation sets

## Asset Intensive Planning Integration with Oracle Complex Maintenance, Repair, and Overhaul

This describes integration between Oracle Advanced Supply Chain Planning and Oracle Complex Maintenance, Repair, and Overhaul.

## Planning Scope

ASCP plans material and resource supply for complex assemblies (rotable items) and components (repairable items) associated with:

- Routine maintenance requirements
- Non-routine maintenance requirements
- Operational visits

ASCP recognizes the defectives in the supply chain and:

- Plans repair orders based on sourcing preferences
- Maximizes the supply from repair
- Plans and executes the repair order by recommending adequate repair orders and defective move orders to move defective to repair site.
- Tracks the inventory and transactions across the extended supply chain
- Uses repair lead time or a repair bill of material/repair routing to plan for the auxiliary materials and resources you need to perform the repair
- Considers repair constraints like yield, repair lead-time and the various transfer and processing lead-times
- Considers the return forecast as a future repair supply

ASCP creates:

- Planned complex assembly repair orders with suggested maintenance organizations
- Planned component work orders with suggested maintenance organizations

ASCP

- Plans to the visit and work order priorities set in cMRO
- Looks for alternate parts
- Uses simulation sets (simulated unit maintenance plan)

## Destination Setup

Define repair activities.

Define scrap rate.

Define repair at sourcing.

Define buy from (outside processing) sourcing.

Set profile option MSC: Enable Advanced Constraints value to Yes.

Set plan option, Constrain Mode value to Constrained (without detailed scheduling).

### Collections: Oracle Complex Maintenance, Repair, and Overhaul Work Orders

The collections process collects cMRO work orders associated with visits.

The collections process collects cMRO work orders with these types:

- Unreleased
- Released
- On Hold
- Parts Hold
- Pending QA Approval
- Pending Deferral Approval
- Pending Scheduling
- Import

The collections process collects into these ASCP order types:

- Supply: Maintenance Work Order
- Demand: Maintenance Work Order Demand

It collects cMRO Visit attributes:

- Visit: An asset and work orders to accomplish a set of maintenance tasks
- Produce To Stock: Work orders that produce supply
- Produce To Stock: Work orders that produce supply
- Operating Fleet: A group of assets used to define a fleet management program
- Maintenance Plan: Primary Plan, or the name of a simulation plan

### Collections: Oracle Complex Maintenance, Repair, and Overhaul UMP Aggregate Work Orders

The collections process collects and aggregates cMRO UMP requirements that the collections process brings into ASCP as work orders.

The collections process buckets these aggregate work orders into one work order per period, grouped by:

- Month
- Item
- Organization
- Maintenance Plan Primary
- Maintenance Requirement
- Operating Fleet
- Produce to Stock

The collections process uses order due dates to assign them to periods The due date of the aggregate orders is the last day of that period.

The material and resource requirements are due on the first day of that period. They include all of the components and resources on the detailed work orders. The UMP aggregate work orders do not have substitute components.

Do not release these work orders.

Use these collections parameters to control the collections process for them: cMRO Forecasts: Select Yes to collect them

- Start Date
- End Date

## Asset Intensive Planning Strategy

This describes Oracle Advanced Supply Chain Planning processing.

### Overview

The strategy of planning for supply of repair and rebuildable items is to:

- Issue the items for repair or rebuild
- Create supplies of the repaired and rebuilt items

The planning process, for EAM:

- Collects rebuildable activity structures
- Collects production work orders

- Collects forecasted work orders
- Plans repair work orders for rebuildable items and purchase requisitions for consumable items.

The planning process, for cMRO:

- Collects work orders
- Considers collected cMRO work orders as firm, except for substitute items
- Balances supply and demand for the visit schedule and unit maintenance plans for items with attribute Produces to Stock set to Yes
- If there is not sufficient component material or resources to satisfy all maintenance work order demands on time, satisfies the higher priority work orders first and may satisfy lower priority work order demands late.
- If cMRO reserved items for a visit work order, applies the reservations to the planned maintenance work orders.
- Releases planned repair work orders to cMRO

  Release planned transfers of defective and usable items as internal requisitions / internal sales orders

  Releases planned buy orders as purchase requisitions

In Oracle Advanced Supply Chain Planning, to select the work orders for the planning process to use, select them in plan option Maintenance Work Orders.

You perform asset intensive planning using a constrained plan.

You cannot use batch plan and online replan.

### Usable vs Defective

The planning process uses items in:

- Usable subinventories as sources for good items
- Defective subinventories as sources of defective items to repair into usable items

Make at orders have demands for usable components.

Repair orders have demands for usable and defective components.

The planning engine decides whether material is usable or defective based on the subinventory Default Locator Status.

Material that is in or is going to subinventories with these locators is defective:

- Unserviceable

- Unserviceable: Not Available for Netting, ATP and Reservations
- MRB Review
- QC Hold
- Quarantine

You can mark Oracle Service Parts Planning Condition Type to Defective as well.

## Sourcing Rules and Assignment Sets

Make different sourcing rules for defective items and usable items so that the defectives go to appropriate repair organizations and subinventories.

**Repair at**

Repair at sourcing rule indicates that you repair the item at the organization.

Assign the repair at sourcing rule to organizations where you perform repairs, either at instance-org level or item-instance-org level.

The assignment set Condition is the condition of the repairable at the end of the process. Set it to Usable.

**Transfer from**

When you use transfer from sourcing rules to get material to a repairable facility, set its assignment set Condition to Defective.

## Removals Forecast

Any components of repair or maintenance work orders may be defective.

The planning process looks at all cMRO work orders that have a demand for a rebuildable item. When you installing the rebuildable item you remove a defective item for repair. The planning process uses these defective component requirements to create a removals forecast.

To mark a component as repairable, set destination item attribute Repair Module to EAM or CMRO. This tells the planning engine which application manages the item's maintenance.

It aggregates the information for each item as a removals forecast. To see this, select plan option Derive Returns Forecast from Work Orders.

The planning process groups the removal forecast by item, organization, and date.

**Legacy Reverse Supply Chain Planning**

If you use legacy collections, you can collect a returns forecast (legacy reverse supply chain planning). It goes into order type Returns Forecast at the organization level. In plan options, organizations tab, specify the return forecast name.

## Order Types

These order types relate to asset intensive maintenance:

- Planned Repair Work Order
- Maintenance Work Order
- Maintenance Work Order Demand
- Part Demand
- Planned Part Demand
- Returns Forecast
- External Repair Order

## Scrap Rate and Repair Yield

Scrap rate (item organization item attribute) is the typical percentage of removals that are unrepairable defectives--repairable components that you scrap before putting them into subinventory

The repairable returns = [Returns Forecast * (1 – Scrap Rate)]

Repair yield (item attribute) is the typical percentage of repairable returns that you typically successfully repair. You can specify it in the source instance, the destination instance, or a simulation set.

The planning engine calculates the number of defectives you need to produce one unit of usable item [1 / repair yield]. It matches with the supply of defectives calculated using the returns forecast and the scrap rate (the repairable returns).

The quantity of the repairable component is [Work order quantity * (1 – Scrap Rate) * Repair Yield].

The repair yield applies to repairable components, not to consumable components--they use the make component scrap and yield item attributes.

The maximum number of usable parts that the repair process can create is Onhand + [(1 – Scrap Rate) * Repairable Returns]] * Repair Yield

## Planned Repair Orders

Repair orders are similar to make orders except:

- Their sourcing is Repair at
- The defective items are components

- The usable item is the repaired assembly

The repair structure does not have the defective component in it; the planning process creates it when it sees a Repair at sourcing rule.

If there is no repair structure, the planning process creates a repair work order without it.

It:

- Calculates the lead time from the routing. If there is no routing, it uses the value in item attribute Repair Lead Time. You can enter lead time in a simulation set as well.
- Plans the due date of components according to their offset percents. It loads the defective component to the first operation.
- Plans resources by their offset percents
- Plans for substitute components and alternate bills of material and routings

If you mark an asset as an outsourced assembly and a buy item, the planning engine plans a buy order against your manufacturing partner.

If you transfer your defective parts to other organizations for repair, the planning process plans the transfers.

The planning engine considers maintenance orders as firm. It:

- Does not recommend reschedule or cancel them
- Does recommend component substitutions

For each planned repair order, the planning engine looks at item attribute rebuild activity and uses its bill of material and routing to:

- Create component demand for defectives of the planned repair work order item
- Add consumable component demand from the repair bill of material
- Add the routing information from the repair routing
- Account for the repair yield

It combines planned repair orders for the same date into a single order.

For duration, the planning engine uses the rebuild activity operation durations. If there are no operations, it uses item attribute Repair Lead Time.

The planning process uses item attribute Repair Lead Time--when there is no routing--to determine when you need the defective component. You can set it in the destination instance at the organization level or in a simulation set. The simulation set overrides the destinations instance setting.

### Aggregate Collected Work Orders

Aggregate collected work orders aggregate these production and forecast maintenance demands into monthly buckets:

- cMRO Visit Work Orders – Production
- cMRO Unit Maintenance Plan – Forecast
- eAM Production
- eAM Budget Forecast

You set plan option Maintenance Work Order Aggregation Horizon to Aggregate

Before the start of the aggregation horizon, the planning process does not further aggregate the collected work orders.

Within the aggregation horizon, the planning engine aggregates the collected forecasted work orders and production work orders.

It aggregates cMRO forecasted and production work orders based on these attributes:

- Month
- Item
- Organization
- Maintenance Plan
- Maintenance Requirement
- Operating Fleet
- Produce to Stock

It aggregates EAM forecasted work orders based on these attributes:

- Month
- Item
- Organization
- Maintenance Plan
- Asset Group
- Class Code

The planning process uses order due dates to assign the aggregate planned repair orders to periods.

The due date of the order is the last day of that period.

The material and resource requirements are on the first day of that period.

They include all of the components and resources on the detailed planned repair orders.

### Internal/External Repair Decision

You can assign sourcing rules to model your internal/external repair business model.

When the planning process cannot meet repair demands on-time, it suggests outside processing (external repair) for them and creates a planned purchase requisition. You must set up outside processing.

The planned repair order has no bill of material and routing.

See Outside Processing.

### Project/Task Planning

The planning process links the maintenance work order to a project and task.

Maintenance work orders that you assign to a project/task generate dependent demands assigned to the same project/task. The planning process pegs these dependent demands to supplies based on your choice of plan options Reservation Level and Hard Pegging Level.

Buy orders that the process associate with the work order have the same project and task reference.

The project cost collector process passes these costs to the work order's project work in process accounts, rather than the accounts associated with the asset or organization.

If you use Seiban numbers, the Seiban number is a project number in ASCP. To instruct the planning engine to peg on hand lots, purchase orders, and work orders to specific demands based on the Seiban numbers, set Reservation Level to Project.

### Exception Messages

In context window Exception Details, you can see Part Condition.

These are the exception messages that the planning engine issues in asset intensive planing situations. See Understanding Exceptions, page 15-14:

1. Material and Resource Capacity Exception Group > Late replenishment to maintenance work order demand
2. Material and Resource Capacity Exception Group > Maintenance work order resource overload
3. Substitutes and Alternates Used Exception Group > Work order uses substitute

component

4. Shortages and Excess Exception Group > Items with a shortage
5. Shortages and Excess Exception Group > Items with excess inventory
6. Shortages and Excess Exception Group > Items below safety stock

### Planner Workbench

The context windows Supply, Demand, Supply/Demand and Onhand show these order attributes for cMRO work orders and you can filter on them

- Visit
- Produce to Stock
- Maintenance Requirement
- Operating Fleet
- Maintenance Plan

The context windows Supply, Demand, Supply/Demand and Onhand show these order attributes for EAM work orders and you can filter on them:

- Part Condition
- Produce To Stock
- Activity Type
- Activity Name
- Class Code
- Asset Group
- Maintenance Plan: Production for production work orders

The context windows Horizontal Plan and Vertical Plan show these order types:

- Planned Repair Work Order
- Maintenance Work Order
- Maintenance Work Order Demand
- Part Demand

- Planned Part Demand
- Returns Forecast
- External Repair Order

You can select them in the Plan Preferences.

The context window Horizontal Plan shows these calculations:

- Defective On-Hand
- Defectives In-Transit
- Projected Available Balance (Defective)

You can select them in the Plan Preferences.

The context window Horizontal Resource Plan shows these order types:

- Planned Repair Work Orders
- Maintenance Work Orders

You can select them in the Plan Preferences

The pegging tree Properties window shows these order attributes:

- Operating Fleet
- Maintenance Requirement
- Class Code
- Asset Group

If you manually enter a planned repair work order, update these fields:

- Org
- Item
- Order Type
- New Date
- New Qty

**Recipe Information**

Context windows Supply/Demand and Process Effectivity show Oracle Process Manufacturing recipe, formula, and routing information. Field:

- Alternate Bom displays recipe/version and formula/version, for example, RITUXAN/1, RXNFORMULA/1
- Alternate Routing displays recipe/version and formula/version, for example, RITUXAN/1, RXNROUTING/1

### Planned Repair Order Release

You can release recommendations to cMRO, EAM, or Legacy. Specify which one in item attribute Repair Module. You must specify a simulation set in plan options Item Simulation Set for the planning process to assign a repair module.

When you release a repair work order for EAM:

- The material and labor associated with the activity becomes part of the work orders.
- They pass to Oracle Production Scheduling for execution.

When you release a planned repair work order for cMRO, the release process implements it as a planned repair work order with a suggested organization to perform the repair.

If you select Legacy, use Feed Work Order Supplies to feed back the legacy work in process supplies to ASCP.

### Resource Information Feedback

You can send resource availability information from ASCP to cMRO.

In plan options, aggregation tab, set Items to Item and Resource to Individual.

This process involves maintenance work orders, it does not involve forecasted work orders.

Start concurrent process Load Net Resource Availability from Planning to CMRO.

It sends resource availability from the plan name specified in the profile option MSC: Plan Name for CMRO to cMRO

cMRO uses this information and resource usage information from Oracle Work in Process to show available slots for scheduling new maintenance work orders.

### Outside Processing

You can source for outside processing in these ways:

- Proportional sourcing: From internal and external repair sources, for example, 80% internal and 20% external
- Rank based sourcing: Internal is rank 1 and external is rank 2
- Combination repair and new buy: For example internal repair is rank 1, new buy is

rank 2, and external repair is rank 3

Outside processing entities are:

- Sales Order: Demand for the defective item and its shipment from the maintenance organization to the outside processing supplier
- Purchase Order: Purchase of the outside processing service. This does not apply to non-asset intensive planning.
- RMA: Supply of a usable (repaired) item and its return to the maintenance organization. The order type is External Repair Order. The planning process sees these as firm supply orders.

Do not use outside processing when, during a visit, you decide to send an item for outside processing.

Oracle recommends that you model an outside processing department and resource in a separate organization. You do not have to mark it as an external organization.

If you do, you can see the ASCP recommended planned external repair work orders separately from the ASCP recommended internal repair work orders in the cMRO Planning Workbench. The external repair order supplies and sales order demands also appear there.

In these Planner Workbench context windows, the RMA supply shows as order type External Repair Order:

- Supply, Demand, Supply/Demand
- Horizontal Plan
- Vertical Plan
- Enterprise Plan

## Integrating Oracle Production Scheduling

Oracle Production Scheduling enhancements and updates support Production Scheduling integration with Oracle Enterprise Asset Management (eAM) and Oracle Complex Maintenance Repair and Overhaul (cMRO). For more information, refer to Setting Schedule Options, page 19-23.

# 19

# Integrating Production Scheduling

This chapter covers the following topics:

- Overview
- Running Production Scheduling in Standalone Mode Without ASCP
- Running Production Scheduling with ASCP
- Setting Profile Options for Production Scheduling
- Setting Resource Parameters for Production Scheduling
- Defining Resource Relationships for Production Scheduling
- Defining Item Consumption Time Target for Production Scheduling
- Setting Up Batchable Resources
- Setting Forecast Priorities
- Using Replacement Groups as All-of-Sets
- Running Collections
- Creating a Schedule
- Setting Schedule Options
- Running a Schedule from the Workbench
- Submitting Model Generation
- Integrating to Production Scheduling
- Copying a Schedule Within Production Scheduling
- Publishing a Schedule
- Running Production Scheduling as a Service
- Feeding a Production Schedule Back into ASCP

## Overview

Oracle Production Scheduling (PS) enables production schedulers to create detailed finite capacity and materially constrained optimized production schedules to drive shop floor execution and material planning. Production Scheduling uses a constraint-based approach to automated scheduling. Unlike traditional automated scheduling tools that are limited to simple dispatch rules and have known bottlenecks, constraints in Production Scheduling can be assigned to every element - resources, operations, and due dates in a schedule. Through an advanced solver technology, feasible solutions can be found, if they exist, for virtually any floating constraints.

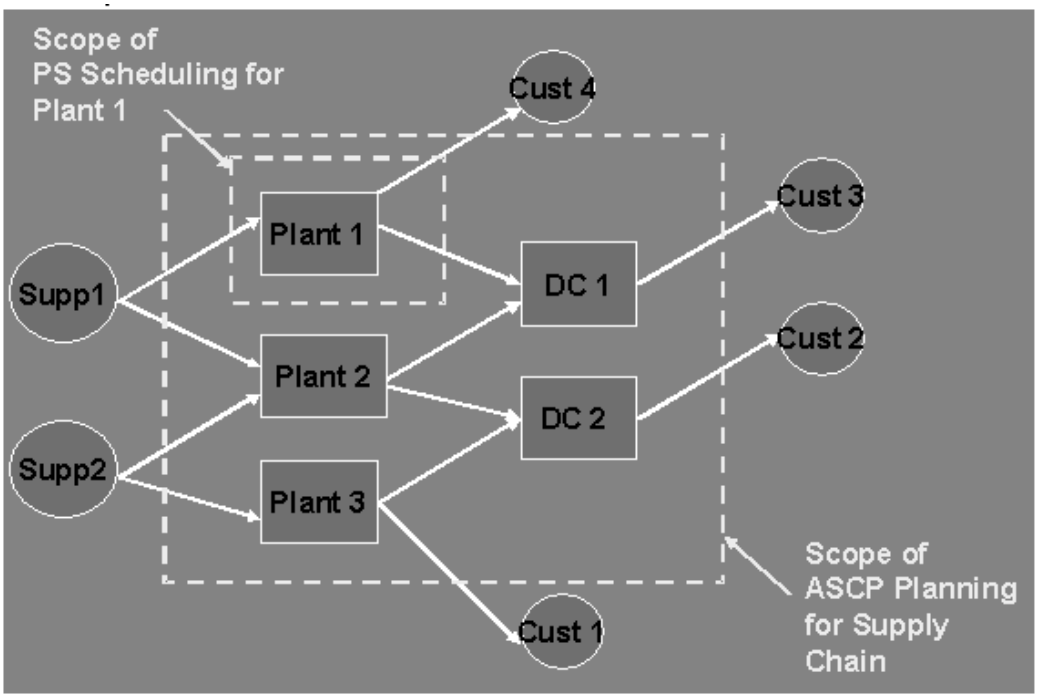
Production Scheduling can either interact only with the E-Business Suite, or additionally receive planned orders from Advanced Supply Chain Planning (ASCP) when generating detailed production schedules.

This chapter explains:

- The interaction between Production Scheduling, ASCP, and the E-Business Suite, and the data and process design considerations that enable a well integrated planning and scheduling process.
- The configuration of the Oracle E-Business Suite to create production schedules.
- The process of running schedules in Production Scheduling and publishing them back to the E-Business Suite

Production Scheduling can interact with the Oracle E-Business Suite independently, or in concert with ASCP.

The graphic below shows the scope of Production Scheduling in comparison with ASCP.



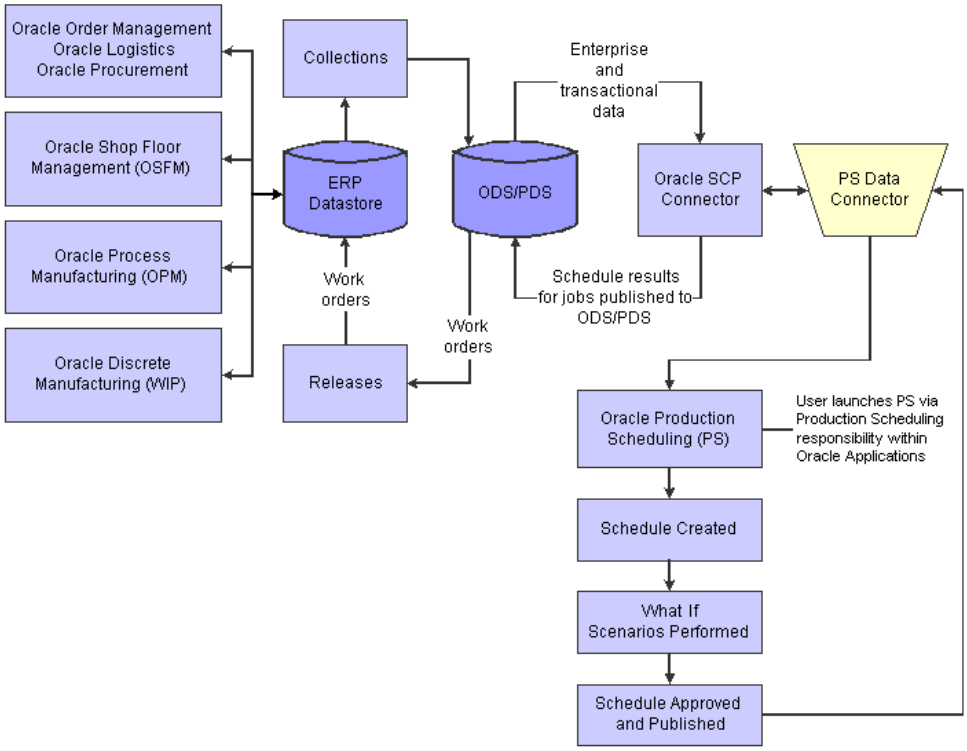

The objectives of ASCP and Production Scheduling are compared below:

| ASCP | Production Scheduling |
|---|---|
| Create New Supply Orders | Schedule the supply orders that have already been created |
| Create a supply chain plan for a network of plants, warehouses, suppliers and customers in the supply chain | Create a production schedule for a single manufacturing facility |
| Plan a mid to long term horizon (for example, 6 months to 1 year) | Schedule the short term horizon (for example, 2 to 8 weeks) |
| Model aggregate level production constraints | Model very detailed production constraints |
| Make decision on procurement - Create new purchase orders | Consider existing purchase orders as a source of supply. No new purchasing decisions taken |

## Running Production Scheduling in Standalone Mode Without ASCP

It is possible to run Production Scheduling without ASCP. When configured in standalone mode, Production Scheduling only schedules the work orders that it

receives from Oracle ERP. Production Scheduling does not schedule any planned orders because ASCP is not being used in the standalone Production Scheduling configuration.




The source of demands to Production Scheduling when running in standalone mode are:

- All external sales orders
- All internal sales orders
- Forecasts from a demand schedule

Production Scheduling does not perform any forecast consumption in this case. Forecasts are considered outside the demand time fence while sales orders are considered within the demand time fence.

> **Note:** If the total quantity of demand is greater than the total quantity of supply fed into Production Scheduling in the form of work orders, Production Scheduling will create new supplies. However it will not be possible to release these new supplies as new work orders into the execution system.

The process for using Production Scheduling with the Oracle E-Business Suite in standalone mode is as follows:

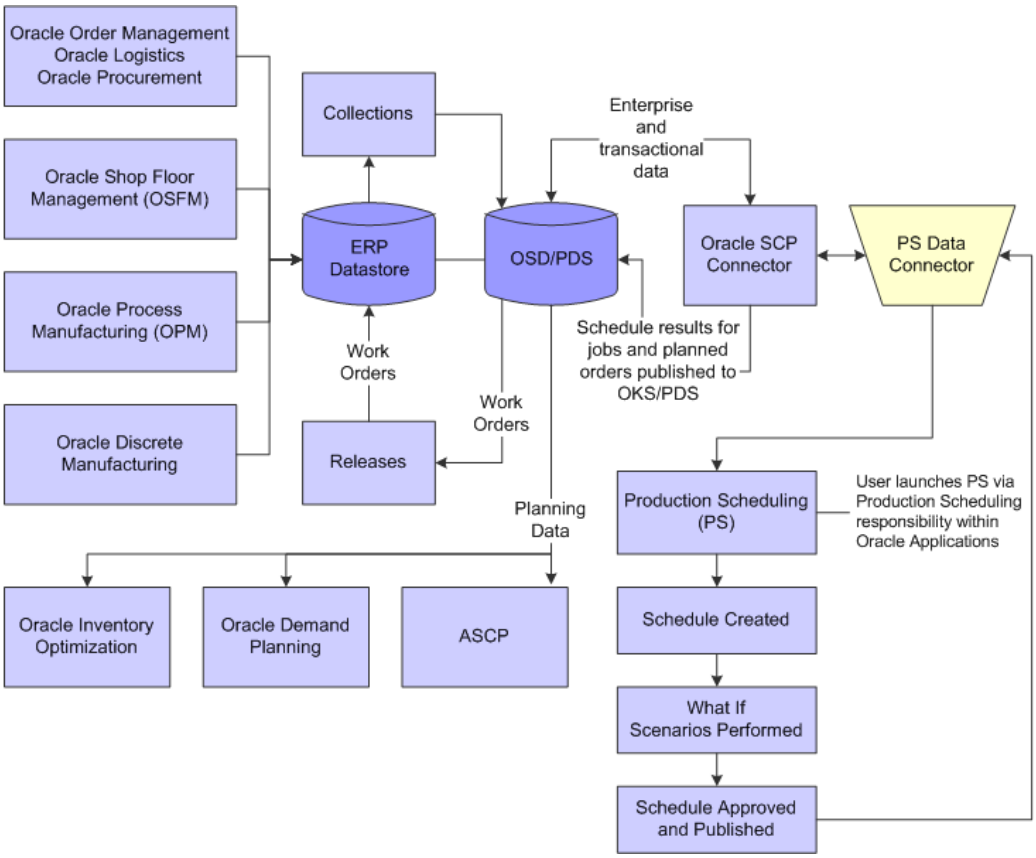
1. A Production Scheduling schedule is run from the Oracle Workbench, extracting fresh ERP data from the E-Business Suite.

2. Within Production Scheduling, various scenarios are run until the best schedule is achieved.

3. The preferred schedule is approved and published back to the planning server, and work orders are released automatically to the E-Business Suite.

## Running Production Scheduling with ASCP

When configured to run in concert with ASCP, Production Scheduling receives planned orders from ASCP. Once Production Scheduling comes up with a detailed shopfloor schedule, it communicates the schedule directly with the E-Business Suite and a portion of this schedule is fed back into ASCP to constrain the subsequent run of the ASCP plan.




ASCP is a tactical and operational planning tool. It creates supply orders called planned orders to meet demands that are present in the supply chain. In doing this it makes decisions based on:

- The size of the supply orders. Various order sizing rules can be used such as Fixed Order Quantities, Fixed Days of Supply, and Fixed Lot Multiples.
- The choice of alternates on the supply orders
  - Alternate source facilities
  - Alternate suppliers
  - Alternate BOMs and Routings
  - Substitute Components
  - Alternate Resource
  - End Items Substitutes

The demands that Production Scheduling sees are:

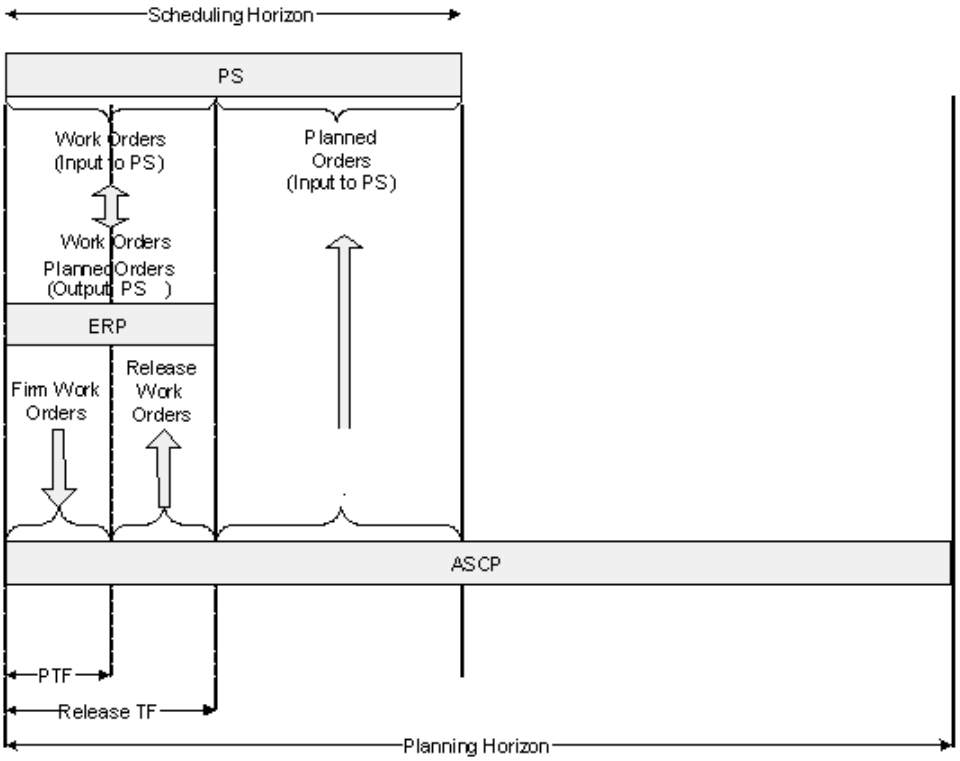
- Inter-organizational transfer demands placed against the organization that is being scheduled by the downstream organizations in the supply chain including:
  - Internal sales orders
  - Planned order demands which are fed in from the ASCP plan to the production schedule.
- Independent customer demands placed against the organization being scheduled including:
  - Sales orders
  - Forecasts

  Both the sales orders and forecasts are fed in from the ASCP plan. The forecast quantities are reduced by the sales orders consumed in the ASCP plan.

  In addition to the sales orders and forecasts from the ASCP plan, any new sales orders that have been collected into the planning server since the last run of the ASCP plan are also input into Production Scheduling provided these sales orders are due within the Demand Time Fence (a schedule option).

  > **Additional Information:** Production Scheduling will not perform any forecast consumption for these new sales orders.

Business Process with ASCP:




1. Run the ASCP plan. Within the planning time fence (PTF), ASCP does not create new orders. The existing work orders within the planning time fence are treated as firm in ASCP.

2. Release new orders from the ASCP plan using either a manual release process or an automated process. In the automated process, all work orders within the release time fence are released.

3. Run Production Scheduling. This process extracts the latest data from the E-Business Suite and ASCP:

   - The work orders within the planning time fence. These work orders are not treated as firm in Production Scheduling unless they are manually firmed using the Firm flag.

   - The new work orders released from ASCP

   - Planned orders from ASCP that exist within the scheduling horizon specified for the Production Scheduling schedule

4. Run various scenarios in Production Scheduling until the best schedule is achieved.

5. Approve and publish the preferred schedule to release any work order reschedules

and scheduled planned orders back to the execution system.

## Setting Profile Options for Production Scheduling

To produce schedules based on the E-Business Suite data, you must configure the profile options to collect the correct information for the data snapshot. The following profile options must be set for Production Scheduling:

- MSC: PS - Snapshot Base Package
- MSC: PS - Snapshot Beginning Inventory Package
- MSC: PS - Snapshot Calendar Package
- MSC: PS - Snapshot Customer Package
- MSC: PS - Snapshot Distributor Package
- MSC: PS - Snapshot Enterprise Forecast Package
- MSC: PS - Snapshot Inventory Safety Targets Package
- MSC: PS - Snapshot Manufacturing Package
- MSC: PS - Snapshot Purchase Orders Package
- MSC: PS - Snapshot Sales Orders Package
- MSC: PS - Snapshot Supplier Package
- MSC: PS - Snapshot Transfer Orders Package
- MSC: PS - Snapshot Work Orders Package
- MSC: PS Currency Symbol
- MSC: PS Resource Constraint Horizon
- MSC: PS Run Application Script
- MSC: PS Run Connector Script
- MSC: PS/SNO Alignment Date
- MSC: PS/SNO API Version
- MSC: PS/SNO Client Install Path

- MSC: PS/SNO Compress XML Package Files
- MSC: PS/SNO Data Store Path
- MSC: PS Enable CRO Scheduling profile
- MSC: PS Consistent Resource Assignment
- MSC: PS/SNO App Server URL
- MSC: PS Allow WO Purchased Item Offloading

See MSC Profile Options, page A-13 for more information about setting the Production Scheduling profile options.

## Setting Resource Parameters for Production Scheduling

When integrating resource data, you must set up resources in Oracle EBS so that the data easily transfers to Production Scheduling.

Using the Resource Parameters page, you can:

- Designate a resource as a crew, machine, or tool.

  **Additional Information:** When using OPM there is no distinction between machine and crew. All resources transfer a machines in Production Scheduling, unless you designate them as crew or tool on this form.

- Determine available spots for a batchable resource.
- Determine Campaign Run Optimized properties.
- Determine offloading properties.
- Determine the inventory release interval for lot multiples.

### To set resource parameters:

1. Using the Production Scheduler responsibility, select Setup.
2. Select Resource Parameters.
3. Complete these fields:

| Field/Flag | Description |
| --- | --- |
| Org | Select the organization in which the resource is in. |
| Department | Select the resource department. |
| Resource | Select the resource. |
| Description | The description is displayed from the resource table. |
| Type | Select Crew, Machine, or Tool. This field transfers to the resource category in Production Scheduling. |
| Batchable | Displays if the resource is batchable. Batchable resources are set up on the Resources page. See Setting Up Batchable Resources.<br><br>This field transfers to the Batchable field on the Resource Properties window, Resource Capacity tab in Production Scheduling. |
| Available Spots | Enter the available spots within the resource if it is batchable.<br><br>This field transfers to the Maximum field within the Capacity Limits group box on the Resource Properties window, Capacity tab in Production Scheduling. |
| CRO | Select this check box if the resource is to be solved using Campaign Run Optimization. Only single capacity machines can be designated as campaign run optimized.<br><br>This check box transfers to the Use Campaign Run Optimization field on the Resource Properties window, Solver Options tab in Production Scheduling. |

| Field/Flag | Description |
| --- | --- |
| Min Cycle Time | Enter the minimum amount of time required to cycle through demand for the items produced. This is the frequency at which items are typically manufactured. Minimum cycle time can be set to **Shift**, **Days**, or **Weeks**, and should match the manufacturing pattern. For example, if items are manufactured on a daily basis, minimum cycle time should be set to day. If items are not typically produced more than once a week, the minimum cycle time should be set to week. Production Scheduling uses the cycle time to collect and aggregate demand when generating runs.<br><br>This value transfers to the Minimum Cycle Time field on the Resource Properties window, Solver Options tab in Production Scheduling. |
| Time Unit | Select the time measurement that defines the Minimum Cycle Time value.<br><br>This value transfers to the Minimum Cycle Time measurement field on the Resource Properties window, Solver Options tab in Production Scheduling. |
| Minimize Changeover Between Cycles | Select this option to minimize the changeovers between cycles. Depending on what operations ran in the previous cycle, Production Scheduling will try to schedule operations without necessitating changeovers.<br><br>This value transfers to the Minimize Changeovers between cycles check box on the Resource Properties window, Solver Options tab in Production Scheduling. |

| Field/Flag | Description |
| --- | --- |
| Offload % | Enter the percentage of capacity above which Production Scheduling offloads production to alternate resources in the set.<br><br>This value transfers to the Offload Threshold % field on the Resource Properties window, Solver Options tab in Production Scheduling. |
| Offload Window | The defined time window before operations must begin, expressed in days, which can be used as the starting point for calculating resource utilization instead of the horizon start date. Using a global offload threshold window instead of the horizon start date allows you to evaluate resource utilization over a shorter period of time, which is closer to the time your operation must begin. This provides you with a more accurate picture of whether capacity is available to fulfill the operation on time. If resource utilization is greater than the offload threshold level, the operation can be transferred to an alternate resource for fulfillment.<br><br>This value transfers to the Prebuild Target field on the Resource Properties window, Solver Options tab in Production Scheduling. |
| Time Unit | Select the time unit that is associated with the Offload Window field. Valid values are: Minutes, Hours, Shifts, Days, or Weeks.<br><br>This value transfers to the Prebuild Target unit of measure field on the Resource Properties window, Solver Options tab in Production Scheduling. |

| Field/Flag | Description |
| --- | --- |
| Inventory Release Interval | Enter lot multiples as a frequency in which inventory is released downstream. For example, you may want to specify that inventory on a machine should be released every four hours so that all yielded quantities are calculated based on four-hour operation durations. This ensures the right level of plan detail is provided, while minimizing the amount of time to solve in Production Scheduling. The time based lot multiple can be specified for machines, crews, and tools.<br><br>This value transfers to the duration value field on the Link Properties window, Attributes tab in Production Scheduling.<br><br>The Inventory Release Interval or Time Based Lot Multiple is computed as: Usage x Efficiency x Time Based Lot Multiple. |
| Time Unit | Select the time unit that is associated with the Inventory Release Interval field.<br><br>This value transfers to the duration unit of measure field on the Link Properties window, Attributes tab in Production Scheduling. |

## Defining Resource Relationships for Production Scheduling

When integrating resource data for multistage synchronization (Make/Pack) environments, you must define resource relationships in Oracle EBS so that the data easily transfers to Production Scheduling. Defining your resource relationships is typically a one time setup task.

Use this Resource Relationship screen to specify the physical resource connectivity for multi-stage synchronization environments. Each resource relationship must be explicitly defined. These relationships are used by the solver when generating the schedule for a multi-stage synchronization environment.

**Production Scheduling and Resource Relationship Rules**

- A machine can either be an upstream resource or a downstream resource, but not both. Production Scheduling runs validation checks to verify resource assignments.

- Use the Resource Relationship screen to define all upstream and downstream resources to be considered when solving your schedule. If there are upstream resources which do not feed any downstream resources directly, or if there are downstream resources which can only be fed indirectly (for example, via totes), then these resources should be assigned to appropriate groups and entered in the Resource Relationship screen with a high Rank value (corresponding to a lower relevance).

### To define a resource relationship:

1. Using the Production Scheduler responsibility, select Setup.
2. Select Resource Relationship.
3. Click Add row button.
4. Complete these fields:

| Field/Flag | Description |
|---|---|
| Upstream Resource | Select a machine or a machine group, which can be used to produce bulk WIP items. |
| Downstream Resource | Select a machine or machine group, which can be used to consume bulk WIP items and convert them into finished good items. |
| Direct Only | Select Direct Only to indicate the downstream resource can only be fed directly. When selected, the solver will not consume any starting inventory on such resource, and will always have to schedule an upstream operation that provides the bulk WIP item. Note that if Direct Only is checked for a downstream resource in any one row, then this will apply to all jobs scheduled on that resource. If the Direct Only option is checked, then this indicates that the respective downstream resource must not be fed indirectly (for example via totes). |

| Field/Flag | Description |
| --- | --- |
| Rank | Use the Rank field to provide a value indicating priority for synchronization. The lower the value, the higher the synchronization priority when generating a schedule. Downstream resources, which have to be fed directly (Direct Only is checked), are implicitly considered most important, independent of the assigned Rank value. Downstream resources, which can only be fed indirectly via totes, typically have Creating Production Scheduling Models 5-141 the highest Rank values, corresponding to the lowest priority. |

5. When you have defined all the relations, save your changes.

### To remove a resource relationship:

1. Using the Production Scheduler responsibility, select Setup.
2. Select Resource Relationship.
3. Select a row containing the relationship you want removed.
4. Click the Delete button.
5. When you have made all the necessary changes, save your changes.

## Defining Item Consumption Time Target for Production Scheduling

When integrating resource data for multistage synchronization (Make/Pack) environments, you can define consumption time targets for items in Oracle EBS so that the data easily transfers to Production Scheduling. Consumption Time Target for items are used by Production Scheduling to generate synchronization exceptions. The Consumption Time Target is defined from the Item Attributes Mass Maintenance screen in the EBS environment.

The quality of the schedule from a synchronization perspective can be evaluated by measuring the time between when a bulk WIP item is produced and when it is consumed. This is referred to as *consumption time*.

The Total Consumption Time and the Average Consumption Time are calculated for all items that have the Consumption Time Target specified and can be produced and

consumed on upstream and downstream resources listed in the Resource Relationship screen. This information is found in the the Key Performance Indicators - Materials tab in Production Scheduling.

### To define a resource relationship:

1. Using the Advanced Supply Chain Planner responsibility, select Setup.
2. Select Item Attributes Mass Maintenance.
3. For the bulk WIP items, whose production on Make resources and consumption on Pack resources are synchronized, select the items and enter a numeric value, corresponding to number of days, in the Consumption Time Target field.

   Within Production Scheduling this value is used to generate exceptions, indicating synchronization issues.
4. When you have defined all item consumption time targets, save your changes.

## Setting Up Batchable Resources

A batchable resource can be described as a machine, oven, or kiln that processes many items simultaneously. Batchable resources must share one or more similar attribute such as temperature, color, or duration. Typically, these resources have several spots, such as locations or racks. When an item is placed within a batchable resource the item consumes one or more of these spots.

When defining a resource as Batchable, you must define a minimum and maximum spot capacity, and a pull forward window that allows the resource to be filled to its minimum spot capacity. If a minimum spot usage is required before setting up a machine to run a certain job type, the Production Scheduling solver may require to pull-forward subsequent operations to achieve the target minimum spot usage. However, it is important to note that target minimum spots are considered a soft constraint. This means that if no operations can be pulled forward to fulfill the target minimum usage (due to the pull forward window) or if there isn't enough demand in the model, the target can be violated and the user is presented with an alert.

### To set up resources as batchable:

1. From the Manufacturing and Distribution responsibility, select Bills of Materials, Routings, Resources.

   The Resources page appears.
2. Complete these fields:

| Field/Flag | Description |
| --- | --- |
| Resource | Enter the name of the batchable resource. |
| Type | Select Machine. Only machines can be batchable. |
| Basis | Select Lot. The machine must be defined as lot-based to make it batchable. |
| Batchable | Select to indicate the machine is batchable. This field is available for lot-based resources only.<br><br>This value transfers to the Batchable radio button on the resource Properties window, Capacity tab in Production Scheduling. |
| Minimum Batch Capacity | Enter the minimum batch capacity.<br><br>This value is used to calculate the lot multiple for the routing in Production Scheduling. |
| Maximum Batch Capacity | Enter the maximum batch capacity.<br><br>This value is used to calculate the lot multiple for the routing in Production Scheduling. |
| Batch Capacity UOM | Enter the batch capacity unit of measure.<br><br>This value is used to calculate the lot multiple for the routing in Production Scheduling. |
| Batching Window | This value transfers to the Pull Forward Window value on the resource Properties window, Capacity tab in Production Scheduling. |
| UOM | This value transfers to the Pull Forward Window UOM on the resource Properties window, Capacity tab in Production Scheduling. |

3. Access the Resources page for the department.

4. Select the Owned tab.

5. Find the batchable resource row, and select the Schedule by Instance check box.

   **Tip:** A batchable resource cannot be defined as a multi-capacity resource.

6. Access the Unit of Measure Conversions page.

7. Select the Inter-class tab.

8. Set up the Unit of Measure conversion between the batching capacity and the item UOM.

   This must be completed before a batchable resource can be assigned to an operation. The UOM conversion factor is used for calculating the lot multiples for the routing in Production Scheduling. The lot multiple for a routing with a batchable resource is calculated as the capacity of the machine per spot. This takes precedence over other parameters such as charge quantity (OPM), MTQ, and so on.

9. Access the Resource Parameters page.

10. Enter the Organization, Department, and Resource name.

    The Type field populates with the machine type, which is Machine.

    The Batchable check box is selected and a closed field. This value comes from the Resources setup page.

11. In the Available Spots field, enter the available spots within the resource.

    This field transfers to the Maximum field within the Capacity Limits group box on the Resource Properties window, Capacity tab in Production Scheduling.

### To assign a batchable resource to an operation:

1. Access the Operation Resources page.

2. Select the Scheduling tab.

3. In the Resource field, enter the batchable resource name.

4. In the Setup Type field, select one of the options defined on the resource for the operation.

### To assign the operation to the routing:

1. Access the Routings page.
2. On the Main tab, in the Referenced - Code field, enter the standard operation code for the operation.

## Setting Forecast Priorities

The forecast priority is specified for each demand in Production Scheduling. In the event of resource conflicts, higher priority orders are expected to receive preferential treatment over other orders in the system.

### Defining Forecast Priorities

Flexfields need to be set up to enter forecast priorities. Use the profile option: **MSC: Forecast Priority Flexfield**. This profile option indicates the flexfield that contains the priority.

## Using Replacement Groups as All-of-Sets

Resource replacement groups in EBS are used to create All-of-Sets in Production Scheduling.

Production Scheduling has four types of sets:

- Item sets.
- Resource sets.
- Operation sets.
- All-of-sets.

Items sets are specific to items where you can define and insert alternate items into operations.

Resource sets enable you to substitute resources within an operation such as substituting machine 1 for machine 2, or crew 1 for crew 2.

Operation sets enable you to substitute a production step within a routing.

All-of-sets is a set type that means all resources in the set are used to run the operation. All-of-sets enable you to select groups of resources within an operation, such as running an operation on line 1 and operator 1, or running the operation on line 2 and operator 2. In this case, line 1 cannot be run by operator 2, and line 2 cannot be run by operator 1.

## Example of Setting up Replacement Groups in EBS

On the Operation Resources form, Scheduling tab, a primary resource group is defined and consists of M1 and C1.

On the Operation Alternate Resources form, Scheduling tab, alternate resource replacement groups are defined where M2 and C2 have a replacement group value of 1, and M1 and C2 have a replacement group value of 2.

This implies that the operation can be run by one of the following resource groups:

- M1 and C1
- M2 and C2
- M1 and C2

### To set up replacement groups in EBS:

1. Access the Operation Resources form.
2. Click the Scheduling tab.
3. In the Resource field, enter the primary resources for an operation.

   **Tip:** The primary fields that are used for All-of-sets are: Sequence and Resource.

4. Access the Operation Alternate Resources form.
5. Click the Scheduling tab.
6. In the Resource field, enter the alternate resources.
7. In the Replacement Group field, assign the same value to the alternate resource groups.

   **Example**

   For example, all resources that belong to alternate resource group 1, are assigned an replacement group value of 1. All resources that belong to alternate resource group 2, are assigned a replacement group value of 2.

# Running Collections

The collections process for Production Scheduler is the same as the collections process for Oracle ASCP. There are no new data setups to be done for Production Scheduling if you have already performed these data setups for ASCP.

See Supply Chain Modeling, page 4-1 for details on how to set up manufacturing model related data in the Oracle E-Business Suite.

See Running Collections, *Oracle Advanced Supply Chain Planning Implementation and User's Guide* for more details about the data collections process.

Production Scheduling can now collect cMRO work orders. To supplement this data, six new tables have been added as this information is required to properly schedule cMRO work orders. This information is not available in standard collections and an API has been provided to augment the collected data. The tables are listed as follows:

1. Visits - Visit information including the start date, end date, and organization.
2. Work Order Attributes - Work order attribute information defining the work breakdown structure.
3. Work Order Milestones - The work order milestones for a given visit.
4. Work Order Operation Relation - Work order operation information including precedence constraints.
5. Work Order Breakdown - The work breakdown structure definition.
6. Work Order Task Hierarchy - Related work order information related work orders including precedence relationships.

To import this data, the legacy collection framework has been leveraged. A spreadsheet template can be downloaded to facilitate the data upload and download procedure. This template enables an Add-In where you can import the sample flat file format, which can then be exported using the Add-In. Once this has been exported, it can be uploaded using an upload utility.

To upload flat files:

1. Access Collect Flat File Data - Self Service. The Oracle Collaborative Planning - Load Data Files page appears.
2. Download the template, which will be in a self-extracting zip file executable, by selecting the Download link. A spreadsheet template is now available along with sample data files.
3. After populating the data and exporting, they can be uploaded using the Load Data Files page.

## Creating a Schedule

You can have multiple production schedules. You can either create a new schedule and go through all the steps to define it or you can base your schedule on an existing schedule, making changes where necessary.

### To create a schedule:

1. Sign in using the Production Scheduler responsibility.
2. Select the Names option.

   The Organizations window appears.
3. Choose the schedule's organization.

   The Production Schedule Name window displays all the current schedules associated with the organization you chose.

   **If you aren't basing your schedule on an existing schedule**

   1. Click the New button to add a new production schedule.
   2. Enter the following details about the schedule:

| Field/Flag | Description |
|---|---|
| Name | Define a schedule name. |
| Description | Define the schedule description. |

   The new schedule now appears on the production schedule list.

## Setting Schedule Options

Once the production schedule has been created, you can configure the model using the schedule options.

After signing in using the Production Scheduler responsibility, the Production Schedule Options window can be accessed in two ways:

- From the Applications menu, choose the Names option. Choose an organization, a production schedule, and then click the Schedule Options button.
- From the Applications menu, choose the View Schedule Options. Choose an organization, a production schedule, and then click the Schedule Options button.

The Production Schedule Options window appears.

### To set schedule options:

1. Enter schedule horizon, dates and times in the Horizon form.

| Production Schedule Options - Horizon Tab Fields | Description |
|---|---|
| Scheduling Horizon | The number of days for which the schedule is to be created in Production Scheduling. Forecasts, sales orders, and work orders that fall before or after the scheduling horizon are not imported. |
| Release Horizon | The number of days for which schedule results are sent back to the planning server and ERP source when the schedule is published from Production Scheduling. Only those work orders that start before the release horizon are exported. |
| Schedule Start Date Offset | The number of days relative to the current system date that should be used as the horizon start date for extracting snapshot data from the E-Business Suite. For example, if today is January 24th and you want the schedule start to be January 23rd, set this to -1. This is useful if you are running the schedule based on older transactional data. |
| Schedule Start Time | The start time for the schedule, expressed in hh24:mm format. |
| Schedule Start | The schedule start date and time computed from the current system date, the schedule start date offset, and the schedule start time entered in the above fields. |
| Schedule End | The schedule end date and time computed from the schedule start and schedule horizon information entered in the above fields. |

2. Access and fill out fields on the Scope tab.

| Production Schedule Options - Scope Tab Fields | Description |
|---|---|
| Include Past Due Sale Orders | The number of days before the schedule start date that sales orders can be considered as valid demands within Production Scheduling. |
| ASCP Plan Reference | Enter the ASCP plan from which Production Scheduling reads in dependent and independent demands as well as planned orders.<br><br>This applies to Discrete based jobs only. |
| Active Item Filter | Select this option to pull only those items that are active within the given Production Scheduling horizon. The items are considered to be active if and only if they have either supply or demand within the horizon. This feature applies to all items coming from ASCP plan and from Category/Category Set. |
| Schedule CMRO Work Orders | Use to schedule cMRO work orders and import closed visit work orders.<br><br>Select this option to import cMRO schedule (Visit) information into Production Scheduling and have it account for this data when generating schedules. Once this option is selected, you have the option of importing close Visit work orders.<br><br>**Note:** The ASCP Plan Reference field is no longer disabled for cMRO integrations. It is valid to run with an ASCP and cMRO orders in the same plan. |

| Production Schedule Options - Scope Tab Fields | Description |
|---|---|
| Import Closed Visit Work Order | Select this option, available when Schedule CMRO Work Orders is selected, to import closed work orders for a Visit that is currently being scheduled.<br><br>**Note:** This only applies to Visits that are open and imported into Production Scheduling. This option allows the scheduler to view the entire genealogy of the visit. |
| Consider EAM Schedule | Use to consider Oracle Enterprise Asset Management (eAM) maintenance work orders. Select to import Oracle Enterprise Asset Management work orders. Not applicable to Oracle Process Manufacturing and Oracle Shop Floor Management. |
| Include Past Due ___ Days | The number of days to import past due Enterprise Asset Management work orders. |
| Demand Timefence | The timefence to be used for sales orders and forecasts, expressed in number of days. The way sales orders and forecasts are handled depends on whether Production Scheduling works with ASCP, or connects directly to the E-Business Suite.<br><br>With an ASCP plan reference, only new sales orders collected since the last run of ASCP are considered within the demand time fence. These new sales orders will not consume forecasts. All other demands (sales orders and forecasts) are as they exist in the referenced ASCP plan.<br><br>Without an ASCP plan reference, all forecasts are dropped within the demand timefence and only sales orders are considered. |

| Production Schedule Options - Scope Tab Fields | Description |
| --- | --- |
| Bottleneck Resource Group | Select the bottleneck resource group for the organization.<br><br>A bottleneck resource group is a group of resources that represent the true constraints in the supply chain as pre-decided by the user. It is a way for the user to indicate that they do not want the planning or scheduling engine to consider the constraints on resources that do not belong to this group. The planning and scheduling engine is free to violate capacity constraints on the resources outside this group, which are often referred to as non bottleneck resources.<br><br>A resource can belong to only one bottleneck resource group. The bottleneck resource group is specified in the Department Resources Form. The Production Scheduling integration sets the resources belonging to the bottleneck resource group as Relaxed = No. Resource that do not belong to this group should be set as Relaxed = Yes. |

| Production Schedule Options - Scope Tab Fields | Description |
| --- | --- |
| Simulation Set | Select the simulation set for the organization.<br><br>A Simulation set is a vehicle for making resource capacity changes against a prescribed baseline. The baseline is established by specifying valid shifts for the resource in the Department, Resources, Shifts form. In this form, click on the Capacity Changes button to access the form where the baseline capacity of a resource can be modified.<br><br>When modifying the picture of baseline capacity of a resource, the user should also specify the name of a valid simulation set that will hold those capacity changes. A simulation set name is a pre-defined designator defined in Bill of Material, Setup, Simulation Sets.<br><br>**Simulation set example:**<br><br>Resource R1 works on a Monday through Friday working calendar. On each working day it has two active shifts namely Shift 1, which is from 07:00 - 15:00, and Shift 2, which is from 16:00 - 23:00.<br><br>If the user wants to create a scenario where they add a third shift in the month of January, they can do so in the form mentioned above, but when making the change they should specify the name of a simulation set such as, SIM_JAN_EXTRASHIFT.<br><br>The same user might want to simulate another scenario, for example, the resource is taken down from maintenance between 05-Jan-2006 and 15-Jan-2006. The user can do this as well using the above form and use another simulation set name to hold the change such as SIM_JAN_MAINTENANCE.<br><br>After all of this information is collected over |

| Production Schedule Options - Scope Tab Fields | Description |
|---|---|
| | to the APS server, the user can run multiple plans, with each plan specifying different simulation set names to model various what-if scenarios. |
| Purchase Lead Time Offset | Enter a value that determines the offset time between the ASCP plan and the detailed production plan created by Production Scheduling. This value considers the amount of time needed to run MRP plans and Production Scheduling plans. The unit of measure for this value is days.<br><br>For example, if the Purchase Lead Time Offset is set to 1, the system will add one day to all purchase lead times in Production Scheduling. |
| Include Past Due Demands | Enter the number of days before the schedule start date that ALL demands (SO, TO out, Forecast, etc.) can be considered as valid within Production Scheduling. |
| Include Past Due Supplies | Enter the number of days before the schedule start date that ALL supplies (Discrete/OPM/CMRO WO, PO, TO in, etc.) can be considered as valid within Production Scheduling. |
| Demand Schedules | Demand Planning forecast scenarios that are being brought into the schedule. This option is only available if you are not using an ASCP plan, and are running Production Scheduling in a standalone mode.<br><br>The demand schedules are used to read demand, such as a forecast. If an ASCP plan is used, the demand comes from the ASCP plan and this field is not used. If there is no ASCP plan then you need to specify demand through a demand schedule. |

| Production Schedule Options - Scope Tab Fields | Description |
|---|---|
| Category Set | The category set to be used to filter the items for consideration.<br><br>This value transfers to an item group folder in the Model Workspace tree in Production Scheduling. |
| Category | The categories from the category set to be included in the plan. |
| Description | The description of the category is filled automatically. |

3. Access and fill out the fields on the Schedule Parameters tab.

| Production Schedule Options - Schedule Parameters Tab Fields | Description |
|---|---|
| Cost Time Unit | Select the unit of measure for the cost time displayed in Production Scheduling. Valid values are:<br>• Minutes<br>• Hour<br>• Shift<br>• Day<br>• Week |
| Fixed Time Fence | Duration of the fixed time fence at the beginning of the calendar horizon. During this time, new operations are not scheduled by Production Scheduling. The fixed time fence applies to all resources. |

| Production Schedule Options - Schedule Parameters Tab Fields | Description |
|---|---|
| Decimal Precision | The number of decimal places to be used when defining precision for all items in the model. For example, a value of two would produce two zeros after the decimal point. The default is 2. |
| Use Work Order Units of Effort | Select this option if you want schedule work orders by their individual "unit of effort" instead of strictly by demand. Selecting this option can shorten the makespan required to produce an item by breaking the routings into multiple instances, enabling secondary operations to start earlier.<br><br>This option is not applicable for cMRO. This is specific to manufacturing customers with incremental inventory release. |
| Adjacent Operations Preferred | Select this option is you want to eliminate idle time when running multiple instances of an operation. Although this approach may increase the manufacturing makespan, it may improve the efficiency of the resources involved with the operation. |
| Enable Supply Tolerance Offset | Select to indicate that supply tolerance offset should be used. If this option is selected, there will be no net new production recommendations generated at any level in the BOM (for example, only work order supply production will be scheduled). If there is insufficient work order supply, inventory will be automatically added to prevent levels from falling below zero (demand is permitted to be shorted). A Production Scheduling log message is generated to indicate what inventory quantity adjustments were made. Using this feature assumes work order supply is sufficient to meet demand. |

| Production Schedule Options - Schedule Parameters Tab Fields | Description |
|---|---|
| Enforce Horizon Start | Select to move forward all operations running behind on various machines, without changing the sequence of the operations and consider upstream or downstream dependencies. There are a variety of different scenarios associated with this feature in regards to why operations may appear running in the past. For example, work order operations that have a Firm Start Date, Firm End Date, or Firm Date Range in the past, several work order operations that have an active status on the work order routing operation step that conflicts with another work order, and so on.<br><br>**Note:** When working with Visits, make sure "Pre-Build" is selected as the Build Strategy in Schedule Parameters tab. |
| Scheduling Bucket | Use this when generating a schedule for a multistage synchronization environment. Specify a value for the time interval over which demand and operations should be grouped for the multistage synchronization algorithm. It is used to balance changeover optimization against desired run size and service levels.<br><br>When enabled, it uses the First Cycle Start Time date defined. |
| Build Strategy | Select the preferred demand build strategy. Valid values are:<br><br>• Just-in-time (JIT) - Items normally produced as late as possible.<br><br>• Pre-Build - Items normally produced as early as possible.<br><br>JIT is the default. |

| Production Schedule Options - Schedule Parameters Tab Fields | Description |
|---|---|
| Pre-Build Policy | Use this list to assign one of the following options:<br>• Balanced: Schedules work as early as possible while attempting to maximize order fill rate. Places a smaller emphasis on resource load balancing and changeover minimization.<br>• Dynamic Resource Allocation: Select this pre-build mode to allow more aggressive pre-building and typically results in better resource allocation patterns. In this mode the solver can be directed to choose resources using earliest completion time or least changeover plus idle time optimization strategies.<br>• Multistage Synchronization: Select this option to provide a solve for multistage synchronization (make/pack) environment. |
| Resource Allocation Priorities | If Build Strategy is set to Pre-Build and Pre-build policy is set to Dynamic Resource Allocation or Multi-Stage Synchronization, then you can use the adjust the Resource Allocation Priorities. Select a priority and use the Move Selection Up and Move Selection Down arrows to adjust the priorities. |
| Allow Resource Offloading on Workorders | Select this option to allow Production Scheduling to offload work order production to alternate resources when above the specified offload threshold level. |
| Ship Complete for Transfer Orders | Select this option to ship all the items on a transfer order when all the line items have been produced. If left blank, shipment occurs after each line has been produced on the transfer order. |

4. Access and fill out the fields on the Display Parameters tab.

| Production Schedule Options - Display Parameters Tab Fields | Description |
|---|---|
| Create Demand Folders Based On | Specifies how the Production Scheduling Demand folders are structured. Valid values are order class, demand priority, type, or customer. |
| Create Supply Folders Based On | Specifies how the Production Scheduling Supplies folders are structured in the Supply and Demand Editor. Valid values are supplier or type. |

| Production Schedule Options - Display Parameters Tab Fields | Description |
|---|---|
| Create Work Order Folders Based On | Specifies how the Production Scheduling Work Order folders are structured. Valid values are Item, Routing or Work Breakdown Structure.<br><br>If the Schedule CMRO Work Orders option is selected on the Scope tab, then select Work Breakdown Structure from the Create Work Order Folders based On list.<br><br>When the Work Breakdown Structure option is selected from the Create Work Order Folders Based On list, the Workorder Display Options are enabled (the Workorder Display Options parameters should be based on the CMRO Work Breakdown Options in the lower section of the tab). It is important to note that the integration to cMRO needs to set these plan options dynamically, as these fields could have been renamed in the cMRO system (for example, the values in the right column need to be dynamic). The values will be set in the Work Breakdown Structure table from Parameters 1-9. When integration runs, these values are pulled from the cMRO system.<br><br>Select the Workorder Breakdown Structure parameters to display in Production Scheduling and provide Custom Label if necessary. The Custom Label will appear with the Production Scheduling plan. If the fields change in cMRO, the plan options pick up the display name. Visit, Item and Item Serial Number cannot be renamed, and Visit is always selected. |

5. Access and fill out the fields on the Campaign Run Options tab if you want to run the Repetitive Manufacturing Optimization (RMO) algorithm in Production Scheduling. The RMO algorithm takes into consideration the various costs in the model, including inventory carrying, inventory stockout, changeover, and safety stock violation costs when creating an optimal production schedule. To facilitate the efficient manipulation of these costs in the RMO algorithm to run various scenarios and simulations, you can use the scaling factors defined in this tab to help

understand and manipulate solve results.

The Risk Adjusted Costs functionality in Production Scheduling enables you to quickly scale the relative costs of inventory carrying, inventory stockout, changeover and safety stock violation costs. The actual costs in the model do not change, but they are "scaled" in the Production Scheduling solver when it makes trade-off decisions to create a schedule. The cost factors default to a value of 1. You can quickly and easily change the relative importance of the specific cost by decreasing or increasing the factor value associated with the specific cost. The acceptable values for each of respective scale factors range from 0.01 to 100.

| Production Schedule Options - Campaign Run Options Tab Fields | Description |
|---|---|
| Use Campaign Run Optimization | Select this option to use Campaign Run Optimization in Production Scheduling.<br><br>This value transfers to the Enable Campaign Run Optimization check box on the Solver Options window, Campaign Run Options tab in Production Scheduling. |
| Work Week Start Day | The start of the work week for the model using run optimization. |
| Work Day Start Time | The start of the workday for the model using run optimization in a HH24:MM format. |
| Minimum Cycle Time | The frequency at which items are typically manufactured. Minimum cycle time can be set to shift, days, or weeks, and should match the manufacturing pattern. For example, if items are manufactured on a daily basis, minimum cycle time should be set to day. If items are not typically produced more than once a week, the minimum cycle time should be set to week. Production Scheduling uses the cycle time to collect and aggregate demand when generating runs. Valid values are:<br>• Shift<br>• Days<br>• Weeks |

| Production Schedule Options - Campaign Run Options Tab Fields | Description |
|---|---|
| Ideal Operation Sequence Based On | The changeover optimization criteria preferred for run optimized resources. Valid values are:<br>• Cost - The cost of the changeover.<br>• Time - The duration between operations.<br>This value transfers to the Calculate Ideal Run Sequence field on the Solver Options window, Campaign Run Options tab in Production Scheduling. |
| Inventory Carrying Cost Scale Factor | Enter the scaling factor you want applied by Production Scheduling to reflect the relative costs of carrying inventory. The cost scale factor is set to "1" by default. You can increase the relative importance of the carrying cost by increasing the scale factor. |
| Inventory Stockout Cost Scale Factor | Enter the scaling factor you want applied by Production Scheduling to stockout costs. The inventory stockout cost scale factor is set to "1" by default. You can increase the relative importance of the inventory stockout cost by increasing the scale factor. |
| Changeover Cost Scale Factor | Enter the scaling factor you want applied by Production Scheduling to changeover costs. The cost scale factor is set to "1" by default. You can increase the relative importance of the changeover cost by increasing the scale factor. |
| Safety Stock Violation Cost Scale Factor | Enter the scaling factor you want applied by Production Scheduling to safety stock violations. The cost scale factor is set to "1" by default. You can increase the relative importance of the safety stock violation cost by increasing the scale factor. |

## Running a Schedule from the Workbench

Running a schedule starts Production Scheduling with the plan that was previously launched.

### To run a schedule using the Workbench:

1. Sign in using the Production Scheduler responsibility.
2. Choose Workbench from the Applications Menu.
3. Specify the schedule's organization.

   This will take you to a form where all the defined schedules are displayed. The displayed columns are:

| Field/Flag | Description |
|---|---|
| Plan | The schedule that you want to run or analyze. If no plans have been previously launched, No Search Conducted is displayed in this column. |
| Phase | Specifies whether the schedule has been created in Production Scheduling. Valid values are:<br>• New - New schedules are those that have never been run by Production Scheduling. No schedules have been launched<br>• Completed - The schedule has been run on Production Scheduling in the past, potentially resulting in a saved schedule. |
| Status | The status message returned by the concurrent manager after last running this schedule. |
| Download | The download link to the schedule. |

If this is your first time launching the application, click Update Production Scheduling. A warning appears stating that an updated version of Production Scheduling will be installed. Click OK. An APS Integration software installation

status window appears.

4. Click on the schedule you want to run.

   The Extract Planning Data window appears.

5. Choose the type of data extraction required to run your schedule.

| Option | Description |
|---|---|
| Launch Fresh Snapshot | Collect the latest E-Business Suite data and ASCP planned orders for scheduling in Production Scheduling. If this is the first time you are running this schedule, this is the only option available to you. |
| Use Existing Snapshot in Server | When E-Business Suite data has previously been collected to the planning server, this option creates the production schedule based on that data. |
| Use Existing Snapshot in Client | Start Production Scheduling with the last model saved on the client computer. |

6. Click OK.

   A "waiting for concurrent request to complete" message appears. If it is the first time that you are running a schedule, the Production Scheduling client software is installed on your computer at this point. Finally, your schedule is displayed in Production Scheduling, ready for fine tuning.

   See *Oracle Production Scheduling Implementation Guide* for more information about how to modify and solve schedules in Production Scheduling.

## Submitting Model Generation

As an alternative to running a schedule from the Workbench, you can schedule a job, which creates the model, to run at a later time. This job stores the model on the server so that a planner can access the model after it has been created. This feature eliminates the need for the connection between the server and the client to be active while the integration runs.

### To submit model generation:

1. From the Production Scheduler responsibility, select Other.

2. Select Request.
3. For a new request click the Submit a New Request button.
4. Select Single Request or Request Set.
5. Click OK.
6. In the Name field, enter MSCSCPPS for Production Scheduling.

   The Parameters window appears.
7. Complete the fields on the Parameters window and click the OK button.
8. Click the Schedule button to determine when the job should run.
9. Select the job frequency and click the OK button.
10. Click the Submit button to schedule the job.

## Integrating to Production Scheduling

When transmitting data from EBS to Production Scheduling the system automatically converts data based on certain values.

This section discusses:

- Generating folders in Production Scheduling.
- The resource calendar.

### Generating Folders in Production Scheduling

In Production Scheduling, folders are used to create changeovers at a resource and operation group level, and view information filtered by group in schedule views such as the Resource Gantt or Item Gantt. User defined item and resource groups are imported into Production Scheduling from EBS.

The resource group folder structure can be created three different ways from EBS:

- One resource group is created for each resource.

  This group contains the resource and resource instances in case the resource is scheduled by instance. The naming convention is: <DEPARTMENT NAME>: <RESOURCE NAME>.
- One resource group is created for each department.

  This group contains all of the resources assigned to a department.

- One resource group is created for each user-defined resource group in EBS.

  This group contains all the resources assigned to this group in EBS.

The item group folder structure is created for each category that the item is assigned to in the Schedule Options window, Scope tab.

The operation group folder structure is created for each setup and resource combination. The group includes all the operations on a particular resource using a particular setup. The naming convention is <SETUP NAME>:<RESOURCE NAME>.

### The Resource Calendar

The integration uses the resource calendar when populating the changeover calendar in Production Scheduling.

## Copying a Schedule Within Production Scheduling

It is possible to create a copy of a schedule within Production Scheduling for simulation purposes. Production Scheduling maintains a mapping between the original schedule and the copied schedule. The name (and internal id) of the original schedule is used if you publish the simulated results back to the planning server.

For example, you can define a schedule called "Production" (ID = 1111) and solve the schedule. Based on the results, you might decide to make a copy of the schedule in Production Scheduling and call it "Simulation" (ID = 1112), make some resource capacity changes, and run the schedule again. If satisfied with the results of the "Simulation" schedule, you can publish the results back to the planning server. When the results are published back, they get stored in the planning server under the ID= 1111, corresponding to the ID of the original schedule "Production". The schedule called "Simulation" only exists within the Production Scheduling application and is not visible in the planning server - it does not exist in the Schedule Names form.

See *Oracle Production Scheduling Implementation Guide* for more information about how to copy a schedule within Production Scheduling.

## Publishing a Schedule

You can publish a schedule back to the planning server and to the Oracle Applications Manufacturing modules by using the Publish process.

Once the schedule has been solved, you can publish the results back to the E-Business Suite. Of all the scenarios you may have created while fine tuning your schedule, you must first approve your final schedule.

#### To publish a schedule:

1. In Production Scheduling, right-click on the schedule you want to approve for

publishing.

2. Click Approve.

   The schedule name appears in bold in the Production Scheduling model workspace.

3. From the File menu, choose Publish.

   The Publish window appears.

4. From the publishing profile list, choose Release Schedule and click Publish.

   The schedule including the sequenced planned orders, jobs, and scheduled resource specific changeovers are published back to the planning server, and automatically released back to E-Business Suite.

## Running Production Scheduling as a Service

Production Scheduling has been enhanced to be able to be called as a service. The solver and application have been decoupled such that the import and solve process can optionally be run on the server - this includes Windows, Linux, Sun Solaris, HP-UX and AIX platforms. The user interface continues to run on the planners Windows client.

This enables Production Scheduling users to have their models pre-solved on the server - saving time and improving efficiency. It also allows for batch solving of multiple plans (Automation of the "what if" process).

The server-side functionality creates a deployable solved model which includes import and solver statistics in log files. The log files are all downloaded to the client desktop on planner request. This enhancement also includes improved application status logging and filtering - including access to various event statuses and solver statistics log from within Production Scheduling for events which took place on the server.

### To run Production Scheduling on the server as a service:

1. From the Responsibility form, select Production Scheduler.

2. From the Production Scheduler Navigator window, select the Launch menu option. The Launch PS Plan form and Parameters window appear.

3. From the Parameters window, enter the plan name or select a plan using the LOV button.

4. Select Yes from the Solve on Server field to solve the model on the server. Select No to download and review the unsolved model.

5. Click OK to save the Parameters settings and close the Parameters window.

6. Click OK on the Launch PS Plan page to execute your plan.

If you selected to run the plan on the server, the import and solver statistics are recorded in log files. The log files are all downloaded to the client desktop on planner request. This feature also provides application status logging and filtering - including access to various event statuses and solver statistics log from within Production Scheduling for events which took place on the server.

## Feeding a Production Schedule Back into ASCP

Once the production schedule has been published back to the planning server, it can be used to constrain subsequent runs of ASCP plans. This is performed by specifying the name of the production schedule as input in the ASCP plan options.

Several Production Scheduling schedules, one per organization, can be specified in an ASCP plan. A firm horizon can be specified for each Production Scheduling schedule. The firm horizon defines the window in which planned orders are considered firm by ASCP. Production Scheduling releases selected work orders and planned orders to EBS and publishes the remaining in the scheduling horizon to the Planning Data Store. Only planned orders that are unreleased from Production Scheduling are read into ASCP. The planned orders from Production Scheduling that fall in the firm horizon for that Production Scheduling schedule are imported and considered as firm in ASCP. Planned orders that fall outside of the firm horizon are not imported into ASCP.

ASCP reads all of the planned orders that are published by Production Scheduling from the PDS that correspond to the Production Scheduling plan specified in the ASCP Plan Options page. ASCP reads the Production Scheduling published planned orders that fall within the firm horizon and marks them as firm with the new schedule start date. Any orders that fall outside of the firm horizon are not read by ASCP.

For each organization in the plan, you can specify the following on the Plan Options page, Organization tab:

| Field/Flag | Description |
|---|---|
| Firm Planned Orders From Production Schedule | Select this check box to indicate that the organization can receive data from Production Scheduling to the schedule specified in the Schedule Name field. |
| Schedule Name | Enter the schedule name. The schedule name that is entered should reference the ASCP plan on the Schedule Options page, Scope tab. |
| Firm Horizon (days) | The number of days for which the planned orders from the feeding production schedule are considered by the ASCP plan. |

For additional information on the Organization tab, see Defining Supply Chain Plans, Setting Plan Options, The Organization Tabbed Region.

# 20

# Integrating Strategic Network Optimization

This chapter covers the following topics:

- Overview
- Integration Architecture and Business Process
- Setting Profile Options for Strategic Network Optimization
- Running Collections
- Creating a New Plan Using the Workbench
- Setting Schedule Options
- Starting Strategic Network Optimization
- Running a Plan Using the Workbench
- Publishing a Plan
- Defining Assignment Sets in Strategic Network Optimization
- Modeling Demand at the Customer or Zone Level
- Mapping to Strategic Network Optimization
- Publishing a Constrained Forecast
- Submitting Model Generation

## Overview

Oracle Strategic Network Optimization (SNO) is a tool that enables you to model and optimize your supply chain network, from obtaining raw materials through delivering end products. With strategic network optimization you can:

- Determine which material should be sourced from different suppliers.
- Determine what products to make in what plant.

- Optimize your aggregate production plans including machine routings, the flow of materials, and use of critical resources.
- Optimize your distribution plans, including plant locations, warehouses, and transportation alternatives.

Strategic network optimization enables you to solve a wide range of production, distribution and planning problems. You can determine when and where to close or open facilities and production lines, and whether to manufacture in-house or outsource. You can:

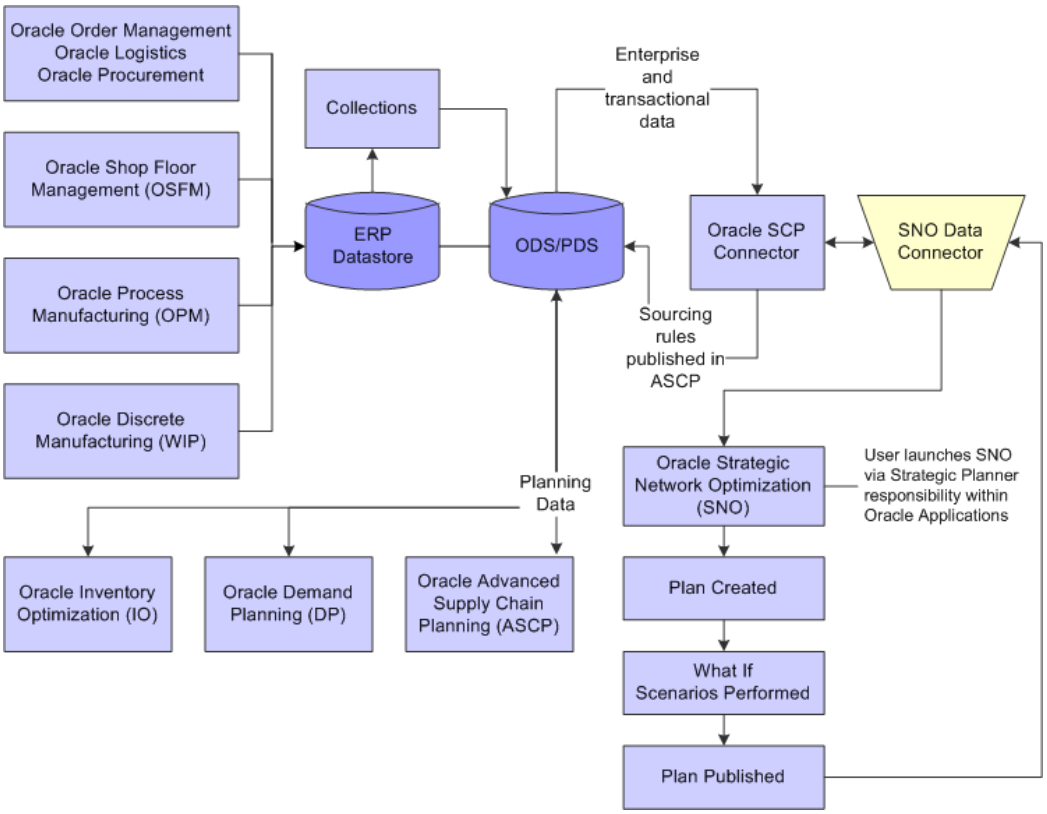
- Develop and evaluate "what if "scenarios.
- Plan for supply, demand, and capacity changes.

You can optimize plans by performing a variety of detailed analyses including expected profit, new market, marketing promotions, materials and finished goods sourcing, and inventory builds.

Strategic Network Optimization is integrated with the Oracle E-Business Suite and leverages the APS component architecture to pull (or collect) data from the E-Business Suite.

## Integration Architecture and Business Process

The Strategic Network Optimization and E-Business Suite provide out-of-the-box integration so that you can build base models in Strategic Network Optimization automatically. The integration passes data both ways.




## Inbound Integration

Strategic Network Optimization receives data from the following sources:

- ERP data such as items, organizations, bill of materials, routings, resources (machine and person), purchase orders, forecast, and on-hand inventory.
- Scenarios generated and published from Demand Planning (DP) if applicable.
- Inventory levels generated using an Inventory Optimization (IO) plan if applicable.

## Outbound Integration

When using Strategic Network Optimization to perform sourcing or capital asset decisions that impact the supply chain network definition, sourcing rules used by Strategic Network Optimization can be published to APS so that ASCP and IO can use the assignment set definition for generating inventory or tactical plans.

## Business Process

1. Run Strategic Network Optimization from the Workbench. This process extracts the

latest data from the E-Business Suite, demand forecast scenarios from Demand Management, and time-phased safety stock levels from Inventory Optimization.

2. Run various scenarios in Strategic Network Optimization until the best plan is achieved.

3. Publish the assignment sets to the planning server in the form of sourcing rules so that:
   - ASCP can generate a tactical plan to produce planned orders and recommendations to the E-Business Suite.
   - Inventory Optimization can generate an inventory plan to support inventory policy decisions.

4. Run ASCP to produce planned orders and recommendations to the E-Business Suite.

5. Release the ASCP planned orders and recommendations to the E-Business Suite.

## EBS - Demantra Demand Management Integration

Oracle E-Business Suite integrates Oracle Demantra Demand Management to generate consensus forecasts and accuracy measures in a business scenario that implements Strategic Network Optimization. Oracle Demantra Demand Management collects booking history, price list, currency, calendars, users, and items from the E-Business Suite applications and generates the following functional outputs:

- Forecast and demand priority for Advanced Supply Chain Planning
- Forecast and forecast accuracy for Inventory Optimization
- Forecast for Strategic Network Optimization

To access the Demand Management Workbench, the E-Business Suite user requires any of the following responsibilities:

- Demand Administrator
- Demand Analyst

For more information on the integration between Oracle Demantra Demand Management and the E-Business Suite, refer "EBS - Demantra Demand Management Integration" in *Oracle Demantra Implementation Guide*.

## Setting Profile Options for Strategic Network Optimization

To produce strategic network optimization plans based on the E-Business Suite data, you must configure the profile options to collect the correct information for the data snapshot. The following profile options must be set for Strategic Network Optimization:

- MSC: PS/SNO Alignment Date
- MSC: PS/SNO API Version
- MSC: PS/SNO Client Install Path
- MSC: PS/SNO Compress XML Package Files
- MSC: PS/SNO Data Store Path
- MSC: PS/SNO Debug Mode
- MSC: PS/SNO Use DB for Integration Data
- MSC: SNO - Snapshot Base Package
- MSC: SNO - Snapshot Beginning Inventory Package
- MSC: SNO - Snapshot Calendar Package
- MSC: SNO - Snapshot Customer Package
- MSC: SNO - Snapshot Demand Package
- MSC: SNO - Snapshot Distribution Package
- MSC: SNO - Snapshot Enterprise Forecast Package
- MSC: SNO - Snapshot Inventory Safety Targets Package
- MSC: SNO - Snapshot Manufacturing Package
- MSC: SNO - Snapshot Purchase Orders Package
- MSC: SNO - Snapshot Supplier Package
- MSC: SNO - Snapshot Transfer Orders Package
- MSC: SNO - Snapshot Work Orders Package
- MSC: SNO Connector Precision

- MSC: SNO Currency Precision
- MSC: SNO Decimal Precision
- MSC: SNO Fixed Production Package
- MSC: SNO Optimization Type
- MSC: SNO Run Application Script
- MSC: SNO Run Connector Script
- MSC: SNO Sales Order Package
- MSC: SNO Transportation Capacity By

See MSC Profile Options, page A-13 for more information about setting the Strategic Network Optimization profile options.

## Running Collections

The collections process for Strategic Network Optimization planner is the same as the collections process for Oracle ASCP.

See Running Collections, *Oracle Advanced Supply Chain Planning Implementation and User's Guide* for more details about the data collections process.

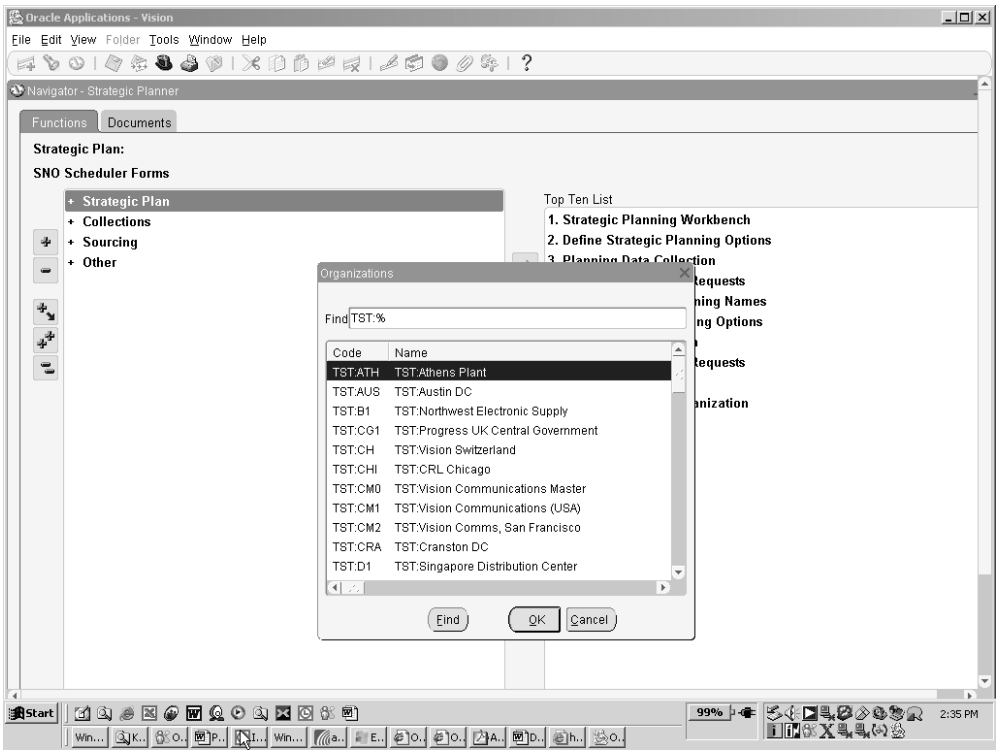
## Creating a New Plan Using the Workbench

In order to create a Strategic Network Optimization plan, the first step is to create a name for the plan and specify the plan options. A Strategic Network Optimization plan name is created in the context of an organization.

### To create a new plan using the Workbench:

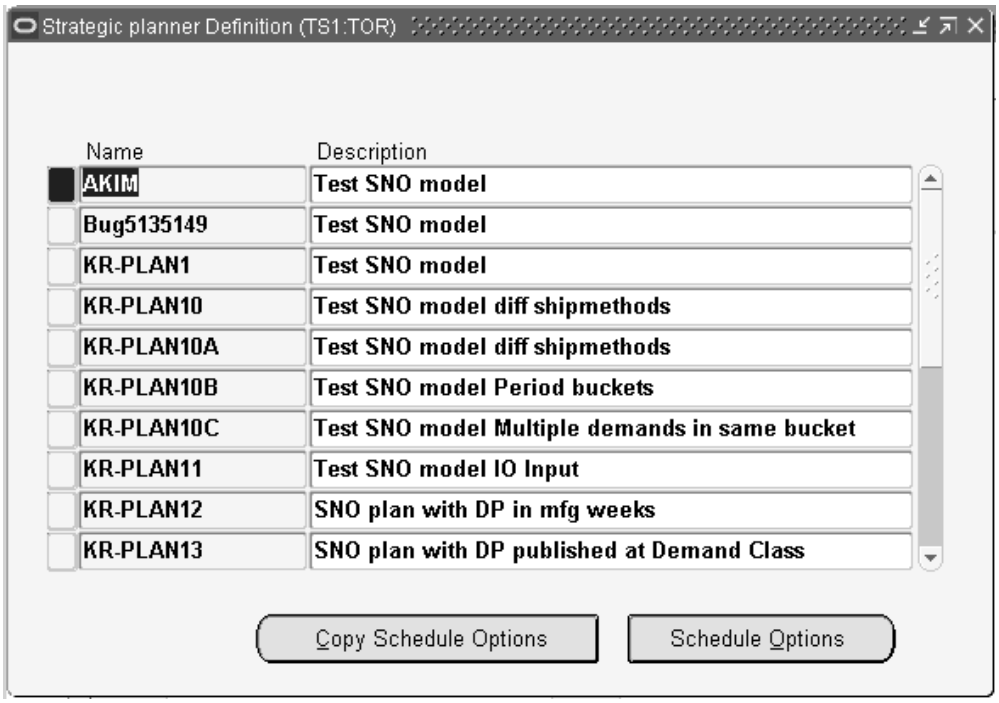
1. Sign in using the Strategic Planner responsibility.
2. From the Planner Workbench, choose the Strategic Network Planner responsibility.
3. Choose Names.

   The Organizations form appears:




4. Choose the plan's organization.

   The SNO Schedule Definition form appears.




**If you aren't basing your plan on an existing plan**

1. Click the New button to add a new plan.
2. Enter the following details about the plan:

| Field/Flag | Description |
|---|---|
| Name | The name of the new Strategic Network Optimization plan. |
| Description | A description of the plan. |

The new plan now appears on the SNO Planner Definition list.

## Setting Schedule Options

Once the plan has been created, you can configure the model using the schedule options.

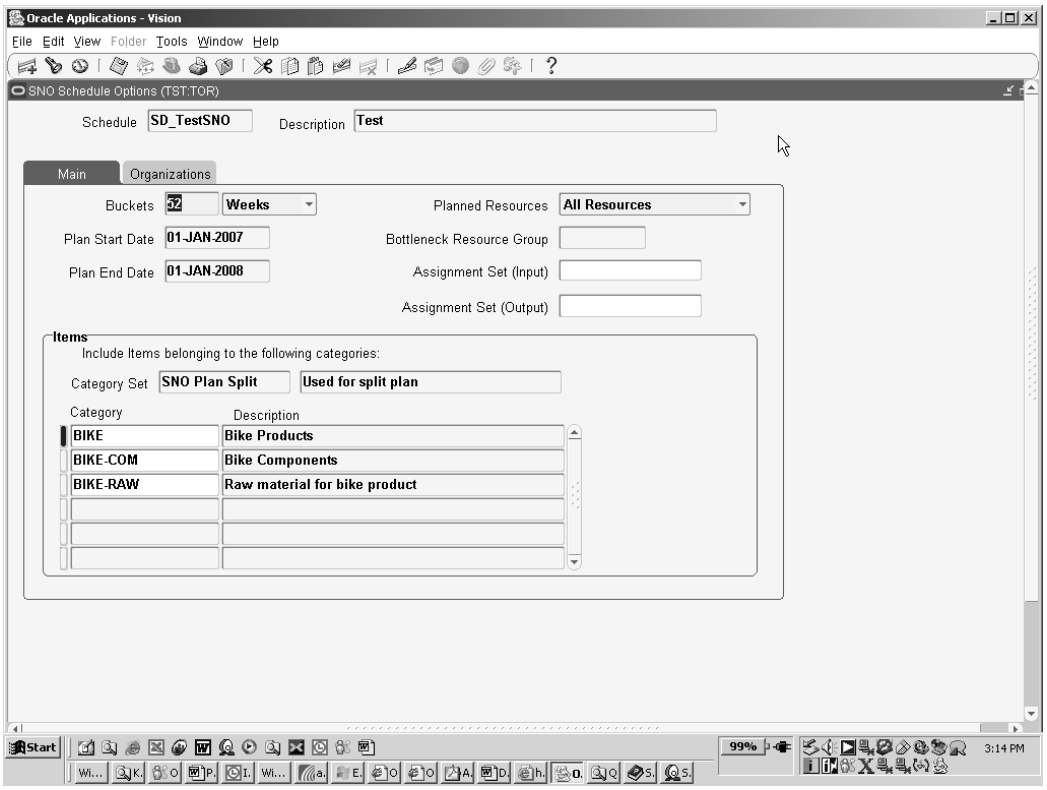
After signing in using the Strategic Planner responsibility, the Strategic Planning Options window can be accessed in two ways:

- From the Applications menu, choose the Names option. Choose an organization, a

strategic plan, and then click the Schedule Options button.

- From the Applications menu, choose the View Schedule Options. Choose an organization, a strategic plan, and then click the Schedule Options button.

The Strategic Planning Options form appears.




## To set schedule options:

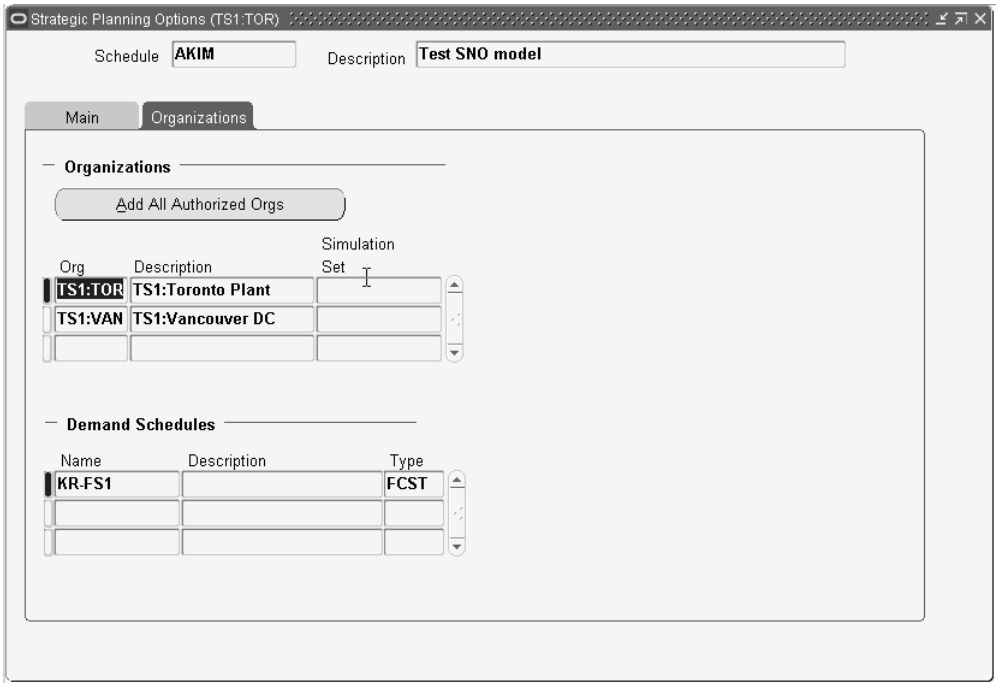
1. Define the strategic plan on the Main tab where:

| Field/Flag | Description |
|---|---|
| Buckets | Enter the number of buckets to be planned. You can choose between a "Week" or "Period" bucket type. Periods represent fiscal 445 periods. |

| Field/Flag | Description |
| --- | --- |
| Plan Start Date | The current day. This day can be within a bucket, resulting in the first bucket being a partial bucket. The associated capacities, lead times, and transactional data are consistent with this date. |
| Plan End Date | This date is calculated based on the Plan Start Date and the number and type of buckets to be planned. |
| Use for Sales and Operations Planning | Specify whether or not the SNO plan should be used for Sales and Operations Planning. |
| Scenario File | Select this checkbox to upload a .imp or .zip file from your local machine. To launch the SNO plan without considering the import file, de-select the check box. |
| Planned Resources | Specify whether every resource within a routing is marked as capacity constrained, or just bottleneck resources. |
| Bottleneck Group | If you have selected "Bottleneck Resources" in the Planned Resources field, specify the bottleneck group that you want to include in the plan. |
| Assignment Set (Input) | The input assignment set used for sourcing considerations. |
| Assignment Set (Output) | The assignment set to which the Strategic Network Optimization sourcing decisions are written if you choose to publish the sourcing rules from Strategic Network Optimization back to the E-Business Suite. |
| Category Set | The category set used to filter items for consideration. |
| Category | Enter categories from the category set to be included in the plan. |

| Field/Flag | Description |
|---|---|
| Description | The description of the category is filled automatically. |

2. Click the Organizations tab.




| Field/Flag | Description |
|---|---|
| Add All Authorized Organizations | Click this button to add all the organizations the Strategic Planner responsibility is authorized to access, as defined in the organizations security screen. See Organization Security, page 10-65 for more information. |
| Org | Select the organizations to be included in the model. |
| Description | The description of the selected organizations is automatically filled in. |

| Field/Flag | Description |
| --- | --- |
| Simulation Set | The container for any capacity changes made to resources within the Oracle Manufacturing modules. When specified as input, the modified picture of resource capacity is considered by Strategic Network Optimization as input, rather than the baseline capacity. |
| Demand Schedules | Select the MDS, MPS, Source Forecast, Demand Planning, or Inventory Optimization schedules to be brought into the plan.<br><br>Select the Scenario which identifies the demand profile that the demand schedule maps to in Strategic Network Optimization. Valid values are:<br><br>• Baseline - maps to the primary Demand or Safety profile<br><br>• Scenario1 - maps to Demand1 or Safety Stock1<br><br>• Scenario2 - maps to Demand2 or Safety Stock2<br><br>The description and type fields are filled in automatically. |
| Define Safety by Cover | Click this checkbox to model safety stock by periods of cover in a Strategic Network Optimization plan. |

In Strategic Network Optimization, safety stock can be expressed both in terms of quantity and periods of cover. Safety stock can be modeled in terms of time in Inventory Planner and passed to Strategic Network Optimization as a demand schedule. During integration, safety stock units of measure are converted from days of supply to periods. In Strategic Network Optimization, values for Safety Cover are displayed in StorageCover nodes if the safety cover option is enabled.

## Mapping to Scenarios

What-if scenarios can be modeled in Strategic Network Optimization and used to

support Supply Chain Risk Management. Each what-if scenario can be run with different demand and safety stock profiles and can be compared using key performance indicators.

During integration, required data is mapped to Strategic Network Optimization. One primary and two alternate forecast and safety stock profiles can be mapped from E-Business Suite to Strategic Network Optimization to generate these what-if scenarios.

| E-Business Suite Field | Strategic Network Optimization Field |
|---|---|
| Baseline | Imported into the following Demand node fields:<br>• Min<br>• Max |
| Scenario1 | The Demand 1 field in the Demand nodes. |
| Scenario2 | The Demand 2 field in the Demand node. |

## Starting Strategic Network Optimization

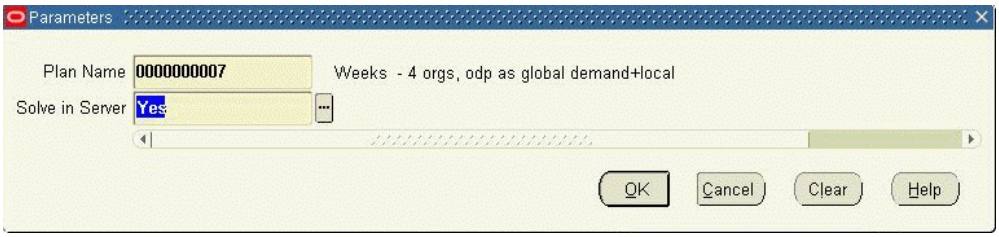
When the Launch menu item is selected in Strategic Planner:

1. Strategic Network Optimization is launched
2. Data is extracted from Collections
3. The model is built, and optionally solved, on the server

### To start Strategic Network Optimization:

1. In Strategic Planner, choose Launch.

   The Parameters form appears.




2. In the Parameters form, enter the Plan Name
3. Set the Solve to Server field to Yes or No.
4. Click OK.

   The Parameters form exits.
5. In the Launch form, click Submit.

   The system creates a model.
6. In the Strategic Planner form, choose Workbench.

## Running a Plan Using the Workbench

Running a plan starts Strategic Network Optimization with the previously launched plan.

### To run a plan using the Workbench:

1. Sign in using the Strategic Planner responsibility.
2. Choose Workbench from the Applications Menu.

   The Strategic Plans form appears. The displayed columns represent:

| Field/Flag | Description |
|---|---|
| Plan | The plan that you want to run or analyze. If no plans have been previously launched, No Search Conducted is displayed in this column. |

| Field/Flag | Description |
| --- | --- |
| Phase | Specifies whether the plan has been created in Strategic Network Optimization. Valid values are:<br>• New - New plans are those that have never been run by Strategic Network Optimization. No plans have been launched.<br>• Completed - The plan has been run on Strategic Network Optimization in the past, potentially resulting in a saved plan. |
| Status | The status message returned by the concurrent manager the last time the plan was run. |
| Download | The download link to the plan. |

If this is your first time launching the application, click Update Strategic Planner. A warning appears stating that an updated version of Strategic Planner will be installed. Click OK. An APS Integration software installation status window appears.

3. Click the plan that you want to run.
4. Click Download.

   The model opens.

## Publishing a Plan

Once a plan has been solved and reviewed, the sourcing rules can be published back to the planning server and used as input into ASCP. A sourcing rule is created for each item and is time phased over the horizon. The target assignment set is deleted and replaced with the new sourcing rules as follows:

1. All the existing assignment and sourcing rules belonging to the target assignment set are cleared.
2. An assignment for each receipt organization and item is created.

3. A sourcing rule for each receipt organization and item is created.
4. An associated receipt organization record is created for each sourcing rule.
5. A source organization record is created for each lane and item for the receipt organization.

**To publish a plan:**

1. Sign in using the Strategic Planner responsibility.
2. Select the Strategic Network Optimization plan you want to publish.
3. From the File menu, choose Publish.

   The Publish dialog box appears.
4. From the Publish dialog box, choose Release Sourcing Rules.
5. Click OK.

   The sourcing rules are published to the planning server, where they are used to create planned orders in ASCP, and inventory policy decisions in Inventory Optimization.

## Defining Assignment Sets in Strategic Network Optimization

You can define assignment sets in Strategic Network Optimization by assigning sourcing rules. An assignment set represents a selection of organizations and/or items you want planned.

- Bills of Distribution are not used to define assignment sets in Strategic Network Optimization.
- Strategic Network Optimization publishes at the item level only.

Lanes are created based on sourcing rule assignments and transportation lanes at the lowest level. Locations can be grouped into geographical zones and assignments defined at this zone level. Creating lanes to zones makes it easier to set up Strategic Network Optimization integration, especially if a large number of locations are modeled.

See Setting Up the Supply Chain, page 4-2for more information about Assignment Sets.

## Modeling Demand at the Customer or Zone Level

Demand can be imported into Strategic Network Optimization at the customer location level or at the aggregated zone level. In Strategic Network Optimization, demand exists

at whatever level the forecast is published.

- Zones are treated as customers in Strategic Network Optimization.
- Strategic Network Optimization models all demand for a customer or zone as global demand, even though the demand is attached to an organization.

The following are the hierarchy level combinations for publishing forecasts to model customer or zone demand:

| Ship-From Hierarchy Level | Ship-To Location | Zone | None or All Geographies |
|---|---|---|---|
| Org | Input as a local demand schedule but treated as global demand in Strategic Network Optimization. | Input as a local demand schedule but treated as global demand in Strategic Network Optimization. | Input as a local demand schedule and treated as local demand at the organization level in Strategic Network Optimization. |
| All Orgs | Input as a global demand schedule and treated as global demand in Strategic Network Optimization. | Input as a global demand schedule and treated as global demand in Strategic Network Optimization. | Not a valid scenario |

When customers are modeled in Strategic Network Optimization, each ship-to location for the customer is modeled as a separate customer since shipping lanes are defined to locations. Assignment sets must be created by assigning sourcing rules for each of these customer locations in order for the demand to be imported into Strategic Network Optimization.

> **Note:** Both customer locations and zones are treated as customers in Strategic Network Optimization. In case customers are modeled in Strategic Network Optimization, each ship-to location for the customer is modeled as a separate customer since shipping lanes are defined to locations. Assignment sets need to be created by assigning sourcing rules for each of these customer locations for the demand to be imported into Strategic Network Optimization.

When you set up zones in E-Business Suite, all locations in the regions assigned to the zone are included in the zone. The zone gets its latitude and longitude from the median location in Strategic Network Optimization's map view.

Sales orders are not netted against the forecast for the zones the ship-to locations reside

if zones are being modeled. Therefore, it is recommended that sales orders not be imported into Strategic Network Optimization if zones are being modeled. This can be done by setting the profile option, "MSC: SNO - Snapshot Sales Orders Package", to "No". Since Strategic Network Optimization is a strategic planning product, running the model with only forecast should not adversely affect the solve results in a strategic time horizon.

### To model customer demand in Strategic Network Optimization:

1. Publish the forecast using one of the following levels:
   - Customer ship-to location

     A customer ship-to location forecast can be set up in E-Business Suite by using the Customer and Ship Address fields in the forecast details. The forecast is published to Strategic Network Optimization as a demand schedule. A customer ship-to location forecast can also be set up by setting Geography to Ship To Location in Demand Planner and published to Strategic Network Optimization as a demand schedule.

   - Zone

     A zone level forecast can be set up in Demand Planner by specifying Zone as the output level in the geography dimension. Individual locations in the forecast are aggregated to the zone level and published to Strategic Network Optimization.

2. Set up shipping lanes from organizations to locations and zones in the Manufacturing and Distribution Manager. Use the following fields in the Transit Time form:
   - Origin
   - Destination
   - Ship Method

3. Set up sourcing rules and assign them to customers and zones.

   Assignment sets can be created in E-Business Suite or in the Strategic Planner responsibility.

4. Publish the forecast to the Strategic Network Optimization plan.

   Sourcing recommendations are published at customer and site levels. One sourcing rule is created for each customer-site and item combination and assigned to the customer using Item-Instance-Organization assignment type.

5. Run the plan.

In Strategic Network Optimization, a new Customer block node is created which contains one node for each customer location. The Ship-To location is included in the node names.

## Mapping to Strategic Network Optimization

The section outlines various requirements for mapping data between E-Business Suite and Strategic Network Optimization.

### Resource Replacement Groups

In E-Business Suite and Strategic Network Optimization, resource replacement groups can be set up with only certain combinations of simultaneous resources assigned to an operation. The following combinations are supported:

- Operator 1, Line 1
- Operator 2, Line 2

> **Note:** Other combinations, such as Operator 2, Line 1, will not work

For example, consider a All-of-Sets or resource replacement group where the primary resource group consists of GM-AS-M and GM-AS-C, and the alternate resource replacement group consists of GM-AS-MA and GM-AS-CA. This operation can only be run by either GM-AS-M and GM-AS-C or by GM-AS-MA and GM-AS-CA and not by any other combination of resources. When integrated with Strategic Network Optimization, one node is created for the primary resource group and the alternate resource replacement group.

### Fixed Production

Integration facilitates planned production by aggregating work orders in Strategic Network Optimization.

- Work order quantities are aggregated at the item-organization level in the Strategic Network Optimization period in which the work order is due.
- Work order quantities are mapped to Strategic Network Optimization as a minimum constraint on production.

> **Note:** The source of these work orders must be specified. Work orders are only imported from E-Business Suite and cannot be imported from ASCP.

### Supplier Capacities

In E-Business Suite, supplier capacities are set up for an item and supplier-site combination. This supplier capacity information is mapped to Strategic Network Optimization and aggregated into periods using a 7-day week calendar.

### Date Effective Bill of Materials

Strategic Network Optimization supports Time Varying Bill of Materials.

## Publishing a Constrained Forecast

Strategic Network Optimization generates a constrained forecast which is a report of the demand satisfied at each organization, customer, or zone. This constrained forecast considers all supply chain constraints and is a result of cost or profit optimization. It can be published to a demand schedule in ASCP and used to respect decisions made in Strategic Network Optimization.

The constrained forecast is published at the level where demand is imported; organization, customer ship-to location, or zone. It is published to the Planning Data Store as one or more Demand Planning scenarios, as follows:

| Demand Plan Scenario published as: | Input to ASCP as: |
|---|---|
| Organization level forecast | Local demand schedule for each organization |
| Customer Ship-To Location level forecast | Global demand schedule |
| Zone level forecast | Global demand schedule |

#### To publish a constrained forecast:

1. In Strategic Network Optimization, select File, then Publish.

   The Publish form appears.

2. In the Publish form choose Release Constrained Forecast.

3. Complete the Profile Details fields.

4. Click the Publish button.

## Submitting Model Generation

As an alternative to running a schedule from the Workbench, you can schedule a job, which creates the model, to run at a later time. This job stores the model on the server so that a planner can access the model after it has been created. This feature eliminates the need for the connection between the server and the client to be active while the integration runs.

### To submit model generation:

1. From the Strategic Planner responsibility, select Other.
2. Select Request.
3. For a new request click the Submit a New Request button.
4. Select Single Request or Request Set.
5. Click OK.
6. In the Name field, enter MSCSCPSNO for Strategic Network Optimization.

   The Parameters window appears.
7. Complete the fields on the Parameters window and click the OK button.
8. Click the Schedule button to determine when the job should run.
9. Select the job frequency and click the OK button.
10. Click the Submit button to schedule the job.

# 21

# Integrating with Primavera P6

## Overview

Supply Chain Planning processes ensure that demands for materials and resources are met on time. This requires close collaboration between an organization's project management system and its supply chain. Supply Chain Planning processes can bridge these two functions.

- Demands for items required by project activities, or items that must be delivered to as part of a project contract need to be sent to the supply chain planning system from the project management system.
- The supply chain planning system determines when these items will be available and sends these dates back to the project management system.

You can enable this functionality with an integration between Oracle Advanced Supply Chain Planning (the Supply Chain Planning system) and Primavera P6 (the Project Management system). A work breakdown structure is created and maintained in Primavera P6. Activities at the lowest level in the work breakdown structure represent the steps required to meet a project's deliverables. Some of these activities have associated material requirements which need to be communicated to the supply chain planning system as demands.

Other activities in the work breakdown structure can track end item deliverables manufactured in the supply chain. Demand for these end item deliverables also need to be communicated from the project plan to the supply chain planning system. Demand for end item deliverables originating from Primavera P6 should also be reconciled against sales orders for end item deliverables in the project's accounting and execution system, for example;

- Oracle EBS Project Accounting
- Oracle EBS Order Management

The supply chain planning process plans for supplies to meet the project's demands. Constraints in the supply chain as well as the hard pegged versus soft pegged nature of different items results in supplies being planned for different dates and quantities. This supply information must then be exported to the Primavera P6 project plan. This process can have the following benefits:

- Increased efficiency in the supply chain management and project management processes
- Reduced inventory and supply chain costs
- Improved time fulfillment of project deliverables

## Modeling Projects and Activities in Primavera P6

Demands for materials originating from the Primavera P6 project plan are converted into a master demand schedule that can be used for the supply chain planning process with ASCP. For additional details on the mapping of projects, activities and material resource assignments in Primavera P6 to the demands in ASCP, refer to the Oracle VCP chapter in the *Primavera Gateway Implementation and User Guide*.

## Reconciling Sales Order Demands with Primavera P6 Activities

ASCP collects sales orders from the Order Management system. This enables you to plan for:

- Sales order demands
- Demand communicated from a Primavera P6 master demand schedule

The integration between ASCP and Primavera P6 makes the following assumptions about sales orders:

- Demands are managed in Primavera P6 or in Order Management but not both.
- When a sales order is booked in Order Management, the item should no longer be marked as a demand item in the Primavera P6 project plan.

## Master Data Synchronization Between Primavera P6 and Oracle ASCP

The integration between ASCP and Primavera P6 makes the following assumptions about master data:

- Items, organizations and item-organization combinations communicated from Primavera P6 to ASCP are existing items or organizations in the source ERP system and are marked as Planned Items.

- The Project number and Task number associated with the demands communicated from Primavera P6 to ASCP are existing Project numbers or Task numbers in the source ERP system.

- ASCP uses the ERP source system as the system of record for Items, Organizations, Projects and Tasks (demand from Primavera P6 must have a valid Item, Organization, Project or Task defined in the ERP system).

## Creating a Demand Schedule from the Primavera P6 Project Plan

You can create demand schedules in ASCP from projects in Primavera P6 that include any of the following:

- One demand schedule per project

- One demand schedule for all projects within a specified level in the Enterprise Project Structure as defined in Primavera P6

- One demand schedule for all projects within the Enterprise Project Structure as defined in Primavera P6

When an integration flow is launched in Primavera Gateway, all demands that belong to the specified Demand Schedule Name are removed from the ASCP operational data store and replaced with a fresh snapshot of the demands extracted from Primavera P6.

### Exporting Projects and Demands from Primavera P6 to Oracle ASCP

Primavera Gateway enables the exporting of project level demands from Primavera P6 to ASCP. When the Demand Flow business process is invoked in Primavera Gateway, projects in Primavera P6 (including activities and material resource assignments) are transformed to a set of demands. This set of demands is part of a master demand schedule that can be incorporated into an ASCP plan.

For additional mapping details between ASCP and Primavera P6 refer to the Oracle VCP Provider chapter in the *Primavera Gateway Implementation and User Guide*

## Supply Chain Planning Process in Oracle ASCP

When the export process from Primavera P6 to ASCP is complete, create the supply chain plan in ASCP to meet the project demands as follows:

- The ASCP Plan options should be configured to include the MDS names exported from Primavera P6 as input demand schedules at for the appropriate organizations. This is a one-time setup step.

- The ASCP Plan should be run to generate supplies to meet the Primavera P6

material and sales order demands. This happens during every planning cycle.

### Specifying Plan Options in ASCP

To enable project level planning in ASCP, follow these steps before running a plan:

1. Ensure that item pegging attributes are set to either soft-pegged or hard-pegged, according to functional requirements.
2. Set the plan options Reservation Level and Hard Pegging Level, according to functional requirements.
3. Set the MSC: Attribute Based Netting profile option to Yes.
4. In ASCP Plan Options, specify the Master Demand schedule created by the integration process as an input demand schedule.

## Exporting Supply Details from ASCP to Primavera P6

Primavera Gateway enables the exporting of supply dates and order numbers from ASCP to Primavera P6. When the Supply Flow business process is invoked in Primavera Gateway, supply details are exported from the ASCP plan and the Primavera P6 project plan is updated accordingly. The three modes of supply feedback are as follows:

- Demand level supply feedback only

  Supply availability information for the demand is exported from ASCP to Primavera P6 for the following attributes only:

  - Supply Availability Date: The date on which supply is available to meet demand
  - Supply Order Type: The order type of the supply that meets the demand
  - Supply Order Number: The order number of the supply that meets the demand

    **Note:** If there are multiple finished good supplies that peg to a demand, the most recent supply is used to publish the Supply Order Type and Order Number Information to Primavera P6.

- Detailed Supply feedback for demand that originated in Primavera P6

  Supply details at the finished good level and the lower levels in the bill of material are included in the feedback from ASCP to Primavera P6. There are three sub-options within this option:

- Option A – Include supply feedback for all items
- Option B – Include supply feedback for hard pegged items only
- Option C – Include supply feedback for the specified Category or Category Set only

- Detailed Supply feedback for demand that did not originate in Primavera P6.

  Supply information is sent from ASCP to Primavera P6 for demands that did not originate in Primavera P6, such as sales orders and forecasts.

For additional mapping details between ASCP and Primavera P6 refer to the Oracle VCP Provider chapter in the *Primavera Gateway Implementation and User Guide*.

## Supply Attributes Exported from ASCP to Primavera P6

The following supply attributes are included when publishing detailed supply feedback from ASCP to Primavera P6:

| Attribute | Description |
|---|---|
| End_Pegged_Demand_Activity_ID | The Activity ID of the end demand pegged to this supply. For non Primavera demands, this is set to NULL. |
| End_Pegged_Demand_Order_Number | The Demand Order number of the end demand pegged to this supply. |
| Order_Type | The order type of the supply. For example, On Hand, Work Order, Planned Order. |
| Order_Number | The order number of the supply. |
| Order_Date | The date on which the supply order is placed or planned to be placed. For purchase orders, this is the PO creation date. |
| Start_Date | The date on which the supply order is to start (applies primarily to manufacturing orders). |
| Actual_Start_Date | If a manufacturing work order has already started, this date indicates the actual start date. |

| | |
|---|---|
| Ship_Date | The date on which the supply order is planned to ship (applies to Inter organization shipments). |
| Dock_Date | The date on which a supply order arrives at the receiving dock (applies to purchase orders and inter organization shipments). |
| Due_Date | The due date of the supply, the date on which the supply is available for use to meet demands. |
| Updated_Arrival_Date | The arrival date for supplies as updated by Oracle Transportation management. |
| Item | The item that is supplied. |
| Organization: | The organization corresponding to the supply. |
| Quantity | The quantity of the supply. |
| Project Number | The project number to which this supply is pegged. |
| Task Number | The task number to which this supply is pegged. |

# 22

# Reports and Concurrent Processes

This chapter covers the following topics:

- Reports
- Concurrent Processes

## Reports

Oracle Advanced Supply Chain Planning has the following reports:

- Audit Statements Report
- Plan Comparison Report
- Planning Detail Report

### Audit Statements Report

The planning process involves collecting and using source data to drive planning. Data from source transaction instances need to be accurate and need to be set up properly in order for reliable planning output. Data from the source can be corrupt due to many reasons, including: bad transactions, missing transactions, human error, improper formats, conflicting and/or missing setups and profile options.

The Audit Statements Report is a self-explanatory report that evaluates data setups for profile options that are incorrectly set, invalid package bodies and objects, invalid triggers, etc. It suggests remedies for the problems that are found.

#### To run the Audit Statements Report

1. Sign in using the Advanced Supply Chain Planner responsibility.
2. Select Setup > Run Request.

   The Find Requests window appears.

3. Select Submit a New Request.

   The Submit a New Request window appears.

4. Select Single Request, then click OK.

   The Submit Request window appears.

5. From the List of Values for the Name field, select Audit Statements Report.

   The Parameters window appears.

6. Select Application.

| Application | Use for... |
|---|---|
| Global Order Promising | Order promising related audit statements |
| Inventory Optimization | Inventory optimization related audit statements |
| Advanced Supply Chain Planner | Supply chain planning related audit statements |
| Demand Planning | Demand planning related audit statements |

7. Select Report.

| Report | Audits data setups related to ... |
|---|---|
| Audit Collections Setup | Collections |
| Audit Planning Data | The planning engine |
| Audit UI Data | The user interface; for example, to check the validity of materialized views and profile options that control the display of plan data |

8. Select the plan for which you want to validate setup data.

9. Select the source instance for which you want to validate setup data.

10. Select Output Type.

| Output Type | Select this if you... |
|---|---|
| Summary Report | Do not want to look at details of the errors and warnings |
| Detail report - Errors Only | Want audit details of the errors only |
| Detail Report - Errors and Warnings | Want audit details of both the errors and warnings. Warnings are not fatal to the planning process, but could cause erroneous output |
| Detail Report - Complete | Want the summary as well as errors and warnings in your audit report |

11. Select OK.

    The Parameters window disappears.

12. Select Submit in the Submit Request window.

**To view the output of the Audit Statements Report**

1. From the Navigator, select Other > Request.

   The Find Requests window appears.

2. Select Find.

   The Requests window appears.

3. Select the completed request for Audit Statements Report.

4. Select View Output to view the report.

## Plan Comparison Report

The Plan Comparison Report compares two plans. To compare two plans:

- Specify criteria for comparison attributes (preference sets) and the comparison display (filtering criteria)
- Select the plans to compare and view the comparison: You can drill down from exception group comparison to exception type comparison to exception details comparison.

### Specifying Plan Comparison Criteria

The plan comparison criteria are:

- Preference set
- Filtering criteria

### Preference Set

You use preference sets to specify comparison attributes, for example, the exception messages on which to compare.

### To specify a preference set

1. From the Plan Comparison screen, select either the Comparison Setting tab or choose the Create/Edit Preferences button.

   The Preference Set Search page appears. You can:

   - Select whether or not to display plan options comparison.
   - Delete the preference set
   - Save the preference set and indicate it as the default
   - Mark it private or public. Other users can access public preference sets.

2. To save the preference set, click Save.
3. To create a new preference set using the settings on the page, enter a new preference set name in Save Plan Comparison Preference Set As and click Save.
4. To discard changes to the preference set, click Cancel.
5. To edit another preference set, select the preference set name at the top of the page and click Go.
6. To display a plan comparison report using the preference criteria, click Display Report.

### Filtering Criteria

You can select the filtering level for the attributes to be compared. For example, you could compare lateness at the item level and compare early replenishment at the product family level.

You can create and use filtering hierarchies and combinations of filtering hierarchies. Within each hierarchy, use:

- Filtering to narrow the selection
- Combinations of filtering hierarchies to include more selections

The supported hierarchies are Item and Resource.

Filtering functionality behaves similarly to the Find functionality in the Planner Workbench.

#### To select filtering criteria

1. Select the Comparison Settings tab.
2. Select the Filter Criteria tab.

   The Filter Criteria page appears.
3. Select a field name.
4. Select a condition.
5. Select or enter the From and To.
6. To use these filter criteria for comparison, click Display Report.
7. To go the previous screen, click Cancel.
8. To delete all the data entered, click Clear.
9. To specify additional filter criteria, click Add Another Row.

### Viewing Plan Comparison

You can access plan comparisons in several ways and display tabular and plan options information.

#### To access the Plan Comparison page from Planner Workbench

1. In Planner Workbench, select a plan name from the Navigator.
2. On the menu bar, select Plan.
3. Select Compare Plans.

   The Plan Comparison page appears.

#### To access the Plan Comparison page from the Navigator

1. From the Navigator, navigate Reports > Plan Comparison Report > Plan Comparison.

The Plan Comparison page appears.

**To compare two plans**

1. Check for View Requests and verify that concurrent process Compare Plan Exceptions has completed successfully.
2. Access the Plan Comparison page from the Planner Workbench or from the Navigator.
3. In the Exceptions tab, enter or select the plan names in Plan A and Plan B.
4. Enter or select the preference set.

   To create or edit a preference set, click Create/Edit Preferences.
5. Click Go.

   The comparison appears in the lower part of the page.

   The page shows the exception count for the exception groups for the two plans according to the preference set.

   You can select any exception group link and view the exception type plan comparison for that exception group. You can select any exception type link and view the exception details.

**To drill down in the plan comparison**

1. From the Exception Group Summary page, click a link in the Exception Group column.

   The Exception Types Summary page appears.

   This screen shows the exception count allocated to each exception type in the exception group.
2. From the Exception Types Summary page, click a link in the Exception Type column.

   The exception details graph appears.
3. To view corresponding tabular data, click Exception Details.

   The Exception Details page appears.

**To view plan options**

1. Select the Plan Options tab.

   The Plan Options page appears.

2. To view plan options information about the two plans, click the links at the bottom of the page (Main, Aggregation, Organization, Constraints, Optimization, Decision Rules).

## Planning Detail Report

Process manufacturing planners use the Oracle Advanced Supply chain Planning Detail Report to view the results of their plans.

In previous releases, process manufacturing planners use the Oracle Process Manufacturing OPM Reorder Point Report to view the results of reorder point planning. Process manufacturing planners use the Oracle Inventory Reorder Point Report to view the results of reorder point planning.

### Planning Detail Report

In previous releases, you could run the Oracle Advanced Supply Planning Detail Report against manufacturing plans. In release 12, the scope of data against which you can run the report has changed. You can run it against your manufacturing plans, your distribution plans, and your collected data. It shows material requirements planning information that you can use to understand the results of a plan.

This report is designed to increase planner productivity by using comprehensive and easy-to-analyze reports that summarize the plan at the desired level. It is also designed to improve communications between all parties involved in the planning and execution cycle.

The report may include the following sections: Horizontal Report, Vertical Report, Exception Report, and Action Report. These reports include details such as forecast, purchase order receipts, scheduled production, on-hand, available balance, expired lot, and safety stock.

#### To create the Planning Detail Report

1. Navigate using one of these navigation paths:
   - ASCP navigation: Advanced Supply Chain Planning, Reports, Planning Detail Report.
   - OPM navigation: OPM Process Planning, Planning, Reports, Planning Detail Report.
2. Two windows appear: the GMP_PDR window in the background, and the Parameters window in the foreground.
3. Complete the Parameters window using these fields:

| Parameter | Description |
| --- | --- |
| Instance | Select an instance. |
| Organization | Select a plan owning organization. |
| Plan Name | Select a plan or enter **Collections** to create the report based on the ODS data. |
| Plan Organizations | Select all planned organizations or a single plan. |
| Day, Week, and Period Buckets | Select the number of daily, weekly, and period buckets. |
| First, Second, and Third Sort | Select a sort parameter: No Sort, Organization, Inventory Item, Category, Planner, Buyer, or ABC Class. |
| Exception types | Select an exception type. |
| Planner, Buyer, Item From and To | Select a range of planners, buyers, or items. |
| Category Set Name | Select another category set. The default is the category set used for the plan. |
| Category From and To | Select a range of categories. |
| ABC Class Name From and To | Select a range of item ABC class. |
| Cutoff Date | Select a cutoff date for the Vertical report. |
| Combined PDR | Select Yes to print all four reports. If you select Yes, you will not be able to select individual reports. |
| Combined PDR Template | Select the template name for the Combined report. There is one seeded template. Users can add additional templates as needed. |
| Combined PDR Template Locale | Select the template locale for the Combined report. Such as **en-US** for English: United States. |

| Parameter | Description |
|---|---|
| Horizontal PDR | Select Yes to print the Horizontal report. |
| Horizontal PDR Template | Select the template name for the Horizontal report. |
| Horizontal PDR Template Locale | Select the template locale for the Horizontal report. Such as **en-US** for English: United States. |
| Vertical PDR | Select Yes to print the Vertical report. |
| Vertical PDR Template | Select the template name for the Vertical report. |
| Vertical PDR Template Locale | Select the template locale for the Vertical report. Such as **en-US** for English: United States. |
| Exception PDR | Select Yes to print the Exception report. |
| Exception PDR Template | Select the template name for the Exception report. |
| Exception PDR Template Locale | Select the template locale for the Exception report. Such as **en-US** for English: United States. |
| Action PDR | Select Yes to print the Action report. |
| Action PDR Template | Select the template name for the Action report. |
| Action PDR Template Locale | Select the template locale for the Action report. Such as **en-US** for English: United States. |

4. Click the OK button. The GMP_PDR window displays the Parameter selection string in the Parameter field.
5. On the GMP_PDR window, click the Submit button.
6. The Decision window appears asking if you want to submit another request.

Respond by clicking Yes or No.

7. The Planning Detail Report is available in XML Publisher. For more information about XML Publisher, see the Oracle XML Publisher User's Guide.

# Concurrent Processes

You can access concurrent processes from these locations in the Navigator:

- Collections menu
- Setup menu

## ATP 24x7 Switch Plans

### Overview

In 24-by-7 available to promise, the inquiries are done on the current version of the plan while the new plan run is in progress. Once the new plan is run, this synchronization is called internally during the ATP Post Plan Processing request and log messages in that request show the results of the synchronization process. Oracle may ask you to run this process independently as a debug step.

See also *Oracle Global Order Promising Implementation and User's Guide*.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select ATP 24x7 Switch Plans from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Plan Name: The plan against which you want to run the concurrent process.

## ATP 24x7 Synchronization Process

### Overview

Synchronization in 24-by-7 available to promise considers the sales orders received while the plan was being run and makes it a part of the new plan so that all demands are accurately reflected in the newest plan. Once the new plan is run, this concurrent process synchronizes the new plan. While this process typically runs automatically, Oracle may ask you to run this process independently.

See also *Oracle Global Order Promising Implementation and User's Guide*.

### Prerequisites

An ATP plan

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select ATP 24x7 Synchronization Process from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Plan: The plan against which you want to run the concurrent process.

## ATP Post Plan Processing

### Overview

This concurrent process analyzes the plan output and summarizes the supply according to an item's allocation rule. On completion of the run, you get availability picture is for order promising as the output.

See also *Oracle Global Order Promising Implementation and User's Guide*.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select ATP Post Plan Processing from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Plan: The plan against which you want to run the concurrent process.

## Analyze Plan Partition

#### Overview

This concurrent process runs automatically at the end of the plan run and analyzes the plan partition after the plan is generated. It gathers the optimizer statistics and improves SQL performance for queries.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Analyze Plan Partition from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Plan Name: The plan against which you want to run the concurrent process.

## Auto Release Planned Order

#### Overview

This concurrent process automatically releases planned orders:

- Generated during the run of a plan with Production selected
- With Order Date within item attribute Release Time Fence

#### Submission

The planning process automatically launches this concurrent process as needed.

#### Completion

The concurrent process completes with warning if it cannot release a planned order for a buy item because the planner is not an active employee. It notes the issue in the log file with error Purchase requisition is not released because Planner is not an active employee.

### Build Collaborative Planning Calendar

#### Overview

This concurrent process builds a default calendar used in Oracle Collaborative Planning application. Horizontal plans and exception calculations use this calendar. Oracle Collaborative Planning uses a hierarchy of calendars depending on the dates and order in question.

See also *Oracle Collaborative Planning Implementation and User's Guide*.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Build Collaborative Planning Calendar from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Calendar code: A valid calendar code existing in the planning system.

### Calculate Resource Availability

#### Overview

For a planning instance, this concurrent process computes resource availability from a start date. This is typically used for quality assurance and regression testing where the source and planning destination dates may be different.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Calculate Resource Availability from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Instance: The instance-organization against which you want to run the concurrent process.

Start Date: The date from which you want to calculate resource availability.

## Collections Synonyms

### Overview

This concurrent process drops and creates synonyms during the collections run.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Collections Synonyms from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

None

## Collections Triggers

### Overview

This concurrent process drops and creates triggers during the collections run.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Collections Triggers from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

None

## Collections Views

### Overview

This concurrent process drops and creates views during the collections run.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Collections Views from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

None

## Compare Plan Exceptions

### Overview

This concurrent process performs the calculations that report Plan Comparison Report uses to compare two plans.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Compare Plan Exceptions from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

From Plan: The original plan name.

To Plan: The copied plan name.

## Continuous Collections

### Overview

This concurrent process regularly and automatically synchronizes the data on the planning server to the current source data.

See also Running Collections.

### Submission

#### Option 1

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Continuous Collections from the Reports list.

The Parameters window appears.

4. Set the parameters and click Submit.

**Option 2**

1. In the Navigator, select Collections > Oracle Systems > Continuous Collection.

   The Submit a New Request window appears.

   The Parameters window appears.

2. Set the parameters and click Submit.

**Parameters**

Instance: The instance-organization against which you want to run the concurrent process.

Collection Group: The collection group.

Number of Workers: The number of workers that the process should use.

Timeout (minutes): The time out in minutes after which the process will fail.

Snapshot Threshold (%): Threshold that the collections engine should use to decide whether to do a net change or targeted collection. If the data volume change is above the specified percentage, the collections engine uses targeted collection.

Analyzing Staging Tables: Indicate whether to analyze staging tables and gather statistics for the staging table.

In the remaining program parameters, specify whether or not to collect each entity:

- Approved Supplier Lists (Supplier Capacities)
- BOM / Routings / Resources
- Bills of Resources
- Forecasts
- Items
- Key Performance Indicator Targets
- Master Demand Schedule (MDS)
- Master Prod. Schedule (MPS)
- On Hand

- Purchase Orders/Purchase Requisitions
- Sales Orders
- Supplier Responses
- Transportation Details
- User Supplies and Demands
- Work in Process (WIP)
- ATP Rules
- Calendars
- Demand Class
- End Item Substitutions
- Key Performance Indicator Targets
- Planning Parameters
- Planners
- PO Receipts
- Projects/Tasks
- Reservations
- Resource Availability
- Safety Stock
- Sourcing History
- Sourcing Rules
- Subinventories
- Suppliers/Customers/Orgs
- Unit Numbers
- Unit of Measure

- User Company Association

## Create AHL Snapshots

### Overview

This concurrent process drops and recreates AHL snapshots during the collection process. Typically, it runs as part of concurrent process Refresh Collection Snapshots when profile option MSC: Source set up required is Yes.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create AHL Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

None

## Create APS Partitions

### Overview

This concurrent process segregates data by plans and instances. Use it only if you want to have more than one partition.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create APS Partitions from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Plan Partition count: The number of plan partitions to be created.

Instance Partition count: The number of instance partitions to be created.

## Create ATP Partitions

#### Overview

This concurrent process segregates data by plan with ATP partitions.

See also *Oracle Global Order Promising Implementation and User's Guide*.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create ATP Partitions from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Plan partition count: The number of plan partitions to be created.

Instance partition count: The number of instance partitions to be created.

## Create BOM Snapshots

#### Overview

This concurrent process drops and recreates BOM snapshots during the collection process. Typically, it runs as part of concurrent process Refresh Collection Snapshots when profile option MSC: Source set up required is Yes.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create BOM Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

None

## Create Forecast Priority Flexfield

#### Overview

This concurrent process creates a new segment in the existing forecast descriptive flexfield in the source instance. The segment holds forecast priority information for each forecast entry.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create Forecast Priority Flexfields from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Forecast Priority: The segment of the flexfield that you want to designate for defining the forecast priority.

## Create INV Snapshots

#### Overview

This concurrent process drops and recreates INV snapshots during the collection process. Typically, it runs as part of concurrent process Refresh Collection Snapshots when profile option MSC: Source set up required is Yes.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create INV Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

None

## Create Instance-Org Supplier Association

### Overview

This concurrent process designates a supplier as an external supplier organization and creates an association between the supplier and the instance-organization. The planning engine nets and explodes though the supplier organization to issue buy planned orders.

See Modeling Cross-Instance Customers and Suppliers, page 9-5.

Use this process only when planning across instances. If the supplier and the organization are part of the same instance, use the supplier to organization association function when setting up inventory organizations . See Setting up Organization Parameters in *Oracle Inventory User's Guide*.

### Prerequisites

Before running, collect the supplier and the instance-organization.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create Instance-Org Supplier Association from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Instance Code: The instance in which you want to create the association.

Organization: The organization in which you want to create the association.

Modeled Supplier: The supplier to be associated with the specified instance.

Modeled Supplier Site: The supplier site to be associated with the specified instance.

Accept Demands From Unmet PO: This controls whether unmet quantity in the Purchase orders will be exploded though the supplier organizations to create demands in the external supplier organization.

## Create Inventory Planning Flexfields

### Overview

This concurrent process creates new segment definitions in existing descriptive flexfields to hold data that may be required for inventory planning. It also populates profile values with the value corresponding to the descriptive flexfield attribute number for each attribute created.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create Inventory Planning Flexfields from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Service Level (Item): The service level value that you want to maintain for the items.

Service Level (Org): The service level value that you want to maintain for the organizations.

Service Level (Customer): The service level value that you want to maintain for the customers.

## Create MRP Snapshots

### Overview

This concurrent process drops and recreates MRP snapshots during the collection process. Typically, it runs as part of concurrent process Refresh Collection Snapshots when profile option MSC: Source set up required is Yes.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create MRP Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

None

## Create OE Snapshots

### Overview

This concurrent process drops and recreates OE snapshots during the collection process. Typically, it runs as part of concurrent process Refresh Collection Snapshots when profile option MSC: Source set up required is Yes.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create OE Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

None

## Create PO Snapshots

#### Overview

This concurrent process drops and recreates PO snapshots during the collection process. Typically, it runs as part of concurrent process Refresh Collection Snapshots when profile option MSC: Source set up required is Yes.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create PO Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

None

## Create Planning Flexfields

#### Overview

This concurrent process creates new segment definitions in existing descriptive flexfields to hold data that may be required for constrained and/or optimized planning. It also populates profile values with the value corresponding to the descriptive flexfield attribute number for each attribute (planning parameter) created.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create Planning Flexfields from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

**Parameters**

Late Demands Penalty Attribute: The late demands penalty attribute.

Material Overcapacity Penalty (Item): The value that you want to maintain for the material capacity penalty cost at the item level.

Late Demands Penalty (Org): The value that you want to maintain for the late demands penalty at the organization level.

Material Overcapacity Penalty (Org): The value that you want to maintain for the material overcapacity penalty at the organization level.

Resource Overcapacity Penalty (Org): The value that you want to maintain for the resource overcapacity penalty at the organization level.

Transportation Overcapacity Penalty (Org): The value that you want to maintain for the transportation overcapacity penalty at the organization level.

Aggregate Resource (Resource): The value that you want to maintain for the aggregate resource at the resource level.

Resource Overcapacity Penalty (Resource): The value that you want to maintain for the resource overcapacity penalty at the resource level.

Material Overcapacity Penalty (Supplier): The value that you want to maintain for the material overcapacity penalty at the supplier level.

Substitute Items Priority: The value that you want to maintain for the substitute items priority.

Transportation Overcapacity Penalty (Ship Method): The value that you want to maintain for the transportation overcapacity penalty for the ship method.

BOM/Routing Cost: The value that you want to maintain for the Bill of Material (BOM) and Routing cost.

Late Forecasts Penalty: The value that you want to maintain for the late forecasts penalty.

Resource Group (Line): The value that you want to maintain for the resource group at the line level.

Demand Priority: The demand priority.

## Create Resource Batch Planning Flexfields

### Overview

For future use.

## Create Setup and Run Flexfield

### Overview

This concurrent process creates new segment definitions in existing descriptive flexfields to hold data that may be required for defining setup and run related information.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create Setup and Run Flexfields from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Activity Group Id: The segment to be used for defining the activity group id.

## Create WIP Snapshots

### Overview

This concurrent process drops and recreates WIP snapshots during the collection process. Typically, it runs as part of concurrent process Refresh Collection Snapshots when profile option MSC: Source set up required is Yes.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

The Submit Request window appears.

3. Select Create WIP Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

None

## Create WSH Snapshots

#### Overview

This concurrent process drops and recreates WSH snapshots during the collection process. Typically, it runs as part of concurrent process Refresh Collection Snaphots when profile option MSC: Source set up required is Yes.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create WSH Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

None

## Create WSM Snapshots

#### Overview

This concurrent process drops and recreates WSM snapshots during the collection process. Typically, it runs as part of concurrent process Refresh Collection Snaphots when profile option MSC: Source set up required is Yes.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create WSM Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

None

## Create Zone Flexfields

### Overview

This concurrent process creates new segment definitions in existing descriptive flexfields to hold data that may be required for planning and order promising. It also populates profile values with the value corresponding to the descriptive flexfield attribute number for each attribute (planning parameter) created.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Create Zone Flexfields from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Zone Usage: The segment to be used for defining the Zone usage.

## Custom Exception Generator

### Overview

This concurrent process creates user defined exceptions in Oracle Collaborative Planning

See also *Oracle Collaborative Planning Implementation and User's Guide*.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Custom Exception Generator from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Exception Name: The name of the exception to be created.

Full Load: Select Yes to instruct the planning engine to calculate exceptions based on the full set of data conditions. Select No to instruct the planning engine to calculate exceptions based on changed data from last run of the concurrent process.

## Detail Scheduling Continuous Collection

### Overview

For future use.

## Detail Scheduling Data Pull

### Overview

For future use.

## Detail Scheduling ODS Load

### Overview

For future use.

## Download Profile Options Value

### Overview

This concurrent process copies and captures the profile options value for each responsibility or user. It is typically used for debugging and regression testing.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Download Profile Options Value from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Preference set name: The name for the preference set.

User Name: The user name whose profile options values will be downloaded.

Responsibility application: The application for which to download the profile values, for example, Inventory Planning, Collaborative Planning.

Responsibility name: The responsibility name for which the concurrent program will download the profile option values.

Schema Names: The Application Database schema names, for example, MSC, MSO.

File Name: The file name in which the profile values will be downloaded.

## Drop Collections Snapshot

### Overview

This concurrent process drops the source snapshot definitions. Use it when there is an error or corruption in a particular snapshot or materialized view. The next collection recreates the snapshots.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Drop Collections Snapshot from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Snapshot Name: The name of the snapshot to drop.

## ERP Legacy Collections Request Set

#### Overview

This request set collects Oracle Applications data that is in flat file format and includes concurrent processes:

- Load Transaction Data
- Pre-Process Transaction Data
- Planning ODS Load

See also Running Collections.

#### Submission

1. In the Navigator, select Collections > Oracle Systems > Load Transaction Data using Flat Files.

   The Planning Data Collection window appears.

2. Set the parameters and click Submit.

## Flat File Loader

#### Overview

This concurrent process loads legacy transaction data from flat files into the destination (planning) interface tables. Concurrent process Pre-Process Monitor validates the data from this load.

See also Running Collections.

#### Submission

The Legacy Collections request set automatically launches this concurrent process.

**Parameters**

File Path Separator: The file path separator. The value is unique to the operating system.

Control Files Directory: The complete path and name of the control file for loading the legacy data.

Data Files Directory: The directory that contains the flat files.

Number of workers: The number of worker processes that you want to use to load the data.

In the remaining program parameters, specify the file name to be used to collect the entity. In case the data files directory is specified you just need to specify the file name. Otherwise specify the complete path for each data file to load the particular entity being selected for legacy load.

- File Name: Demand Classes
- File Name: Bills of Material Headers
- File Name: Bills of Material Components
- File Name: Component Substitutes
- File Name: Items
- File Name: Routings
- File Name: Routing Operations
- File Name: Operation Resources
- File Name: Resource Groups
- File Name: Resources
- File Name: Resource Availability
- File Name: Resource Shifts
- File Name: Project Tasks
- File Name: Units of Measure
- File Name: Units of Measure Class Conversions
- File Name: Unit of Measure Conversions
- File Name: Category Sets

- File Name: Item Categories
- File Name: Item Sourcing
- File Name: Calendars
- File Name: Workday Patterns
- File Name: Shift Times
- File Name: Calendar Exceptions
- File Name: Shift Exceptions
- File Name: Resource Requirements
- File Name: Item Suppliers
- File Name: Supplier Capacities
- File Name: Supplier Flex Fences
- File Name: Safety Stocks
- File Name: Trading Partners
- File Name: Trading Partner Sites
- File Name: Location Associations
- File Name: Sub Inventories
- File Name: Partner Contacts
- File Name: Shipping Methods
- File Name: Work Order Supplies
- File Name: Requisition Supplies
- File Name: On hand Supplies
- File Name: In transit Supplies
- File Name: Purchase Order Supplies
- File Name: Plan Order Designators

- File Name: Plan Order Supplies
- File Name: ASN Supplies
- File Name: Sales Order Demands
- File Name: Forecast Designators
- File Name: Forecast Demands
- File Name: Demand Schedule Designators
- File Name: Demand Schedule Demands
- File Name: Work Order Component Demands
- File Name: Reservations
- File Name: Customer Items
- File Name: Item Substitutes
- File Name: Planners
- File Name: Operation Network
- File Name: Co-Products
- File Name: Job Operation Network
- File Name: Job Operation
- File Name: Job Requirement Ops
- File Name: Job Operation Resources
- File Name: Profiles
- File Name: Calendar Assignments
- File Name: Regions
- File Name: Zone Regions
- File Name: Region Locations
- File Name: Region Sites

## Launch Supply Chain Planning Process Request Set

### Overview

This concurrent request launches the concurrent request set that generates the plans. The request set includes:

- Memory-based snapshot and snapshot workers
- Memory-based planner and planner workers

### Prerequisites

- A plan name with plan options set.
- Enough system resources to avoid negative impacts on the online transaction processing.

### Submission

#### Option 1

1. In the Navigator, select Supply Chain Plan > Launch.

   The Submit a New Request window appears.

   The Parameters window appears.

2. Set the parameters and click Submit.

#### Option 2

1. In the Navigator, select Supply Chain Plan > Names.

   The Submit a New Request window appears.

   The Parameters window appears.

2. Click Launch Plan.
3. Set the parameters and click Submit.

### Parameters

Plan: The plan to launch.

Launch Snapshot: Specify whether to launch snapshot.

Launch Planner: Specify whether to launch the planner.

Anchor Date: The plan's Anchor date.

Enable 24x7 ATP: Specify whether to enable 24x7 order promising for this plan.

Release reschedules: Specify whether to release reschedules in production plans.

Snapshot Static Entities: Specify whether to snapshot static data, for example, suppliers and customers.

Launch Global Forecast Refresh: Automatically launches concurrent process Refresh Global Forecast Materialized Views.

Snapshot Source for Firm Planned Orders: Specify the source of firm planned orders into this plan:

- <name of this plan>: The process uses firm planned orders from the Advanced Supply Chain Planning plan.
- <name of a Rapid Planning baseline or simulation plan>: The process uses firm planned orders from the Rapid Planning plan. See Simulating Plans in Oracle Rapid Planning, Feeding Back from Rapid Planning.

Build Worksheet: Complete the worksheets you selected for the plan in Plan Options > tab Reporting.

Copy Plan Output to Simulation Plans: Automatically copy this plan to Rapid Planning as a baseline plan. Use Yes if you don't need to review the Advanced Supply Chain Planning plan before making it a Rapid Planning baseline plan.

## Legacy Collections Request Set

### Overview

This request set collects legacy data that is in flat file format and includes concurrent processes:

- Flat File Loader
- Pre-process Monitor
- Planning ODS Load

See also Running Collections.

### Submission

1. In the Navigator, select Collections > Legacy Systems > Collect Flat File Data.

   The Planning Data Collection window appears.

2. Set the parameters and click Submit.

## Load ATP Summary Based on Collected Data

### Overview

Oracle Global Order Promising summarizes multiple supply and demand information in single-quantity buckets for each item / instance / organization / demand class. This concurrent process retrieves summary data for checking availability information. It improves available to promise performance because each inquiry does not need to compute availability from detailed supply and demand information.

See also *Oracle Global Order Promising Implementation and User's Guide*.

### Prerequisites

An ATP plan

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Load ATP Summary Based on Collected Data from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Instance: The instance-organization against which you want to run the concurrent process.

Load Method: Select the load method to use--complete, net change, or targeted.

Refresh Sales Orders: Select Yes to refresh sales orders in the summary.

Supplies/Demands: Select Yes to include supplies and demands in the summary.

## Load ATP Summary Based on Planning Output

### Overview

Oracle Global Order Promising summarizes multiple supply and demand information in single-quantity buckets for each item / instance / organization / demand class. Summary information changes as you get new orders and create new supplies through capable to promise. This concurrent process helps you determine and use incremental

changes to the summary data by restricting the data summarization to be done on a specific plan. It may improve available to promise performance.

See also *Oracle Global Order Promising Implementation and User's Guide*.

#### Prerequisites

A completed supply chain plan.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Load ATP Summary Based on Planning Output from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Plan_id: The plan ID.

### Load Transaction Data

#### Overview

This concurrent process loads Oracle Applications transaction data from flat files into the destination (planning) interface tables. Concurrent process Pre-Process Transaction Data validates the data from this load.

See also Running Collections.

#### Submission

The ERP Legacy Collections request set automatically launches this concurrent process.

#### Parameters

Time Out Duration: The length of time in minuted that the process should wait in suspension before terminating. The default is 1440.

File Patch Separator: Separator used in file names of later parameters. The default is /.

Control Files Directory: The complete path and name of the control file for loading the legacy data.

Data Files Directory: The directory that contains the flat files.

Total Number of Workers: The number of worker processes that you want to use to load the data.

In the remaining program parameters, specify the file name to be used to collect the entity. In case the data files directory is specified you just need to specify the file name. Otherwise specify the complete path for each data file to load the particular entity being selected for legacy load.

- File Name: Resource Requirements
- File Name: Supplier Capacities
- File Name: Supplier Flex Fences
- File Name: Work Order Supplies
- File Name: Requisition Supplies
- File Name: On hand Supplies
- File Name: In transit Supplies
- File Name: Purchase Order Supplies
- File Name: Plan Order Designators
- File Name: Plan Order Supplies
- File Name: ASN Supplies
- File Name: Sales Order Demands
- File Name: Forecast Designators
- File Name: Forecast Demands
- File Name: Demand Schedule Designators
- File Name: Demand Schedule Demands
- File Name: Work Order Component Demands

## MDS Data Collection

### Overview

This concurrent process loads master demand schedule data from the source instance without affecting the rest of the collected data.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select MDS Data Collection from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Instance: The instance-organization against which you want to run the concurrent process.

## Planning Data Collection - Purge Staging Tables

### Overview

This concurrent process deletes the data from the staging tables. Use it either before regenerating and launching a new data pull or after the collections data pull fails.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Planning Data Collection - Purge Staging Tables from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Instance: The instance-organization against which you want to run the concurrent process.

Validation: Specify whether the concurrent process needs to verify if a planning data collection is running.

## Planning Data Collection Request Set

### Overview

This request set performs data collection and includes concurrent processes:

- Planning Data Pull
- Planning ODS Load

See also Running Collections.

### Submission

1. In the Navigator, select Collections > Oracle Systems > Standard Collection.

   The Planning Data Collection window appears.

2. Set the parameters and click Submit.

## Planning Data Pull

### Overview

This concurrent process pulls Oracle Applications data from the source (transaction) instance to the destination (planning) instance interface tables.

See also Running Collections.

### Prerequisites

The refresh snapshot process should have completed successfully.

### Submission

#### Option 1

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Planning Data Pull from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

**Option 2**

The Planning Data Collection request set automatically launches this concurrent process.

**Parameters**

Instance: The instance-organization against which you want to run the concurrent process.

Collection Group: The collection group.

Number of Workers: The number of workers that the process should use.

Timeout (minutes): The time out in minutes after which the process will fail.

Purge Previously Collected Data: Indicate whether or not to purge previously collected data before pulling this data.

Collection Method: The method of collection indicating whether to complete refresh or not.

Analyzing Staging Tables: Indicate whether to analyze staging tables and gather statistics for the staging table.

In the remaining program parameters, specify whether or not to collect each entity:

- Approved Supplier Lists (Supplier Capacities)
- ATP Rules
- Bills of Materials / Routings / Resources
- Bills of Resources
- Calendars
- Demand Classes
- End Item Substitutions
- Forecasts
- Items
- Key Performance Indicator Targets
- Master Demand Schedules
- Master Production Schedules
- On Hand

- Planning Parameters
- Planners
- Projects/Tasks
- Purchase Orders/Purchase Requisitions
- Reservations
- Safety Stock
- Safety Orders
- Sourcing History
- Sourcing Rules
- Subinventories
- Supplier Responses
- Suppliers/Customers/Orgs
- Transportation Details
- Unit Numbers
- Units of Measure
- User Company Association
- User Supplies and Demands
- Work In Process

## Planning ODS Load

### Overview

This concurrent process moves data from the destination (planning) instance interface tables to the destination (planning) instance planning tables.

See also Running Collections.

### Prerequisites

Successful completion of planning data pull process.

#### Submission

#### Option 1

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Planning ODS Load from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Option 2

The ERP Legacy Collections, Legacy Collections, and Planning Data Collections request sets automatically launch this concurrent process.

#### Parameters

Instance: The instance-organization against which you want to run the concurrent process.

Timeout (Minutes): Indicate timeout minutes beyond which the concurrent process will fail.

Number of Workers: The number of workers that the process should use.

Resource Availability: Indicate whether to compute resource availability.

Recalculate Sourcing History: Indicate whether to recalculate sourcing history.

Purge Sourcing History: Indicate whether to purge the sourcing history.

## Pre-Process Monitor

#### Overview

This concurrent process preprocesses legacy transaction data in the destination (planning) instance interface tables and generates IDs. It validates data loaded using concurrent process Flat File Loader.

See Legacy Collection, *Oracle Advanced Supply Chain Planning Implementation and User's Guide*.

#### Prerequisites

Successful completion of the Flat File Loader process.

**Submission**

The Legacy Collections request set automatically launches this concurrent process.

**Parameters**

Instance: The instance against which you want to run the concurrent process.

Processing Batch Size: The processing Batch Size in terms of number of rows.

Total Number of Workers: The total number of workers to be used for validating the data.

In the remaining program parameters specify whether to include certain types of data for validation.

- Process Calendars
- Process Demand Class
- Process Trading Partners
- Process category Sets
- Process Product Categories
- Process Units of Measure
- Process UOM Conversions
- Process Designators
- Process Projects and Tasks
- Process Items
- Process Suppliers
- Process Safety Stock
- Process Shipping Methods
- Process Sourcing Rules
- Process Bills of Materials
- Process Routings
- Process Resources
- Process Material Supplies

- Process Material Demands
- Process Reservations
- Process Resource Demands
- Process Customer Items
- Process Item Substitutes
- Process Planners
- Process Profiles
- Process Calendar Assignments

## Pre-Process Transaction Data

### Overview

This concurrent process preprocesses Oracle Applications transaction data in the destination (planning) instance interface tables and generates IDs. It validates data loaded using concurrent process Load Transaction Data.

See also Running Collections.

### Prerequisites

Successful completion of concurrent process Load Transaction Data.

### Submission

The ERP Legacy Collections request set automatically launches this concurrent process.

### Parameters

Instance: The instance in which you want to load the transaction data.

Plan: The plan against which you want to run the concurrent process.

## Purge Collaborative Planning Historical Records

### Overview

This concurrent process purges data collected into Oracle Collaborative Planning and saves it in a history table. Successive data collections increase the size of the table and may affect performance.

See also *Oracle Collaborative Planning Implementation and User's Guide*.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Purge Collaborative Planning Historical Records from the Reports list

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

From Date: The first date from which to purge records.

To Date: The last date through which to purge records.

Order Type: A specific order type to purge.

## Purge Designator

### Overview

This concurrent process schedules the plan purge activity.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Purge Designator from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

None

## Purge Interface Tables

### Overview

This concurrent process purges Oracle Applications and legacy data from the destination (planning) interface tables. Use it before launching new collections when a previous data collection run failed or if you fine data corruption in the interface tables.

See also Running Collections

### Submission

### Option 1

1. In the Navigator, select Collections > Oracle Systems > Purge Interface Tables.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Purge Interface Tables from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Option 2

1. In the Navigator, select Collections > Legacy Systems > Purge Interface Tables.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Purge Interface Tables from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Instance code: The instance of the legacy source.

Delete Rejected Records Only: Specify wether to delete only the rejected records or all records.

## Purge Legacy Data

### Overview

This program deletes all the records that are collected from a legacy source.

### Submission

1. In the Navigator, select Collections > Legacy Systems > Purge Collected Data.

   The Launch Purge Program for Collected data window appears.

   The Parameters window appears.

2. Set the parameters and click Submit.

### Parameters

Instance: The instance of the legacy source.

Complete Refresh: Specify whether to perform complete refresh or not.

Delete Records Up to Date: The date range up to which all the records will be deleted from the collected data.

Delete Supplies: Specify whether to delete supply related entries from the collected data.

Delete Demands: Specify whether to delete demand related entries from the collected data.

## Push Plan Information

### Overview

This concurrent process deletes an entire plan on the source instance and then replaces it with a copy of the current plan from the destination instance.

### Prerequisites

A plan that has been run successfully.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Push Plan Information from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Instance

Plan Type

Plan Name

Buy Orders Only: The default is No.

Demand: If you select Yes, the process purges and re-populates table `mrp_gross_requirements` with requirements from the plan. If you select No, the process leaves the data in table mrp_gross_requirements. The default is Yes.

Organization Code: The list of values contains the planned organizations of the selected plan.

Planner: The list of values contains the planners of the items planned in the selected plan.

Category: The list of values contains the categories in the default planning category set.

Item: You can select a specific item. If you leave this parameter blank, the process pushes information for all items planned in the selected plan.

Supplier: The list of values contains the suppliers in the plan assignment set. You can select a value for this parameter only if:

- Buy Orders Only is Yes
- Demand is No

Supplier Site: The list of values contains the supplier sites in the plan assignment set. You can select a value for this parameter only if:

- Supplier has a value
- Demand is No

Horizon Start Date: The earliest Suggested Due Date for which you want plan information pushed. If you leave this parameter blank, the process begins with the plan start date.

Horizon End Date: The latest Suggested Due Date for which you want plan information pushed. The default is one year from today. If you leave this parameter blank, the process ends with the plan horizon.

### Overwrite Behavior

If the fields Organization, Planner, Category, Item, Supplier, Supplier Site, Horizon Start Date, and Horizon End Date are all blank, the process:

- Deletes the plan information on the source instance
- Copies the plan information from the destination instance to the source instance

If the is a value in at least one of the fields Organization, Planner, Category, Item, Supplier, Supplier Site, Horizon Start Date, and Horizon End Date, the process:

- Deletes the plan information on the source instance that matches the criteria with values. The supplies and demands that do not match the criteria are not deleted.
- Copies the plan information from the destination instance to the source instance. The supplies and demands originally on the source instance that did not match the criteria stay as they were before the execution of the Push Plan Information process.

If you perform rolling horizon pushes (plan start date to planning horizon) for consecutive runs of the same plan, leave Horizon Start Date blank. This eliminates the possibility duplicate orders pushed to the source instance.

To see the plan, navigate to responsibility Supply Chain Planner. You cannot see it in the MRP Names form.

The process does not release planned orders on the source. Also, it does not change:

- Planned order status from Released to None
- The row color to pink

### Example 1: Minimal Criteria

Settings:

- Buy Orders Only: No
- Demand: Yes
- Organization, Planner, Category, Item, Supplier, Supplier Site, Horizon Start Date, Horizon End Date: <blank>

The process:

- All supplies and demands from the selected plan in the source instance are deleted.
- All supplies and demands from the selected plan in the destination instance are copied to the source instance.

#### Example 2: Buy Orders Only

Settings:

- Buy Orders Only: Yes
- Demand: Yes
- Organization, Planner, Category, Item, Supplier, Supplier Site, Horizon Start Date, Horizon End Date: <blank>

The process:

- All supplies and demands from the selected plan in the source instance are deleted.
- Buy orders from the selected plan in the destination instance are copied to the source instance.

#### Example 3: Multiple Criteria

Settings:

- Buy Orders Only: Yes
- Demand: No
- Planner: JSmith
- Horizon Start Date: 18-Feb-2004
- Horizon End Date: 30-Jun-2004
- Organization, Category, Item, Supplier, Supplier Site: <blank>

The process:

- All supplies and demands corresponding to the selected plan that satisfy ALL of the following conditions are deleted from the source instance:
  - Item planner = Jsmith
  - Suggested Due Date >= 18-Feb-2004
  - Suggested Due Date <= 30-Jun-2004
- All other supplies and demands in the source instance corresponding to the selected plan are left untouched.
- All supplies and demands from the selected plan in the destination instance that satisfy the conditions are copied to the source instance.

#### Inconsistent Data Warning

The concurrent process flags the risk of inconsistent plan data when it runs multiple times against the same plan name. If both of these conditions occur, the concurrent process completes the deletions and copies and issues a warning in its log file:

- The launch date/time of the plan being pushed is later than the launch date/time that was used in the last run of that plan name.
- The push process does not completely overwrite all data for the pushed plan in the source instance.

The warning text is "WARNING: Risk of inconsistent plan information. The Push Plan Information process has caused supply/demand data from multiple runs of plan <plan name> to be present on the source instance. Plan launch date/time at previous Push Plan Information run = <date 1>. Plan launch date/time at current Push Plan Information run = <date 2>."

The concurrent process does not identify which specific data came from which plan launch date/time.

#### Example 1: Warning not issued

18-Feb: Run planning process for orgs ORG1, ORG2, and ORG3

18-Feb: Run Push Plan Information concurrent process for ORG1, ORG2, and ORG3

No warning issued

Data in source instance corresponds to:

- ORG1 data as of 18-Feb
  - ORG2 data as of 18-Feb
  - ORG3 data as of 18-Feb

19-Feb: Run planning process for orgs ORG1, ORG2, and ORG3

19-Feb: Run Push Plan Information concurrent process for ORG1, ORG2, and ORG3

No warning issued (because all source data overwritten)

Data in source instance corresponds to:

- ORG1 data as of 19-Feb
  - ORG2 data as of 19-Feb
  - ORG3 data as of 19-Feb

#### Example 2: Warning issued

18-Feb: Run planning process for orgs ORG1, ORG2, and ORG3

18-Feb: Run Push Plan Information concurrent process for ORG1, ORG2, and ORG3

No warning issued

Data in source instance corresponds to:

- ORG1 data as of 18-Feb
  - ORG2 data as of 18-Feb
  - ORG3 data as of 18-Feb

19-Feb: Run planning process for orgs ORG1, ORG2, and ORG3

19-Feb: Run Push Plan Information concurrent process for ORG1

Warning issued (because previous plan launch date = 18-Feb, current plan launch date = 19-Feb, and not all source data overwritten)

Data in source instance corresponds to:

- ORG1 data as of 19-Feb
  - ORG2 data as of 18-Feb
  - ORG3 data as of 18-Feb

20-Feb: Run Push Plan Information concurrent process for ORG2

No warning issued (because previous plan launch date = 19-Feb and current plan launch date = 19-Feb)

Data in source instance corresponds to:

- ORG1 data as of 19-Feb
  - ORG2 data as of 19-Feb
  - ORG3 data as of 18-Feb

## Realign Operational Data Stores Dates

### Overview

This concurrent process makes mass update of the dates for records present in the collected data. Use it for quality assurance and regression testing.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Realign Operational Data Stores Dates from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Instance: The instance-organization against which you want to run the concurrent process.

Time Factors (In Days): The time factor for shifting the dates forward.

### Refresh Allocation Hierarchy Materialized View

#### Overview

This concurrent process determines the allocation rules to be used. Run it after making changes to allocation rules or assignments.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Refresh Allocation Hierarchy Materialized View from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

None

### Refresh Collection Snapshots

#### Overview

This concurrent request refreshes the snapshot in the source. After the refresh, the snapshot reflects the most current master data.

If profile option MSC: Source set up required is Yes, this process runs the following

concurrent processes:

- Create AHL Snapshots
- Create BOM Snapshots
- Create INV Snapshots
- Create MRP Snapshots
- Create OE Snapshots
- Create PO Snapshots
- Create WIP Snapshots
- Create WSH Snapshots
- Create WSM Snapshots

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Refresh Collection Snapshots from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Refresh Mode: The refresh mode: Fast, Complete, or Automatic.

Snapshot Name: The snapshot that you want to refresh.

Threshold for Truncating Logs: The threshold for truncating the snapshot log file.

Degree: The maximum degree of parallelism; the default is 0 which signifies Serial.

## Refresh Global Forecast Materialized Views

#### Overview

This concurrent process converts the global forecast materialized views into populated tables for performance improvement.

#### Prerequisites

A data collection that changes the global forecasting information. For example, you can launch this process after:

- Every collection
- Changing or creating plans
- Changing sourcing rules
- Changing assignment sets

#### Submission

The Launch Supply Chain Planning Process request set automatically launches this concurrent process if needed.

#### Parameters

Plan ID: If entered, the concurrent process runs for that plan only. If blank, the concurrent process runs for all plans with global forecasts.

### Refresh KPI Summary Data

Obsolete; to display key performance indicators, select plan option Display Key Performance Indicators (Main tab).

### Refresh Materialized Views

#### Overview

Oracle Global Order Promising chooses the plan that it uses for ATP purposes for all instance / item / organization / demand class combinations, this concurrent process improves that performance. It refreshes snapshot `MSC_ATP_PLAN_SN`.

See also *Oracle Global Order Promising Implementation and User's Guide*.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Refresh Materialized Views from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Materialized view name: Always enter `MSC_ATP_PLAN_SN`.

## Release Sales Order Recommendations

#### Overview

This concurrent process posts sales order changes to the source instance. These changes are recommended by the planning engine and released from Planner Workbench, for example, assignment of a shipping organization with global forecasting and replacement of line item from end item substitution.

#### Prerequisites

Released sales order recommendations from Planner Workbench.

#### Submission

The Planner Workbench release process automatically launches this concurrent process.

#### Parameters

None.

## Register Ask Oracle Planning Question

Not used.

## Send XML Releases to Legacy Sources

#### Overview

This concurrent process pushes the release information via XML to a source legacy application. It is equivalent to the process that pushes release information to the Oracle Applications source instance.

See also *Oracle Collaborative Planning Implementation and User's Guide*.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Send XML Releases to Legacy Sources from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

#### Parameters

Instance code: The instance code of the legacy source.

Send Rescheduled Purchase Orders: Indicate whether to send rescheduled purchase orders.

Send Rescheduled Work Orders: Indicate whether to send rescheduled work orders.

Send New Requisitions: Indicate whether to send new requisitions.

Send New Work Orders: Indicate whether to send new work orders.

Address of Destination System: Indicate whether the legacy source has an address or not.

Protocol (HTTP/SMTP/HTTP-OXTA): The message protocol to use to format the transactions.

User Name for Destination System: The user sign-on name at the legacy system.

Password for Destination System: The password for the user sign-on name at the legacy system.

## Supply Chain Event Manager

#### Overview

Trading partners and original equipment manufacturers post information such as supply, demand, and capacities into Oracle Collaborative Planning. This concurrent process identifies data conditions that may create imbalance in the supply chain and that you may need to manage.

See also *Oracle Collaborative Planning Implementation and User's Guide*.

#### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select Supply Chain Event Manager from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

You can generate exceptions based on events for groups of events.

Late orders:

- Late replenishment to customer
- Late replenishment from supplier
- Replenishment to customer is past due
- Replenishment from supplier is past due

Material shortage:

- Supply commit is less than customer order forecast
- Supplier supply commit is less than order forecast
- Short supply for customer purchase order
- Short supply from supplier for purchase order
- VMI item shortage at customer site, replenishment required
- VMI item shortage at your site

Response required:

- Response required for customer purchase order
- Supplier response required for purchase order
- Response required for supplier sales order
- Customer response required for sales order

Potential late orders:

- Potential late order due to upstream lateness
- Purchase order compresses lead time
- Customer purchase order compresses lead time
- Sales order requires lead time compression

Forecast mismatch:

- Customer sales forecast exceeds your sales forecast
- Customer sales forecast is less than your sales forecast
- Supplier sales forecast exceeds your sales forecast
- Supplier sales forecast is less than your sales forecast

Early orders:

- Early replenishment to customer
- Early replenishment from supplier

Material excess:

- Supply commit exceeds customer order forecast
- Supplier supply commit exceeds order forecast
- Excess replenishment for customer purchase order
- Excess replenishment from supplier for purchase order
- VMI item excess at customer site
- VMI item excess at your site

Changed orders:

- Customer purchase order has been cancelled
- Customer purchase order has been rescheduled
- Customer purchase order has been rejected

Forecast accuracy:

- Customer sales forecast exceeds actual sales
- Sales forecast exceeds actual sales
- Customer order forecast exceeds actual orders
- Order forecast exceeds actual orders

Performance below target:

- Customer forecast error exceeds threshold
- Forecast error exceeds threshold

- Supplier has exceeded a stock-out threshold
- You have exceeded a stock-out threshold
- Supplier fill rate is below threshold
- Fill rate to customer is below threshold
- Supplier on-time delivery performance is below threshold
- On-time delivery performance is below threshold
- Inventory turns for VMI item below threshold
- Customer inventory turns for VMI item below threshold

Custom exceptions scheduled with standard exceptions

## VMI Replenishment Engine

### Overview

This concurrent process detects the need for and generates vendor-managed inventory replenishments.

See also *Oracle Collaborative Planning Implementation and User's Guide*.

### Submission

1. In the Navigator, select Setup > Run Requests.

   The Submit a New Request window appears.

2. Select Single Request and click OK.

   The Submit Request window appears.

3. Select VMI Replenishment Engine Concurrent Process from the Reports list.

   The Parameters window appears.

4. Set the parameters and click Submit.

### Parameters

Replenishments from Suppliers: Choose to generate vendor managed inventory replenishments managed by suppliers supplying to original equipment manufacturers.

Replenishment Time Fence Multiplier (> =1): For Replenishments from Suppliers, choose to increase the duration in which the vendor managed inventory engine evaluates supplies by a multiplier of the lead times.

Replenishments to Customers: Choose to generate vendor managed inventory replenishments managed by you for your customers.

Replenishment Time Fence Multiplier (> =1): For Replenishments to Customers, choose to increase the duration in which vendor managed inventory engine evaluates supplies by a multiplier of the lead times.

# A

# Profile Options

This appendix covers the following topics:

- Special Considerations
- INV Profile Options
- MRP and CRP Profile Options
- MSC Profile Options
- MSD Profile Options
- MSO Profile Options
- MSR Profile Options

## Special Considerations

### Automatic Calculations

When the Default Value of a profile option states that it is automatically calculated, this means that the Planning Engine determines the default value of that particular profile option. These profile options are included in this appendix for information purposes only. If you must change these profile option values, do so only after consulting Oracle Development and Oracle Support.

### Flexfield Attributes

Flexfield attribute profile options store the name of the flexfield column that contains the value in the corresponding table. For example, if the Aggregate Resource Name is stored in column ATTRIBUTE1, the profile option MSC: Aggregate Resource Name Flexfield Attribute will contain the value 1.

This setup is performed only during an Oracle Applications installation. Do not modify it unless absolutely necessary.

### Floating Point Precision

Certain quantities used by Oracle Advanced Supply Chain Planning have fractional values. For internal processing purposes these quantities must have integer values. To resolve this problem, floating-point precision profile options act as internal multipliers. When a fractional quantity is encountered it is multiplied by the appropriate floating-point precision profile option value, and the resulting integer is processed by the Planning Engine.

There are several floating-point precision profile options. This enables greater flexibility in controlling the precision with which to consider each quantity. It also provides more flexibility to avoid numerical overflow on 32-bit platforms where the each equivalent integer processed by the Planning Engine cannot exceed 2.1 x 109. The floating-point precision profile options are: Floating Point Precision for Usages in Routing, Floating Point Precision, Floating Point Precision for Transportation Capacities (Weight and Volume), Floating Point Precision for Planning Bucket Efficiency.

## INV Profile Options

The following table lists and defines the INV profile options in Oracle Advanced Planning.

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| INV: Capable to Promise | ATP/CTP Based on Planning Output, ATP Based on Collected Data | ATP Based on Collected Data | This is a site level profile. Valid values are:<br>• ATP/CTP Based on Planning Output: set the profile to this value if you want to use the Oracle Advanced Supply Chain Planning output for order promising.<br>• ATP Based on Collected Data: set the profile to this value if you want to use collected data for order promising. |
| INV: External ATP | Not applicable | Not applicable | Only set up on source instance. Set this profile to Global ATP Server if Oracle Global Order Promising is deployed. This is a site level profile. |

## MRP and CRP Profile Options

The following table lists and defines the MRP and CRP profile options available with Oracle Advanced Planning.

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| CRP: Spread discrete requirements | Yes/No | No | The planning engine usually sets resource requirement end dates in both production and manufacturing plans. However, if this profile option is Yes for a production plan, the planning engine does not set resource requirement end dates. |
| MRP: Activate OLP | - | - | Not used by Oracle Advanced Planning. |
| MRP: ATP Assignment Set | Text | Null | Indicates the assignment set name for use with Oracle Global Order Promising. When set to Null, Oracle Global Order Promising uses the assignment set from profile MSC: ATP Assignment Set from Oracle Advanced Planning Solution instance. Update this profile at site level on the source instance. |
| MRP: ATP Database Link | Text | Null | Determines whether distributed Order Promising is used. |
| MRP: Backlog Progress Timeout | - | - | Not used by Oracle Advanced Planning. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: Calculate Excess Exceptions on Time Fence | Yes/No | Yes | Indicates whether excess exceptions are calculated at the time fence or up to the time fence. Valid values are:<br>- Yes: The planning engine issues exceptions only at the time fence date.<br>- No: The planning engine issues individual exceptions. |
| MRP: Calculate Plan Performance | - | - | Not used by Oracle Advanced Planning. |
| MRP: Calculate Supply Demand | Yes/No | Yes | Controls whether you calculate supply demand for an order promising check. Can update at site level. |
| MRP: Category Set for Backlog Form | - | - | Not used by Oracle Advanced Planning. |
| MRP: Combine Sugg Rep Schedules | Yes/No | Yes | Combines repetitive schedules, if scheduled back-to-back for the same quantity. Used only by unconstrained plans. |
| MRP: Compute Sales Order Changes | - | - | Not used by Oracle Advanced Planning. |
| MRP: Compute Standard Mandatory Components for ATO Models | Yes/No | Yes | Prevents mandatory component demands for ATO Models calculation during refresh snapshot process when set to No. Omission of this process can increase performance. Must be set on the source instance. |
| MRP: Consume Fcst Set Summary | - | - | Not used by Oracle Advanced Planning. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: Consume Forecast | - | - | Not used by Oracle Advanced Planning. |
| MRP: Consume MDS | - | - | Not used by Oracle Advanced Planning. |
| MRP: Consume MPS | - | - | Not used by Oracle Advanced Planning. |
| MRP: Create Time fence | Yes/No | Yes | Set to Yes to create a natural time fence based on firm work orders, purchase orders, flow schedules, and shipments. When set to No, the planning engine does not create a time fence.<br><br>The planning engine honors the item attribute Planning Time Fence regardless of the value of this profile option |
| MRP: Cutoff Date Offset Months | Integer >= 0 | 6 | Determines how many months of resource availability should be computed for resources and simulation sets. No resource availability is calculated beyond this horizon. For constrained plans beyond this horizon, resource capacity resource capacity is not available until the planning horizon.<br><br>To set the start date for resource availability calculations, use profile option MSC: Days of Resource Availability before sysdate. |
| MRP: Cutoff History Days | - | - | Not used by Oracle Advanced Planning. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: Debug Mode | Yes/No | No | Enables debug messages within Oracle MRP when set to Yes. It captures details about runs of concurrent process WIP Mass Load. |
| MRP: Default Criteria Set | - | - | Not used by Oracle Advanced Planning. |
| MRP: Default DRP Plan Name | - | - | Not used by Oracle Advanced Planning. |
| MRP: Default Forecast Date | - | - | Not used by Oracle Advanced Planning. |
| MRP: Default Forecast Name | - | - | Not used by Oracle Advanced Planning. |
| MRP: Default Plan Name | - | - | Not used by Oracle Advanced Planning. |
| MRP: Default Schedule Name | - | - | Not used by Oracle Advanced Planning. |
| MRP: Default Sourcing Assignment Set | - | - | Not used by Oracle Advanced Planning. |
| MRP: Demand Time Fence Days | - | - | Not used by Oracle Advanced Planning. |
| MRP: Enhanced Exception | - | - | Not used by Oracle Advanced Planning. |
| MRP: Environment variable to set path for MRP files | Text | Null | Specifies appropriate path for the MRP files. If this profile option is not used, files are written to $MRP_TOP/$APPLOUT. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: Explode Demand Through Phantom Component | - | - | |
| MRP: Firm Internal Req Transferred to OE | Yes/No | Yes | This profile option specifies whether or not Oracle Advanced Supply Chain Planning should recommend reschedule messages for internal requisitions that have been linked to internal sales orders in Oracle Order Management. Valid values are:<br><br>- Yes: All internal requisitions transferred to Oracle Order Management are treated as firm supplies by Oracle Advanced Supply Chain Planning.<br><br>- No: Oracle Advanced Supply Chain Planning may generate reschedule recommendations for these internal requisitions.<br><br>Rescheduled recommendations cannot be released to purchasing for internal requisitions. To reschedule recommendations, cancel the internal requisition in the source instance and create a new requisition with the new date. |
| MRP: Firm Planned Order Time Fence | Yes/No | Yes | Set to Yes for firm planned orders to create a natural time fence. When set to No, the Planning Engine does not create a time fence at a firm planned order. |
| MRP: Firm Requisitions within time fence | - | - | Not used. Replaced by profile option MSO: Firm Requisitions within Time Fence. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: Include Schd Rcpts in Use-up | Yes/No | No | If set to Yes it includes scheduled receipts when computing the engineering change order use-up date. |
| MRP: Include Substitute Components | Yes/No | No | Indicates whether to include substitute components in Order Promising calculation. Can update at the site level. |
| MRP: Interface Table History Days | - | - | Not used by Oracle Advanced Planning. |
| MRP: Maintain Original Schedule Version | - | - | Not used by Oracle Advanced Planning. |
| MRP: MPS Relief Direction | - | - | Not used by Oracle Advanced Planning. |
| MRP: Net All Purchase Orders Prior To Requisitions | Yes/No | No | Use this profile to specify whether or not the planning engine should net all existing supplies prior to netting purchase requisitions. The valid values are:<br>- Yes: Net purchase orders, then net purchase requisitions. This may result in purchase requisitions with schedule dates earlier than purchase orders being canceled or rescheduled out.<br>- No: Net purchase orders and purchase requisitions together.<br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: New Backward Planner Compatibility | Yes/No | No | Use tis profile option to instruct the planning engine which sort of item to consider phantom items. Valid values are:<br>- Yes: Plan phantoms as standard items, create planned orders<br>- No: Plan phantoms as phantom items, do not create planned orders<br>See also profile option MSC: New Planner Backward Compatibility. |
| MRP: Old Sales Orders Cutoff Days | - | - | Not used by Oracle Advanced Planning. |
| MRP: Perform Planning Manager Functions in Loads | - | - | Not used by Oracle Advanced Planning. |
| MRP: Plan Revenue Discount Percent | Text | Null | Specifies the average discount percent applied to all items in a plan. This value is a key performance indicator used to calculate performance in a plan for Business Intelligence reports. |
| MRP: Plan Revenue Price List | Numeric | Null | Specifies the sales order price list applied to items in a plan. Used to calculate the plan margin key performance indicators for Business Intelligence reports. |
| MRP: Planner Batch Size | - | - | Not used by Oracle Advanced Planning. |
| MRP: Planner Workers | - | - | Not used by Oracle Advanced Planning. |
| MRP: Planning Manager Batch Size | - | - | Not used by Oracle Advanced Planning. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: Planning Manager Max Workers | - | - | Not used by Oracle Advanced Planning. |
| MRP: Planning Manager Run First Time | - | - | Not used by Oracle Advanced Planning. |
| MRP: Purchasing By Revision | Yes/No | Yes | When set to Yes, creates purchase requisitions using the latest revision date on the item. |
| MRP: Purge Batch Size | Numeric | 25000 | Used by Oracle Advanced Supply Chain Planning collections and Snapshot. |
| MRP: Repetitive Past Due Supply Days | - | - | Not used by Oracle Advanced Planning. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: Requisition Load Group Option | All on One, Buyer, Planner, Vendor, Category, Item, One Each | Null | Indicates group by option used when loading requisitions using the Planner Workbench form. The planning engine uses the value of this profile option when there is no value for window Plan Preferences > tab Other, field Req Group By.<br><br>Valid values are:<br><br>- All on One: Creates one purchase requisition for all recommended orders<br><br>- Buyer: Creates one purchase requisition for each buyer; within each requisition, creates one line for each planned order<br><br>- Planner: Creates one purchase requisition for each planner; within each requisition, creates one line for each planned order<br><br>- Vendor: Creates one purchase requisition for each vendor; within each requisition, creates one line for each planned order<br><br>- Category: Creates one purchase requisition for each item category; within each requisition, creates one line for each planned order<br><br>- Item: Creates one purchase requisition for each item; within each requisition, creates one line for each planned order<br><br>- One each: Creates a purchase requisition for each planned order |
| MRP: Retain Dates Within Calendar Boundary | Yes/No | No | Determines whether to pull dates outside the calendar boundary into calendar horizon. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: RHX Check Profile | - | - | Not used by Oracle Advanced Planning. |
| MRP: Round Source Entries | - | - | Not used by Oracle Advanced Planning. |
| MRP: Snapshot Pause for Lock (Minutes) | - | - | Not used by Oracle Advanced Planning. |
| MRP: Snapshot Workers | Integer >= 0 | 1 | Determines number of workers launched by the snapshot monitor. When set to 0, the Snapshot runs as a single- threaded process. Snapshot workers collect data on bills of material, work in process, on- hand quantities, purchasing, firm planned orders, routings, and work-in-process job resource requirements. |
| MRP: Sourcing Rule Category Set | - | - | Not used by Oracle Advanced Planning. |
| MRP: Time Fence Warning | - | - | Not used by Oracle Advanced Planning. |
| MRP: Trace Mode | Yes/No | No | Determines whether trace is enabled for all Oracle Advanced Supply Chain Planning processes. |
| MRP: Use Direct Load Option | Yes/No | No | Determines whether load worker can use the direct load option instead of conventional loads. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MRP: Use Ship Arrived Flag | Yes/No | No | This profile is used when collecting Intransit Supplies.<br><br>If Yes, then we check the wsh_new_deliveries. ultimate_dropoff_date to populate MRP_AP_INTRANSIT_SUPPLIES_V.ARRIVED_FLAG. If Arrived, then we do not collect this supply.<br><br>If No, Then we collect the intransit supply. NULL = No |

## MSC Profile Options

The following table lists and defines the MSC profile options available with Oracle Advanced Planning.

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| CP HZ View Default Query | Yes/No | Yes | Displays default results in the Oracle Collaborative Planning Horizontal View. |
| MSC: 64-bit Planner Platform | Yes/No | No | Set to Yes for the supported 64-bit platforms (HP-UX and Sun Solaris 2.8). |
| MSC: Action Allowed on ATP 24x7 Plan While Running | Yes/No | Yes | This profile option controls whether you can access and make changes to the ATP plan while it is running in 24x7 mode. The changes you make to the plan while it is running will not be reflected in the refreshed plan.<br><br>If you set this profile option, consider setting MSC: ATP Synchronization Downtime (minutes).<br><br>This is a site level profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Aggregate Resource Name Flexfield Attribute | Integer >= 0 | Null | Stores flexfield column name that contains its value in the corresponding table. See Flexfield Attributes, page A-1 for more information. |
| MSC: Allocated ATP Forward Consumption Method | Reduce future supply from lowest priority and Reduce available supply from any priority | Reduce future supply from lowest priority | This profile controls the forward consumption method for allocated available to promise using the user-defined allocation percentage method. The values are:<br>- Reduce future supply from lowest priority: The shortage --after consuming its own allocated supply and available supply from a lower priority--is accounted for by using available future supply from the lowest priority. If all the demand classes are at the same priority, the shortage from a demand class consumes its own future supply. Use this if you prefer to delay some of the committed demand and hold the supply for higher priority demand classes.<br>- Reduce available supply from any priority: The shortage --after consuming its own allocated supply and available supply from lower priority--is accounted for by using available supply from higher priority demand classes. Therefore, committed demand must be accounted for before allowing more promises.<br>This is a site level profile option. |
| MSC: Allocation Assignment Category Set | Valid category set | Category specified in profile option MSC: Sourcing Category Set | The Assign Allocation Rule form and the Sourcing assignment form both use the MSC: Sourcing Category Set to determine the valid category set. Use this profile option if you want the allocation rule category set to be different from the sourcing assignments category set. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Allow Release of Planned Orders from Demand Schedule Plan | Yes/No | No | This profile option provides increased flexibility for releasing planned orders and applies only to manual release. It is not considered for auto-release. MPS and MPP planned orders cannot be auto-released from the MRP. The planning engine assumes that if the item is marked so that auto-release is allowed then auto-release has already occurred from the MPS or the MPP. Valid values are:<br><br>- Yes: You can release demand schedule MPP or MPP planned orders from the lower level plan<br><br>- No: You cannot release demand schedule MPP or MPP planned orders from the lower level plan |
| MSC: Allow Release of Planned Orders from Demand Schedule Plan | Yes/No | No | Use this profile option to allow manually release master production plan and master production schedule planned orders from the material requirements planning plan, when the master production plan or master production schedule is a demand or supply schedule to the material requirements planning plan. Valid values are:<br><br>- Yes: Allow manual release<br><br>- No: Do not allow manual release<br><br>This profile only applies to manual release. It is not considered for auto-release; auto-release of planned orders of the release master production plan and master production schedule planned orders occurred during their plan runs. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Anchor dates for calculating operation yields | Operation start date or Order start date | Operation start date | Use this profile option to instruct the planning engine on which effectivity date to use when it generates resource requirements of operations with yields. This profile option applies to discrete jobs and Oracle ShopFloor Management (OSFM) routings with primary network scheduling method.<br><br>- Order start date: Use the order start date to check for operation effectivity and select yield value<br><br>- Operation start date: Use the operation start date to check for operation effectivity and select yield value.<br><br>The planning engine uses lead-time percent to calculate the operation start date; it assumes that the lead-time percent of an operation that is effective in the future is the same as the lead-time percent of the operation it replaces.<br><br>If an operation's effectivity ends within a time bucket, the planning engine assumes that its effectivity ends on the first day of the time bucket. |
| MSC: Anchor date for calculating remaining shelf life | Arrival Date/Ship Date | Arrival Date | Use this profile option to instruct the planning engine which date to use as an anchor date for calculating the remaining shelf life. Valid values are:<br><br>- Arrival Date: Calculate the remaining shelf life from the arrival date at the customer site<br><br>- Ship Date: Calculate the remaining shelf life from the ship date. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: APCC Currency Code | Currency code | <blank> | Use this profile option on the destination instance to specify reporting currency. If you change the value, the next time you run collections, the collections process purges the data with the previous currency code and replaces it with data with the new currency code. |
| MSC: Apply Lot Modifiers in Weekly/Period Buckets | Yes/No | Null | Determines whether order modifiers are considered when creating planned orders for weekly or period time buckets. A Yes value considers order modifiers in these calculations. A No value does not consider order modifiers in these calculations |
| MSC: Apply Order Modifier To Start Quantity | Yes/No | No | Use this profile option to specify whether order modifiers are applied to start quantities for discrete or lot based jobs. This behavior only applies to routings that have operation yield. In this case the start quantity may be different from the expected supply quantity. Valid values are:<br>- Yes: The planning engine inflates the order start quantity by the routing operation yield and then applies order modifiers.<br>- No: The planning engine applies the order modifiers to the end quantity. |
| MSC: Apply Safety Stock Change interval to non MRP Planned Safety Stock | Yes/No | No | Use this profile option to specify the safety stock to which the smoothing within time interval applies: Valid values are:<br>- Yes: Smoothing applies to all types of safety stock<br>- No: Smoothing applies only to MRP planned safety stock |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Apply shortage and excess tolerance percentages to planned orders | Yes/No | Yes | Use this profile option to control the types of supplies to which the planning engine applies Shortage Tolerance Percent and Excess Tolerance Percent. Valid values are:<br>- Yes: Apply them to all supply types<br>-No: Apply to them to all firm supply types except firm planned orders, for example, on-hand and scheduled receipts.<br>Using this option means that, in general, if the quantity of firm supplies used to satisfy a demand is lower than the Shortage Tolerance Percent of the item, the planning engine does not apply the tolerance to planned orders that it recommends.<br>Whenever a demand is not fully satisfied, the planning engine sets the replenishment date to the end of the planning horizon. |
| MSC: ASCP Planning URL | <A url> | Null | Use this profile option to enable access to the web tools browser pages.<br>Set it at the site level.<br>Use format `http://domain_name:port_number`.<br>Use the domain name of your ASCP managed server and its port number. |
| MSC: ATP Allocation Method | User-Defined Allocation Percentage, Demand Priority | Null | Determines the allocation method used by ATP. This is a site level profile. Valid values are:<br>• User-Defined Allocation Percentage<br>• Demand Priority |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: ATP Assignment Set | Text | Null | Indicates name of the assignment set for Oracle Global Order Promising to use to identify all the possible shipping organizations. Oracle Global Order Promising uses this assignment set if profile MRP: ATP Assignment Set is Null on the ERP instance. Users can update it the at site level in the Planning instance. |
| MSC: ATP Capacity Allocation | Yes/No | No | Set it to No. You should only set it to Yes under specific instruction from Oracle Applications development. |
| MSC: ATP Debug Mode | Debug Only, Debug and Database Trace, Database Trace Only, None | Null | Determines whether to enable debug messages within Oracle Global Order Promising. You can update it at the user level. Valid values are:<br>- Debug Only: ATP generates a log file for an ATP request.<br>- Debug and Database Trace: ATP generates a log file and a database trace file.<br>- Database Trace Only: ATP generates a database trace file.<br>- None: ATP does not generate log file or database trace file. |
| MSC: ATP Enforces Lead Time for ATO Model | Yes/No | Yes | Use this profile option to specify how ATP considers lead-time. Valid values are:<br>- Yes: ATP always enforces lead-times for non-ATPable ATO models<br>- No: ATP does not enforce lead-times for non-ATPable ATO models |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: ATP Infinite Time Fence Pad | Integer >=0 | Null | Oracle Global Order Promising adds the number of days specified in this profile option to the infinite time fence you specify in an ATP rule. It inflates the infinite time fence by that number of days.<br><br>Use this profile option when you want an infinite time fence date for an item to be based on the item manufacturing lead-times plus extra days.<br><br>This is a site level profile option. |
| MSC: ATP Synchronization Downtime (minutes) | Integer > 0 | Null | You may need to set this profile option if you run available to promise in 24x7 mode. When new sales orders come in while the synchronization process is running, the process can run for a long time if the order volume is high. Available to promise cannot switch to the new plan until the process finishes.<br><br>Specify the ATP downtime in minutes. During the downtime, there are no new sales orders for available to promise to process. The synchronization process can finish as soon as possible. There is a trade-off between available to promise downtime and the time it takes to switch to the refreshed plan.<br><br>This is a site level profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Automatically Recalculate Operation Time | Yes/No | No | If the value of this profile option is Yes, the planning engine recalculates make order New Date (due date) if you both:<br>- Firm the order<br>- Update New Start Date<br>The calculation process uses:<br>- Fixed and variable lead times<br>- Working days.<br>This applies only to unconstrained plans.<br>It has certain limitations. |
| MSC: Auto-Release Compression Days Tolerance | Integer >= 0 | Null | Indicates the number of compression days allowed for the automatic release of planned orders. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Auto-Release Compression Days Tolerance | Null/List of Values | Null | This profile option specifies the workday calendar that the planning engine uses to bucket the beginning and end of weeks and periods.<br><br>Values are:<br><br>- Null: If you set this value, the planning engine uses the plan owning organization's calendar for bucketing weeks and periods. This is the organization that you launch the plan from.<br><br>- List of Values: You can select any calendar in the list of values for this profile option. This list of values includes all calendars that you defined on the source instance and collected.<br><br>The calendar that you associate with the profile option should be a seven-day calendar without any holidays. If not, some supplies may be adjusted to later weeks when two organizations have different calendars. |
| MSC:Avoid Re-sourcing Sales Orders | Yes/No | Yes | Use this profile option to instruct the planning engine whether to source sales orders. Valid values are:<br><br>- Yes: Do not source sales orders.<br><br>- No: Source sales orders. You can plan by arrival date, change ship methods, and change source orgganization if you have set up the correct sourcing rules. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Buy Order Processing Lead Time Calendar | Supplier Capacity Calendar, Org Manufacturing Calendar | Supplier Capacity Calendar | Use this profile option to instruct the planning engine what calendar to use when it offsets processing lead-time for buy orders. Valid values are:<br>- Supplier Capacity Calendar: The planning engine offsets processing lead-time for buy orders using the Approved Supplier List Supplier Capacity Calendar. The Approved Supplier List Supplier Capacity Calendar is the successor to the Approved Supplier List supplier delivery calendar.<br>- The planning engine offsets processing lead-time for buy orders using the organization manufacturing calendar |
| MSC: Cancel Outstanding Sales Order Quantities | Yes/No | No | Use this profile option to specify if distribution planning should cancel unfilled sales orders after the sales order latest acceptable date (Fill or Kill). The canceled quantity is displayed in the Expired Demand field of the Supply Demand window. |
| MSC: Category set for CP Horizontal View | - | - | Indicates a category set that you want to query in the Oracle Collaborative Planning horizontal view. Using this profile option, you can restrict queries to specific categories based on your requirement. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Choice of Item for Which to Create Supplies in Substitute Relationship | Demanded Item, Highest Level Item, Follow Item Attributes | Demanded Item | Determines the item for which Oracle Global Order Promising and Oracle Advanced Supply Chain Planning creates planned supplies when item substitution relationships are specified.<br><br>When set to Follow Item Attribute and the item attribute Create Supply for all the substitute items in the substitution chain is No, no supplies are created.<br><br>When you have a substitution chain A --> B --> C, and this profile option is set to Highest Level Item, it is expected that Oracle Advanced Planning creates supply for item C. Item C must be enabled in the organization where you are trying to create supply. If item C is not enabled in the organization, Oracle Advanced Planning creates supply for item B (the next highest level item in the substitution chain) and does not create supply for item C. |
| MSC: Circular Sourcing Surplus Inventory Basis | - | - | Not used. |
| MSC: Circular sourcing surplus days | - | - | Not used. |
| MSC: Class Hierarchy | Demand / Customer | Demand | Indicates which allocation hierarchy to use. Users can update at the site level. Valid values are:<br><br>- Demand Class: User-defined, single-level hierarchy.<br><br>- Customer Class: Three levels: customer class, customer, and site. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Collaborative Planning Default Calendar | - | - | The horizontal view buckets supply and demand data into days, weeks and months (periods) according to the receiving calendar of the trading partner who receives material. This profile option indicates the default system calendar that Oracle Collaborative Planning uses when multiple customer sites are displayed together. |
| MSC: Collect CMRO Work Order Demand | No | Yes/No | Specifies if Consumed Items are being imported to Production Scheduling. If no Work Order Consumed Items are being imported, set profile MSC: Collect CMRO Work Order Demand to Yes.<br><br>Used when performing collections. It is not used in release 12.2 and higher. |
| MSC: Collect Item, Material and Resource Costs | Yes/No | Yes | This profile option indicates whether data collection should include cost information. Specifying No may improve data collections performance. |
| MSC: Collect Routing | Yes/No | No | Use this profile to instruct the targeted collections process how to collect bill of material and routing data. Valid values are:<br><br>- Yes: Collect bill of material and routing data<br><br>- No: Collect bill of material data but do not collect routing data<br><br>This profile option is overridden by profile option INV: Capable To Promise is ATP/CTP based on Planning Output. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Collection Window for Trading Partner Changes (Days) | Integer >= 0 | Null | Used by Oracle Advanced Supply Chain Planning collections. Specifies the number of days backwards that changes in customer names, customer sites, vendors, and vendor sites are collected. If null, then all changes are collected. Used when collections for the trading partners entity is run in complete mode.<br><br>If you update or delete region ID in a record of tables `wsh_regions`, `wsh_region_locations`, or `wsh_zone-regions`, perform this process:<br><br>- Set this profile option to null or 0<br><br>- Run collections<br><br>- Reset this profile option to your usual non-zero value |
| MSC: Compute IB Aggregation during Collection | Yes/No/NULL | Yes/NULL | Use this profile option to instruct the collections process whether to collect over the install base under contracts information (run concurrent process Compute Aggre Installbase under Contract). Valid values are:<br><br>• Yes: Run it if data pull parameter Install Base Under Contracts is Yes.<br><br>• No: Do not run it.<br><br>You can run the concurrent process before the collections run to reduce the collections run processing time. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Compute Project Exception | Yes/No | Yes | This profile option determines whether to generate project specific exceptions when running a project based plan.<br><br>- Yes: Enable the generation of project specific exceptions.<br><br>- No: Disable the generation of project specific exceptions. The default value is Yes. |
| MSC: Configuration | Not applicable | Not applicable | Used by Oracle Collaborative Planning. |
| MSC: Consume Forecast Inside Demand Time Fence | Yes/No | No | When set to No, demand time fence control is implemented prior to forecast consumption. Forecast entries in the demand time fence are dropped as demand statements and not used for consumption.<br><br>When set to Yes, forecast consumption occurs prior to enforcing demand time fence control. The forecast entries within the demand time fence are used for consumption but not as demand. After consumption, demand quantity for all the forecast entries within the demand time fence is zero.<br><br>If you are using forecast spreading:<br><br>- For a periodic forecast entry that falls in weekly planning buckets within the demand time fence, the forecast spreading process spreads the entries into daily entries.<br><br>- If the daily entry is within the demand time fence, the process ignores the value that you set and uses the value Yes in processing.<br><br>- If the daily entry is outside the demand time fence, the process ignores this profile option and consumes against the entry. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Consume forecast with No demand class | Within Each Bucket, After Consuming Demand Class Specific Forecast | Within Each Bucket | This profile option instructs the forecast consumption process in about the order it should use to consume forecast entries when some of them have a demand class and others do not have a demand class. If you select:<br>• Within Each Bucket: The forecast consumption process starts by consuming forecast entries for the day on the sales order; it consumes entries with matching demand class first, then entries with no demand class. Then, it consumes forecast entries within the backward and forward consumption days; for each day, it uses matching demand class first, then no demand class.<br>• Within Each Bucket, After Consuming Demand Class Specific Forecast: The forecast consumption process starts by consuming forecast entries for the day on the sales order with matching demand class only. Then, it consumes forecast entries within the backward and forward consumption days with matching demand class only. If there is a remaining sales order quantity, it repeats the process against forecast entries with no demand class, first on the day on the sales order, then within the backward and forward consumption days. |
| MSC: Cost of Using a BOM/ Routing Flexfield Attribute | - | - | Not used. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Cost Type | Frozen,<br>Average,<br>Any user-defined cost type | Null | Use this profile option on the source instance (execution system) to specify the cost type that collections should use when collecting the item costs.<br>You should perform a cost rollup for the specified cost type before collecting data.<br>If this profile option is null, collections uses the:<br>- Frozen cost type for standard costed organizations and<br>- Average cost type specified in organization setup for average costed organizations |
| MSC: CP Debug Level | Debug - Off, Debug - On, or Debug - High | Debug - High | Controls the level of detail in the concurrent program log messages for Oracle Collaborative Planning.<br>Off: No debug messages generated<br>On: Short debug messages generated<br>High: Detailed debug messages generated. |
| MSC: Create resource requirements for all operations | Yes/No | Yes | If an operation has no resources with Schedule = Yes, when this profile option is set to:<br>• Yes: The planning engine creates a dummy resource requirement for the operation<br>• No: The planning engine does not create a dummy resource requirement for the operation; the operation does not have any resource requirements |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Currency Conversion Type | A currency conversion type | Corporate | Use this profile option on the destination instance to specify currency conversion type.<br><br>If you change the value, the next time you run collections, the collections process purges the data with the previous currency conversion type and replaces it with data with the new currency conversion type. |
| MSC: Daily Allocation to Maintain Safety Stock Level | Yes/No | Yes | Not used. |
| MSC: Day UOM | Text | Null | Supports the unit of measure conversion required for Oracle Advanced Supply Chain Planning resource batching calculations. Batching Window is considered in days, but users can specify the batching window in a unit of measure other than days. The profile option establishes a standard for the Day unit of measure. Users must specify a unit of measure that represents the value Day using this profile option. Users must also set up a unit of measure conversion between the unit of measure used for resources and the Day unit of measure specified here. |
| MSC: Days of Resource Availability before sysdate | Integer > = 0 | 1 | Use this to specify the start date for resource availability calculations.<br><br>It is the number of days before the plan run date. So, value of 3 means -3 days from today's date.<br><br>To set the end date for resource availability calculations, use profile option MRP:Cutoff Date Offset Months. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Default Project for Supplies Pegged to Excess | Project code | Null | Use this profile to manage planned supplies pegged to excess inventory when planning in a Project Manufacturing environment. Oracle Advanced Supply Chain Planning allows you to specify a project as a default project for all supplies pegged to excess. This may be setup at the Site, Application, Responsibility, or User Levels. The project must be assigned to all organizations that will be planned at the defined level. |
| MSC: Default Time Stamp for Make Planned Order Release | 00:00:00 and 23:59:59 | 00:00:00 | Use this profile option to specify the timestamp of an Oracle Work in Process and Oracle Shop Floor Manufacturing job recommended for release or reschedule by an unconstrained plan. Valid values are:<br>- 00:00:00: The planned order timestamps are set to 00:00:00.<br>- 23:59:00: The planned order timestamps are set to 23:59:00.<br>This does not apply to constrained and optimized plans. |
| MSC: Default Workbench Height | | | Specify the default workbench height. Can be defined at the site level. |
| MSC: Default Workbench Width | | | Specify the default workbench width. Can be defined at the site level. |
| MSC: Degree of Parallelism for Index Creation | Integer >= 0 | 0 | Controls the use of parallel workers in data collections. Specifies how many parallel workers to use when creating indexes. |
| MSC: Demand Priority Flexfield Attribute | Integer >= 0 | Null | Stores the value of the attribute column that controls the demand priority. See Flexfield Attributes, page A-1 for more information. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Demand Satisfied Percent Threshold for Pegging | Decimal percent | 100.0 | Set this profile option to instruct the planning engine to stop pegging supplies to a demand which is over satisfaction percentage. Oracle recommends setting the value greater than 99.9.<br><br>Even if you set this profile option below 100.0, the planning engine still satisfies 100% of the demand. |
| MSC: Display Order Rescheduling Supplies | Yes/No | No | This is a profile option is for use by Oracle. When set to Yes, Planner Workbench displays Order Rescheduling Supply and Order Rescheduling Demand inserted by available to promise when it unschedules a sales order for a configured item. |
| MSC: Display Warning Message When Rescheduling Recommendation Not Suggested by the Plan | Yes/No | Yes | This profile option specifies whether or not the Planner Workbench should display a warning message when you release rescheduled orders that the planning engine has not recommended.<br><br>The values are:<br><br>- Yes: Use this value if you want the Planner Workbench to prompt you for confirmation when you release rescheduled orders that the planning engine does not recommend.<br><br>- No: Use this value if you do not want the Planner Workbench to display the message prompting to prompt you for confirmation when you release the rescheduled orders that the planning engine does not recommend. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Distribution Planning Group Internal Requisitions by Trip | Yes/No | No | Use this profile option to specify how many internal requisitions the planinng process should create for trips containing planned inbound shipments.<br><br>Valid values are:<br><br>- Yes: The process creates one internal requisition for all available lines (planned inbound shipments) in a trip.<br><br>- Yes: The process creates one internal requisition for each available line (planned inbound shipment) in a trip.<br><br>Regardless of the setting that you choose, field New Internal Reqs shows the number of requisition lines for the trip, not the number of internal requisitions.<br><br>For example:<br><br>- You set this profile option to Yes.<br><br>- The planning process finds five planned inbound shipments in a trip.<br><br>- It creates one internal requisition with five lines.<br><br>- Field New Internal Reqs shows 5. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Distribution Planning Ship Date | Ship full trips early or ship latest (Target), Ship full trips early or ship latest (SS), Latest possible ship date (Target), Latest possible ship date (SS) | Latest possible ship date (SS) | Use this profile option to schedule a trip for departure based on the earliest and latest possible ship dates of the trip. The values are:<br>- Ship full trips early or ship latest (Target): Utilized trips ship on the earliest possible ship date or in time to prevent inventory levels from dropping below target.<br>- Ship full trips early or ship latest (SS): Utilized trips ship on the earliest possible ship date or in time to prevent inventory levels from dropping below safety stock.<br>- Latest possible ship date (Target): Trips ship just in time to prevent inventory levels from dropping below target.<br>- Latest possible ship date (SS): Trips ship just in time to prevent inventory levels from dropping below safety stock. |
| MSC: DPP allocates to existing ISO's before other demands with the same priority | Yes/No | Yes | Use this profile option to specify how you want the DRP allocation process to allocate to sales orders that:<br>- Are in the same allocation bucket<br>- Have the same demand priority<br>Valid values are:<br>- Yes: It allocates supply to internal sales orders first, then allocates supply to external sales orders.<br>- No: It allocates supply to all sales orders regardless of whether they are internal or external. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: DPP Discrete Job Cutoff Window (Days) | Integer >=0 | Null | Use this profile option to control the number of days from plan start date that discrete jobs are considered. Valid values are:<br><br>- Null: All discrete jobs are considered by the distribution plan.<br><br>- 0: No discrete jobs are considered by the distribution plan.<br><br>- Integer >=0: All discrete jobs with completion dates from plan launch date + {integer value} are considered by the distribution plan. New planned orders for discrete jobs can be created both inside and outside the job cutoff window. |
| MSC: DPP Multitasking Group ID's per Process | Integer | 1 | Use this profile option to specify how many group IDs an unconstrained demand and supply netting and allocation child process should process. In this phase, a child process loads data based on internal group IDs and will load all the org-items belonging to those group ID's. This option specifies the length of the list of group ID's.<br><br>This profile option does not control the Load Consolidation processes.<br><br>This profile option does not apply with operating system Microsoft Windows. |
| MSC: DPP Multitasking Max Concurrent Processes | Integer | 10 | Use this profile option to specify the maximum number of DPP processes that are allowed to run in parallel. For example, if your machine has 4 CPU's, you might choose to run a maximum of one concurrent process on each CPU; in this case, set the value to 4.<br><br>This profile option does not apply with operating system Microsoft Windows. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Enable Advanced Constraints | Yes/No | No | Use this profile option to control the values that display for plan option Constraints Mode (on the Constraints tab). Valid values for the profile option are:<br>- Yes: All values for plan option Constraints Mode display<br>- No: All values for plan option Constraints Mode display except Constrained (Without Detailed Scheduling) and Constrained (With Detailed Scheduling) |
| MSC: Enable Allocated ATP | Yes/No | No | Use this profile options to indicate whether allocated order promising is used. Users can update this profile at the site level. |
| MSC: Enable ATP for Phantom Components | Yes/No | No | If you set to Yes, Oracle Global Order Promising treats phantom items like standard items and net their supply and demand.<br>If you set to No, Oracle Global Order Promising explodes phantom items to their components and performs availability check for the components only.<br>This is a site level profile option. |
| MSC: Enable ATP Summary Mode | Yes/No | No | Enables the summarization of supply / demand data for performance improvement. This is a site level profile. Valid values are:<br>- Yes: Enable ATP Summary Mode<br>- No: Disable ATP Summary Mode. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Enable ATP Workflow | Yes/No | No | Controls the generation of workflow notifications to send to the planner. This is a site level profile. Valid values are:<br><br>Yes: Generate ATP Workflow Notifications<br><br>No: Do not generate ATP Workflow Notifications |
| MSC: Enable DPP Multitasking orders | Yes, No | No | Use this profile option to specify whether the planning engine should use high volume distribution planning. You can set at the user and site levels. Valid values are:<br><br>- Yes: All DPP plans run by this user or at this site are run in high volume mode. This value does not apply with operating system Microsoft Windows.<br><br>- No: DPP plans run by this user or at this site are not run in high volume mode |
| MSC: Enable Enhanced Sourcing | Yes/No | Yes | Enables enhanced sourcing logic that considers historical allocations and allows the splitting of planned orders to achieve target sourcing percentages. Rank 2 buy sources are considered if supplier capacity is exhausted for rank 1 sources.<br><br>This profile option duplicates the functionality of the decision rule Use Alternate Sources parameter for buy items but not for transfers from other organizations. When the decision rules are enabled, the planning engine does not consider this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Enable Group Based Netting | Yes/No | Yes | Use this profile option to control whether the planning engine uses group based netting features. A value of Yes provides the most recent netting logic.<br><br>Oracle recommends that you set the value to Yes and use the latest netting features. This profile option is for backward compatibility. |
| MSC: ENFORCE CRITERIA REQUIREMENT BEFORE EXECUTING QUERY | Yes/No | Yes | Use this profile option to specify if a query requestor needs to specify criteria before executing a query:<br><br>- Yes: They do. This ensures that the query performs more efficiently. |
| MSC: Enforce Hard Links | Yes/No | Yes | This profile option specifies whether time offsets are hard constraints or soft constraints.<br><br>If Yes, the planning engine can violate resource and material capacities to satisfy minimum and maximum time offsets. If capacity is exceeded, exception messages start the cause as "Hard Link Constraint".<br><br>If No, the planning engine cannot violate resource and material capacities to satisfy the minimum and maximum time offsets. In this case, the planning engine can violate hard links and generate a "Hard Link Violation" exception message. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Enhanced Project Netting | Yes/No | No | If the planning engine creates a planned order that pegs to multiple projects or tasks, the planning engine splits the planned order. Valid values are:<br><br>- Yes: If there is an excess, the planning engine includes its quantity in the planned order of one of the projects.<br><br>- No: If there is an excess, the planning engine creates a separate planned order for it |
| MSC: Enable Enhanced Sourcing | -- | -- | Not used. |
| MSC: Excess and Safety Stock by Demand Class | Yes/No | No | This profile option controls the allocation of supply or demand that pegs to excess or safety stock in the case of allocated ATP using the demand-priority based method.<br><br>The valid values are:<br><br>- Yes: If such supply or demand has a demand class, and if the demand class exists on the allocation rule, allocate the supply or demand to the demand class. However, if the supply or demand does not have a demand class or if the demand class does not exist on the allocation rule, allocate the supply or demand to OTHER.<br><br>- No: Allocate such supply or demand to OTHER. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Explode in WIP when Details are not released | Yes.<br>No/NULL | Yes/NULL | Use this profile option to instruct the planning engine order whether to keep manually added operations and resources on work orders that it reschedules. Valid values are:<br>• Yes: Do not keep them. The planning engine removes the component requirements and operations and re-explodes the bill of material and routing to update them.<br>• Keep them. The planning engine removes the non-changed component requirements and operations and re-explodes the bill of material and routing to update them.<br>The profile option applies to unconstrained plans. |
| MSC: Fast Refresh of Region Site Map | Yes/No/NULL | No/NULL | Use this profile option to instruct concurrent process Refresh Collections Snapshot how to perform the supplier site to region mapping when there are changes to shipping regions. Valid values are:<br>• Yes: Re-map the affected supplier sites and those with no location defined<br>• No: Re-map all supplier sites |
| MSC: File Flush Limit | Integer > 0 | 20000 | Use this profile option to control Planner concurrent process write to database, if the number of records exceed this value, the process uses SQL*Loader or array insert. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Firm Internal Requisition Time Fence | Yes/No | Yes | This profile option creates a natural time fence for an item if a firm internal requisition exists. The natural time fence is the date of the latest firm internal requisition.<br><br>The values are:<br><br>- Yes: Use this to create a natural time fence for a firm internal requisition.<br><br>- No: Use this if you do not want to create a natural time fence for a firm internal requisition. |
| MSC: Firm Intransit and PO in Receiving Supplies | Yes/No | Yes | This profile option applies to unconstrained plans only and instructs the planning engine whether it should consider intransit and purchase order in receiving supplies as firm or it should issue reschedule recommendations for them.<br><br>If you set the profile option to Yes, the planning engine considers intransit and purchase order in receiving supplies as firm. If you set it to No, the planning engine generates reschedule recommendations for these types of supplies. Use this setting if you expedite shipments that are en route from a supplier to a receiving organization or if you want to expedite the movement of materials in receiving to the shop floor. For example, you might offload a package from a ship at a port and then fly the package to the receiving organization.<br><br>These recommendations are informational only and cannot be released from the Planner Workbench.<br><br>This is a user level profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Forecast Priority Flexfield Attribute | Integer >= 0 | Null | Stores the value of the attribute column that will control the forecast priority. See Flexfield Attributes, page A-1 for more information. |
| MSC: Forecast Spreading Calendar | Organization Manufacturing Calendar, Organization Shipping Calendar | Organization Manufacturing Calendar | Use this profile option to specify the calendar that the forecast spreading process should use. Valid values are:<br>- Organization Manufacturing Calendar: Base forecast spreading on the organization manufacturing calendar.<br>- Organization Shipping Calendar: Base forecast spreading on this hierarchy of organization shipping calendars—carrier/organization calendar, organization shipping calendar. If neither of these calendars exists, forecast spreading uses the organization manufacturing calendar. |
| MSC: Future Days for Currency Conversion | Positive number | 90 | Use this profile option to instruct the collections process how many future days of currency conversion rates to collect, starting from today. |
| MSC: Generate Notifications for Transportation Updates | Yes/No | Yes | Use this profile option to specify whether the process that passes estimated arrival time updates from Oracle Transportation Management should create workflow notifications. Valid values are:<br>Yes: Create workflow notifications<br>No: Do not create workflow notifications |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: High Volume Items | Yes/No | No | This snapshot profile controls plan weed out logic. Since snapshot on 64-bit machines could run out of memory if the number of planned items is high. Valid values:<br><br>- Yes: Snapshot bypasses the weed out logic and directly inserts items from operational data store to planning data store. If item planning type is All Planned Items, the snapshot inserts all items into the planing data store. If the items have demand schedules only, snapshot only inserts the items in demands schedules into the planning data store.<br><br>- No: The snapshot uses weed out logic. |
| MSC: History Days for Currency Conversion | Positive number | 180 | Use this profile option to instruct the collections process how many past days of currency conversion rates to collect, starting from today. |
| MSC: Horizontal Plan Demand Bucketing Preference | Plan Recommended Date/Demand Due Date | Demand Due Date | This profile controls how Oracle Global Order Promising treats demand due date when calculating availability. Valid values are:<br><br>- Plan Recommended Date, Oracle Global Order Promising treats the demand due as the date recommended by Oracle Advanced Supply Chain Planning.<br><br>- Demand Due Date, Oracle Global Order Promising treats the demand due as the Schedule Ship Date. |
| MSC: Horizontal Plan Extension Program | PackageName. ProdecureName format | <blank> | Use this profile option when you are using a custom row in the Planner Workbench Horizontal Plan. Specify the name of the PL/SQL program unit with no parameters that specifies that information to display in the custom row. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Hour UOM | Text | HR | Specifies unit of measure. Can be defined at the site level. |
| MSC: Ignore CMRO and EAM Work Orders for ASCP | Yes/No | Yes | Specifies if ASCP should ignore cMRO and EAM work orders. If the value is set to No then asset intensive planning features to account for EAM and cMRO work orders are enabled. If set to Yes, then these features are disabled. |
| MSC: Include Firm Planned Orders In Firm Allocation Window | Yes/No | No | For priority pegging, controls the point at which demands peg to firm planned orders. Valid values are:<br>- Yes: Firm planned orders are included in the firm allocation window (along with scheduled receipts). They are eligible for pegging during the first phase of priority pegging.<br>- No: Firm planned orders are not included in the firm allocation window (along with scheduled receipts). They are eligible for pegging during the second phase priority pegging. |
| MSC: Include Safety Stocks in Priority based Pegging | Yes/No | No | Controls whether to exclude non-transient safety stock levels from the priority-based pegging logic. Valid values are:<br>• Yes: The planning engine does not give preference to non-transient safety stock levels in priority-based pegging. It pegs the demands and the safety stock levels, at the same time, to the supplies.<br>• No: The planning engine gives preference to non-transient safety stock levels in priority-based pegging. It first pegs them to non-firm planned orders. Then, it pegs the demands to the other supplies. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Inflate WIP Resource Requirements | Yes/No | No | Determines whether or not the planning engine should inflate the Work in Process resource requirements based on resource efficiency and utilization during collections from Oracle Work in Process.<br><br>The values are:<br><br>- Yes: Planning engine inflates the resource requirements for the firm, unfirm, and non-standard discrete jobs considering the resource efficiency and utilization.<br><br>- No: The planning engine does not consider resource efficiency and utilization to inflate the resource requirements for the collected discrete jobs.<br><br>Note that this profile option is used in conjunction with shop floor scheduling products such as Oracle Manufacturing Scheduling. It is assumed that the discrete jobs are not released from the planning engine. If the jobs are rescheduled and released by the planning engine, the resource requirements are deflated. This could result in data inconsistency as the resource requirements are deflated on release whereas Oracle Manufacturing and Scheduling might have calculated resource requirements based on the inflated values.<br><br>The planning engine always sends the original resource requirements upon release. If the resource requirements are already inflated in the source from Oracle Manufacturing Scheduling, set this profile option to No to avoid double inflation of the resource requirements. Otherwise, set it to Yes so that the planning engine inflates the resource requirements. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Inventory Rebalancing Surplus Inventory Basis | Target, Safety Stock | Safety Stock | Use this option to specify whether inventory rebalancing considers target or safety stock inventory levels. Valid values are:<br><br>- Target: Surplus inventory is defined as the quantity of projected available balance greater than target inventory level. Target inventory demands are considered by inventory rebalancing.<br><br>- Safety Stock: Surplus inventory is defined as the quantity of projected available balance greater than safety stock inventory level. Target inventory level demands are ignored by inventory rebalancing. |
| MSC: Launch Analyze Plan Partition | Yes/No | Yes | Launches the concurrent request Analyze Plan Partition. |
| MSC: Launch Workflow-Enabled Exception Message Notifications | Yes/No | Yes | Determines if Oracle Collaborative Planning sends notification messages when it generates exceptions. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Legacy Collections Using Lot Based Job Details | Yes/No | No | Used with legacy data collections only. Valid values are:<br>• Yes: For Oracle ShopFloor Management (OSFM) lot based jobs, the planning engine uses the BOM and Routing details stored in the job for scheduling future operations.<br>• No: The planning engine utilizes the BOM and Routing stored in the BOM application for scheduling future operations of a lot based job. The job will be the reference for the current operation only. Only job header changes can be released from planning, not operation details.<br>To control the same behavior for collections from an Oracle E-Business Suite instance, Advanced Planning Suite uses Oracle ShopFloor Management (OSFM) profile option WSM: Create Job Level BOM and Routing Copies |
| MSC: Maximum Number of Planned Orders per Demand | Positive number | 10000 | The maximum number of planned orders that the planning engine can create to satisfy one demand. |
| MSC: Maximum Percentage variation in safety stock values | Null or positive number | Null | The safety stock is not allowed to deviate by more than this value between two adjacent time intervals. Null allows any deviation. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Minimize Project Cross Peg within Window | Yes/No | Yes | Used in conjunction with profile option MSC: Use attribute based netting in priority pegging. Valid values are:<br>- Yes: The planning engine tries to minimize cross pegging within the Supply/Demand window.<br>- No: The planning engine does not attend to the amount of cross pegging. |
| MSC: Minimum Percentage variation in safety stock values | Null or positive number | 0 | The safety stock is held constant across time intervals if the deviation is within this percentage. Zero ignores all deviations. |
| MSC: Minimum Supply/Demand Percent for Pegging | Decimal percent | 0.0 | Set this profile option to instruct the planning engine not to peg tiny supplies and large demands. It skips a supply if (Supply size / Demand size) x 100 is less than the value of this profile option. Oracle recommends setting the value at 0.0001. |
| MSC: Minimize Workorder crossovers during reschedules | Yes/No | No | Controls pegging for work orders pegging to minimize crossovers during rescheduling.<br>- Yes: The planning engine does not push the supply forward even if there is some excess.<br>- No: The planning engine can peg work orders to safety stock supplies available. This may sometimes lead to work orders with later old schedule dates to be pegged to higher priority demands and work orders with earlier schedule dates may be pegged to lower priority demands.<br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine only uses this profile option if its value is Yes. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: MPS Auto-Firm Planned Orders | Yes/No | Yes | This profile option specifies how the planning engine deals with master production schedule firm planned orders. You can use this profile option to specify whether or not the planning engine should treat all planned orders in the master production schedule as firm:<br><br>Valid values are:<br><br>- Yes: All planned orders in the master production schedule are automatically firmed and not rescheduled during a batch replan.<br><br>- No: Use the same behavior as distribution requirements plans and material requirements plans.<br><br>When a master production schedule is a demand schedule for another plan, the planning engine treats all planned orders in the demand schedule plan as firm. This is the same as treating planned orders in distribution requirements plans and material requirements plans that are demand schedules for other plans as firm.<br><br>This profile option applies only to master production schedule plans. You can set it at the site and user levels. |
| MSC: Net Change Temp Dir | Text | Null | Stores the location of image cache used in the Plan Comparison Report. Indicate the location in the following format: <directory>@<subdir> where <directory><br><br>This must match the absolute path of the OA_MEDIA environment variable and <subdir> is the name of a subdirectory under the OA_MEDIA directory. The subdirectory must have write permissions for all. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: New Forecast Auto Plan | A valid plan name in Oracle Advanced Supply Chain Planning | Null | The plan launched in Oracle Advanced Supply Chain Planning when Oracle Collaborative Planning receives a supplier's forecast. Oracle recommends that this plan be an unconstrained plan. |
| MSC: New Planner Backward Compatibility | Yes/No | No | Use tis profile option to instruct the planning engine which algorithm to use to plan phantom items. Valid values are:<br>- Yes: Use the old algorithm<br>- No: Use the new algorithm<br>See also profile option MRP: New Planner Backward Compatibility.<br>Oracle recommends that you use Yes, even though it is not the default value, unless you have a specific situation that demands the new algorithim. |
| MSC: New Supply Commit Auto Plan | A valid plan name in Oracle Advanced Supply Chain Planning | Null | The plan launched in Oracle Advanced Supply Chain Planning when Oracle Collaborative Planning receives a supplier's supply commits. Oracle recommends that this plan be a constrained plan. |
| MSC: Organization containing generic BOM for forecast explosion | Any collected organization | Null | Used by collections to identify and populate the bill of material validation organization. |
| MSC: Order Type for Consigned VMI | - | - | This indicates the order type that Oracle Collaborative Planning uses when creating a sales order for consigned VMI. This order type should encompass billing and inventory reduction functions without any shipping being performed. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Operator Company Name | - | - | Used by Oracle Collaborative Planning. |
| MSC: OTM URL | Null, <URL> | Null | Use this profile option to specify the URL of the Oracle Transportation Management instance that is providing the updates. This URL is used for drilling down in Oracle Transportation Management for more details about the order that has been rescheduled. |
| MSC: Overwrite all Order Forecast records | Yes/No | No | Indicates whether or not the previous records regarding customer order forecasts need to be maintained. You can set this profile option to replace all previous forecasts with the latest forecast that the customer provides. The valid values are:<br>- Yes: Use this if you want to delete all previous order forecast records for an item, organization, customer, or customer site combination.<br>- No: Use this if you do not want to delete the previous forecasts. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Overwrite all supplier capacity records | Yes/No | No | Indicates whether or not the previous records regarding supplier capacity need to be maintained. You can set this profile option to replace all previous supplier capacity values with the latest supplier capacity to which the supplier commits. The valid values are:<br><br>- Yes: Use this if you want to delete all previous supplier capacity records for an item, organization, customer, or customer site combination. When the supplier provides a new commit statement for a specific horizon, the planning engine deletes all previous supplier capacity records for the horizon.<br><br>- No: Use this if you do not want to delete the previous supplier capacity records. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Pass List Price to OM in DRP Release | Yes/No | No | Use this profile option to specify how the distribution planning engine obtains internal sales order line list prices> Valid values are:<br><br>- Yes: During the creation of an internal sales order line, the Oracle Order Management Application Programming Interface does not call the pricing engine to get the list price of an item. Distribution planning passes the list price based on the item list price. If the list price is null, it passes the pass the standard cost. If the standard cost is null, it passes 0. In all cases, the internal sales order is created in a Booked status. This is the same process used when concurrent process Create Internal Orders creates internal sales orders from manual internal requisitions.<br><br>No: During the creation of an internal sales order, the Oracle Order Management Application Programming Interface calls the pricing engine to get the list price of an item. If the item is not an any price list, it creates the internal sales order in an Entered status. |
| MSC: Performance target for Inventory Turns | Integer > 0 | 6 | Use this profile option to set the KPI performance target for inventory turns. |
| MSC: Performance target for Margin Percent | Integer > 0 | 20 | Use this profile option to set the KPI performance target for margn. |
| MSC: Performance target for Ontime Delivery Percent | Integer >0 | 100 | Use this profile option to set the KPI performance target for ontime delivery. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Performance target for Resource Utilization Percent | Integer > 0 | 100 | Use this profile option to set the KPI performance target for planned utilization. |
| MSC: Plan co-products | Yes/No | Yes | Indicate whether co-products are planned and whether supplies are created for the co-products. Can be defined at the site level.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine only uses this profile option if its value is Yes. |
| MSC: Plan for order at risk calculation | - | - | Indicates a plan that Oracle Collaborative Planning uses to derive the pegging information for each order that you upload. |
| MSC: Plan Name for CMRO | <A plan name> | Null | In asset intensive planning, the plan that the planning engine uses when it sends resource availability information to Oracle Complex Maintenance, Repair, and Overhaul. |
| MSC: Planning Currency | - | - | Not used. |
| MSC: Priority for Substitute Items Flexfield Attribute | Integer >= 0 | Null | This profile option stores the name of the flexfield column that contains the value in the corresponding table. Set this profile option at the site level only See Flexfield Attributes, page A-1 for more information. |
| MSC: Priority of Alternate Resources for an Operation Flexfield Attribute | Integer >= 0 | Null | This profile option stores the name of the flexfield column that contains the value in the corresponding table. See Flexfield Attributes, page A-1 for more information. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Production Plan for Transportation Updates | Null, All Production Plans, <specific plan name> | Null | Use this profile option to indicate the production plans that receive estimated arrival time updates from Oracle Transportation Management. Valid values are:<br><br>Null: Do not pass updates to any plan<br><br>All Production Plans: Pass updates to all plans with Production flag selected<br><br><specific plan name>: Pass updates only to the plan that is specified |
| MSC: Project Task Collection Window Days | Null, Integer | Null | Controls which projects/tasks are collected after the collection engine deletes all of the previously collected records for the instance. Valid values:<br><br>- Null: Collects all of the records from the source.<br><br>- Integer: Collects all of the records from the source from projects whose end date is within the number of days in the past specified in the profile option value.<br><br>The collections process never collects tasks whose projects are completed. |
| MSC: Provide Warning for Dates Entered on Non-work Days | Yes/No | No | - No: Use this value if you do not want the warning message to be displayed. |
| MSC: PS - Snapshot Base Package | Yes/No | Yes | Specifies whether the Base Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Beginning Inventory Package | Yes/No | Yes | Specifies whether the Beginning Inventory Package is used for creating a model in Production Scheduling. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: PS - Snapshot Calendar Package | Yes/No | Yes | Specifies whether the Calendar Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Customer Package | Yes/No | Yes | Specifies whether the Customer Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Distribution Package | Yes/No | Yes | Specifies whether the Distribution Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Enterprise Forecast Package | Yes/No | Yes | Specifies whether the Enterprise Forecast Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Inventory Safety Targets Package | Yes/No | Yes | Specifies whether the Inventory Safety Targets Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Manufacturing Package | Yes/No | Yes | Specifies whether the Manufacturing Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Purchase Orders Package | Yes/No | Yes | Specifies whether the Purchase Orders Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Sales Orders Package | Yes/No | Yes | Specifies whether the Sales Orders Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Supplier Package | Yes/No | Yes | Specifies whether the Supplier Package is used for creating a model in Production Scheduling. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: PS - Snapshot Transfer Orders Package | Yes/No | Yes | Specifies whether the Transfer Orders Package is used for creating a model in Production Scheduling. |
| MSC: PS - Snapshot Work Orders Package | Yes/No | Yes | Specifies whether the Work Orders Package is used for creating a model in Production Scheduling. |
| MSC: PS Allow WO Purchased Item Offloading | Yes/No | No | Specifies item offloading control for purchased items. It allows alternate items on work orders consuming purchased items. This profile globally sets the work order allow offload flag to the appropriate value. The Bill of Material tab allows you to then set the Allow Offloading field to override the default as needed for those purchased items that have alternates. |
| MSC: PS Currency Symbol | text | $ | The currency symbol used by PS for measurement of costs and calculation of key performance indicators. |
| MSC: PS Resource Constraint Horizon | Any numeric value >= 0 | 30 (days) | Sets a time window from the start of the scheduling horizon beyond which resource capacity will be relaxed. Value specified in days. |
| MSC: PS Run Application Script | text | runPS.bat | Specifies the name of the batch script that starts Production Scheduling. |
| MSC: PS Run Connector Script | text | runPSConnector.bat | Specifies the batch script that starts the Production Scheduling Connector. |
| MSC: PS/SNO Alignment Date | Text | 2000-01-01 00:00:00 | The alignment date is the date and time that fixes the start of time periods in a model. The alignment date fixes all time period starts, including the Fiscal Month 445 period type, where it sets the start of 13-week 445 patterns. The alignment date format is yyyy-MM-dd HH:mm:ss. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: PS/SNO API Version | Text | 3.2 | The Supply Chain Planning XML format being used to generate SNO and PS models. |
| MSC: PS/SNO Client Install Path | Text | c:\ | The path where the Supply Chain Planning Production Scheduling (PS) or Strategic Network Optimization (SNO) is installed. PS and SNO are installed automatically the first time they are accessed by the E-Business Suite. |
| MSC: PS/SNO Compress Xml Package Files | Yes/No | Yes | Specifies whether data is transferred between the ASCP planning server, PS and/or SNO using a compressed file format also known as .gzip. The compressed XML format reduces the size of data files transferred, thereby minimizing the time involved in the creation of models. |
| MSC: PS/SNO Data Store Path | text | Null | The path to where the refreshed snapshot data from the E-Business Suite, or the published plans from PS or SNO, are temporarily stored before being transferred to the ASCP planning server. |
| MSC: PS/SNO Past Due Supplies Window | Integer | 7 | This value specifies the amount of time in the past to look for supply. Not applicable after 12.1.3.7 and removed from the ldt file. However, if this profile currently exists in your database, you will continue to see it but it can ignored. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Purchase Order Dock Date Calculation Preference | Need By Date and Promise Date | Promise Date | This profile option specifies the purchase order line date that the planning engine uses as the material arrival (suggested dock) date:<br><br>- Promise Date: If the Promise Date is not available (an unacknowledged purchase order), the planning engine uses Need by Date.<br><br>- Need By Date<br><br>This is a site level profile option.<br><br>Use the same setting of this profile option for running both collections and plans.<br><br>It does not affect supplier capacity, see profile option MSC: Supplier Capacity Consumption by Purchase Orders. |
| MSC: Purge Staging and Entity Key Translation Tables | Yes/No | No | Controls both truncation of the staging table during data collection process and deletion of the link ID tables. When running data collections for multiple instances simultaneously, set to No to avoid data loss. Set to Yes to conserve disk space when running data collections for single instances, or as separate processes for multiple instances. |
| MSC: Refresh Snapshots Pending Timeout | Integer in minutes | 10 | Sets the time that the Planning Data Pull concurrent process waits for concurrent process Refresh Snapshots on the source before it times out. This time out only applies if concurrent process Refresh Snapshots is at status Pending/Inactive which occurs if another version of concurrent process Refresh Snapshots is running. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Release PO Firm Flag to Purchasing | Yes/No | Yes | Use this profile option to indicate whether the release process should pass information about firm rescheduled purchase orders to the Purchasing source instance.<br><br>Valid values are:<br><br>- Yes: Pass the information<br><br>- No: Do not pass the information<br><br>See also profile option MSC: Remove Promise Date for Rescheduled Purchase Orders. |
| MSC: Release WIP Dtls if Order Date different then BOM Revision Date | Yes/No | Yes | If the value is Yes, then planning engine releases the WIP details even if the Suggested Start Date is different than BOM Revision Date.<br><br>If the value is No, the planning engine does not release the WIP details if the new WIP Start Date is different than BOM Revision Date. Oracle Work in Process uses the details effective on the job start date. |
| MSC: Released Only By User | Yes/No | No | Use this profile option to specify whether to restrict implementation of planned orders and recommendations to the current user. Valid values are:<br><br>- Yes: Only implement planned orders and recommendations that this user marked<br><br>- No: Implement planned orders and recommendations that any user marked |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Remove Promise Date for Rescheduled Purchase Orders | Yes/No<br><br>No | | Use this profile option to indicate whether the release process should remove the Promise Date on purchase orders on the Purchasing source instance when you firm and reschedule them in ASCP.<br><br>Valid values are:<br><br>- Yes: Remove Promise Date<br><br>- No: Do not remove Promise Date<br><br>Set profile option MSC: Release PO Firm Flag to Purchasing before you set this one. |
| MSC: Resource Group for a Line Flexfield Attribute | Integer >= 0 | Null | This profile option stores the name of the flexfield column that contains the value in the corresponding table. See Flexfield Attributes, page A-1 for more information. |
| MSC: Resource Type for an Operation Flexfield Attribute | - | - | Not used. |
| MSC: Respect Minimum Remaining Shelf Life Days | Yes/No | No | Use this profile option to instruct the planning engine how to plan supplies using minimum remaining shelf life days. Valid values are:<br><br>- Yes: Plan supplies taking into account the minimum remaining shelf life days.<br><br>- No: Plan supplies without enforcing minimum remaining shelf life days<br><br>The planning engine does not calculate safety stock if you set this profile to Yes and you set item attributes for lot expiration. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Safety stock change interval (Days) | Integer > 0 | 1 | Use this profile option to specify the time interval used for smoothing within the time interval functionality. |
| MSC: Safety Stock Project | Text | Null | Specifies the default project charged for all safety stock demands. Oracle Advanced Supply Chain Planning assigns the project specified for all safety stock demands which originate from non-MRP planned safety stock. When safety stock requirements are specified in Oracle Inventory for specific projects, the profile option value is not honored. The list of values for this profile option is restricted to projects specified in Oracle Projects. This profile option is enabled at project/seiban level, not at the task level. |
| MSC: Sales Orders Offset Days | Integer >= 0 | Null | Completed sales orders are collected within the offset duration. For example, if Sales Orders Offset Days is set to 90, all the sales orders completed in the past 90 days are also collected. Can be defined at the site level. A Null value means all closed sales orders are collected.<br><br>Does not apply to complex maintenance repair and overhaul where the material scheduled for a visit or task is collected as a sales order in Oracle Advanced Supply Chain Planning. |
| MSC: SCEM Engine Launch Events | None, Load, Publish, or All | All | Launch the Supply Chain Event Manager when data is loaded, published, or both. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Self Service Loads Delimiter | -/, | - | Delimiter used to parse the data files loaded using self service loads, for example, the loading of spreadsheet forecast data to Oracle Demand Planning. |
| MSC: Scope of Analyze Plan Partition | All Partitions, Plan Partition Only | Plan Partition Only | This profile option specifies the partitions that concurrent process Analyze Plan Partitions should analyze. |
| MSC: Share Plan Partitions | - | - | The profile option is a work-around for test/demo scenarios where you expect the creation of many plans by different testers and demonstrators. This profile option is not meant for production use by customers. When enabled the number of plan partitions parameter to the concurrent program mentioned becomes irrelevant; only one partition is created for a plan (you can enter 1). This profile option should only be changed by the system administrator.<br><br>If the MSC: Share Plan Partitions profile is turned on, you must run the Create APS Partitions program afterwards so that it can create the partition that every plan shares. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Shelf Life Override of Order Modifiers for Transfer Orders | Off/On | Off | Use this profile option to instruct the planning engine whether or not to maximize the number of demands satisfied with respect to minimum remaining shelf life. Valid values are:<br><br>- Off: Respect order modifiers for transfer orders. Schedule a supply pegged to multiple demands based on the most constraining demand with respect to minimum remaining shelf life.<br><br>- On: Ignore order modifiers for transfer orders as needed both to maximize the number of demands satisfied with respect minimum remaining shelf life and to maximize the usage of supplies in advance of their expiry dates. |
| MSC: Simultaneous Resource Sequence Flexfield Attribute | Integer >= 0 | Null | This profile option stores the name of the flexfield column that contains the value in the corresponding table. This setup is only performed during application install. |
| MSC: Smoothing method to calculate Safety stock within Change interval | Minimum, Average, or Maximum | Average | Specifies the mathematical construct used to calculate safety stock for a time interval using values within the time interval. |
| MSC: SNO - Snapshot Base Package | Yes/No | Yes | Specifies whether the Base Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Beginning Inventory Package | Yes/No | Yes | Specifies whether the Beginning Inventory Package is used for creating a model in Strategic Network Optimization. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: SNO - Snapshot Calendar Package | Yes/No | Yes | Specifies whether the Calendar Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Customer Package | Yes/No | Yes | Specifies whether the Customer Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Demand Package | Yes/No | Yes | Specifies whether the Demand Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Distribution Package | Yes/No | Yes | Specifies whether the Distribution Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Enterprise Forecast Package | Yes/No | Yes | Specifies whether the Enterprise Forecast Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Inventory Safety Targets Package | Yes/No | Yes | Specifies whether the Inventory Safety Targets Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Manufacturing Package | Yes/No | Yes | Specifies whether the Manufacturing Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Purchase Orders Package | Yes/No | Yes | Specifies whether the Purchase Orders Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Sales Order Package | Yes/No | Yes | Specifies whether the Sales Order Package is used for creating a model in Strategic Network Optimization. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: SNO - Snapshot Supplier Package | Yes/No | Yes | Specifies whether the Supplier Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Transfer Orders Package | Yes/No | Yes | Specifies whether the Transfer Orders Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO - Snapshot Work Orders Package | Yes/No | Yes | Specifies whether the Work Orders Package is used for creating a model in Strategic Network Optimization. |
| MSC: SNO Connector Precision | Numeric | 8 | Specifies the precision value of the SNO connector. |
| MSC: SNO Currency Precision | Numeric | 2 | Specifies the number of decimal places used to display currency information in the SNO Currency Table. For the most accurate calculations, a precision of 9 is recommended. |
| MSC: SNO Decimal Precision | Numeric | 2 | Specifies the number of decimal places shown for data in properties windows. Within SNO, the number of decimal places is called the display precision. Changing the display precision does not change the actual data values saved in a model. The display precision can affect results when you match data. For example, if the display precision is 2, a Machine node Utilization field with a value of 133.333333 displays 133.33. If you try to match Machine nodes with a Utilization field value of 133.33, the Machine node in this example is not matched because its actual value is 133.333333. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: SNO Optimization Type | text | Cost | Specifies the optimization type to be used when solving the model. Valid values are:<br>- Cost: The item list price is not considered.<br>- Profit: The item list price is considered. |
| MSC: SNO Run Application Script | text | runSNO.bat | Specifies the name of the batch script that starts SNO. |
| MSC: SNO Run Connector Script | text | runSNOConnector.bat | Specifies the batch script that starts the SNO Connector. |
| MSC: SNO Transportation Capacity By | text | Weight | Specify the unit of measure that determines transportation capacity. |
| MSC: Source Setup Required | - | See Automatic Calculations, page A-1. | Internal profile used by the software during collections configuration. Do not manually update. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Sourcing History Start Date Offset (in months) | Integer >= 0 | Null | Offsets the starting date of sourcing history calculations and is used in conjunction with collections parameters Purge Sourcing History = Yes and Recalculate Sourcing History = Yes. These settings delete, then calculate Sourcing History from the Start date determined by the profile option value (in months). System performance can be degraded when there is a high value for this profile option and a high volume of source transaction data.<br><br>Valid values are:<br><br>- Null: Collect all of it<br><br>- Positive integer: Collect that many number of months of it<br><br>Set Planning Data Pull parameter Recalculate Sourcing History to Yes. |
| MSC: Sourcing Rule Category Set | Text | Null | Determines the category set used in Oracle Advanced Supply Chain Planning in the assignment set form. If this not set, the user cannot assign sourcing rules and bills of distribution at the Category- Instance-Organization and Category-Instance level. |
| MSC: Sourcing Variance Tolerance | Number between 0 and 1 | 0.05 (5%) | Used when Enforce Sourcing Constraints is enabled for a plan. This percentage value establishes a threshold for triggering exception messages if sourcing allocations are violated. Exceptions are generated if the difference between the user-specified sourcing allocation percentages and the plan-derived allocation percentages is greater than the Sourcing Variance Tolerance. The profile option is entered as a number and converted to a percentage. If the user enters 0.5 it becomes 50%. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Split Planned Order to perform safety stock pegging | No, Yes but do not violate order modifier, or Yes | No | Use this profile option to instruct the planning engine how to split a planned order that pegs to customer demand when pulling it in to meet transient safety stock. Valid values are:<br>- No: Do not split planned orders<br>- Yes but do not violate order modifier: Split planned orders only if the split does not violate an order modifier<br>- Yes: Split planned orders<br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine only uses this profile option if its value is No. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Split Planned Orders for Scheduling Flexibility | Yes/No | Yes | For constrained plan with decision rules and optimized plans, it determines whether the planning engine consolidates planned orders that were split during optimization processing prior to scheduling them. For unconstrained plans, set it to No.<br><br>- Yes: Do not consolidate planned orders prior to scheduling.<br><br>The planning engine splits them into multiple planned orders whose quantities generally satisfy one planning time bucket's worth of capacity against the resources or suppliers used in the planned order. During scheduling, the planning engine has more flexibility to place smaller quantities into available time slots. You cannot specify the size of the durations and the planning engine does not guarantee that each planned order in the final plan output spans exactly one planning bucket.<br><br>- No: Consolidate orders when possible prior to scheduling.<br><br>Use this value if you tend to have long production runs per routing that cross multiple planning buckets. The planning engine creates a single planned order.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine ignores this profile option and does not consolidate planed orders prior to scheduling. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Supplier Capacity Accumulation (multiplier) | Numeric value > 0; may be larger than 1 | 1 | This profile option is a multiplier to ASL lead-time. The planning engine uses it to derive the date when capacity accumulation begins for a supplier.<br><br>If profile option MSC: Purchase Order Dock Date Calculation Preference is Promise Date, Oracle suggests that you set this profile option to 0 so that suppliers accumulates capacity within their lead-time.<br><br>This is a site level profile option. |
| MSC: Supplier Capacity Consumption by Purchase Orders | Yes, No Consumption , Unacknowledged Purchase Orders Only, Purchase Orders outside Lead Time Only | No Consumption | This profile option specifies which purchase orders the planning engine uses to consume supplier capacity. Valid values are:<br><br>- Yes: All purchase orders consume supplier capacity<br><br>- No Consumption: No purchase orders consume supplier capacity<br><br>- Unacknowledged Purchase Orders Only: Only purchase orders without a promise date consume supplier capacity<br><br>- Purchase Orders outside Lead Time Only: Only purchase orders with dock date outside of lead time consume supplier capacity |
| MSC: Suppress Exception for Selection of Alternates | Yes/No | No | Controls whether the planning engine generates exceptions related to alternate bills of material and routings. If the profile option is No, it does not generate those exceptions. |
| MSC: Temp Index Extent Size (Bytes) | - | - | Not used |
| MSC: Temp Table Extent Size (Bytes) | - | - | Not used |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Transportation Domain | Null, <domain name> | Null | Use this profile option to specify the domain name that identifies the source instance integrated with Oracle Transportation Management. Enter the same value that is in profile option OTM: Domain Name. |
| MSC: Unit of Measure | - | - | Not used. |
| MSC: Update Requested Completion Date when Releasing Reschedules | n/a | n/a | n/a |
| MSC: Use attribute based netting | Yes/No | No | Use this profile option to control netting in a project manufacturing environment. Valid values:<br>- Yes: Planning nets at the reservation level. It respects pegging level and creates planned orders based on hard pegging level. It does not respect order modifiers if the reservation level and hard pegging level are not the same. With this approach, you can enable priority pegging can be enabled.<br>- No: The planning engine uses customary netting in a project manufacturing environment. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Use Base Model during Forecast Consumption | Yes/No | No | Use this profile option to instruct the planning engine whether to consume configure to order forecasts with attention to the top-level models.<br><br>Valid values are:<br><br>- Yes: Consume configure to order forecasts for the same top-level model on the sales order line<br><br>- No: Consume configure to order forecasts without attention to their top-level models<br><br>Coordinate how you set this profile option with how you set profile option MSD: Publish CTO Forecast Percentages by Top-level Model. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Use FIFO Pegging | Yes/No | No | If this profile option is Yes, the planning engine uses FIFO pegging.<br><br>For all demands and supplies, it proceeds item by item and pegs supplies to demands on a daily basis. Daily supplies and demands are not sorted. When supplies or demands on a given date are used up, it picks from supplies or demands on the next date. The unpegged supplies are pegged to excess.<br><br>If the plan option Peg Supplies by Demand Priority is selected, it performs a priority based allocation of firm supplies prior to performing the FIFO pegging of the non-firm supplies.<br><br>If profile option MSC: Use FIFO pegging is No, it uses either standard pegging or priority pegging logic. See profile options MSO: Demand Window Size, MSO: Supply Window Size, MSO: Firm Supply Allocation Window (Backward days), and MSO: Firm Supply Allocation Window (Forward days).<br><br>This is a user level profile option.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option.<br><br>The planning engine performs safety stock smoothing only if this profile option is No. |
| MSC: Use Hash Key | - | - | This profile option is for use by Oracle |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Use Optimization Supply Due Dates for Pegging | Yes/No | No | Use this profile option to instruct the planning engine on the date fields to use when pegging.<br><br>- Yes: Pegging uses the optimization recommended supply date for planned orders and scheduled receipts.<br><br>In FIFO pegging, the supply sequence is based on the optimization supply date. In priority pegging, the division of the supply window is based on optimization supply date. This setting has no effect on form supplies because optimization does not move the schedule date.<br><br>For independent demands, the optimization demand date is the schedule date. For dependent demands, the planning engine offsets optimization demand date from the optimization supply date of its assembly's supply<br><br>In co-product/by product environments, the planned order/scheduled receipt and its related by-product planned order/scheduled receipt have the correct optimization supply date for pegging.<br><br>It reduces pegging discrepancies in which the main supply is pulled out and the by product supply remains at the original schedule date.<br><br>- No: Pegging behaves in the standard way.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine only uses this profile option if its value is Yes. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Use Shipping Receiving Calendars | Yes/No | Yes | Controls the use of shipping, receiving, and carrier calendars. Values are:<br>- Yes: Use shipping, receiving, or, carrier calendar for planning/scheduling<br>- No: Use the organization manufacturing calendar while generating a plan.<br>This profile option specifies:<br>- At the site level, whether the collection engine collects the calendars. If the calendars are collected, the planning engine uses them.<br>- At the user level, whether Planner Workbench displays the collected calendars. Even if the planning engine used the calendars, if the user level value is No, the Planner Workbench displays calendars as 24x7. This should be avoided.<br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine only uses this profile option if its value is Yes. |
| MSC: Vertical view default query | Not applicable | Not applicable | Used by Oracle Collaborative Planning to display default results in the vertical view. |
| MSC: VMI Default Query | Not applicable | Not applicable | Used by Oracle Collaborative Planning to display default results on the VMI page. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSC: Wait Time to Obtain Lock on Table/Partition for Snapshot Delete Worker (in sec) | Number >=0 | 60 seconds | Time (in seconds) the Snapshot Delete Worker waits to obtain a lock on a table/partition before aborting. Releasing plans recommendations through Workbench and running Purge Plan can cause locks on the table/partition preventing the Snapshot Delete Worker from obtaining a lock. If the timer expires, the program prints the following message in the log file: Unable to obtain a lock on table. |
| MSC: Write MBP Flat Files | Yes/No | No | Profile provide controls whether to flush the Planner concurrent process data files and setup data files during the plan run. If Yes, the process writes all the files to the $APPLCSF/out/data<planid> directory. |
| MSC: Distribution Planning Respects Minimum Remaining Shelf Life | Yes/No | Yes | This profile option enables Distribution Planning to plan supplies with respect to shelf life, including the minimum remaining shelf life days. |

## MSD Profile Options

The following table lists and defines the MSD profile options in Oracle Advanced Planning.

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSD: Calculate Planning Percentages | Planning Percentages<br><br>Forecast Explosion | Forecast Explosion | This profile option controls the behavior of the planning percentage calculations. For example, it controls whether the planning percentages can be calculated from the sales history of options. This profile can prevent expensive calculations when the user does not want to calculate planning percentages and just wants to use the existing planning percentages specified in the enterprise resource planning source to explode the forecast. |
| MSD: Category Set Name | Category set names | Null | This profile option is used to select one category set during the data collection process. If the user value is left blank, then all categories will be selected for data collection. Valid values are limited to valid category set names. |
| MSD: Client Debugging | - | - | This profile option is for use by Oracle. It allows you to enable debugging tools. |
| MSD: Code Workspace | - | - | This profile option is for use by Oracle. |
| MSD: Conversion Type | Conversion rates | Null | This profile option determines what conversion rates are collected from the General Ledger rates table. Valid values are limited to valid conversion rates. |
| MSD: Currency Code | Currency codes | Null | This profile option designates the base currency used in Oracle Demand Planning. All revenues are calculated and displayed in this base currency. Valid values are limited to the currency list of values. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSD: Customer Attribute | Descriptive flexfield column names | Null | This is a source profile option used to selectively bring the customer names into Oracle Demand Planning to improve the system performance. This profile holds the descriptive flexfield column name that is used to indicate if a customer in the Customers table will be used by Oracle Demand Planning. Only those customers in the Geography dimension that have this flexfield populated will be collected.<br><br>This profile option value is one of the attribute columns of the RA_CUSTOMERS entity, which indicates whether or not the customer will be used for demand planning purposes. In the customers table, you need to reflect this in a descriptive flexfield. All of the source views for the geography dimension that use the RA_CUSTOMERS entity filter using this attribute column. If the profile option is not provided, then no filtering will occur. If the profile option is provided, then only the entities in the geography dimension that have the attribute in the RA_CUSTOMERS entity specified as Yes will be collected. To set up Key Customers, go to the Customer setup screen in Oracle Applications. Select the relevant customer and set an available flexfield column to Yes. For example, if you use attribute10, then you need to use this information in the MSD profile option setup also. Also, in the source instance, set up the following information for profile option value MSD_CUSTOMER_ATTRIBUTE: list of values from ATTRIBUTE1 to ATTRIBUTE15. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSD: Default DP Scenario | Valid demand planning scenarios | Null | This profile option specifies a demand scenario, which appears as a demand schedule in the Plan Options window.<br><br>You can select the demand scenario from the list of values.<br><br>When you publish the demand scenario specified in this option, the planning engine launches the unconstrained plan specified in the profile option MSC: New Forecast Auto Plan. |
| MSD: Master Org | Master organizations | Null | This profile option is used to select a master organization, if there are multiple master organizations. The item attributes pertaining to the selected master organization are used by Oracle Demand Planning. |
| MSD: OLAP Directory Alias | - | - | Use this profile to specify the database directory alias used to store the log files created during the demand plan build process should be stored. It is primarily for the technical use of login and file-based operations.<br><br>This profile option can be set at the site level. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSD: One Step Collection | Yes/No | No | This profile option controls the number of steps in the data collection process. Valid values are:<br><br>Yes: indicating that the collection programs should take the data directly into the Fact Tables in a single step.<br><br>No: allows for the default two step collection process. In the first step, the collection programs take the data in to the Staging Tables where the data can be consolidated and cleansed by the user, if required. In the second step, the pull concurrent programs carry the data over to the Fact Tables from the Staging Tables. Both set of tables exist on the Demand Planning Server. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSD: Publish CTO Forecast Percentages by Top-level Model | Yes/No | No | Use this profile option to instruct the Oracle Demantra Demand Management how to publish configure to order forecast percentages for options, option classes, and models that are in the bill of materials for multiple top-level models. For example, Option Class M is in the bills of material for both Model A and Model B.<br><br>Valid values are:<br><br>- Yes: Oracle Demantra Demand Management publishes planning percentages for option classes and options for each model bill of material that they are in. When the planning engine explodes forecasts, it keeps the exploded information separated by top-level models.<br><br>- No: Oracle Demantra Demand Management publishes planning percentages for option classes and options aggregated over all the model bills of material that they are in.<br><br>If you set it to Yes, you can see the source of each published planning percentage in Planner Workbench, Supply/Demand window in fields:<br><br>- Parent Model: The immediate parent of the option, option class, and model in the forecast<br><br>-Top-level model: The top-level model of the option, option class, and model in the forecast |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSD: Two-Level Planning | Exclude family members with forecast control 'None'/Collect all family members and their sales histories | Exclude family members with forecast control 'None' | Use this profile option to forecast demand at product family level on the basis of sales histories of member items.<br><br>You can collect the sales histories of all the product family members regardless of their forecast control; set:<br><br>- Product family forecast control to Consume or Consume and derive<br><br>-Planning method for the product family and its members to Not planned<br><br>- This profile option to Collect all family members and their sales histories<br><br>You can collect the sales histories of all the Consume and Consume and derive product family members; set this profile option to Exclude family members with forecast control 'None'.<br><br>Use this profile option to forecast demand at the product family level on the basis of sales histories of member items. You can collect all the product family members and their sales histories regardless of the forecast control as long as the:<br><br>- Product family forecast control is Consume or Consume and Derive<br><br>- Planning method for the product family and its members is Not planned.<br><br>- Set this profile option to Collect all family members and their sales histories.<br><br>The default profile value is Exclude family members with forecast control 'None' specifies that only Consume or |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| | | | Consume and Derive product family members are subject to collection. |

## MSO Profile Options

In general. MSO: profile options apply only to constrained and optimized plans. If an MSO: profile option applies to unconstrained plans, its description specifically mentions it.

The following table lists and defines the MSO profile options available with Oracle Advanced Planning.

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Activity Selection Window (Days) | any number | 7 | This profile option specifies the number of days over which the planning engine groups activities that are candidates for scheduling. The larger the number, the greater the chance of finding an activity that can be scheduled with another activity of the same setup type. Making this number too large might result in demand priorities not being fully respected while scheduling. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Additional Demand Slices for Shared Supply Rescheduling | Number >= -1 | 0 | Controls the maximum number of slices to which supply can be rescheduled. Accepts values from -1 to maximum number of slices. Controls the maximum number of slices to which supply can be rescheduled. Supply is not rescheduled after this maximum even when demand will be delayed. Possible values include: -1: Reschedule to last slice 0: Does not reschedule.<br><br>For example, if a supply pegs to demand in slice 2, 3, 4, 5, and 6, and the parameter value is 2, supply will reschedule if needed in slice 3 and 4 (rescheduled 2 times, in slice 3 and 4) and will not reschedule in slice 5 and 6.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Allow early builds to consume existing supplies of phased-out components and sources | Yes/No | Yes | With Oracle Process Manufacturing, use this profile option to specify whether the planning engine plans supplies earlier than their pegged demand due dates. You want to plan supplies early to make them before their bills of material become obsolete. Valid values are:<br>- Yes: It does<br>- No: It does not. It plans to make the item due on the demand due date and using the components that are effective on the demand due date.<br>You can use this profile option in these planning modes:<br>- Constrained (Classic)<br>- Constrained (Without Detailed Scheduling)<br>- Constrained (With Detailed Scheduling) |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Allow Partial Demand Completion | All End Demands, Sales Orders, or None | None | Enables supply orders to individually schedule for partial satisfaction of a demand when demand is split across several supply orders. Valid values include: All End Demands: Enable Partial Demand Satisfaction for all independent demands (forecasts, sales orders, and MDS entries). Sales Orders: Enable Partial Demand Satisfaction for all Sales Order demand only. None: Schedules all supplies to coincide with completion date (latest supply date) to meet demand.<br><br>This functionality can be enabled for all independent demands or only for Sales Orders.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine only uses this profile option if its value is All End Demands. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Allow Schedule Gaps for Shared Supplies | Yes/No | No | This profile option controls the scheduling of shared supplies (scheduled receipts, firm planned orders, and planned orders with multiple demands pegged to them).<br><br>- Yes: When scheduling shared supplies, the shared supply is moved to the right (moving the schedule date later) during the final scheduling step (to coincide with the start time of downstream supplies) if it would make one of the pegged demands late or later. The shared supply schedule is always right justified if it does not make any pegged demands late or later.<br><br>When a lower-level shared supply is scheduled for the highest priority demand pegged to it, there may be a gap between the shared supply end date and the start date of the next downstream supply. By not right justifying it, it is more likely to be on time for the lower priority demands in later demand slices which are also pegged to it.<br><br>Before selecting Yes, consider the setting for MSO: Additional Demand Slices for Shared Supply Rescheduling. If this profile is not 0, shared supplies may be rescheduled and this profile option does not need to be Yes. For example, Demand A with priority 100 and Demand B with priority 500 are in different slices. If the shared supply is late for Demand B, it may still be rescheduled to be on time depending on available capacity and the number of additional demand slices in which it is scheduled. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| | | | If MSO: Additional Demand Slices is 0 and this profile option is Yes, the planning engine does not right justify the shared supply due date; the shared supply might still be on time for demand B even though it is not rescheduled in a later slice.<br><br>- No: When scheduling shared supplies and moving them to the right (moving the schedule date later), the planning engine does not consider demands in other slices that are not yet unscheduled but pegged to this supply. This yields a schedule with fewer gaps but at the expense of potentially more late demands.<br><br>This is a user level profile option.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Alternate Process Penalty | Number > 0 | See Automatic Calculations, page A-1. | Specifies weight for alternate process objective in optimization. This value is specified as a number greater than 0, and is an internal value. |
| MSO: Alternate Resource Penalty | Number > 0 | See Automatic Calculations, page A-1. | Specifies weight for alternate resource objective in optimization. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Alternate Resource Selection Method | Rank of Alternate<br><br>Setup Type Match | | If Rank of Alternate, ASCP will prefer to load the primary resource if it is available even if it means incurring a setup that could have been avoided by going to the alternate.<br><br>If Setup Type Match, ASCP will prefer the alternate that is the best option from a setup minimization perspective. If all alternates are equal from a setup perspective, then ASCP chooses the alternate based on rank. |
| MSO: Alternate Source Penalty | Number > 0 | See Automatic Calculations, page A-1. | Specifies weight for alternate source objective in optimization. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Avoid non working days for Buy/Transfer order dates | Yes/No | No | This profile option applies only when profile option MSO: Use Shift definitions when scheduling lead-times is No. Valid vales are:<br><br>- Yes: The planning engine avoids placing the ship, dock, due dates of buy and transfer orders on non-workdays according to the appropriate calendar.<br><br>- No: The planning engine does not schedule buy and transfer orders with regard to the appropriate calendar.<br><br>This profile option does not govern the placement of order dates.<br><br>If profile option MSO: Use Shift definitions when scheduling lead-times is Yes, the planning engine assumes accurate shift timings.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine only uses this profile option if its value is Yes. |
| MSO: Barrier Optimizer Algorithm Choice | 0, 1, 2, or 3 | Null (interpreted as 0) | This profile indicates which starting point algorithm the planning engine when it uses the barrier algorithm to solve an optimization problem. It applies only when multiple threads are used in optimization. |
| MSO: Calculate Constraint Exceptions | Yes/No | No | Determines whether constraint exceptions are calculated for plans with Enforce Capacity Constraints selected.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Capacity Units Recalculation Threshold | Any value between 0 and 1 | 0 | The planning engine schedules supplies in two phases:<br><br>- Backward schedule: From demand due date to see if demand can be met on time.<br><br>- Forward schedule: If the backward schedule results in a late demand, the forward schedule from the plan start date meet demands with minimum lateness.<br><br>At the end of the forward schedule phase, the planning engine adjusts the schedule to remove gaps between supplies (right justification). It may move a supply to occur at a time where there are more resource units available that there were in its previously scheduled time.<br><br>If this profile option is 1, the planning engine considers assigning more resource units to the supply. For example, this profile option is 0.5. The planning engine considers changing the number of resource units if the current capacity units value is less than 0.5 * Max assigned units on the routing for the item.<br><br>If this profile option is 0, the planning engine does not consider assigning more resource units.<br><br>This is a user level profile option.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Check Redundant Constraints | 0 and 1 | See Automatic Calculations, page A-1. | Specifies location and removal of redundant constraints. |
| MSO: Choice of supply for substitution | All Supplies, Excess Supplies | All Supplies | Determines which supplies are considered by the Planning Engine for substitution. Valid values are: All Supplies: Oracle Advanced Supply Chain Planning takes supplies belonging to substitute items even when there is demand for substitute items. Demand priorities drive the allocation. Excess supplies - Oracle Advanced Supply Chain Planning takes supplies belonging to substitute items only if it finds that the supply from the substitute item is in excess. Oracle Advanced Planning performs regular netting logic within the Substitution Window and find that excess can be offered for substitution. The native demand satisfaction has priority only within the Substitution Window. After the Substitution Window demand priorities drive the substitution.<br><br>Oracle Order Promising does not honor this profile option. Oracle Order Promising always honors native demand satisfaction logic. |
| MSO: Component offset logic for optimization | 2 | n/a | n/a |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Consume Firm Work Orders Based on Resource Hours | Yes/No | No | Use this profile to instruct the planning engine what data to use for resource load when it determines resource availability. Valid values are:<br><br>- Yes: The planning engine uses resource hours to determine the resource load. Use this value if you do not attend to work in process timestamps, your work in process times are not adjusted for efficiency, and you specify resource hours.<br><br>- No: The planning engine uses timestamps to determine the resource load. Use this value if your work in process times are adjusted for efficiency. If work in process is scheduled by the planning engine scheduling process, choose this value. |
| MSO: Continuous transfer across organizations | Yes/No | No | Allows you to model continuous or non-continuous transfers across organizations.<br><br>- Yes: Allows continuous transfers across organizations.<br><br>- No: Allows discrete, incremental or non-continuous transfers across organizations.<br><br>This feature can also be set at the item/organization level using the Continuous Inter-Org Transfers item attribute. The value specified for the item attribute overrides the profile option setting.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders | Series/ Parallel | Parallel | Allows you to fulfill a demand in series or in parallel from multiple supplies from suppliers and/or other organizations. Values are:<br><br>- Series - Demand is satisfied in series from multiple supplies.<br><br>- Parallel - This is the default value. Demand is satisfied in parallel from multiple supplies.<br><br>For supplier sourced orders, use profile option MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced Orders.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Convergent Supplies Consumption Pattern for Intra-Org Sourced orders | Series / Parallel | Parallel | Allows you to satisfy a demand in series or in parallel from multiple supplies in the same organization. Values are:<br><br>- Series - Demand is satisfied in series from multiple supplies.<br><br>- Parallel - This is the default value. Demand is satisfied in parallel from multiple supplies<br><br>If a component is fed by orders from multiple organizations, the value of profile option MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders overrides the value of this profile option.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Cost Roll-up incremental factor | Null, positive number | Null | This profile option controls the cost increments used by the internal cost roll up in Oracle Advanced Supply Chain Planning. The cost calculation is:<br><br>SUM across all components for the assembly [K * Cost of a component * (Usage of the component for the assembly + 0.01)].<br><br>K is the value that you set in this profile option. Oracle recommends a minimum value of 1.<br><br>Valid values are:<br><br>- Null: Use the standard cost roll-up logic<br><br>Positive number: Use this factor in the cost roll-up logic of the planning engine optimization phase to calculate the assembly cost based on the components costs |
| MSO: CPLEX Crash Parameter | -1, 0, and 1 | See Automatic Calculations, page A-1. | Determines how objective coefficients are used to select basis. |
| MSO: CPLEX Refactor Rate | Integer >= 0 | See Automatic Calculations, page A-1. | Specifies the value of the parameter to control the refactor rate. |
| MSO: CPLEX Scaling Factor | -1, 0, and 1 | See Automatic Calculations, page A-1. | Contains the scaling factor in the Planning Engine. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Create Aggregate Supply for Unsatisfied Demands within Planning Time Fence | Yes/No | No | Use this profile option to instruct the planning engine whether to create one supply order to meet the demand within the planning time fence.<br><br>Valid values are:<br><br>- Yes: Create one supply order<br><br>- No: Create multiple supply orders<br><br>In both cases, the planning engine:<br><br>- Considers demand from the plan start date through and including the planning tine fence date<br><br>- Creates the orders on the planning time fence date |
| MSO: Default Forecast Priority | Integer >= 0 | 100000 | Contains default priority value for forecasts and is used by the Scheduling Engine to determine when to schedule the forecast. Can be defined at the site level. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Default Resource Sequencing Window (Days) | any number | 7 | After the planning engine select an unscheduled activity from the activity selection window specified by MSO: Activity Selection Window (Days), this profile option specifies the number of days from the pegged demand date over which the planning engine can look for another activity of the same setup type to schedule the activity with and achieve a good sequence on the resource. This profile option number can be overridden by resource level settings made in the Departments: Resources screen in the source system.<br><br>The large this number, the longer the time spent by the resource on a setup type before changing over to the next setup type. |
| MSO: Default Sales Order Priority | Integer >= 0 | 10000 | Contains default priority value for sales orders. Used by the Scheduling Engine to determine when to schedule a sales order. Can be defined at the site level. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Default Timestamp for Forecasts | Beginning of Day or End of Day | End of Day | This profile option determines the forecast timestamps that Oracle Advanced Supply Chain Planning uses to plan. It applies to forecast scenarios from Oracle Demand Planning, master demand schedule forecasts, and manual master demand schedule entries. The timestamp denotes the time by which supplies to meet the demand must be available to be considered on time:<br><br>Values are:<br><br>- Beginning of Day: Supplies must be available at 00:00<br><br>- End of Day: Supplies must be available at 23:59<br><br>This profile option does not apply to sales orders. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Default Timestamp for Sales Orders | Beginning of Day, End of Day, or Retain Sales Order Timestamps | End of Day | This profile option determines the sales order line timestamps that Oracle Advanced Supply Chain Planning uses to plan. The timestamp denotes the time by which supplies to meet the demand must be available to be considered on time:<br><br>Values are:<br><br>- Beginning of Day: Supplies must be available at 00:00.<br><br>- End of Day: Supplies must be available at 23:59.<br><br>- Retain Sales Order Timestamps: Supplies must be available at the timestamp on the sales order line. The sales order demand due timestamp does not affect forecast consumption because forecast consumption is done in daily buckets.<br><br>This profile option does not apply to forecasts. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Default Timestamp Safety Stocks | Beginning of the Day or End of Day | Beginning of the Day | The planning engine uses this profile option value to determine when safety stock supplies are due. The timestamp value applies to the safety stock requirements from Oracle Inventory, Oracle Inventory Optimization, Oracle Material Requirements Planning, and Oracle Advanced Supply Chain Planning.<br><br>The values are:<br><br>- Beginning of Day: Supplies must be available at 00:00. Set this option if you want to use timestamps that match safety stock requirements from Oracle Inventory Optimization.<br><br>- End of Day: Supplies must be available at 23:59. Set this option if you want to use timestamps that match safety stock requirements from Oracle Inventory or Oracle Material Requirements Planning.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine only uses this profile option if its value is End of Day. |
| MSO: Delay fulfillment of small demands | Yes/No | No | Use this profile option to enable the planning engine to delay fulfilling a small demand until it has a later larger demand. If you select Yes, set the item attribute Unsatified Demand Factor on each item whose small demands you want delayed. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Demand Size Tolerance Before Splitting Planned Orders | Number >=0 | Null | Creates a threshold percentage that causes Planned Orders to split prior to scheduling (if the remaining unallocated quantity of a planned order is greater than the remaining unallocated quantity of the pegged demand). Not used if order modifiers exist for an item and not used in a project planning environment. Valid values are positive decimal quantities (.5 is interpreted as 50%).<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option |
| MSO: Demand Window Size | integer >=0 | Null | During priority pegging, demands are sorted based on the demand priority within the demand window. After these demands are fully pegged, Oracle Advanced Supply Chain Planning sorts all demands in the next window by priority. This is stated as the number of calendar days including non-workdays. With a value of 10, the first demand window is between the start date of the plan or the first demand date +10 days. The default (Null) is treated as 1 in the Planning Engine.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine uses this profile option as value 1 day. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Disable Inference of Item Substitution Relationship | Yes/No/Null | Null | Use this profile option to instruct the planning engine whether to infer end item substitution relationships. Valid values are:<br>- Yes: Do not infer item substitution relationships<br>- No/Null: Do infer item substitution relationships |
| MSO: Divergent Supply Feeding Pattern for Inter-Org and Supplier Sourced orders | Series With MTQ Only / Series | Series With MTQ Only | Allows you to fulfill multiple downstream demands in parallel or in series by a supply from another internal organization. Values are:<br>- Series With MTQ Only - This is the default value. A supply always feeds multiple demands in series when a corresponding MTQ has been specified.<br>- Series - Supply feeds multiple demands in series.<br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Divergent Supply Feeding Pattern for Intra-Org Sourced orders | Series With MTQ Only / Series | Series With MTQ Only | Allows you to fulfill multiple downstream demands in parallel or in series by a supply in the same organization. Values are:<br><br>- Series With MTQ Only - This is the default value. A supply always feeds multiple demands in series when a corresponding MTQ has been specified.<br><br>- Series - Supply feeds multiple demands in series.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Dual Simplex Parameter | 0, 1, 2, 3, and 4 | See Automatic Calculations, page A-1. | Gradient parameter for dual simplex. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: EDD Scheduling Window Control | Any value between 0 and 1 | 0.5 | This profile option is applicable to constrained plans with enforce demand due dates.<br><br>The planning engine calculates an actual scheduling window for each resource activity and supply. The actual window is defined by the dates:<br><br>- Latest Possible completion time (LPCT): Determined by the start time of downstream activities that have already been scheduled.<br><br>- Earliest Allowable Completion Time (EACT): Calculated by the planning engine which accounts for the unscheduled upstream activities and how much time those activities need.<br><br>If this profile option is the default value, the planning engine uses the calculated EACT.<br><br>If this profile option is lower than the default value, the planning engine uses an earlier EACT than the calculated EACT which gives the activity a larger scheduling window.<br><br>If this profile option is higher than the default value, the planning engine uses a later EACT than the calculated EACT which gives the activity a smaller scheduling window.<br><br>This is a user level profile option.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Enable Cost Rollup for Optimization | Yes/No | Null (interpreted as No) | This profile specifies where the optimization engine looks for costs during cost-based optimization. Valid values are:<br>- No: Use user-provided costs from the source system<br>-Yes: Use costs from the internal cost rollup |
| MSO: Enable Decision Rules | Yes / No | No | The profile option enables User Defined Decision Rules. Yes: Use the user-defined decision rules. No: User defined decision rules are not allowed. The Plan Options tab, Decision Rules, is disabled. |
| MSO: Enable Hard Links Globally | Yes/No | No | Use this profile option to specify whether the planning engine should globally enforce hard link constraints. Valid values are:<br>- Yes: Enforce hard link constraints<br>- No: Do not enforce hard link constraints |
| MSO: Enable Triangulation in Optimization | - | - | Reserved for future use. |
| MSO: Enforce Planning Time Fence in Day Level Planning | Yes/No | No | Use this profile option to make the planning time fence a hard constraint for Constrained without detailed scheduling plans. It applies to:<br>- Constrained - enforce capacity constraints<br>- Comstrained - Enforce demand due dates<br>See Planning Time Fence Control, page 4-86, Related profile Options. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Enforce Resource Sequence Contiguity | Yes / No | Yes | Controls contiguity constraints between resource activities within an operation. Valid values are:<br><br>- Yes: Resource activities within the same operation are scheduled contiguously in time. The end of the preceding activity exactly lines up with the start of the current activity and the end of the current activity exactly lines up with the start of the next (if there is MTQ specified, the activities may also overlap).<br><br>- No: The contiguity constraint is relaxed and in certain cases, the chances of obtaining feasible schedules improved.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Firm Operations/Orders Within Time Fence | Yes/No/Null | No | Indicates whether or not the planning engine should firm those operations and orders that are within the plannng time fence. The valid values are:<br><br>- Yes/Null: Firms operations and orders that are within the time fence.<br><br>- No: The planning engine does not reschedule the non-firm operations and orders that have dock dates within the time fence.<br><br>This profile option also applies to unconstrained plans. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Firm Purchase Orders Within Time Fence | Yes/No/Null | No | Indicates whether or not the planning engine should firm those purchase orders that are within the planning time fence. The valid values are:<br><br>- Yes/Null: Firms purchase orders that are within the time fence.<br><br>- No: The planning engine reschedules and cancels the non-firm purchase orders that have dock dates within the time fence<br><br>This profile option also applies to unconstrained plans. |
| MSO: Firm Requisitions Orders Within Time Fence | Yes/No/Null | No | Indicates whether or not the planning engine should firm those requisitions that are within the planning time fence. The valid values are:<br><br>- Yes/Null: Firms requisitions that are within the time fence.<br><br>- No: The planning engine does not reschedule the non-firm purchase requisitions that have dock dates within the time tence. The planning engine reschedules and cancels recommendations within the time fence.<br><br>The planning engine uses the start date of the receiving organization as the reference for internal requisitions.<br><br>This profile option also applies to unconstrained plans. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Firm Requisitions Within Time Fence | Yes/No | No | Use this profile option to tell the planning engine whether to consider internal requisitions at the receiving organization as firm. The requisitions that this profile option relates to are ones that have Start Date before or on Planning Time Fence Date.<br><br>Valid values are:<br><br>- Yes: It treats them as firm.<br><br>- No: It can recommend rescheduled and cancel. |
| MSO: Firm Supply Allocation Window (Backward days) | Integers >=0 | 1 | The allocation of firm supplies to demands is based on demand priorities within the Firm Supply Allocation window. Set this window using system level profile options. This window is derived dynamically for each demand; it starts with the demand due date and goes backwards to the window size.<br><br>This is stated as the number of calendar days including non-workdays. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Firm Supply Allocation Window (Forward days) | Integers >=0 | Null | The allocation of firm supplies to demands is based on demand priorities within the Firm Supply Allocation window. Set this window using system level profile options. This window is derived dynamically for each demand; it starts with the demand due date and moves forwards to the window size. This pegs demands to firm supplies that are scheduled after the demand date. After searching backward, it searches forward by the number of days set by this profile option, pegging the supply with the nearest (earliest) schedule to the unallocated demand quantity. This can cause supplies to be late for the demand due date.<br><br>This is stated as the number of calendar days including non-workdays.<br><br>To use this feature, set profile option MSO: Net All Firm Supplies Before Creating Planned Orders to Yes. |
| MSO: Firm Work Orders/ Operations Within Time Fence | Yes / No | No | Used for both constrained and unconstrained plans. When set to Yes, all operations of an order with start dates in the Planning Time Fence are treated as firm. Any operation with a start date outside of the Planning Time Fence is not considered firm and can be moved. When set to No, operations with start dates in the Planning Time Fence can be rescheduled out. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Floating Point Precision | Number > 0 | 100 | Internal multiplier for order quantities. Can change the value depending on precision desired. Verify that the product of the floating point precision and the number does not exceed the maximum integer size handled by the machine.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Floating Point Precision for Planning Bucket Efficiency | Not applicable | Not applicable | This has been changed to MSO: HLS Granularity Precision. |
| MSO: Floating Point Precision for Transportation Capacities (Volume) | Number > 0 | 100 | Internal multiplier for transportation lane capacities by volume, by day. Can change the value depending on precision desired. Verify that the product of the floating point precision and the number does not exceed the maximum integer size handled by the machine. See Floating Point Precision, page A-2 for more information.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Floating Point Precision for Transportation Capacities (Weight) | Number > 0 | 100 | Internal multiplier for transportation lane capacities by weight, by day. Can change the value depending on precision desired. Verify that the product of the floating point precision and the number does not exceed the maximum integer size handled by the machine. See Floating Point Precision, page A-2 for more information.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Floating Point Precision for Usage in Routings | Number > 0 | 100 | Internal multiplier for order quantities. Can change the value depending on precision desired. Verify that the product of the floating point precision and the number does not exceed the maximum integer size handled by the machine. See Floating Point Precision, page A-2 for more information.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Generate Compression Days Exception | Yes/No | Yes | Use this profile option to control issuance of exception message Orders with compression days. Valid values:<br><br>- Yes: Issue the exception message<br><br>- No: Do not issue the exception message<br><br>The planning engine issues exception message Orders with insufficient lead-time when it schedules orders for less time than their assembly's lead-time. If the reason for that scheduling is that the planning engine would schedule the order in the past, it also issues exception message Orders with compression days.<br><br>To avoid seeing both these exceptions for the same order, select No for this profile option. |
| MSO: Generate Compression/Firming Exceptions for Orders in Progress | Yes/No | Yes | When set to No, the planning engine does not issue the following exception messages for firm orders whose start date is in the past (after applying the lead time offset to the due date). The planning engine assumes that these orders are in progress and on time:<br><br>• Order with Insufficient Lead Time<br><br>• Order is Firmed Early |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Generate Shared Supply Exceptions | Yes/No | No | The planning engine schedules demands in slices; each slice contains a set of demands in a time period. Sometimes, a supply is pegged to two demands (shared supply) that are each in different slices.<br><br>If these two slices are separated by more slices than the value of profile option MSO: Additional Demand Slices for Shared Supply Rescheduling, the planning engine does not reschedule the shared supply in the earlier slice when it schedules the demand in the later slice. It is possible that the demand in the later slice is satisfied late because the planning engine did not reschedule in (earlier date) the supply in the earlier slice.<br><br>If this profile option is Yes, the planning engine issues a Shared Supply Scheduled Late exception message when this occurs. If this profile option is No, the planning engine does not generate the exception message.<br><br>This is a user level profile option. |
| MSO: Global Batchable Flag | Yes/No | No | This profile option enables resource batching functionality for order scheduling. Valid values are Yes (enable resource batching) and.No (do not enable resource batching).<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Global Chargeable Flag | Yes/No | No | This profile option controls whether Oracle Advanced Supply Chain Planning schedules resource charges. If Yes, the planning engine schedules charges for chargeable resources. If No, chargeable resources are considered as item basis an no individual charges are scheduled. Material flows and resource loads are not influenced by charge quantities. |
| MSO: Global Time Limit | Number > 0 | See Automatic Calculations, page A-1. | Parameter used to set global time limit for halting optimization. |
| MSO: Hard link scheduling window | Integer | 30 | This profile option specifies the time window within which ASCP tries to schedule a set of operations linked together through hard links. If scheduling is unsuccessful, overloads are created.<br><br>This is a hidden profile option used by development. This defines the scheduling window within which the system schedules the hard-linked operation set. Increasing the window gives room to schedule operations with hard links without overloading. Based on the number of operations per hard linked operation set, increasing this value can have a performance impact. |
| MSO: Hard link scheduling window expansion factor | Integer | 10 | This hidden profile option used by development is used to limit the propagation for the hard linked operation set. Normally, we limit the propagation by a factor of (This profile option value * Minimum duration of hard linked operation set). |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Heuristic type | Look Ahead | Look Ahead | Determines which heuristic to use.<br><br>The look-ahead heuristic reserves time for lower priorities so the schedule begins with the tasks of higher priorities.<br><br>This is a site level profile option. |
| MSO: HLS flat files path | Text | Null | Specifies the directory to store the Planning Engine debugging data files. |
| MSO: Improved Lead Time Offsetting in Aggregated Buckets | - | - | Reserved for future use.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Include Past Due in Safety Stock | Yes/No | Yes | Use this profile option to instruct the planning engine whether to include past due demand in the safety stock calculation. Valid values are:<br><br>• Yes: Include it.<br><br>• No: Do not include it. If you have a lot of past due demand, use this value to avoid overstatement of typical safety stock level. |
| MSO: Internal Demand Aggregation Within Optimization | Yes/No | Null (interpreted as No) | This profile specifies how the optimization engine should prioritize independent demands. Valid values are:<br><br>- Yes: Prioritize by date. This value improves optimization engine performance.<br><br>- No: Prioritize by demand priority |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Inventory Carrying Costs Percentage | A percentage between 0 and 100 | Null | Specifies inventory carrying costs percentage for all items in the plan. Can be defined at the site level. You can update this value. The inventory carrying cost is a percent (if the user enters 10, the value is 10%). |
| MSO: Late Demands Exceptions Tolerance Minutes | Integer > 0 | 0 | This profile option is used by constrained plans. Sets the value in minutes for a window during which the planning engine does not issue exception messages for late demands. Use it particularly in cases where demands are only a few minutes or a few hours late.<br><br>The value that you enter is used based on a 24 hour, 7 day per week calendar. For example, enter 1440 minutes (24 hours) for this profile option. A demand due at 15:00 on Tuesday does not cause late demand exception or diagnosis information as long as the supplies are complete by l5:00 on Wednesday. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Lead Time Control | Violate Minimum Processing Times to Meet Demand Due Date and Do Not Violate Minimum Processing Times | Violate Minimum Processing Times to Meet Demand Due Date | This profile option is applicable to constrained plans. Valid values are:<br>- Violate Minimum Processing Times to Meet Demand Due Date: The planning engine meets the demand due date even if it compresses operations and supplies beyond their minimum durations (from item lead-times and routing usages).<br>- Do Not Violate Minimum Processing Times: The planning engine respects the minimum durations of operations and supplies (from item lead-times and routing usages) even if it satisfies demands late.<br>This is a user level profile option. |
| MSO: List Size for Pricing Candidates | Integer > 0 | See Automatic Calculations, page A-1. | Parameter to set the list size for pricing candidates. |
| MSO: LP Constraint Batch Size | - | - | Not used. |
| MSO: LP Markowitz Coefficient | Number between 0.0001 and 0.99999 | See Automatic Calculations, page A-1. | Sets the Markowitz Coefficient. |
| MSO: LP Optimization Algorithm | 0: Primal simplex, 1: Dual simplex, 2: Hybrid barrier primal, 3: Hybrid barrier dual | 0 | Determines which optimization algorithm is used. Can be defined at the site level. See Automatic Calculations, page A-1 for more information on the default value for this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Maximize Search of Availability Intervals | Yes / No | Yes | Enhances the capability of the scheduling engine to accurately identify pockets of available time where resource activities can be feasibly scheduled. Valid values are:<br><br>- Yes: Maintains a detailed picture of the Resource Profile while scheduling. Resource Profile refers to the time varying picture of requirements and availability. The maintenance of this detailed picture causes the planning engine to miss fewer valid slots for scheduling activities than otherwise.<br><br>- No: Detailed Resource Profile is not maintained.<br><br>If you need to change the default value of this profile in your installation, it is recommended that you consult with Oracle Development before doing so.<br><br>You can set this option if you receive the Requirement causes resource overload exceptions in the Planner Workbench in Enforce Capacity Constraints Plans. For more details, see Exception Messages, page 15-1.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Maximum Activity Duration | Number > 0 | See Automatic Calculations, page A-1. | Defines the Planning Engine maximum activity duration in days. All requirements should be less in duration than this. If null, the planning horizon duration is used.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Maximum Allowable Days Late | Integer > 0 | 300 | Limits the number of days by which a demand or unfirmed scheduled receipt can be moved out when optimization is turned on. This value is used only to improve performance and reduce the size of the plan for the optimization component of the Planning Engine. Scheduling moves demands and unfirmed scheduled receipts out as long as necessary. Can be defined at the site level.<br><br>**Note:** Set this to a number as large as the typical planning horizon to avoid unusual results. |
| MSO: Maximum Allowable Days Late before Forecast Expiration | Integer > 0 | Null | Oracle Advanced Supply Chain Planning uses this profile option when planning supplies for forecast scenarios from Oracle Demand Planning, master demand schedule forecasts, and manual master demand schedule entries. When a forecast or master demand schedule entry cannot be completely satisfied within the allowable days late, the planning engine does not plan supplies for the quantity that is late by this many days.<br><br>The profile option does not apply to sales orders. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Maximum Demands per Group | Integer > 0, smaller than the size of a slice | 5 | Determines the maximum number of demands that can be grouped together for scheduling. Within a group, the default heuristic can try different orders among the demands. Can be defined at the site level.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Maximum Demands per Group for Advanced Sequencing | Any number | 1 | The profile option specifies the number of demands that are grouped together for scheduling. the larger this number, the greater the chances of obtaining good sequences on the resources. Making this number too large might result in demand priorities not being fully respected while scheduling. |
| MSO: Maximum Demands per Slice | Integer >= 0 | 100 | Determines the number of demands in a slice. Enables the Scheduling Engine to resolve interactions of demands within a slice. Supplies shared between demands are scheduled better when the demands are in the same slice. However, slices that are too large slow down the Scheduling Engine use more memory. Can be defined at the site level.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Maximum Inventory Level % of Safety Stock | Between 0 and 100% | - | Use this option to specify maximum inventory levels. If no other method of calculation is defined for an item-organization maximum inventory level, the levels are based on the specified percentage of the safety stock level. |
| MSO: Maximum Number of Prepones | Number > 0 | 10 | Scalability factor for the Scheduling Engine. The Scheduling Engine attempts to schedule the operations in different orders to find a solution. Limits the number of times the Scheduling Engine attempts to schedule an operation. If there are many components for some items or many small supplies answering a demand, the number of orders is larger; reduce this parameter. Can be defined at the site level. See Automatic Calculations, page A-1 for more information.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Maximum Number of Pull for Operation | Integer > 0 | 8 | When an operation cannot be scheduled on a certain day, the scheduling engine attempts to schedule it on an earlier date (for backward scheduling). This profile option controls how many days are tried in this manner. Many days result in lower performance. Can be defined at the site level. See Automatic Calculations, page A-1 for more information.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Maximum number of pulls/push for hard linked operations | -- | -- | This hidden profile option is not used. |
| MSO: Maximum Number of Pushes for Operation | -1 or Integer > 0 | -1 | When you are running constrained plans with the Enforce Capacity Constraints plan option checked, this profile option controls the number of attempts made to schedule a resource activity feasibly. Valid values are:<br><br>-1: Continues the search for available capacity till the end of the planning horizon.<br><br>Integer > 0: The number that you specify here determines the number of attempts that the planning engine makes to schedule the activity. For example, if you set the profile option to 5, the planning engine makes 5 attempts to schedule the activity feasibly, and after that schedules the activity with an overload. The spot chosen to schedule the activity with overload is the initial spot that was tried.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Maximum Operations Per Slice | Integer > 0 | 3000 operations | Determines the number of operations which can be scheduled in a slice. Limits the problem size in a slice and can be a limiting factor in determining the number of demands that can be scheduled in a slice.<br><br>Oracle recommends that you use a large value such as the default value.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Maximum Resource Over-capacity | Number > 0 | 5 | Assigns resource slacks when it does not find the resource available and it is forced to use slacks. The Scheduling Engine initiate the resource slack from 0 to maximum assigned units and will jump to this number if no solution is possible. This limits the number of tries to assign the resource slack. Can be defined at the site level. See Automatic Calculations, page A-1 for more information.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |
| MSO: Maximum Simplex Iterations | Integer > 0 | See Automatic Calculations, page A-1. | Parameter to set the maximum number of simplex iterations. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Minimize Supply Duration | Yes/No | No | Use this profile option to specify whether the planning engine should left-justify operations and post processing time.<br><br>The planning engine plans them to occur as close to the demand date as possible. They may have gaps between them because of resource constraints.<br><br>When the planning engine left-justifies them, it moves them earlier in time. It makes the start dates of the later ones the same as the end dates of the previous ones.<br><br>For example, the planning engine plans the operations for a supply that pegs to a demand date of day 12. It plans:<br><br>- Operation 30 from days 10 to 12<br><br>- No operations for days 8 to 10<br><br>- Operation 20 from days 6 - 8<br><br>If you tell the planning engine to left-justify, it moves operation 30 from days 10 - 12 to days 8 - 10.<br><br>Valid values are:<br><br>- Yes: Left justify<br><br>- No: Do not left justify |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Multiplier To Derive Supply Allocation Window | Number >= 0 | Null | You can set the Firm Supply Allocation window using the profile option MSC: Firm Supply Allocation Window or you can use the manufacturing lead-time and this profile option. If you specify any value for this profile option, the information you enter for MSC: Firm Supply Allocation Window is ignored. If the product of this multiplier and cumulative manufacturing lead-time is a fractional quantity, the number is rounded up to the next integer. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Net All Firm Supplies Before Creating Planned Order | No,<br><br>All Supply Types,<br><br>Only for Work Orders,<br><br>Only for Purchase and Transfer Supplies,<br><br>All Supply Types Including By-product Supplies | No | Nets all firmed supply available in any future period before creating new planned orders. The profile option treats firmed planned orders the same as real supplies.<br><br>The values are:<br><br>- No: Does not net firm supplies before creating planned orders.<br><br>- All Supply Types: Net all firm supplies before creating planned orders. This includes work orders, purchase orders, transfer supplies and firm planned orders for these supplies.<br><br>- Only for Work Orders: Net only firm discrete jobs before creating planned orders.<br><br>- Only for Purchase and Transfer Supplies: Net all firm purchased and transfer supplies before creating planned orders.<br><br>- All Supply Types Including by-product/co-product supplies: Nets all firm supplies (including by-product and co-product supplies) before creating planned orders. The planning engine does not reschedule by-product and co-product supplies, they follow the scheduling of the supply that generates them. This choice allows these supplies to be netted for earlier demands. This may cause late demands, but may reduce overall inventory. |
| MSO: Network routing cycle time coefficient | Not used | Not used | Not used |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Network routing fixed time window | Not used | Not used | Not used |
| MSO: Nfl Backward Compression Pct | Not used | Not used | Not used |
| MSO: Nfl Forward Compression Pct | Not used | Not used | Not used |
| MSO: Number of Decomposition Groups in Optimization | Integer > 0 | NULL | Before you change this, contact Oracle Support for a development recommendation. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Number of Demand Groups for Optimization | Integer > 0 | 50 | You can use this profile option only for constrained plans that have decision rules enabled. In the case of cost-based optimization, the planning engine considers the demand lateness penalty cost instead of demand priorities.<br><br>Use this profile option to instruct the planning engine how to group demand into demand groups by priority ranges. For example, the demand priority values are from 1 to 100 and you set this profile option to 5. The planning engine assigns demands to five demand groups. Each group includes a range of 20 priorities - 1 to 20, 21 to 40, 41 to 60, 61 to 80, 81 to 100.<br><br>The planning engine searches for supplies that satisfy all demands having priorities in the same range. It satisfies demands in the higher priority range first. For multiple demands in the same priority range, the planning engine satisfies demands based on individual demand priorities.<br><br>Note that too many groups may affect performance. |
| MSO: Number of Threads for Optimization | Integer > 0 | Null | This profile option applies to 64-bit platforms only. Values greater than 1 invoke running optimized plans in a multi-threaded mode. This enables various optimization problems to be solved in parallel so that run time may be reduced. However, multi-threading increases the CPU usage and memory consumption. You can control the load on CPU by specifying the number of threads that you want to run in parallel. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Optimization Advanced Start | 0 and 1 | Null (internally defaulted as a value of 1) | This profile option controls whether the planning engine should be set to use advanced start (profile option value 1). This means that the optimization engine uses certain values from a previous run of the plan; it sees improved performance by reusing certain computations.<br><br>This is an optimization engine profile option and should not be changed under ordinary circumstances. |
| MSO: Optimization Daily Aggregation Buckets | Integer > 0 | Null | Specifies the Daily Aggregation Time Bucket to be used by the Planning Engine if the profile option MSO: Use Optimization Internal Time Aggregation is set to True. |
| MSO: Optimization Weekly Aggregation Buckets | Integer > 0 | Null | Specifies the Weekly Aggregation Time Bucket to be used by the Planning Engine if the profile option MSO: Use Optimization Internal Time Aggregation is set to True. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Order Modifier Maximum Searching Depth | Integer | 3 | Use this profile option to specify the maximum number of lower levels in the supply chain that the planning engine searches for alternate sources, bills of material, components, and resources to resolve a shortage. The shortages often occur when the planning engine rounds down planed orders with respect to capacity constraints and order modifiers.<br><br>The planning engine searches this many levels down both in:<br><br>- The organization with the shortage<br><br>- Organizations that supply the short organization with the short item<br><br>Oracle suggests that:<br><br>The solution quality improves with higher numbers while the processing time worsens with higher numbers.<br><br>For each integer increase in the profile option, processing time worsens at a much higher rate than solution quality improves.<br><br>You consider the tradeoffs and tend towards lover rather than higher numbers. |
| MSO: Overlap Activities by MTQ | Yes/No | No | Use profile option MSO: Overlap Activities by MTQ to control overlapping activities inside one operation. Valid values are:<br><br>- Yes: Allow overlapping activities inside one operation.<br><br>- No: Prevent overlapping activities inside one operation. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Peg By-product Supplies | Yes/No | Yes | Yes: Pegging is considered when scheduling operations with by-product supply. Scheduling of these operations respects demand for the by-product and demand for the main product. After scheduling these operations, the by-product supply date is updated to reflect the operation scheduled date.<br><br>No: By-Product Supplies are not pegged to demands For constraint-based plans. Set this profile option to No with items that are components on the supply chain bill of materials and that are by-product on a different level of the same supply chain bill of materials. Selecting No prevents the planning engine from continuous looping between the component demand and the by-product supply. |
| MSO: Penalty Basis for Changeovers | Changeover Time<br><br>Changeover Penalty | | Indicates whether the changeover time of the changeover penalty is to be used as the criterion for calculation the ideal sequence.<br><br>If Changeover Time, ASCP uses the relative changeover times between setup types as the criteria for deciding on the ideal sequence of setup types.<br><br>If Changeover Penalty, ASCP uses the relative changeover penalties between setup types as the criteria for deciding on the ideal sequence of setup types. |
| MSO: Penalty Cost Factor for Exceeding Item Material Capacity Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Penalty Cost Factor for Exceeding Material Capacity | Number >= 0 | Null | Defines a penalty cost factor for exceeding material capacity. |
| MSO: Penalty Cost Factor for Exceeding Material Capacity Flexfield Attribute | Number | Automatically generated to denote flexfield segment holding the penalty factor | This profile option stores the item flexfield segment that holds the penalty cost factor for exceeding material capacity. The collections process Create Planning Flexfield concurrent program captures the segment when it first runs during installation. |
| MSO: Penalty Cost Factor for Exceeding Org Material Capacity Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |
| MSO: Penalty Cost Factor for Exceeding Org Resource Capacity Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |
| MSO: Penalty Cost Factor for Exceeding Org Transportation Capacity Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |
| MSO: Penalty Cost Factor for Exceeding Resource Capacity | 0 and 1 | Null (internally defaulted as a value of 1) | Denotes a factor for plan profit computations that is invoked only when the plan profit parameter for optimization has a value greater than 0. The penalty cost factor is multiplied by the resource cost to give the cost of overloading a particular resource. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Penalty Cost Factor for Exceeding Resource Capacity Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |
| MSO: Penalty Cost Factor for Exceeding Transportation Capacity Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |
| MSO: Penalty Cost Factor for Late Demands | Number > 0 | None | Defines a penalty cost factor common to all demands. The demands include sales orders, forecasts and safety stock. Can be defined at the site level. |
| MSO: Penalty Cost Factor for Late Forecasts Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |
| MSO: Penalty Cost Factor for Late Item Demands Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |
| MSO: Penalty Cost Factor for Late Org Demands Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Penalty Cost Factor for Late Sales Orders Flexfield Attribute | Integer >= 0 | Null | Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes, page A-1 for more information. |
| MSO: Penalty Multiplier Outside Unconstrained Window | | | This profile option specifies an extra lateness penalty when scheduling later than the unconstrained latest possible completion time for a given activity. |
| MSO: Postpone Use of Alternates to Latest Possible Time | Yes/No | No | Use this profile option to specify when the planning engine should plan alternate supplies. Valid values are<br>- Yes: Postpone planning them until the last possible moment<br>- No: Plan them when you need to do so to create the best plan for the item |
| MSO: Preprocessing Aggregator Fill | Integer > 0 | See Automatic Calculations, page A-1. | Preprocessor aggregator fill. |
| MSO: Preprocessing Aggregator Limit | Integer > 0 | See Automatic Calculations, page A-1. | Parameter to control preprocessing aggregator limit. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Preprocessing Flag for LP Matrix | 0,1 & 2 | See Automatic Calculations, page A-1. | Use his profile option to control the LPs where the planning engine triggers the pre-solve step. The pre-solve step helps identify redundant constraints and variables, so it helps reduce overall solve time. Enabling pre-solve solves some problems faster than solving from basis. The valid values are:<br>- 0: Turn off pre-solve for all LPs<br>- 1: Turn on pre-solve for some LPs<br>- 2: Turn on pre-solve for all LPs and turn off advanced start for all LPs |
| MSO: Preprocessor LP Compression | - | - | Not used. |
| MSO: Primal Simplex Parameter | -1, 0, 1, 2, 3, and 4 | See Automatic Calculations, page A-1. | Gradient parameter for primal simplex algorithm. |
| MSO: Primal/Dual Preprocessing Reduction | 0, 1, 2, and 3 | See Automatic Calculations, page A-1. | Used by optimization. |
| MSO: Pull push base | Positive Integers | 1 | Each time the planning engine needs to search for a new spot to schedule it looks ahead by a certain time period that is dictated by the settings of the profile options MSO: Push Pull Base and MSO: Push Pull Offset.<br>For more details, see Requirement causes resource overload exception, page 15-29. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Pull push offset | Positive integer in mnutes | 1440 | Each time the planning engine needs to search for a new spot to schedule it looks ahead by a certain time period that is dictated by the settings of the profile options MSO: Push Pull Base and MSO: Push Pull Offset.<br><br>For more details, seeRequirement causes resource overload exception, page 15-29 . |
| MSO: Queue Time Factor | Number >= 0 | None | Increases item lead-time in optimization, so that lead-time values are close to those used in the Scheduling Engine. Optimization lead-time is padded to include queue time. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Reschedule Jobs Out to Reduce Inventory Carrying Costs | Yes/No | Yes | This profile option involves right justifying standard and lot-based discrete jobs when rescheduling them out to line up with other supplies for the job. When there is a constraint, the planning engine always moves the jobs based on the constraint. When there are no constraints, you have the option to instruct the planning engine to right justify the jobs:<br><br>- Yes: The planning engine attempts to schedule the job as late as possible for one or more demands.<br><br>- No: The planning engine does not reschedule or right justify the job beyond its old due date. If there is existing capacity earlier than the old due date of the job, the planning engine may recommend a reschedule in.<br><br>This profile option does not apply to other order types, for example, purchase orders and purchase requisitions. |
| MSO: Reschedule Shared Supply to Influence Batching | Yes/No | No | Determines whether the Planning Engine schedules shared supplies early to avoid item-based resource constraints prior to batch resources. Valid values are Yes (considers whether scheduling shared supplies early will allow subsequent resource batching; this value improves the scheduled utilization of batch resources by considering earlier constraints) and No (schedules resource batching when supplies are available). |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Resource Adjustment Factor For Improved Offloading to Alternates | A number between and including 0 and 1 | Null (internally defaulted as a value of 1) | The factor that the planning engine uses to reduce the resource availability when making the sourcing decision. For example, if the factor is set to 0.8, the resource availability is reduced by 20% and the planning engine uses more of the alternate processes. Then, at the time of scheduling, planning has more flexibility. |
| MSO: Resource Batching Strategy | Nearest Date/ Level Utilization | Nearest Date | Selects order scheduling strategy used in resource batching. Valid values are Nearest Date (schedules orders to load resources nearest the due date of the order) and Level Utilization (schedules orders to level utilization of the resource). |
| MSO: Setup Pattern Calculation Window (multiplier of Resource Sequencing window | any number | 1 | A window is calculated by multiplying the Resource's Sequencing window value by the value in this profile.<br><br>The relative mix of various setup types that fall into this window is calculated and then applied to each resource sequencing window. When MSO: Use Sequencing Template is set to Yes, ASCP uses this calculated mix of setup types to determine the desired spots. |
| MSO: Resource Group for the Line Flexfield Attribute | Integer >= 0 | Null | Stores the name of the flexfield column that contains the value in the corresponding table. This setup is only performed during application install. See Flexfield Attributes, page A-1 for more information. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Schedule Across Breaks | Yes/No | Yes (can schedule across break) | Determines whether the scheduling engine starts an activity before a break and ends it after the break. If set to No, verify that every activity has enough resource in one shift (otherwise the activities are moved to the end of the horizon). Can be defined at the site level. |
| MSO: Schedule PO in FIFO | Yes | n/a | n/a |
| MSO: Schedule Simultaneous Resources Across Breaks | Yes/No | Yes (can schedule across break) | This profile option behaves the same as profile option MSO: Schedule Across Breaks. However, it only applies to simultaneous resources. |
| MSO: schedule window width | Integers >=0 | 8 days | Defines time window (days) that the scheduling engine looks for its primary resource. If the primary resource is not in this window, the scheduling engine moves to an alternate resource. Can be defined at the site level. |
| MSO: Scheduler Time Step | - | - | Reserved for future use. |
| MSO: SCO Dual Variables Tolerance | Numeric | 0.000000001 | Parameter used internally for optimization. Consult Oracle Development and Oracle Support before modifying this profile option. |
| MSO: SCO Reduced Cost Tolerance | Numeric | 0.000000001 | Parameter used internally for optimization. Consult Oracle Development and Oracle Support before modifying this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Simplex Feasibility Tolerance | A number between e-9 and e-4 | See Automatic Calculations, page A-1. | Parameter to set the simplex feasibility tolerance. |
| MSO: Simplex Optimality Tolerance | A number between e-9 and e-4 | See Automatic Calculations, page A-1. | Parameter to set the optimality tolerance for the simplex algorithm. |
| MSO: Simplex Perturbation Constant | A number greater than e-8 | See Automatic Calculations, page A-1. | Parameter to set the simplex perturbation constant. |
| MSO: Simplex Perturbation Limit | Integer > 0 | See Automatic Calculations, page A-1. | Parameter for the simplex perturbation limit. |
| MSO: Simplex Perturbation Parameter | 0 and 1 | See Automatic Calculations, page A-1. | Provides a perturbation constant for the Planning Engine. Sets the amount by which the Planning Engine perturbs the upper and lower bounds on the variables when a problem is perturbed.<br><br>Before you change this, contact Oracle Support for a development recommendation. |
| MSO: Simplex Presolve Limit | -1, 0, and integer > 0 | See Automatic Calculations, page A-1. | Parameter to set the limit on the number of pre-solves. |
| MSO: Simplex Singularity Repair Limit | Integer > 0 | See Automatic Calculations, page A-1. | Parameter to set the simplex singularity repair limit. |
| MSO: Simultaneous Resource Overlap Mode | - | - | Not used. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Slack Hours for Batch Resource | Integer | Null | This profile value is used by Oracle Advanced Supply Chain Planning to right justify the maximum end date for a scheduled batch resource.<br><br>The value specified is the amount of slack time (in hours) to delay scheduling the resource so that other supplies can be included in the same batch even though they cannot be scheduled as early as the original supply. This means that the batch must wait for the constrained supply. |
| MSO: Solve Dual Problem | 0 and 1 | See Automatic Calculations, page A-1. | Controls whether the Planning Engine solves the dual problem or the primal problem. |
| MSO: Sourcing Allocation Window | integer >= 1 | 7 | Specifies the Allocation Percentages Satisfaction Period. The constraints are enforced in a rolling horizon manner. Used with Enforce Sourcing Constraints enabled in specific plan options. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Split Planned Orders for Assigned Units | Yes / No | Yes | This profile option is used by Oracle Advanced Supply Chain Planning optimized plans only. It specifies if the planning engine should attempt to split planned orders such that they can be scheduled within a specific day.<br><br>The valid values are:<br><br>- Yes: Create more planned orders with quantities that can be scheduled by the resource units available within a given day.<br><br>- No: The planning engine generates larger planned orders that may require a resource duration spanning several days.<br><br>Note that the maximum number of resource units at the routing level will always be respected. |
| MSO: Spread Resource Consumption Within Optimization | Yes/No | Null (interpreted as No) | This profile specifies how the optimization engine should model resource consumption is modeled in optimization. Valid values are:<br><br>- Yes: Consume resources at the first operation. This value provides improved optimization engine performance.<br><br>- No: Consume resources at the operation to which they belong. This value provides improved optimization engine accuracy. |
| MSO: Substitute Item Penalty | Number > 0 | None | Defines an internal penalty weight for substitute item objective in supply chain optimization. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Supply Reschedule Window Size for Safety Stock Pegging | Integer > 0 | Null | This profile options provides an estimate of the number of days by which the supply and its associated demand (dependent demand) moves due to constraints. You can use this profile option to specify the number of days a specific supply can satisfy safety stock demand. |
| MSO: Supply Window Size | Integer >= 0 | Null | During priority pegging, supplies are sorted based on supply type, then smallest quantity, then by schedule date. The highest priority demands from the first demand window will peg to the sorted supplies in the first window if possible. When the supplies from one window are all pegged, the demand will peg to the highest sorted supply in the next window until all demands are pegged. This is stated as the number of calendar days including non-workdays. Null is treated as 1 in the Planning Engine.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine uses this profile option as value 1 day. |
| MSO: Target Inventory Level % of Safety Stock | Between 0 and 100% | - | Use this option to specify target inventory levels. If no other method of calculation is defined for an item-organization target inventory level, the levels are based on the specified percentage of the safety stock level. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Transfer Quantity Threshold for Enforcing Hard Links | Null, Number between and including 0 and 1 | 0 | Use this profile option to instruct the planning engine to ignore the hard link constraints if a transfer quantity is less than or equal to this percent threshold of the corresponding order quantity. Valid values are<br>- Number between 0 and 1: Ignores hard link constraints for transfer quantities less than or equal to this percent threshold<br>- Null: Respects all hard link constraints regardless of the size of the transfer quantities |
| MSO: Upper Limit for Maximum Time Offset for Hard Links | Integer (including 0), Null | Null | Use this profile option to set an upper limit for the maximum time offset. If a maximum time offset is higher than this number, the planning engine uses this number instead of what you set. Valid values are:<br>- Integer (including 0): Use this number<br>- Null: Use 10,000,000 |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Use Breaks in Calculation of Unconstrained Scheduling Windows | Yes/No | Yes | The planning engine calculates an unconstrained scheduling window for each resource activity and supply in a plan. The scheduling window is defined by the dates:<br><br>- Unconstrained Earliest Possible Start Time (UEPST)<br><br>- Unconstrained Earliest Possible Completion Time (UEPCT)<br><br>- Unconstrained Latest Possible Start Time (ULPST)<br><br>- Unconstrained Latest Possible Completion Time (ULPCT).<br><br>If this profile option is Yes, the planning engine does not set any of these dates during a break even if the calculation places it there.<br><br>If this profile option is No, the planning engine does set any of these dates during a break if the calculation places it there.<br><br>This is a user level profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Use Collections Start Time | Yes<br>No,<br>Use Input Demand Plan Start Time or Collections Start Time,<br>Use Input Demand Plan Start Time or Plan Start Time | Yes | Use this profile option to coordinate plan start date and collections start time. This affects how the plan calculates resource availability. Valid values are:<br>- No: Always use plan start time.<br>- Yes: Use collections start time.<br>- Use Input Demand Plan Start Time or Collections Start Time: If there is an input demand plan, the planning engine uses the Input Demand Plan Start Time. Otherwise, it uses the Collections Start Time.<br>- Use Input Demand Plan Start Time or Plan Start Time: The planning engine uses the Input Demand Plan Start Time. Otherwise, it uses the Plan Start Time. |
| MSO: Use Effectivity Date to Infer End Item Substitute Priority | Yes/No/Null | Null | Use this profile option to specify the method by which the planning engine selects end-item substitute items. Valid values are:<br>- Yes: Use effectivity date from the substitute list for the demanded item. The substitute item with the earliest effectivity date has the highest priority in the substitution chain.<br>- No/Null: Use substitution distance from the demanded item. The substitute item with the least distance has the highest priority in the substitution chain. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Use Existing Supplies in Alternate BOM/Subs. | 0, 1, 2, 3 | 0 | Use this profile option to specify how the planning engine should use supplies of substitute components and supplies of components in alternate bills of material to satisfy demands. Valid values are:<br><br>- 0: Use supplies of both substitute components and supplies of components in alternate bills of material<br><br>- 1: Use supplies of substitute components; do not use supplies of components in alternate bills of material<br><br>- 2: Do not use supplies of either substitute components or supplies of components in alternate bills of material<br><br>- 3: Use supplies of components in alternate bills of material; do not use supplies of substitute components |
| MSO: Use Item Shelf Life Days in Scheduling Buy or Make Orders | Yes/No | No | Use this profile option to instruct the planning engine whether to use the item shelf life days as a backup maximum time offset between the operation that produces an item and the operation that consumes it. Valid values are:<br><br>- Yes: If the operation that produces the item does not have a maximum time offset, use item shelf life days as the maximum time offset.<br><br>No: Do not use item shelf life days as a backup maximum time offset. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Use of Assigned Units in Scheduling | Variable / Fixed at Routing Value | Variable | Controls the number of resource units to be used when scheduling a resource activity. Valid values are:<br><br>- Variable: Permits a choice ranging between a minimum of one unit and a maximum value equivalent to the assigned units specified on the routing for the item.<br><br>- Fixed at Routing Value: Forces the scheduling engine to always choose the number of assigned units specified in the routing when scheduling a resource activity. It is recommended that you choose this option when you do not need to use the flexibility of the Variable option.<br><br>**Note:** The assumption that the activity duration is less when more units are chosen is only valid for the basis type of Item specified in the Operation > Resources form. |
| MSO: Use Optimization and Decision Rules for Simulation | Yes/No | No | For online planner sessions against constrained plans with decision rules or optimized plans, select:<br><br>• Yes: To rerun the optimization and decision rules-based decisions during the online planner session<br><br>• No: To retain the optimization and decision rules-based decisions from the initial planning run for the online planner session |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Use Safety Lead Time | Yes/No | No | Use this profile option to instruct the planning engine how to plan material to be completed early as a safety buffer. Values are:<br><br>- Yes: Use safety lead-time planning. The value in item attribute Safety Stock Percent is the safety lead-time in days; for example, if safety lead-time is two days, enter 200.<br><br>- No: Use non-transient / transient safety stock planning. The value in item attribute Safety Stock Percent is a percent of demand. |
| MSO: Use SCO Time Aggregation | True/False | False | Determines whether the Planning Engine should use different aggregate time buckets than specified in the aggregation settings of the plan options. The Planning Engine use the values defined in the plan options. You can specify large values for daily and weekly buckets for Planning Engine output, but this increases Planning Engine calculation time. Valid values are: True: The Planning Engine uses aggregate time buckets specified in MSO: Optimization Daily Aggregation Buckets and MSO: Optimization Weekly Aggregation Buckets. The period time bucket is derived. False: The Planning Engine uses the same aggregate time buckets as specified in the Aggregation tab of the Plan Options window. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Use Sequencing Template | Yes/No | No | This profile option specifies whether Oracle Advances Supply Chain Planning tries to schedule activities in accordance with a determined preferred sequence of activities.<br><br>If Yes, the planning engine determines a preferred sequence of activities on resources and tries to schedule activities in accordance with the sequence. This setting is recommended if the sequence dependent setup resource is the primary bottleneck.<br><br>If No, the sequence of activities is determined more dynamically when scheduling other activities. This setting is recommended if there are multiple bottleneck resources. |
| MSO: Use Shift Definitions When Scheduling Lead Times | Yes/No | No | Determines whether the planning engine needs to take into account shift times for calculating lead-times on shipping, receiving, and carrier calendars. Values are:<br><br>- Yes: Considers shift definitions for calculating lead-times on calendars in case of constrained plans.<br><br>- No: Shift definitions are not considered when offsetting lead-times on calendars.<br><br>If the plan planning mode is Constrained (Without Detailed Scheduling), the planning engine does not use this profile option. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSO: Use up existing supply of primary components before substitute | Yes/No | Yes | Use this profile option to specify whether to use the supply of substitute components or the primary component first. Valid values are:<br>- Yes: Use the supply of the primary component before using the supply of the substitute components<br>- No: Use the supply of the substitute components before using the supply of the primary component |

## MSR Profile Options

The following table lists and defines the MSR profile options in Oracle Advanced Planning.

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSR: Budget Category Set | Null or any category sets | Null | Use this profile option to specify the categories that you can use when defining budgets in Oracle Inventory. Valid values are:<br>- Null: Define budgets with any category.<br>- Any category set: Define budgets only with categories that are in the category set. |
| MSR: Postponement Factor | Integers >= 0 | 10 | Specifies maximum depth in the bill of materials and sourcing tree to which uncertainty must be postponed. |

| Profile Option Name | Valid Values | Default Value | Description |
|---|---|---|---|
| MSR: Safety Stock Holding Strategy | Destination Organization or Source Organization | Source Organization | Specifies where safety stock should be held when the carrying cost is the same for an item in the destination organization and a source organization. A 0 value causes the safety stock to be held at the destination organization. A 1 value causes the safety stock to be held at the source organization. |
| MSR: Probability Distribution Type | Cumulative Probabilities/ Probabilities | Probabilities | Determines probability distribution type associated with forecast sets as input to Oracle Inventory Optimization. Valid Values are: Probabilities: Demand uncertainty is stated in terms of a (non-cumulative) probability distribution. Cumulative Probabilities: Demand uncertainty is stated in terms of a cumulative probability distribution. |

# B

# Flexfields

This appendix covers the following topics:

- Overview of ASCP Flexfields
- Applying Flexfields to Different Versions of Oracle RDBMS

## Overview of ASCP Flexfields

The following flexfields are used to enter penalty cost data at the appropriate levels for independent demands, items, and resources.

**Penalty Cost Factor for Late Demands (at the demand level)**

Defined via a flexfield in the Forecast Items form (for forecasts) or in the Scheduling region of the Sales Orders form (for sales orders). This will be stored in the table OE_ORDER_LINES_ALL and MRP_FORECAST_DATES.

**Penalty Cost Factor for Late Demands (at the item level)**

Defined via a flexfield in the Items form. This will be stored in the table MTL_SYSTEM_ITEMS.

**Penalty Cost Factor for Late Demands (at the org level)**

Defined via a flexfield in the Organizations Parameters form. This will be stored in the table MTL_PARAMETERS.

**Penalty Cost Factor for Exceeding Material Capacity (at the item/vendor level)**

Defined via a flexfield in the Supplier-Item Attributes form (in the header region). It will be stored in PO_ASL_ATTRIBUTES.

**Penalty Cost Factor for Exceeding Material Capacity (at the item level)**

Defined via a flexfield in the Items form. It will be stored in MTL_SYSTEM_ITEMS.

**Penalty Cost Factor for Exceeding Material Capacity (at the org level)**

Defined via a flexfield in the Organizations Parameters form. This will be stored in the table MTL_PARAMETERS.

**Penalty Cost Factor for Exceeding Resource Capacity (at the resource level)**

Defined via a flexfield in the Department Resources form. This will be stored in the table BOM_DEPARTMENT_RESOURCES.

**Penalty Cost Factor for Exceeding Resource Capacity (at the org level)**

Defined via a flexfield in the Organizations Parameters window. This will be stored in the table MTL_PARAMETERS.

**Penalty Cost Factor for Exceeding Transportation Cap. (ship method level)**

Defined via a flexfield in the Inter-location Transit Times form. It will be stored in MTL_INTERORG_SHIP_METHODS.

**Penalty Cost Factor for Exceeding Transportation Capacity (at the org level)**

Defined via a flexfield in the Organizations Parameters form. This will be stored in the table MTL_PARAMETERS.

Other APS flexfields are:

**Aggregate Resource for a Resource**

This is defined via a flexfield in the Department Resources form. It is based on the existing flexfield Aggregate Resource Id. It is stored in the table BOM_DEPARTMENT_RESOURCES.

**Priority for Substitute Items**

This is defined in the Substitute Components form. This is stored in the table BOM_SUBSTITUTE_COMPONENTS.

**Priority for MDS Entries**

This is defined via a flexfield in the Master Demand Schedule Entries form. It is stored in the table MRP_SCHEDULE_DATES.

**Service Level (at the item level)**

This is defined via a flexfield in the Items form. It is stored in the table MTL_SYSTEM_ITEMS.

**Service Level (at the org level)**

This is defined via a flexfield in the Organization Parameters form. It is stored in the table MTL_PARAMETERS.

**Service Level (at the customer level)**

This is defined via a flexfield in the Customer Entries form. It is stored in the table RA_CUSTOMERS.

## Applying Flexfields to Different Versions of Oracle RDBMS

Oracle ASCP and Oracle Global Order Promising checks to whether you have existing flexfield. If you do, it does not overwrite your existing settings.

Transportation Capacity

Oracle ASCP and Oracle Global Order Promising provides fields in the Inter-Location Transit Time window for setting load weight and load volume.

Creating Demand Priority Flexfield Numbers Manually

**To Create Demand Priority Flexfield Number Manually**

1. From system administrator responsibility, navigate to Application > Flexfields > Descriptive > Segments.
2. Double-click Segments.

   The Descriptive Flexfield Segments window appears.
3. For the Application field, click Find and select Oracle Master Scheduling/MRP MRP_SCHEDULE_DATES.
4. Click Segments.

   The Segments Summary window appears.
5. Click New.

   Fill in the fields as shown in the following table:

| Field | Enter |
|---|---|
| Name | Demand Priority |
| Window Prompt | Demand Priority |
| Column | An attribute column (for example, attribute 10) |
| Number | 1 |

6. Click Value Set.

   The Value Set window appears.
7. For Value Set Name, click Find.

   The Find Value Sets window appears.
8. From list of values, select 7/Number.
9. Click OK.

**To create Profile**

1. Changes responsibility to Application Developer. Select Profile.
2. Fill in the fields as shown in the following table:

| Fields | Enter |
|---|---|
| Name | MRP_DMD_PRIORITY_FLEX_NUM |
| Application | Select Oracle Master Scheduling/MRP from List of Values |
| User Profile Name | Same as Name |
| Description | MRP:demands flexfield attribute for demand priority |

3. Save and close this window.
4. Switch responsibilities back to System Administrator.
5. Select Profile > System.

   The Find System Profile Values screen appears.
6. In the Profile filed, find the Profile MRP_DMD_PRIORITY_FLEX_NUM from the List of Values.
7. Click Site.
8. Click Find.

   The System Profile Values screen appears.
9. In the site column, enter the number 10 (or whatever number you chose for column).

# C

# Control Files

This appendix covers the following topics:

- Setup Data Control Files
- Supply Control Files
- Demand Control Files
- User-Defined Keys

## Setup Data Control Files

The following table shows the setup data control files.

| Business Object | Flat File Loader's File Name Option | Control Files |
|---|---|---|
| Bill of Materials | Bills of Material Headers | MSC_ST_BOMS.ctl |
| Bill of Materials | Bills of Material Components | MSC_ST_BOM_COMPONENTS.ctl |
| Bill of Materials | Component Substitutes | MSC_ST_COMPONENT_SUBSTITUTES.ctl |
| Items | Items | MSC_ST_SYSTEM_ITEMS.ctl |
| Routings | Routings | MSC_ST_ROUTINGS.ctl |
| Routings | Routing Operations | MSC_ST_ROUTING_OPERATIONS.ctl |

| Business Object | Flat File Loader's File Name Option | Control Files |
|---|---|---|
| Routing | Operation Resources | MSC_ST_OPERATION_RESOURCES.ctl |
| Resources | Resources | MSC_ST_DEPARTMENT_RESOURC.ctl ES |
| Resource | Resource Availability | MSC_ST_RESOURCE_CHANGES.ctl |
| Resource | Resource Shifts | MSC_ST_RESOURCE_SHIFTS.ctl |
| Resource | Resource Groups | MSC_ST_RESOURCE_GROUPS.ctl |
| Projects and tasks | Project Tasks | MSC_ST_PROJECT_TASKS.ctl |
| Unit of Measure | Units of Measure | MSC_ST_UNITS_OF_MEASURE.ctl |
| Unit of Measure | Units of Measure Class Conversions | MSC_ST_UOM_CLASS_CONVERSIONS.ctl |
| Unit of Measure | Units of Measure Conversions | MSC_ST_UOM_CONVERSIONS.ctl |
| Item Categories | Category Sets | MSC_ST_CATEGORY_SETS.ctl |
| Item Categories | Item Categories | MSC_ST_ITEM_CATEGORIES.ctl |
| Sourcing Rules | Item Sourcing | MSC_ST_ITEM_SOURCING.ctl |
| Sourcing Rules | Inter Org Shipment Method | MSC_ST_INTERORG_SHIP_METHODS.ctl |
| Calendars | Calendars | MSC_ST_CALENDARS.ctl |

| Business Object | Flat File Loader's File Name Option | Control Files |
|---|---|---|
| Calendar | Workday Patterns | MSC_ST_WORKDAY_PATTERNS.ctl |
| Calendar | Shift Times | MSC_ST_SHIFT_TIMES.ctl |
| Calendar | Calendar Exceptions | MSC_ST_CALENDAR_EXCEPTIONS.ctl |
| Calendar | Shift Exceptions | MSC_ST_SHIFT_EXCEPTIONS.ctl |
| Resource Demand | Resource Requirements | MSC_ST_RESOURCE_REQUIREMENTS.ctl |
| Supplier Capacity | Item Suppliers | MSC_ST_ITEM_SUPPLIERS.ctl |
| Supplier Capacity | Supplier Capacities | MSC_ST_SUPPLIER_CAPACITIES.ctl |
| Supplier Capacity | Supplier Flex Fences | MSC_ST_SUPPLIER_FLEX_FENCES.ctl |
| Trading Partners | Trading Partners | MSC_ST_TRADING_PARTNERS.ctl |
| Trading Partners | Trading Partner Sites | MSC_ST_TRADING_PARTNER_SITES.ctl |
| Trading Partners | Location Associations | MSC_ST_LOCATION_ASSOCIATIONS.ctl |
| Trading Partners | Sub Inventories | MSC_ST_SUB_INVENTORIES.ctl |
| Supply Chain People | Partner Contacts | MSC_ST_PARTNER_CONTACTS.ctl |
| Demand Class | Demand Class | MSC_ST_DEMAND_CLASSES.ctl |

## Supply Control Files

The following table shows the control files for supplies.

| Business Object | Flat File Loader's File Name Option | Control Files |
|---|---|---|
| Work Order | Work Order Supplies | MSC_ST_SUPPLIES_WO.ctl |
| Requisitions | Requisition Supplies | MSC_ST_SUPPLIES_REQ.ctl |
| On hand | On-hand Supplies | MSC_ST_SUPPLIES_ONHAND.ctl |
| Intransit | Intransit Supplies | MSC_ST_SUPPLIES_INTRANSIT.ctl |
| Purchase Order | Purchase Order Supplies | MSC_ST_SUPPLIES_PO.ctl |
| Supply forecast | Plan Order Supplies | MSC_ST_SUPPLIES_PLAN_ORDERS.ctl |
| Supply forecast | Plan Order Designators | MSC_ST_DESIGNATORS_PLAN_ORDERS.ctl |

## Demand Control Files

The following table shows demand control files.

| Business Object | Flat File Loader's File Name Option | Control Files |
|---|---|---|
| Sales Orders | Sales Order Demands | MSC_ST_SALES_ORDERS.ctl |
| Demand Forecast | Forecast Demands | MSC_ST_DEMANDS_FORECAST.ctl |
| Demand Forecast | Forecast Designators | MSC_ST_DESIGNATORS_FORECAST.ctl |

| Business Object | Flat File Loader's File Name Option | Control Files |
|---|---|---|
| Master Demand Schedule | Demand Schedule Demands | MSC_ST_DEMANDS_MDS.ctl |
| Master Demand Schedule | Demand Schedule Designators | MSC_ST_DESIGNATORS_MDS.ctl |
| Work Order Component Demand | Work Order Component Demands | MSC_ST_DEMANDS_WORK_ORDER.ctl |
| Safety Stocks | Safety Stocks | MSC_ST_SAFETY_STOCKS.ctl |
| Reservations | Reservations | MSC_ST_RESERVATIONS.ctl |

## User-Defined Keys

COMPANY_NAME is required only if SCE is installed. For standalone APS, this is defaulted to -1.

The following table shows user-defined keys (UDK's) for various business objects.

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Item | MSC_ST_SYSTEM_ITEMS | SR_INSTANCE_CODE, ORGANIZATION_CODE, ITEM_NAME, COMPANY_NAME |
| BOM | MSC_ST_BOMS | SR_INSTANCE_CODE, ORGANIZATION_CODE, BOM_NAME (defaulted from ASSEMBLY_NAME if Null),<br>ASSEMBLY_NAME,<br>ALTERNATE_BOM_DESIGNATOR (null allowed), COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| BOM | MSC_ST_BOM_COMPONENTS | SR_INSTANCE_CODE, ORGANIZATION_CODE, BOM_NAME (defaulted from ASSEMBLY_NAME if Null),<br>ASSEMBLY_NAME,<br>ALTERNATE_BOM_DESIGNATOR (can be null),<br>OPERATION_SEQ_CODE (if null or character would be defaulted to 1),<br>COMPONENT_NAME, EFFECTIVITY_DATE,<br>DISABLE_DATE (can be null), COMPANY_NAME |
| BOM | MSC_ST_COMPONENT_SUBSTITUTES | SR_INSTANCE_CODE, ORGANIZATION_CODE, BOM_NAME (defaulted from ASSEMBLY_NAME if Null),<br>ASSEMBLY_NAME,<br>ALTERNATE_BOM_DESIGNATOR (can be null), OPERATION_SEQ_CODE (if null or character would be defaulted to 1), COMPONENT_NAME, SUB_ITEM_NAME, COMPANY_NAME |
| Categories | MSC_ST_CATEGORY_SETS | SR_INSTANCE_CODE, CATEGORY_SET_NAME, COMPANY_NAME |
| Categories | MSC_ST_ITEM_CATEGORIES | SR_INSTANCE_CODE,<br>ORGANIZATION_CODE, CATEGORY_SET_NAME, CATEGORY_NAME, ITEM_NAME, COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| UOM | MSC_ST_UNITS_OF_MEASURE | UOM_CODE,<br>UNIT_OF_MEASURE (if null would be defaulted by UOM_CODE), COMPANY_NAME |
| UOM | MSC_ST_UOM_CLASS_CONVERSIONS | ITEM_NAME,<br>FROM_UOM_CODE, FROM_UNIT_OF_MEASURE (defaulted from FROM_UOM_CODE if null),<br>TO_UOM_CODE, TO_UNIT_OF_MEASURE, (defaulted from TO_UOM_CODE if null)<br>COMPANY_NAME |
| UOM | MSC_ST_UOM_CONVERSIONS | ITEM_NAME,<br>UOM_CODE, UNIT_OF_MEASURE (defaulted from UOM_CODE if null), COMPANY_NAME |
| Demand Class | MSC_ST_DEMAND_CLASSES | SR_INSTANCE_CODE<br>DEMAND_CLASS, COMPANY_NAME, |
| Resources | MSC_ST_DEPARTMENT_RESOURCES | SR_INSTANCE_CODE, ORGANIZATION_CODE, RESOURCE_CODE, DEPARTMENT_CODE, COMPANY_NAME |
| Resources | MSC_ST_RESOURCE_SHIFTS | SR_INSTANCE_CODE, ORGANIZATION_CODE, RESOURCE_CODE, DEPARTMENT_CODE, SHIFT_NAME, COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Resources | MSC_ST_RESOURCE_CHANGES | SR_INSTANCE_CODE, ORGANIZATION_CODE, RESOURCE_CODE, DEPARTMENT_CODE, SHIFT_NUM, FROM_DATE, TO_DATE, FROM_TIME, TO_TIME, SIMULATION_SET, ACTION_TYPE, COMPANY_NAME |
| Resources | MSC_ST_RESOURCE_GROUPS | SR_INSTANCE_CODE,<br>COMPANY_NAME,<br>GROUP_CODE |
| Routings | MSC_ST_ROUTINGS | SR_INSTANCE_CODE,<br>ORGANIZATION_CODE,<br>ROUTING_NAME (defaulted from ASSEMBLY_NAME if Null),<br>ASSEMBLY_NAME,<br>ALTERNATE_ROUTING_DESIGNATOR (can be null), COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Routings | MSC_ST_ROUTING_OPERATIONS | SR_INSTANCE_CODE,<br>ORGANIZATION_CODE,<br>ROUTING_NAME (defaulted from ASSEMBLY_NAME if Null),<br>ASSEMBLY_NAME, OPERATION_SEQ_CODE (if null or character would be defaulted to 1),<br>ALTERNATE_ROUTING_DESIGNATOR (can be null), EFFECTIVITY_DATE,<br>DISABLE_DATE, COMPANY_NAME |
| Routings | MSC_ST_OPERATION_RESOURCES | SR_INSTANCE_CODE,<br>ORGANIZATION_CODE,<br>ROUTING_NAME (defaulted from ASSEMBLY_NAME if Null),<br>ASSEMBLY_NAME, OPERATION_SEQ_CODE (if null or character would be defaulted to 1), RESOURCE_SEQ_CODE (if null or character would be defaulted to 1),<br>RESOURCE_CODE, ALTERNATE_ROUTING_DESIGNATOR (can be null), ALTERNATE_NUMBER (can be null), COMPANY_NAME |
| Calendar | MSC_ST_CALENDARS | SR_INSTANCE_CODE, CALENDAR_CODE, COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Calendar | MSC_ST_CALENDAR_EXCEPTIONS | SR_INSTANCE_CODE, CALENDAR_CODE, EXCEPTION_DATE, COMPANY_NAME |
| Calendar | MSC_ST_WORKDAY_PATTERNS | SR_INSTANCE_CODE, CALENDAR_CODE, SHIFT_NAME, COMPANY_NAME |
| Calendar | MSC_ST_SHIFT_TIMES | SR_INSTANCE_CODE, CALENDAR_CODE, SHIFT_NAME, FROM_TIME, TO_TIME, COMPANY_NAME |
| Calendar | MSC_ST_SHIFT_EXCEPTIONS | SR_INSTANCE_CODE, CALENDAR_CODE, SHIFT_NAME, EXCEPTION_DATE, COMPANY_NAME |
| Material Supply (PO) | MSC_ST_SUPPLIES | SR_INSTANCE_CODE, ORDER_NUMBER, PURCH_LINE_NUM, ORDER_TYPE = 1(PO),8(PO Recv.), COMPANY_NAME |
| Material Supply (Req.) | MSC_ST_SUPPLIES | SR_INSTANCE_CODE, ORDER_NUMBER, PURCH_LINE_NUM, ORDER_TYPE = 2, COMPANY_NAME |
| Material Supply (WO-Discrete/ Flow) | MSC_ST_SUPPLIES | SR_INSTANCE_CODE, ORDER_TYPE (3 - Discrete job, 7 - Non-standard job, 27-Flow schedule), WIP_ENTITY_NAME, COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Material Supply (WO- By Products) | MSC_ST_SUPPLIES | SR_INSTANCE_CODE, ORDER_TYPE (14 -Discrete job by-product, 15 - Nonstandard job by-product), ITEM_NAME, WIP_ENTITY_NAME, ORDER_NUMBER, (if null defaulted by WIP_ENTITY_NAME if null), OPERATION_SEQ_CODE (if null or character would be defaulted to 1), COMPANY_NAME |
| Material Supply (Plan Orders) | MSC_ST_SUPPLIES | SR_INSTANCE_CODE, ORDER_TYPE = 5 (Plan Orders),<br>ORGANIZATION_CODE, SCHEDULE_DESIGNATOR, SCHEDULE_LINE_NUM (or order number), COMPANY_NAME |
| Material Supply (Plan Orders) | MSC_ST_DESIGNATORS | DESIGNATOR, ORGANIZATION_CODE, SR_INSTANCE_CODE, COMPANY_NAME |
| Material Supply (On Hand) | MSC_ST_SUPPLIES | SR_INSTANCE_CODE, ORDER_TYPE = 18, ITEM_NAME, ORGANIZATION_CODE, SUBINVENTORY_CODE (can be null), LOT_NUMBER (can be null), PROJECT_NUMBER (can be null), TASK_NUMBER (can be null), UNIT_NUMBER (can be null), COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Material Supply (Intransit) | MSC_ST_SUPPLIES | SR_INSTANCE_CODE, ORDER_NUMBER, PURCH_LINE_NUM, ORDER_TYPE = 11 (Intransit), 12 - (Intransit Receipt), COMPANY_NAME |
| Material Demand (Sales Orders) | MSC_ST_SALES_ORDERS | SR_INSTANCE_CODE, SALES_ORDER_NUMBER, LINE_NUM, ORGANIZATION_CODE, COMPANY_NAME |
| Material Demand (WO-Discrete) | MSC_ST_DEMANDS | WIP_ENTITY_NAME, ITEM_NAME, OPERATION_SEQ_CODE (if null or character would be defaulted to 1), SR_INSTANCE_CODE, ORIGINATION_TYPE = 2 (Non Standard), 3 (Standard), ORGANIZATION_CODE, COMPANY_NAME |
| Material Demand (Master Demand Schedule) | MSC_ST_DEMANDS | ITEM_NAME,<br>DEMAND_SCHEDULE_NAME,<br>SCHEDULE_LINE_NUM (Null allowed - in case of item not being demanded on the same date more than once),<br>ORIGINATION_TYPE = 8 (MDS),<br>ORGANIZATION_CODE<br>SR_INSTANCE_CODE<br>SCHEDULE_DATE, COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Material Demand (Master Demand Schedule) | MSC_ST_DESIGNATORS | DESIGNATOR, ORGANIZATION_CODE, SR_INSTANCE_CODE, DESIGNATOR_TYPE =(1,2), COMPANY_NAME |
| Material Demand (Forecast) | MSC_ST_DEMANDS | ITEM_NAME,<br>FORECAST_DESIGNATOR,<br>SCHEDULE_LINE_NUM (Null allowed - in case of item not being demanded on the same date more than once),<br>ORIGINATION_TYPE = 29 (Forecast),<br>ORGANIZATION_CODE,<br>SR_INSTANCE_CODE,<br>SCHEDULE_DATE, COMPANY_NAME |
| Material Demand (Forecast) | MSC_ST_DESIGNATORS | DESIGNATOR, FORECAST_SET, ORGANIZATION_CODE, SR_INSTANCE_CODE, DESIGNATOR_TYPE =6, COMPANY_NAME |
| Safety Stocks | MSC_ST_SAFETY_STOCKS | SR_INSTANCE_CODE, COMPANY_NAME,<br>ORGANIZATION_CODE,<br>ITEM_NAME,<br>PERIOD_START_DATE |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Reservations | MSC_ST_RESERVATIONS | SR_INSTANCE_CODE,<br>COMPANY_NAME,<br>SALES_ORDER_NUMBER,<br>LINE_NUM,<br>ORGANIZATION_CODE |
| Resource Demand | MSC_ST_RESOURCE_REQUIREMENTS | WIP_ENTITY_NAME, ITEM_NAME, OPERATION_SEQ_CODE (if null or character would be defaulted to 1), SR_INSTANCE_CODE, ORGANIZATION_CODE, DEPARTMENT_CODE, RESOURCE_CODE, COMPANY_NAME |
| Supplier Capacity | MSC_ST_ITEM_SUPPLIERS | SR_INSTANCE_CODE, ORGANIZATION_CODE, VENDOR_NAME, VENDOR_SITE_CODE, ITEM_NAME, COMPANY_NAME |
| Supplier Capacity | MSC_ST_SUPPLIER_CAPACITIES | SR_INSTANCE_CODE, ORGANIZATION_CODE, VENDOR_NAME, VENDOR_SITE_CODE, ITEM_NAME, FROM_DATE, COMPANY_NAME |
| Supplier Capacity | MSC_ST_SUPPLIER_FLEX_FENCES | SR_INSTANCE_CODE, ORGANIZATION_CODE, VENDOR_NAME, VENDOR_SITE_CODE, ITEM_NAME, FENCE_DAYS, COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Trading Partners | MSC_ST_TRADING_PARTNERS | SR_INSTANCE_CODE, PARTNER_NAME<br>PARTNER_TYPE (1 - supplier, 2 - customer), COMPANY_NAME |
| Trading Partners | MSC_ST_TRADING_PARTNER_SITES | PARTNER_NAME, SR_INSTANCE_CODE, PARTNER_TYPE (1 - supplier, 2 - customer), TP_SITE_CODE, COMPANY_NAME |
| Trading Partners | MSC_ST_LOCATION_ASSOCIATIONS | PARTNER_NAME, SR_INSTANCE_CODE<br>PARTNER_TYPE<br>SR_TP_CODE<br>LOCATION_CODE,<br>ORGANIZATION_CODE, COMPANY_NAME |
| Trading Partners | MSC_ST_SUB_INVENTORIES | ORGANIZATION_CODE SR_INSTANCE_CODE<br>SUBINVENTORY_CODE, COMPANY_NAME |
| Trading Partners | MSC_ST_PARTNER_CONTACTS | PARTNER_NAME, SR_INSTANCE_CODE, PARTNER_TYPE, TP_SITE_CODE, COMPANY_NAME, NAME<br>(A partner site can have only one contact) |
| Organizations | MSC_ST_TRADING_PARTNERS | ORGANIZATION_CODE,<br>SR_INSTANCE_CODE,<br>PARTNER_TYPE (3 - organizations), COMPANY_NAME |

| Business Object | Table | User-Defined Key (UDK) |
|---|---|---|
| Sourcing Rules | MSC_ST_INTER_ORG_SHIP_METHODS | SR_INSTANCE_CODE<br>FROM_ORGANIZATION_CODE,<br>TO_ORGANIZATION_CODE,<br>SHIP_METHOD, COMPANY_NAME, |
| Sourcing Rules | MSC_ST_ITEM_SOURCING | SR_INSTANCE_CODE, ITEM_NAME (null allowed), CATEGORY_NAME (null allowed), SOURCING_RULE_NAME (null allowed), ASSIGNMENT_NAME (null allowed), RECEIPT_ORGANIZATION_CODE (null allowed if global sourcing), SOURCE_ORGANIZATION_CODE, SOURCE_PARTNER_CODE (either one of source organization code or partner code can be null), SOURCE_PARTNER_SITE_CODE (null allowed), EFFECTIVE_DATE, COMPANY_NAME |
| Projects & Tasks | MSC_ST_PROJECT_TASKS | SR_INSTANCE_CODE, ORGANIZATION_CODE, PROJECT_NAME, TASK_NAME (can be null if only project information is to be provided), COMPANY_NAME |

# Glossary

## A

### action message

Output of the planning process that identifies a type of action to be taken to correct a current or potential material, capacity, or transportation coverage problem.

### aggregate resources

The summation of all requirements of multi-department resources across all departments that use them.

### allocated ATP

The ability to allocate scarce supply (finished goods, key components or resources) to various demand channels. Whether you are performing ATP or CTP, the allocation is being considered for order promising.

### alternate bill of material

An alternate list of component items you can use to produce an assembly.

### alternate resources

Different resource or a group of different resources that can be used instead of the primary resource or group of resources in the job operation. Each resource, or group of resources, can form an alternate group. Alternative scheduling is when the primary group can be replaced by an alternate group in the job operation.

### alternate routing

An alternate manufacturing process you can use to produce an assembly.

### alternate unit of measure

All other units of measure defined for an item, excluding the primary unit of measure.

### API

An Application Programming Interface (API) is a published interface to accomplish a

business or scientific function. An API defines a contract to its users by guaranteeing a published interface but hides its implementation details.

### assemble-to-order (ATO)

An environment where you open a final assembly order to assemble items that customers order. Assemble-to-order is also an item attribute that you can apply to standard, model, and option class items. An item you make in response to a customer order.

### assembly

An item that has a bill of material. You can purchase or manufacture an assembly item. *See***assemble-to-order, bill of material.**

### assignment hierarchy

You can assign sourcing rules and bills of distribution to a single item in an inventory organization, all items in an inventory organization, categories of items in an inventory organization, a site, and an organization. These assignments have an order of precedence relative to one another.

### assignment set

A group of sourcing rules and/or bills of distribution and a description of the items and/or organizations whose replenishment they control.

### ATO

*See***assemble-to-order (ATO).**

### ATP

*See***available to promise (ATP).**

### availability

The quantity of the item is in stock (and not reserved) in the default location. Calculation is 'on-hand minus reserved.'

### available capacity

The amount of capacity available for a resource or production line.

### available to promise (ATP)

The quantity of current on-hand stock, outstanding receipts and planned production which has not been committed through a reservation or placing demand. In Oracle Inventory, you define the types of supply and demand that should be included in your ATP calculation. Refers to the ability to promise availability based on a pre-defined statement of current and planned supply.

### available-to-promise rule

A set of Yes/No options for various entities that the user enters in Oracle Inventory. The combination of the various entities are used to define what is considered supply and demand when calculating available to promise quantity.

## B

### basic ATP

This term is used to describe the task of performing an ATP check against a given organization.

### bill of distribution

Specifies a multilevel replenishment network of warehouses, distribution centers, and manufacturing plants.

### bill of material

A list of component items associated with a parent item and information about how each item relates to the parent item. Oracle Manufacturing supports standard, model, option class, and planning bills. The item information on a bill depends on the item type and bill type. The most common type of bill is a standard bill of material. A standard bill of material lists the components associated with a product or subassembly. It specifies the required quantity for each component plus other information to control work in process, material planning, and other Oracle Manufacturing functions. Also known as product structures.

### bill of resources

A list of each resource and/or production line required to build an assembly, model, or option.

### bottleneck resource

A resource whose capacity is less than the demand placed upon it. For example, a bottleneck machine or work center exists where jobs are processed at a slower rate than they are demanded.

## C

### calculate ATP

An item attribute the planning process uses to decide when to calculate and print available to promise (ATP) for the item on the Planning Detail Report. The planning process calculates ATP as Planned production - committed demand.

### calendar type

The period pattern used to define a manufacturing calendar.

### capable to deliver

A calculation that includes the transit lead time to meet your customers delivery needs Oracle Global Order Promising encompasses all these capabilities.

### capable to promise

CTP (Capable to Promise) refers to the additional ability to determine the availability of component materials and resources to meet unplanned demands.

### component

A serviceable item that is a part or feature in another serviceable item. Your customers cannot report service requests against this type of serviceable item directly. You can reference components when you enter service requests against actual end item-type serviceable items, or products. For example, if you define three inventory items, A, B, and C, where A and B are products (end item-type serviceable items) but C is a component (non-end item-type serviceable item) of A, you can enter service requests against A and B directly, but not against C. When you enter a service request against product A, you can reference C because it is a component of A.

### component demand

Demand passed down from a parent assembly to a component.

### component item

An item associated with a parent item on a bill of material.

### component yield

The percent of the amount of a component you want to issue to build an assembly that actually becomes part of that assembly. Or, the amount of a component you require to build plus the amount of the component you lose or waste while building an assembly. For example, a yield factor of 0.90 means that only 90% of the usage quantity of the component on a bill actually becomes part of the finished assembly.

### compression days

The number of days the planning process suggests you compress the order (in other words, reduce the time between the start date and the due date).

## D

### discrete job

Discrete jobs are used to manufacture assemblies using specific materials and resources within a start and end date. (Also known as work order or assembly order).

## E

### ECO

*See***engineering change order (ECO).**

### end item

Any item that can be ordered or sold.

### engineering change order (ECO)

A record of revisions to one or more items usually released by engineering.

## F

### firm planned order

An MRP-planned order that is firmed using the Planner Workbench. This enables the planner to firm portions of the material plan without creating discrete jobs or purchase requisitions. Unlike a firm order, a MRP firm planned order does not create a natural time fence for an item.

### forecast

An estimate of future demand on inventory items. A forecast contains information on the original and current forecast quantities (before and after consumption), the confidence factor, and any specific customer information. You can assign any number of inventory items to the forecast and use the same item in multiple forecasts. For each inventory item you specify any number of forecast entries.

## H

### highest level item

Item which sits on the top of the substitution chain. Usually this is the item, which is more functionally rich when compared to other items in the substitution chain.

## I

### independent demand

Demand for an item unrelated to the demand for other items.

### item routing

A sequence of manufacturing operations that you perform to manufacture an assembly. A routing consists of an item, a series of operations, an operation sequence, and operation effective dates. Edits to an Item Routing do not automatically update a job routing.

## J

### job routing

A snapshot of an item routing that has been assigned to a job. The routing is current on the day the job was created. Edits to a job routing do not automatically revert to the item routing.

## M

### make order

An order to manufacture an item. The following Oracle Applications entities are make orders:

- Batches (Oracle Process Manufacturing)

- Discrete jobs (Oracle Work in Process)

- Flow schedules (Oracle Flow Manufacturing)

- Jobs (Oracle Project Manufacturing)

- Jobs (Oracle Shopfloor Management (OSFM))

### master demand schedule

The anticipated ship schedule in terms of rates or discrete quantities, and dates. In ASCP, MDS is used as an input to the enterprise plan.

### material and resource constrained plan

In this plan, you can generate a plan that respects material, resource, and transportation constraints. However, no plan objectives are considered.

### material constrained plan

In this plan, all material constraints that can be specified in the form of a supply schedule from manufacturing plants or by statements of vendor capacity from vendors are considered. When material availability is not a concern, resource availability constraints are used only to generate exceptions arising due to over utilization or under-utilization of resources.

### multilevel supply chain ATP/CTP/CTD

This term is used to describe the task of performing a multilevel BOM availability check including finished goods, components, resource, supplier capacity and transportation lead time.

## N

### need by date

The need by date for the end item is the demand date. The need by dates for the dependent demands are calculated based on the lead-time offsets that are associated to the Items and routings used.

- For a constrained plan, the planning process uses planned orders and routings to derive the suggested due date.
- For an unconstrained plan, , the suggested due date is the need by date.

Therefore, any differences between the lead time offsets (need by date) and actual manufacturing time (suggested due date) created by the planning process, will show up in the form of multiple exception messages.

## O

### ODS

*See***operation data store (ODS).**

### operation data store (ODS)

All the tables that are the destination for the collected data from transaction systems (both Oracle Applications and legacy systems). This acts as the input for the snapshot portion of the planning process.

When we refer to ODS based ATP, we mean ATP based on collected data.

### optimized plan

An optimized and executable plan based on plan objectives as well as material, resource, and transportation constraints.

### original item

An item for which you received demand.

### overload

The condition where required capacity for a resource or production is greater than available capacity.

## P

### PDS

*See***planning data store (PDS).**

### pegging

The capability to identify for a given item the sources of its gross requirements and/or allocations. Pegging can be thought of as active where-used information.

### planned order

A suggested quantity, release date, and due date that satisfies net item requirements.

### Planner Workbench

A form that you use to research exception messages and to act on recommendations generated by the planning process for a plan. You can implement planned orders as discrete jobs or purchase requisitions, maintain planned orders, reschedule scheduled receipts, and implement repetitive schedules. You can choose all suggestions from a plan or only those that meet a certain criteria.

### planning data store (PDS)

All the tables within Oracle Advanced Supply Chain Planning--the ODS and other output tables from planning. When we refer to PDS-based ATP, we mean ATP based on planning output.

### planning exception set

An item attribute the planning process uses to decide when to raise planning exceptions for the item.

### planning horizon

The amount of time a schedule extends into the future.

### planning time bucket

A time period into which the planning engine accumulates time-phased data and nets (performs the gross to net explosion on) that data as a unit. The planning engine plans in planning time buckets of minutes, hours, days, weeks, and periods (months).

### planning time fence

An item attribute used to determine a future point in time inside which there are certain restrictions on the planning recommendations the planning process can make for the item.

### postprocessing lead time

The time required to receive a purchased item into inventory from the initial supplier receipt, such as the time required to deliver an order from the receiving dock to its final destination.

### preprocessing lead time

The time required to place a purchase order or create a discrete job or repetitive schedule that you must add to purchasing or manufacturing lead time to determine total lead time. If you define this time for a repetitive item, the planning process ignores it.

### processing lead time

The time required to procure or manufacture an item. For manufactured assemblies, processing lead time equals the manufacturing lead time.

### production activity control

The function of routing an dispatching the work to be accomplished through the production facility and of performing supplier control.

### projected available balance

Quantity on hand projected into the future if scheduled receipts are rescheduled or cancelled, and new planned orders are created as per recommendations made by the planning process. Calculated by the planning process as current and planned supply (nettable quantity on hand + scheduled receipts + planned orders) minus demand (gross requirements). Note that gross requirements for projected available includes derived demand from planned orders. Note also that the planning process uses suggested due dates rather than current due dates to pass down demand to lower level items. .

## R

### resource constrained plan

The planning engine considers all resource constraints such as available machine hours, transportation capacity, as well as alternate resources. It considers alternate bill of materials only in an optimized plan. Material constraints are used only to generate exceptions arising due to lack of material availability.

### routing

A sequence of manufacturing operations that you perform to manufacture an assembly. A routing consists of an item, a series of operations, an operation sequence, and operation effective dates.

## S

### safety stock

Quantity of stock planned to have in inventory to protect against fluctuations in demand and/or supply.

### scheduled receipt

A discrete job, repetitive schedule, non-standard job, purchase requisition, or purchase order. It is treated as part of available supply during the netting process. Schedule receipt dates and/or quantities are not altered automatically by the planning system.

### seiban manufacturing

A manufacturing environment in which demand and supply are identified by seiban numbers that peg supply to demand. This numbering system is widely used in Japan and Korea.

### shipping

The function that performs tasks for the outgoing shipment of parts, components, and products. It includes packaging, marking, weighing and loading for shipment.

### simultaneous resources

Two or more resources are scheduled to be working concurrently within a job operation. Each operation contains a scheduled sequence of activities and resources used in the operation. Simultaneity is implemented by having more than one resource used in an operation.

### sourcing rule

Specifies how to replenish items in an organization, such as purchased items in plants.

### substitution chain

Several revisions of items with strict predecessor and successor relationships amongst them. In some cases various revisions are modeled as different items forming a substitution chain.

### suggested dock date

The date you expect to receive an order (to arrive on the receiving dock) as suggested by the planning process.

### suggested due date

The date when scheduled receipts are expected to be received into inventory and become available for use as suggested by the planning process. *See also***need by date**

The need by date for the end item is the demand date. The need by dates for the dependent demands are calculated based on the lead-time offsets of the items and routings.

### suggested start date

The date you or your suppliers expect to start to manufacture the order as suggested by the planning process.

### supply chain

The processes from the initial raw materials to the ultimate consumption of the finished product linking across supplier-user companies. The functions inside and outside a company that enable the value chain.

### supply chain ATP

This term is used to describe the task of performing an ATP check against multiple sourcing organizations for a given customer request.

### supply chain management

The planning, organization, and controlling of supply chain activities.

### supplier flexfences

Specifies capacity tolerance percentages that vary over time for each source. This allows you to represent the ability of your supplier to flex capacity upwards based on the amount of advanced notice you provide.

## T

### time bucket

A unit of time used for defining and consuming forecasts. A bucket can be one day, one week, or one period.

## U

### unconstrained plan

The planning process assumes infinite material availability and resource capacity. Statements of material availability and resource capacity are used to generate exceptions. Demand priorities are included during the planning run to determine the appropriate pegging relationships between supply and demand.

### underload

A condition where required capacity for a resource or production is less than available capacity.

## W

### workday calendar

A calendar that identifies available workdays for one or more organizations. The planning process plans and schedules activities based on an entity's available workdays.