

# **Oracle® Advanced Supply Chain Planning**

Implementation and User's Guide

Release 12

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# Contents

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**Preface**

## **1 Overview**

Oracle Advanced Planning Suite.....	1-1
Oracle Advanced Supply Chain Planning.....	1-1
Distribution Planning.....	1-3

## **2 Setting Up Advanced Supply Chain Planning**

Setup Overview.....	2-1
Hardware Configuration.....	2-1
Setup Flowchart.....	2-4
Setup Steps for the Source.....	2-5
Setup Steps for the Destination.....	2-10

## **3 Advanced Supply Chain Planning Business Flows**

Business Flows.....	3-1
Planning Cycle.....	3-3
Specify Sources of Demand.....	3-4
Run Collections.....	3-5
Create a Plan.....	3-5
Launch the Plan.....	3-5
Review Key Performance Indicators (KPIs).....	3-5
Review Exceptions .....	3-6
Review Workflow Notifications.....	3-7

View Pegged Supply and Demand.....	3-8
Modify the Plan Environment.....	3-8
Run Net Change.....	3-10
Release or Firm Orders.....	3-11

## 4 Running Collections

Overview of Running Collections.....	4-1
Definitions.....	4-3
Collection Strategy.....	4-3
Architecture.....	4-5
Collection Methods.....	4-9
When To Use Each Collection Method.....	4-9
Running Standard Collections.....	4-10
Data Changes That Can Be Collected in Net Change Mode.....	4-19
Continuous Collections.....	4-23
Legacy Collection.....	4-30
Organization Specific Collections.....	4-59
Collection from a Single Source to Multiple Destinations.....	4-63

## 5 Defining Supply Chain Plans

Overview of Defining Plans.....	5-1
Global Supply Chain Planning.....	5-1
Prerequisites for Running a Global Supply Chain Plan.....	5-2
Advantages of the Single Plan.....	5-3
Creating Supply Chain Plans.....	5-3
Copying Supply Chain Plans.....	5-6
Subset Plans.....	5-7
Pitfalls of Subset Planning.....	5-9
Choosing Between Global Supply Chain and Subset Plans.....	5-9
Hub and Spoke Planning.....	5-10
Master Scheduling.....	5-24
Choosing a Plan Type.....	5-30
Choosing Plan Classes.....	5-34
Setting Plan Options.....	5-36
The Main Tabbed Region.....	5-38
The Aggregation Tabbed Region.....	5-44
The Organizations Tabbed Region.....	5-46
The Constraints Tabbed Region.....	5-51
The Optimization Tabbed Region.....	5-55
The Decision Rules Tabbed Region.....	5-57



Using an Existing Plan as a Demand Schedule For New Plan.....	5-58
Forecast Explosion.....	5-59
Forecast Consumption.....	5-62
Forecast Bucket Consumption.....	5-74
Forecast Spreading.....	5-75
Up-Sell Cross-Sell Substitution Item Relationships.....	5-83
Overwrite Options.....	5-89
Demand Priority Rules.....	5-95
Peg Supplies by Demand Priority.....	5-98
Plan to Request, Promise, or Schedule Dates.....	5-98
<b>Choosing Aggregation Levels.....</b>	<b>5-100</b>
Time Aggregation Levels.....	5-100
Product Aggregation Levels.....	5-101
Resource Aggregation Levels.....	5-102
Material Aggregation Levels.....	5-104
Routing Aggregation Levels.....	5-104
<b>Choosing an Objective Function.....</b>	<b>5-105</b>
Inventory Turns.....	5-105
Plan Profit Objective.....	5-105
On-time Delivery Objective.....	5-106
Implicit Objectives.....	5-106
Combining Objectives.....	5-107
Factors Affecting Objectives.....	5-108
Computational Burden Considerations.....	5-110
Optimized Plans Data Requirements.....	5-111
Optimization Effects on Sourcing.....	5-112
Nervousness.....	5-112
<b>Controlling Planned Items.....</b>	<b>5-116</b>

## 6 Supply Chain Plan Modeling

<b>Overview of Supply Chain Modeling.....</b>	<b>6-1</b>
<b>Global Forecasting.....</b>	<b>6-2</b>
<b>Publishing Plan Results to Oracle Order Management.....</b>	<b>6-37</b>
<b>Setting Outbound Ship Method.....</b>	<b>6-42</b>
<b>Setting up the Supply Chain .....</b>	<b>6-45</b>
<b>Setting Supplier Capacity .....</b>	<b>6-47</b>
Constraints.....	6-47
Supplier Capacity Accumulation.....	6-48
Purchase Order Consumption of Supplier Capacity.....	6-50
Setting Supplier Capacity by Time Periods.....	6-59

<b>Allocating Demand to Suppliers.....</b>	<b>6-61</b>
Sourcing Example.....	6-63
Enforce Sourcing Splits.....	6-73
<b>Setting Up Routings.....</b>	<b>6-78</b>
Modeling Minimum Transfer Quantity (MTQ).....	6-79
Alternate and Simultaneous Resources.....	6-101
Multiresource Scheduling.....	6-105
<b>Lead-time and the Planning Time Fence.....</b>	<b>6-110</b>
Lead-time.....	6-110
Planning Time Fence Control.....	6-124
Planner Workbench Supply and Demand Dates.....	6-130
Examples of Lead-time Calculations .....	6-138
Examples of Planning Time Fence Control.....	6-160
<b>Safety Stock.....</b>	<b>6-167</b>
<b>Setting Shipping, Receiving, Carrier, and Supplier Capacity Calendars.....</b>	<b>6-178</b>
<b>Scheduled Receipts.....</b>	<b>6-188</b>
<b>Setting Up Batch Resources.....</b>	<b>6-189</b>
<b>Viewing the Supply Chain .....</b>	<b>6-193</b>
<b>Performing Tasks on the Planning Server.....</b>	<b>6-194</b>

## **7 Supply Chain Plan Simulations**

<b>Overview of Simulations.....</b>	<b>7-1</b>
<b>Simulation Scenarios.....</b>	<b>7-1</b>
<b>Simulation Modes.....</b>	<b>7-2</b>
Net Change Replan.....	7-3
<b>Running Net Change Replan Simulations.....</b>	<b>7-4</b>
<b>Using Undo to Reverse Actions or Make Changes.....</b>	<b>7-7</b>
<b>Comparing Scenarios Quantitatively.....</b>	<b>7-11</b>

## **8 Supply Chain Plan Optimization**

<b>Overview of Optimization.....</b>	<b>8-1</b>
<b>Optimization Objectives.....</b>	<b>8-2</b>
<b>Setting Penalty Factors.....</b>	<b>8-3</b>
Setting Late Demand Penalty Costs.....	8-3
Setting Penalty Factors for Exceeding Material Capacity.....	8-8
Setting Penalty Factors for Exceeding Resource Capacity.....	8-12
Setting Penalty Factors Using Plan Options.....	8-16
Setting Penalty Factors Using Optimization Profile Options.....	8-17
<b>Comparing Different Optimization Runs.....</b>	<b>8-18</b>

## 9 Supply Chain Plan Exception Messages

<b>Overview of Exception Messages</b> .....	9-1
<b>Viewing Exceptions</b> .....	9-7
<b>Understanding Exceptions</b> .....	9-15
Late Sales Orders and Forecasts Exception Group.....	9-16
Supply Problems for Late Sales Orders and Forecasts Exception Group.....	9-26
Material and Resource Capacity Exception Group .....	9-48
Transportation and Distribution Exception Group.....	9-65
Shortages and Excess Exception Group.....	9-73
Reschedules Exception Group.....	9-78
Substitutes and Alternates Used Exception Group.....	9-97
Projects/Tasks Exception Group.....	9-103
Item Exceptions Exception Group.....	9-105
Recommendations Exception Group.....	9-112
<b>Exception Diagnosis and Resolution</b> .....	9-114
Workflow Notifications and Activities.....	9-115
Exception Information.....	9-115
Using Constraint Exceptions.....	9-115
Identifying Root Causes of Late Demand.....	9-118
Online Simulation.....	9-134
Identifying Differences Between Plans.....	9-134
Implementing Plan Changes.....	9-135

## 10 Planner Workbench

<b>Overview of Planner Workbench</b> .....	10-1
Plan Tabbed Pane.....	10-3
Queries Tabbed Pane.....	10-43
<b>Tailoring the User Interface</b> .....	10-51
<b>Using the Context Windows</b> .....	10-59
Context Synchronization Between the Context Windows and the Navigator.....	10-60
Exception Summary Window.....	10-60
Exception Details Window.....	10-69
Horizontal Plan.....	10-71
Vertical Plan.....	10-90
Supply Demand Window.....	10-92
Pegging.....	10-111
Items Window.....	10-142
Destinations Window.....	10-148
Sources Window.....	10-151

Supplier Capacity Window.....	10-154
Supplier Variability Window.....	10-158
Safety Stock Window.....	10-158
Substitution Chain Window.....	10-160
Resources Window.....	10-161
Resource Availability Summary Window.....	10-165
Resource Availability (Details) Window .....	10-167
Resource Requirements Window.....	10-169
Supply Chain.....	10-175
Supply Chain Bill.....	10-175
BOM/Routing.....	10-177
Components Window.....	10-178
Routing Operations Window.....	10-181
Network Routing Window.....	10-183
Where Used Window.....	10-184
Co-Product Window.....	10-185
Process Effectivity.....	10-185
Key Indicators.....	10-187
<b>Implementing Planning Recommendations.....</b>	<b>10-195</b>
Creating and Implementing Firm Planned Orders.....	10-195
Releasing Recommendations.....	10-196
Releasing All Recommendations.....	10-197
<b>Interactive Scheduling Using the Gantt Chart.....</b>	<b>10-197</b>
The Order-Centric View.....	10-199
The Resource-Centric View.....	10-200
The Supplier Capacity View.....	10-201
Defining User Preferences - Gantt.....	10-201
Find Window.....	10-202
Right-Click Menu Options.....	10-203
Viewing Information on an Operation.....	10-205
Specify Resources to Plot in the Lower Pane.....	10-207
Specifying Time Buckets.....	10-207
Rescheduling Operations.....	10-208
Firming an Operation.....	10-210
Resolving Overload of an Operation.....	10-210
Gantt Chart Icon Options.....	10-212
Gantt Chart Two Views.....	10-216
<b>Accessing Planner Workbench From Oracle Collaborative Planning.....</b>	<b>10-217</b>
<b>Displaying Suppliers Modeled as Organizations.....</b>	<b>10-221</b>

## 11 Supply Chain Constraint-Based Planning

Overview of Constraint-Based Planning.....	11-1
Constraint Types .....	11-2
Items.....	11-3
Manufacturing Resources.....	11-10
Transportation Resources.....	11-25
Sourcing Constraints/Suppliers.....	11-25
Enabling and Disabling Constraints.....	11-26
Setting Hard and Soft Constraints.....	11-27
Setting Constraints for Different Plan Types.....	11-28
Enforce Purchasing Lead-time.....	11-30
Rules Used in Constrained Plans.....	11-32
Look-Ahead Heuristic.....	11-32
Flexible Shift Times.....	11-34
Partial Demand Satisfaction.....	11-39
Phantom Routings.....	11-42
Split Planned Orders.....	11-42
Firm Work Orders.....	11-45
Plan Shared Supplies.....	11-45
Enforce Capacity Constraints Scheduling.....	11-49
Enforce Demand Due Date Scheduling.....	11-49
Engineering Change Orders Use-Up Effectivity.....	11-59
Forecast Expiration.....	11-62
Sequence Dependent Setups.....	11-68
Sequence Dependent Setups for Discrete Manufacturing.....	11-68
Sequence Dependent Setups for Process Manufacturing.....	11-73
Planning with Sequence Dependent Setups.....	11-74
Viewing Changeover Times and Preferred Sequence.....	11-76
Viewing Plan Results.....	11-77
Planned Inventory Points.....	11-77
PIP Capability.....	11-78
Using PIP.....	11-82

## 12 Setting Up Distribution Planning

Overview of Setting Up Distribution Planning.....	12-1
Prerequisites for Distribution Planning.....	12-2
Defining Items as Distribution Planned.....	12-2
Defining Bills of Material for Kitting.....	12-3
Defining Demand Priority Rules.....	12-4

Defining Trip Limits for Ship Methods by Lane.....	12-7
Defining Sourcing Rules.....	12-10
Multiple Inventory Policies.....	12-11
Inventory Rebalancing.....	12-21
Setting Up Supply Allocation Rules.....	12-27

## **13 Defining Distribution Plans**

Setting Distribution Plan Options.....	13-1
The Main Tabbed Region.....	13-1
The Aggregation Tabbed Region.....	13-9
The Organizations Tabbed Region.....	13-16
The Decision Rules Tabbed Region.....	13-17

## **14 Running and Analyzing Distribution Plans**

Global Forecasting.....	14-1
Ship Method Selection.....	14-2
Distribution Planning Overview.....	14-3
Distribution Plan Workbench.....	14-5
Distribution Plan Exception Messages.....	14-7
Late Sales Orders and Forecasts Exception Group.....	14-9
Supply Exceptions for Late Sales Orders and Forecasts Exception Group.....	14-13
Material Capacity Exception Group.....	14-21
Transportation and Distribution Exception Group.....	14-26
Item Shortage and Excess Exception Group.....	14-29
Reschedule Exception Group.....	14-34
Substitutes and Alternates Exception Group.....	14-39
Item Exceptions Exception Group.....	14-44
Recommendations Exception Group.....	14-46
Defining Organization Selection Lists.....	14-46

## **15 Managing Distribution Plans**

Manage Distribution Plan Overview.....	15-1
Fair Share Allocation.....	15-18
Setting Up Customer Lists.....	15-32

## **16 Integrating with Planning and Manufacturing Environments**

Overview of Integration with Planning and Manufacturing Environments.....	16-1
Common Features in Hybrid Manufacturing Environments.....	16-2
Oracle Project Manufacturing.....	16-14

Hard and Soft Pegging.....	16-15
Supply Chain Project Planning with Hard Pegging.....	16-16
Default Project for Supplies Pegged to Excess.....	16-18
Model/Unit Effectivity (Serial Effectivity).....	16-22
Project Specific Safety Stock.....	16-24
Workflow Based Project Exception Messages.....	16-30
Project Planning Implementation Steps.....	16-31
Project Planning Logic.....	16-33
Viewing the Plan.....	16-36
<b>Oracle Flow Manufacturing.....</b>	<b>16-37</b>
Supply Chain Synchronization.....	16-37
Support for Flow Schedules .....	16-37
Demand Management.....	16-38
Line Design and Balancing.....	16-38
Kanban Planning and Execution.....	16-39
Product Families.....	16-39
Release Flow Schedules.....	16-39
<b>Oracle Process Manufacturing.....</b>	<b>16-40</b>
Merged Organization Structure.....	16-40
Differences Between Production in OPM and Oracle Applications.....	16-41
Recommended OPM Organization Structure for Oracle ASCP.....	16-42
Merging Effectivities, Formulas, and Routings .....	16-43
Creating a Resource Warehouse.....	16-43
Unit of Measure.....	16-43
Setting Up and Using OPM Data.....	16-44
OPM Organizations.....	16-44
Effectivity, Formulas, and Routings.....	16-44
Contiguous Operations.....	16-50
Resources.....	16-52
Scheduling Resource Charges.....	16-53
Setting Up Resource Charge Scheduling.....	16-55
Viewing Resource Charge Information.....	16-56
MPS Schedule.....	16-57
Co-products.....	16-59
<b>Oracle Shop Floor Management.....</b>	<b>16-61</b>
Lot-Based Jobs.....	16-62
Coproducts.....	16-63
Operation Yield .....	16-71
Network Routings.....	16-79
Future Operation Details.....	16-82
<b>Material Planning for Oracle Complex Maintenance Repair and Overhaul.....</b>	<b>16-93</b>

Integrating with Oracle Demantra Demand Management.....	16-96
Integrating with Oracle Demantra Sales and Operations Planning.....	16-97

## **17 Integrating Production Scheduling**

Overview.....	17-1
Running Production Scheduling with ASCP.....	17-3
Running Production Scheduling in Standalone Mode Without ASCP.....	17-7
Setting Profile Options for Production Scheduling.....	17-8
Running Collections.....	17-9
Creating a Schedule.....	17-9
Setting Schedule Options.....	17-11
Running a Schedule from the Workbench.....	17-23
Copying a Schedule Within Production Scheduling.....	17-25
Publishing a Schedule.....	17-26
Feeding a Production Schedule Back into ASCP.....	17-27

## **18 Integrating Strategic Network Optimization**

Overview.....	18-1
Integration Architecture and Business Process.....	18-2
Setting Profile Options for Strategic Network Optimization.....	18-5
Running Collections.....	18-6
Creating a New Plan Using the Workbench.....	18-6
Setting Schedule Options.....	18-8
Running a Plan Using the Workbench.....	18-12
Publishing a Plan.....	18-14

## **19 Supply Chain Plan Configure to Order**

Models.....	19-1
Configure to Order Sales Orders.....	19-2
Configure to Order Order Promising.....	19-3
Configure to Order Forecast Explosion.....	19-3
Configure to Order Forecast Consumption.....	19-6
Configure to Order Collections.....	19-7
Configure to Order Planning Process.....	19-8

## **20 Supply Chain Plan Cross-Instance Planning**

Overview of Cross-Instance Planning.....	20-1
Instances.....	20-1
Collections.....	20-2



<b>Cross-Instance Supply Chain Modeling</b> .....	20-3
Modeling Cross-Instance Intransit Lead-times.....	20-4
Defining Cross-Instance Sourcing Relationships .....	20-5
Modeling Cross-Instance Customers and Suppliers.....	20-7
<b>Cross-Instance Planning</b> .....	20-9
<b>Global Available to Promise</b> .....	20-10
<b>Cross-Instance Execution</b> .....	20-11
<b>Cross-Instance Data Considerations</b> .....	20-13
<b>Purchase Orders and Sales Orders Across Instances</b> .....	20-15

## 21 Supply Chain Plan Business Topics

<b>End-Item-Level Substitution</b> .....	21-1
User Procedures Overview.....	21-2
Define a Substitution Relationship.....	21-2
Viewing Substitution Display.....	21-10
Substitution Logic.....	21-14
End-Item Substitution Features.....	21-17
Exception Messages.....	21-37
End Item Substitution and Oracle Global Order Promising .....	21-43
<b>User-Defined Alternate Decision Rules</b> .....	21-43
User-Defined Alternate Decision Rules for Constrained Plans.....	21-43
Simulations and User-Defined Decision Rules.....	21-62
User-Defined Alternate Decision Rules for Optimized Plans.....	21-62
Planning Search Logic.....	21-66
Lead-times and User-Defined Decision Rules.....	21-73
Pegging and User-Defined Decision Rules.....	21-74
Exception Messages.....	21-74
<b>Organization Security</b> .....	21-75
User Procedure Flow .....	21-76
Organization Validation.....	21-77
Supply Chain Plan Names Form.....	21-78
Plan Options Form.....	21-78
Example.....	21-78
<b>Key Performance Indicators</b> .....	21-80
Inventory Turns.....	21-82
Margin Percentage.....	21-82
Planned utilization.....	21-82
On-Time Delivery.....	21-83
Margin.....	21-83
Cost Breakdown.....	21-83

Service Level.....	21-84
Inventory Value.....	21-85
KPI Setup.....	21-86
Tracking Plan Performance Using KPIs.....	21-87
Making Improvements Based on KPIs.....	21-87
<b>Supplier Acknowledgement for a Rescheduled Purchase Order.....</b>	<b>21-89</b>
<b>Setting Demand to Supply Planning Automation.....</b>	<b>21-91</b>
<b>Setting Supplier Collaboration Automation.....</b>	<b>21-92</b>

## 22 Reports and Concurrent Processes

<b>Reports.....</b>	<b>22-1</b>
Audit Statements Report.....	22-1
Plan Comparison Report.....	22-4
Planning Detail Report.....	22-14
<b>Concurrent Processes.....</b>	<b>22-27</b>
ATP 24x7 Switch Plans.....	22-27
ATP 24x7 Synchronization Process.....	22-28
ATP Post Plan Processing.....	22-29
Analyze Plan Partition.....	22-29
Auto Release Planned Order.....	22-30
Build Collaborative Planning Calendar.....	22-30
Calculate Resource Availability.....	22-31
Collections Synonyms.....	22-31
Collections Triggers.....	22-32
Collections Views.....	22-32
Compare Plan Exceptions.....	22-33
Continuous Collections.....	22-33
Create AHL Snapshots.....	22-36
Create APS Partitions.....	22-36
Create ATP Partitions.....	22-37
Create BOM Snapshots.....	22-38
Create Forecast Priority Flexfield.....	22-38
Create INV Snapshots.....	22-39
Create Instance-Org Supplier Association.....	22-39
Create Inventory Planning Flexfields.....	22-40
Create MRP Snapshots.....	22-41
Create OE Snapshots.....	22-41
Create PO Snapshots.....	22-42
Create Planning Flexfields.....	22-42
Create Resource Batch Planning Flexfields.....	22-44

Create Setup and Run Flexfield.....	22-44
Create WIP Snapshots.....	22-44
Create WSH Snapshots.....	22-45
Create WSM Snapshots.....	22-46
Create Zone Flexfields.....	22-46
Custom Exception Generator.....	22-47
Detail Scheduling Continuous Collection.....	22-47
Detail Scheduling Data Pull.....	22-47
Detail Scheduling ODS Load.....	22-48
Download Profile Options Value.....	22-48
Drop Collections Snapshot.....	22-48
ERP Legacy Collections Request Set.....	22-49
Flat File Loader.....	22-49
Launch Supply Chain Planning Process Request Set.....	22-53
Legacy Collections Request Set.....	22-54
Load ATP Summary Based on Collected Data.....	22-54
Load ATP Summary Based on Planning Output.....	22-55
Load Transaction Data.....	22-56
MDS Data Collection.....	22-57
Planning Data Collection - Purge Staging Tables.....	22-58
Planning Data Collection Request Set.....	22-58
Planning Data Pull.....	22-59
Planning ODS Load.....	22-61
Pre-Process Monitor.....	22-62
Pre-Process Transaction Data.....	22-64
Purge Collaborative Planning Historical Records.....	22-64
Purge Designator.....	22-65
Purge Interface Tables.....	22-65
Purge Legacy Data.....	22-66
Push Plan Information.....	22-67
Realign Operational Data Stores Dates.....	22-72
Refresh Allocation Hierarchy Materialized View.....	22-72
Refresh Collection Snapshots.....	22-73
Refresh Global Forecast Materialized Views.....	22-74
Refresh KPI Summary Data.....	22-74
Refresh Materialized Views.....	22-75
Register Ask Oracle Planning Question.....	22-75
Send XML Releases to Legacy Sources.....	22-75
Supply Chain Event Manager.....	22-76
VMI Replenishment Engine.....	22-79

**A Profile Options**

Special Considerations ..... A-1

INV Profile Options..... A-2

MRP and CRP Profile Options..... A-3

MSC Profile Options..... A-11

MSD Profile Options..... A-58

MSO Profile Options..... A-64

MSR Profile Options..... A-114

**B Flexfields**

Overview of ASCP Flexfields..... B-1

Applying Flexfields to Different Versions of Oracle RDBMS..... B-2

**C Control Files**

Setup Data Control Files..... C-1

Supply Control Files..... C-4

Demand Control Files..... C-4

User-Defined Keys..... C-5

**Glossary**

**Index**

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## **Oracle Advanced Supply Chain Planning Implementation and User's Guide, Release 12**

### **Part No. B31553-03**

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## **Structure**

- 1 Overview**
- 2 Setting Up Advanced Supply Chain Planning**
- 3 Advanced Supply Chain Planning Business Flows**
- 4 Running Collections**
- 5 Defining Supply Chain Plans**
- 6 Supply Chain Plan Modeling**
- 7 Supply Chain Plan Simulations**
- 8 Supply Chain Plan Optimization**
- 9 Supply Chain Plan Exception Messages**
- 10 Planner Workbench**
- 11 Supply Chain Constraint-Based Planning**
- 12 Setting Up Distribution Planning**
- 13 Defining Distribution Plans**
- 14 Running and Analyzing Distribution Plans**
- 15 Managing Distribution Plans**
- 16 Integrating with Planning and Manufacturing Environments**
- 17 Integrating Production Scheduling**
- 18 Integrating Strategic Network Optimization**
- 19 Supply Chain Plan Configure to Order**
- 20 Supply Chain Plan Cross-Instance Planning**
- 21 Supply Chain Plan Business Topics**
- 22 Reports and Concurrent Processes**
- A Profile Options**
- B Flexfields**
- C Control Files**
- Glossary**

## **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 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.

## **Oracle Bills of Material User's Guide**

This guide describes how to create various bills of materials to maximize efficiency, improve quality and lower cost for the most sophisticated manufacturing environments. By detailing integrated product structures and processes, flexible product and process definition, and configuration management, this guide enables you to manage product details within and across multiple manufacturing sites.

## **Oracle Business Intelligence System Implementation Guide**

This guide provides information about implementing Oracle Business Intelligence (BIS) in your environment.

## **Oracle Daily Business Intelligence Online Help**

This guide is provided as online help only from the BIS application and includes information about intelligence reports, Discoverer workbooks, and the Performance Management Framework. It describes a reporting framework that senior managers and executives can use to see a daily summary of their business. Supply chain professionals use Oracle Supply Chain Intelligence to monitor supply chain performance in the areas of manufacturing and distribution operations (product gross margin, annualized inventory turns, inventory value), fulfillment (lines shipped, lines shipped late, value shipped, book to ship days, current past due value), shipping (lines shipped, lines shipped late, value shipped, change in lines shipped, change in lines shipped late, change in value shipped), and order management (product bookings, current backlog, book to fulfill ratio, average line value, average discount, return rate).

## **Oracle Capacity User's Guide**

Oracle Collaborative Planning Implementation and User's Guide

## **Oracle Collaborative Planning Implementation and User's Guide**

This guide describes the information you need to understand and use Oracle Collaborative Planning to communicate, plan, and optimize supply and demand information for trading partners across the supply chain.

## **Oracle Demand Planning User's Guide**

This guide describes how to use Oracle Demand Planning, an Internet-based solution

for creating and managing forecasts.

## **Oracle Enterprise Asset Management User's Guide**

This guide describes the information you need to understand and use Oracle Enterprise Asset Management to plan, schedule, and track the costs of asset maintenance.

## **Oracle Flow Manufacturing User's Guide**

This guide describes how to use Oracle's Flow Manufacturing functionality to support the processes of flow manufacturing. It describes design features of demand management, line design and balancing, and Kanban planning. It also describes production features of line scheduling, production, and Kanban execution.

## **Oracle Flow Manufacturing Implementation Manual**

This manual contains overviews, as well as task and reference information, for implementing Oracle Flow Manufacturing.

## **Oracle Global Order Promising Implementation and User's Guide**

This guide describes how to use Oracle Global Order Promising for sophisticated, fast, accurate, and flexible order promising.

## **Oracle interMedia User's Guide and Reference**

This user guide and reference provides information about Oracle interMedia. This product enables Oracle9i to store, manage, and retrieve geographic location information, images, audio, video, or other heterogeneous media data in an integrated fashion with other enterprise information. Oracle Trading Community Architecture Data Quality Management uses interMedia indexes to facilitate search and matching.

## **Oracle Inventory User's Guide**

This guide describes how to define items and item information, perform receiving and inventory transactions, maintain cost control, plan items, perform cycle counting and physical inventories, and set up Oracle Inventory.

## **Oracle Manufacturing APIs and Open Interfaces Manual**

This manual contains up-to-date information about integrating with other Oracle Manufacturing applications and with your other systems. This documentation includes APIs and open interfaces found in Oracle Manufacturing.

## **Oracle Manufacturing Scheduling User's Guide**

This guide describes how to use a the web-based scheduling product to graphically view and schedule discrete jobs and their operations based on user-defined objectives, priorities, resources, and material constraints.

## **Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide**

This guide describes how to anticipate and manage both supply and demand for your items. Using a variety of tools and techniques, you can create forecasts, load these forecasts into master production schedules, and plan your end-items and their component requirements. You can also execute the plan, releasing and rescheduling planning suggestions for discrete jobs and repetitive schedules.

## **Oracle Order Management Suite APIs and Open Interfaces Manual**

This manual contains up-to-date information about integrating with other Oracle Manufacturing applications and with your other systems. This documentation includes APIs and open interfaces found in Oracle Order Management Suite.

## **Oracle Order Management User's Guide**

This guide describes the necessary information you need to use and comprehend Oracle Order Management.

## **Oracle Process Manufacturing Implementation Guide**

This guide describes the information you need to understand and use Oracle Process Manufacturing.

## **Oracle Process Manufacturing Integration with Advanced Planning and Scheduling User's Guide**

This guide describes the information you need to understand and use to integrate Oracle Process Manufacturing with the Oracle Advanced Planning suite.

## **Oracle Production Scheduling Implementation Guide**

This guide describes how to use Production Scheduling to create detailed finite capacity and materially constrained optimized production schedules to drive shop floor execution and material planning.

## **Oracle Project Manufacturing User's Guide**

This guide describes the unique set of features Oracle Project Manufacturing provides

for a project-based manufacturing environment. Oracle Project Manufacturing can be tightly integrated with Oracle Projects. However, in addition to Oracle Projects functionality, Oracle Project Manufacturing provides a comprehensive set of new features to support project sales management, project manufacturing costing, project manufacturing planning, project manufacturing execution and project quality management.

## **Oracle Project Manufacturing Implementation Manual**

This manual describes the setup steps and implementation for Oracle Project Manufacturing.

## **Oracle Purchasing User's Guide**

This guide describes the information you need to understand and use Oracle Purchasing.

## **Oracle Self-Service Web Applications Implementation Manual**

This manual describes the setup steps for Oracle Self-Service Web Applications and the Web Applications dictionary.

## **Oracle Shopfloor Management User's Guide**

This guide describes the information you need to understand and use Oracle Shopfloor Management to manage complex shop floor information.

## **Oracle Strategic Network Optimization Implementation Guide**

This guide describes how to use Strategic Network Optimization to model and optimize your supply chain network, from obtaining raw materials through delivering end products.

## **Oracle Work in Process User's Guide**

This guide describes how Oracle Work in Process provides a complete production management system. Specifically this guide describes how discrete, repetitive, assemble-to-order, project, flow, and mixed manufacturing environments are supported.

## **Oracle Workflow User's Guide**

This guide describes how to define new workflow business processes as well as customize existing Oracle Applications-embedded workflow processes. You also use this guide to complete the setup steps necessary for any Oracle Applications product that includes workflow-enabled processes.

## Do Not Use Database Tools to Modify Oracle Applications Data

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

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

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

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



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## Overview

This chapter covers the following topics:

- Oracle Advanced Planning Suite
- Oracle Advanced Supply Chain Planning
- Distribution Planning

### Oracle Advanced Planning Suite

The Oracle Advanced Planning suite includes the following products:

- Oracle Advanced Supply Chain Planning (ASCP)
- Oracle Collaborative Planning
- Oracle Demand Planning
- Oracle Global Order Promising
- Oracle Inventory Optimization
- Oracle Manufacturing Scheduling
- Oracle Production Scheduling
- Oracle Strategic Network Optimization

This document covers Oracle Advanced Supply Chain Planning.

### 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 Planning 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 Planning 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:

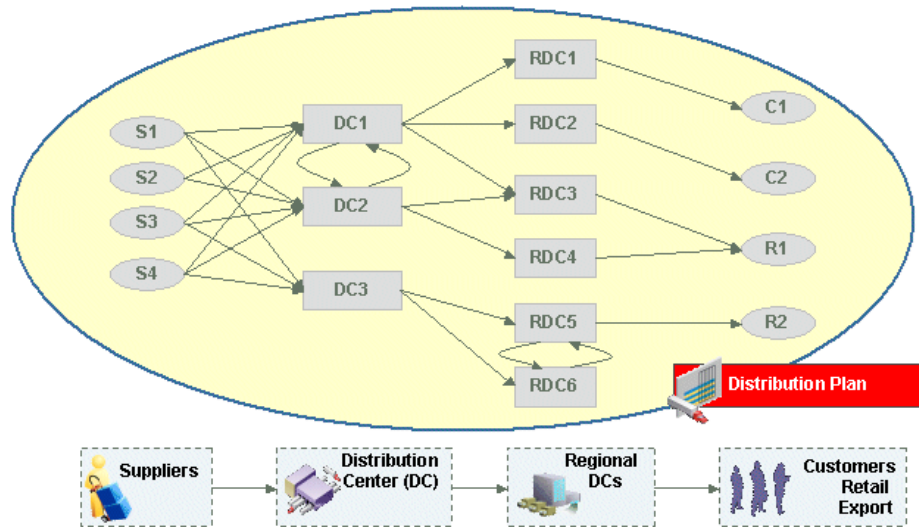
- **Master Production Plans (MPP):** They typically include your distribution facilities and not your manufacturing facilities. Use the master production plan to summarize all of the demands for production in your manufacturing plants. Typically, independent demand drives this plan and this plan drives 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.

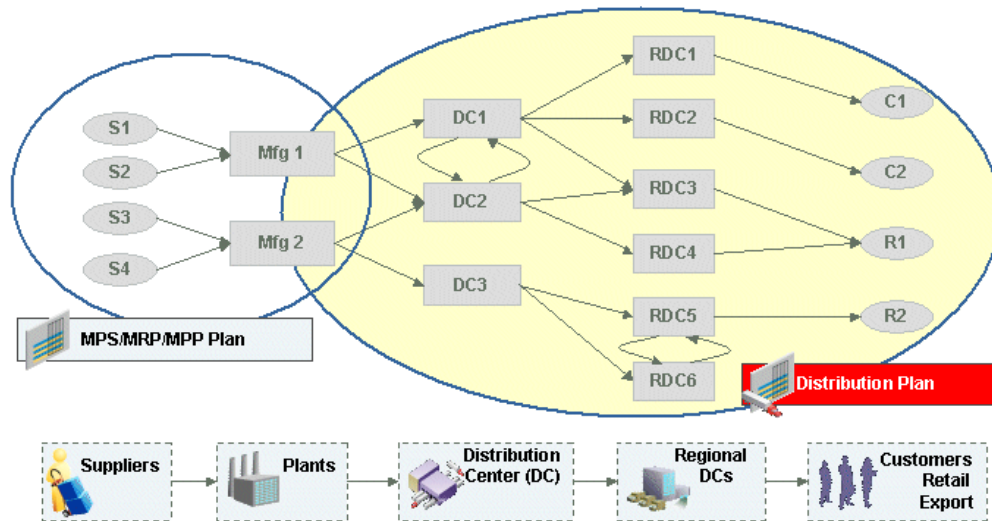


## Manufacturer

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.



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# Setting Up Advanced Supply Chain Planning

This chapter covers the following topics:

- Setup Overview
- Hardware Configuration
- Setup Flowchart
- Setup Steps for the Source
- Setup Steps for the Destination

## Setup Overview

This section describes setup steps for Oracle Advanced Supply Chain Planning.

Set up for Oracle Demand Planning and Oracle Global Order Promising is briefly covered for the sake of completeness, but is described fully in their respective installation instructions.

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

- Node Application: MSC
- Node Key: GATPTOP\_ASCP
- Parent Application: SUPPLY
- Parent Key: SUPPLY

## Hardware Configuration

The first step in the setup process is to decide on the overall hardware configuration.

Oracle Advanced Planning Suite has a component architecture that separates the transaction data and associated processing (for example, inventory receipts and order

entry) in a source instance from the planning calculations done in a destination instance. This allows planning calculations to be done on a different physical machine than the machine that performs transactions and results in better system response. It also allows planning calculations (demand planning, inventory planning, supply planning and order promising) to be applied simultaneously to information from across multiple source instances, which is useful when transaction information for a global supply chain is spread across multiple instances. Oracle Demand Planning also uses a third instance, an Express database, to hold data while multidimensional manipulation of demand data occurs.

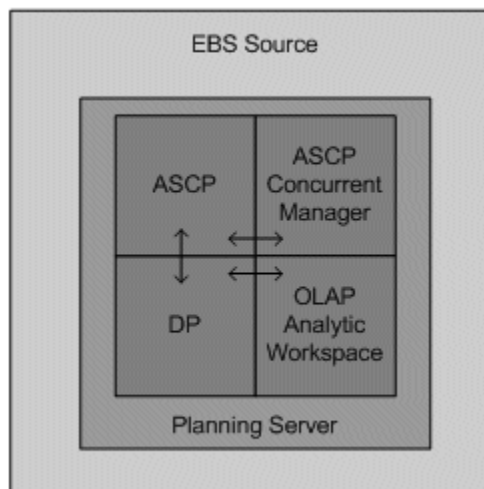
The source can be any ERP system, but out-of-the-box integration to the Oracle Advanced Planning Suite destination instance (planning server) exists in some cases but not in all cases.

Both source and destination database instances must be on the same major release of the Oracle database; see 'Setup Flowchart, page 2-4.

## One-Machine Implementation

For small implementations, source, destination, and Express can reside on the same machine and be in the same instance. The following figure illustrates this configuration.

**Note:** ASCP means Advanced Supply Chain Planning and DP means Demand Planning.

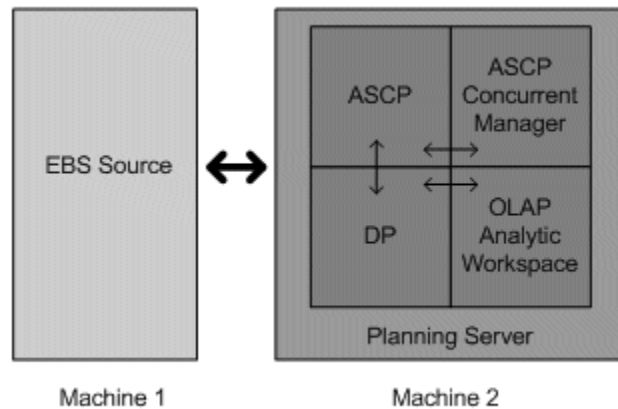


## Two-Machine Implementation

For larger implementations where system throughput is more important, the various instances can be deployed on separate machines. A two-machine deployment

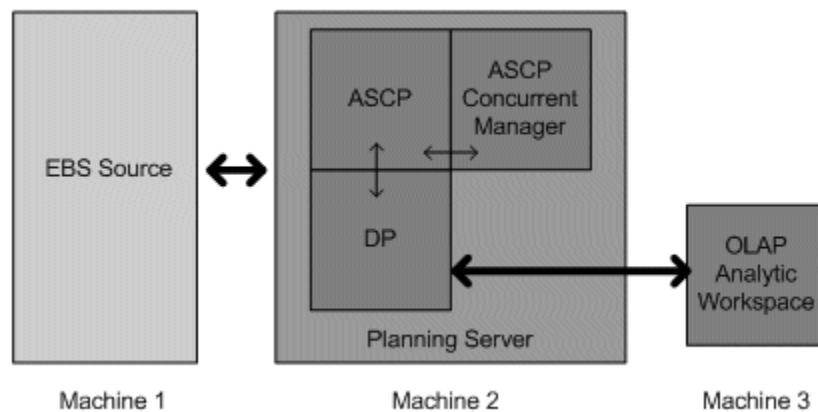


configuration is appropriate when the size of the demand planning data is relatively small. The following figure illustrates this configuration.



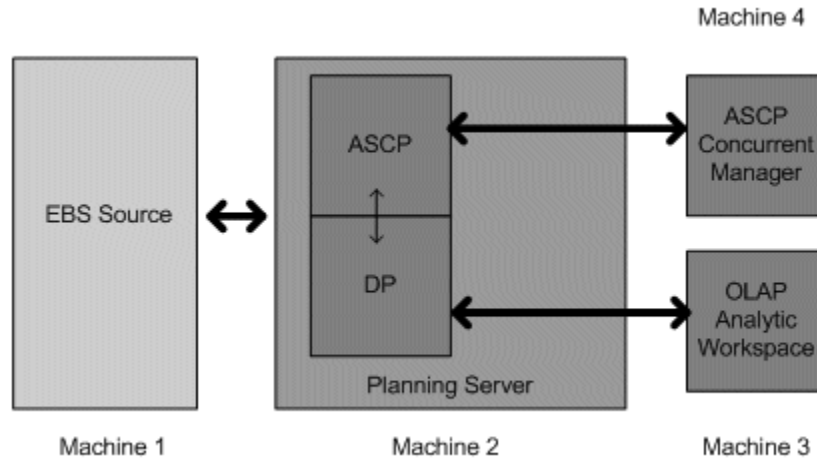
### Three-Machine Implementation

A three-machine deployment allows for the manipulation of high-dimensionality, large-scale demand planning data to occur on a machine separate from the planning calculations done on the planning server. The following figure illustrates this configuration.



### Four-Machine Implementation

The Advanced Supply Chain Planning concurrent manager may also be deployed on a separate machine. This creates even greater system performance. The following figure illustrates the four-machine implementation.



In all deployment configurations, a collection process brings data from the source to the destination (planning server). A build process brings data from the planning server to the Express engine. A separate collection process takes data from the Express engine back to the planning server. Finally, a publish process takes data from the planning server back to the source Oracle Applications instance.

Global Order Promising and Inventory Optimization planning calculations are also performed on the planning server.

## Setup Flowchart

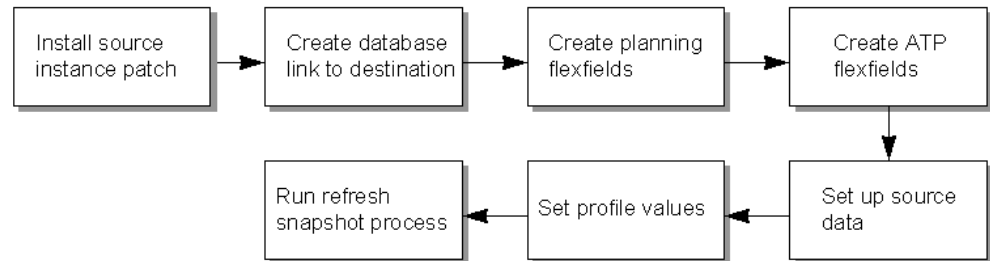
Set up for Oracle Advanced Planning Suite consists of steps for the source, steps for the destination, and steps for Express. Steps for Express are covered in the Oracle Demand Planning installation instructions.

In Oracle Advanced Planning, transaction processing and planning occur in separate database instances, the source instance and the destination instance. If you deploy any Oracle Advanced Planning module using this multi-instance configuration, please note the important restriction that both source and destination database instances must be on the same major release of the Oracle database; either both instances must be on Oracle 8i or both instances must be on Oracle 9i. The configuration source on 8i with destination on 9i is not supported and the configuration source on 9i with destination on 8i is not supported.

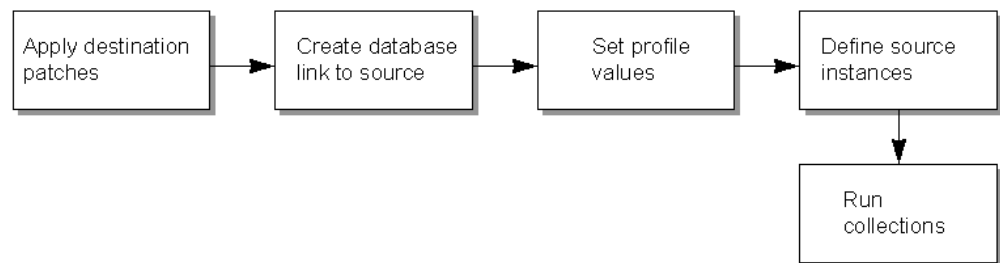
The following figure is a flowchart illustrating the source and destination setup steps.

## Source and Destination Instance Setup

### Source Instance Setup



### Destination Instance Setup



## Setup Steps for the Source

In Oracle Advanced Planning, transaction processing and planning occur in separate database instances, the source instance and the destination instance. If you deploy any Oracle Advanced Planning module using this multi-instance configuration, please note the important restriction that both source and destination database instances must be on the same major release of the Oracle database; either both instances must be on Oracle 8i or both instances must be on Oracle 9i. The configuration source on 8i with destination on 9i is not supported and the configuration source on 9i with destination on 8i is not supported.

### 1. Install the source instance patch

Before beginning the functional setup of the source instance(s), a patch must be applied that will create several new concurrent programs, flexfields, profile options, and database objects on the source database. The patch that is required is determined by the versions of the application and database on the source instance.

When successfully applied, the patch should create the Create Planning Flexfields, Create Global ATP Flexfields, and Refresh Snapshot programs under the All SCP Reports Request group.

### 2. Create a database link pointing to the planning server.

**Note:** Before beginning the installation of the source patch, count all (if any) invalid database objects. If after the patch is installed there are more invalid objects than before, there was a problem with the patch application.

A database link must be established on the source instance that points to the destination (planning) instance. This database link will be referenced in a newly created profile option, MRP: ATP Database Link, discussed in Step 7, page 2-9. This database link will also be used, along with a database link established on the destination instance, in setting up the instances on the planning server.

3. Create an Advanced Supply Chain Planner responsibility. You must create a responsibility in the source instance that conforms to the specifications:
  - Responsibility Name: Advanced Supply Chain Planner
  - Application: Oracle Manufacturing
  - Description: Used for running ASCP Report
  - Menu: SCP\_TOP\_4.0
  - Data Group Name: Standard
  - Application: Oracle Manufacturing
  - Request Group: All SCP Reports
  - Application: Oracle Master Scheduling/MRP
  - This responsibility is used to run the concurrent program Refresh Snapshot during all data collection runs. The data collection process is discussed in 'Running Collections, page 4-1.

**Warning:** The responsibility name must match Advanced Supply Chain Planner exactly. During the data collection process which runs on the destination server, the Refresh Snapshot program is launched automatically in the source from this responsibility. The refresh snapshot process will not complete properly if the responsibility name is not correct.

The Create Planning Flexfields concurrent program creates new segment definitions in existing descriptive flexfields to hold data that may be required for constrained and/or optimized planning. The program also populates profile values with the value corresponding to the descriptive flexfield attribute number for each attribute (planning parameter) created. The table below shows the descriptive flexfield

attributes that are required, the name of the attributes that are created, the tables in which the data resides, and the profile options that correspond to each attribute.

<b>Descriptive Flexfield Names</b>	<b>Parameter Name (In flexfield form and report parameter)</b>	<b>Base Table Name</b>	<b>Profile Option Name</b>
Items	Late Demands Penalty (Item)	MTL_SYSTEM_ITEM MS	MRP: Penalty cost factor for late demands flexfield attribute
Items	Material Over-Capacity Penalty (Item)	MTL_SYSTEM_ITEM MS	MRP: Penalty cost factor for exceeding material capacity flexfield attribute
Organization Parameters	Late Demands Penalty (Org)	MTL_PARAMETER S	MSO: Penalty cost factor for late demands (Organization) flexfield attribute
Organization Parameters	Material Over-Capacity Penalty (Org)	MTL_PARAMETER S	MSO: Penalty cost factor for exceeding material capacity (Organization) flexfield
Organization Parameters	Resource Over-Capacity Penalty (Org)	MTL_PARAMETER S	MSO: Penalty cost factor for exceeding resource capacity (Organization) flexfield
Organization Parameters	Transport Over-Capacity Penalty (Org)	MTL_PARAMETER S	MSO: Penalty cost factor for exceeding transportation capacity (Organization)
Department Resource Information	Aggregate Resources	BOM_DEPARTMENT_RESOURCES	MSO: Aggregate resource name flexfield attribute

<b>Descriptive Flexfield Names</b>	<b>Parameter Name (In flexfield form and report parameter)</b>	<b>Base Table Name</b>	<b>Profile Option Name</b>
Department Resource Information	Resource Over-Capacity Penalty (Resource)	BOM_DEPARTMENT_RESOURCES	MSO: Penalty cost factor for exceeding resource capacity (Resource) flexfield
Attribute (Purchasing)	Material Over-Capacity Penalty (Supplier)	PO_ASL_ATTRIBUTES	MSO: Penalty cost factor for exceeding material capacity (Supplier-Item) flexfield
Substitute Component Information	Substitute Items Priority	BOM_SUBSTITUTE_COMPONENT	MSO: Priority for substitute items flexfield attribute
MTL Interorg ship methods	Transport Over-Capacity Penalty (Ship Method)	MTL_INTERORG_SHIP_METHOD	MSO: Penalty cost factor for exceeding transportation capacity flexfield attribute
Bill of Material Information	BOM/Routing Cost	BOM_BILL_OF_MATERIALS	MSO: Cost of using a BOM/Routing flexfield attribute
MRP Forecast Dates	Late Forecasts	MRP_FORECAST_DATES	MSO: Penalty cost factor for late forecasts
Additional Line Information	Late Sales Order Penalty	SO_LINES	MSO: Penalty cost factor for late sales orders
Production Line	Resource Group (Line)	WIP_LINES	MSO: Resource group for a line flexfield attribute

4. Launch the Create Planning Flexfields report from the newly created Advanced Supply Chain Planner responsibility. The parameters that must be set for the report are the attributes that you wish to utilize for the new flexfield definitions. The list of

values for each parameter lists only the available attributes in the subject descriptive flexfield.

**Note:** Keep track of the attribute number that you select for each flexfield segment. You will need to verify that each corresponding profile option was populated with the correct attribute number when the process completes.

After submitting the program, eleven additional processes should be spawned. These jobs are compiling the descriptive flexfield views.

Check that the profile values corresponding to each flexfield attribute were populated with the correct attribute number. Some profile values may retain the value of unassigned after the Create Planning Flexfield program completed. You must change any unassigned profiles to the attribute number corresponding to the flexfield attribute where the new segment was defined.

5. Create the Global Order Promising flexfields.

The Create Global ATP Flexfields is very similar to the Create Planning Flexfields program. It creates new flexfield segments to hold global ATP data at the item, BOM, routing, and resource levels. The same process, including warnings and suggestions, applies for the Create Global ATP Flexfield program.

6. Set up source data with BOMs, resources, routings, supplier data, flexfields, purchasing information, item masters, Oracle BIS targets, and any other data required by your plans.

7. Set profile values.

If Global Order Promising is going to be utilized, the following two additional profile options must be set.

The MRP: ATP Database Link profile option must be set with the database link. The profile value is the name of the database link that resides on the source and points to the destination. There is no validation on this profile value. If Global Order Promising is not utilized, this need not be set.

The INV: External ATP profile must be set to Global ATP. This is a choice from the list of values. If Global ATP is not utilized, this need not be set.

8. Execute the Refresh Snapshot concurrent program.

The Refresh Snapshot process must be run on the source. This concurrent program is available in the Advanced Supply Chain Planner responsibility created earlier. The process has no parameters to be set at run time. Verify that the process completes without error.

## Setup Steps for the Destination

In Oracle Advanced Planning, transaction processing and planning occur in separate database instances, the source instance and the destination instance. If you deploy any Oracle Advanced Planning module using this multi-instance configuration, please note the important restriction that both source and destination database instances must be on the same major release of the Oracle database; either both instances must be on Oracle 8i or both instances must be on Oracle 9i. The configuration source on 8i with destination on 9i is not supported and the configuration source on 9i with destination on 8i is not supported.

1. Install the destination instance patches.

After installing the application on the destination server, be sure that the proper patches are applied to the install. The patches can be found on Oracle *MetaLink* for the following products:

- MSC - Oracle Supply Chain Planning, Oracle Global Order Promising, Oracle Collaborative Planning, Oracle Inventory Optimization
- MSD - Oracle Demand Planning
- MSO - Oracle Constraint Based Option

2. Create a database link pointing to each source.

These links will be needed when defining instances later on in this setup procedure.

3. Define the source instances to be collected from.

The define instances setup establishes the means of communication between the source and destination instances. It also specifies the organizations in the source database for which data will be pulled.

In a distributed setup, you must have the responsibility APS COLLECTIONS on the source instance to run collections and APS RELEASE on the source instance to release planned orders. These responsibilities are seeded on the source instances. For all collection profiles on source instances at the responsibility level, set them to responsibility APS COLLECTIONS. For all release profiles on source instances at the responsibility level, set them to responsibility APS RELEASE.

4. From the Navigator, choose Setup > Instances. Do not access this form while the collections process is running; it locks a table that the collections process needs to complete successfully.

The Application Instances window appears.



### Application Instances window

Instance Code	Instance Type	Version	Application Database Link	Planning Database Link
TST	Discrete & Process	11i	adlink	pdlink

Organizations

5. Enter each of the Application instances for which you would like the Planning Server to plan.
6. Complete the fields and flags in the Application Instances window as shown in the table below.

**Note:** You are only required to set up Applications Instances before the first time you perform data collection.

Field/Flag	Description
Instance Code	This is a user-defined three character short form for the instance to be planned. It appears in front organization names and other designators. For example, if two transaction instances TA1 and TA2 are to be planned, and both instances have an internal organization named M1, ASCP will display TA1's organization as TA1:M1 and TA2's organization and TA2:M1.

Field/Flag	Description
Instance Type	The valid values here are Discrete, Process, Discrete and Process. This controls whether discrete manufacturing data or process manufacturing data (or both) are collected from the transaction instance to the planner server for planning.
Version	The Oracle Application version of the transaction instance.
Application Database Link	A link to connect the Applications database(s) to Oracle ASCP. This link is determined by the database administrator. This database link is defined on the transaction instance and points to the planning server. This link is used to publish releases from the ASCP back to the transaction instance as purchase orders or work orders.
Planning Database Link	A link to connect Oracle ASCP to the Applications database(s). This link is determined by the database administrator. This link is defined on the planning server and points to the transaction instance. This link is used to positively locate the source of the transaction data to be planned.
Enable Flag	Select this option to enable the collection process.
GMT Difference	The difference between instance time zone and GMT
Assignment Set	Enter the default assignment set for this instance. The assignment is used to resolve sourcing for order promising inquiries.

7. Enter the organizations on each of the instances from which to collect the Planning data and plan for on the Planning Server by clicking Organizations.

The Organizations window appears.

### Organization window



8. Select the organizations for a particular instance. Be sure to select the master organization.
9. Close the Organization window.
10. Save the Instance Definition setup.

## ILOG Libraries and Executables

If you are installing Oracle Advanced Supply Chain Planning, Oracle Inventory Optimization, Oracle Manufacturing Scheduling, or Oracle Work in Process, you may need to install ILOG libraries and executables for optimization calculations.

Install the following ILOG Planner libraries and executables if the Oracle Applications product that you are installing has an installation status of Installed or Shared in your database instance:

- Oracle Constraint Based Option (MSO): MSONEW
- Oracle Inventory Optimization (MSC): MSCNEW
- Oracle Manufacturing Scheduling (WPS): WPCWFS, WPCFSQ
- Oracle Work in Process (WIP): WICDOL, WICMEX, WICMLX
- Oracle Engineering (ENG): ENCACN

## Applying the ILOG Scheduler Library

Contact Oracle for the current patch number.

Apply the patch on the concurrent processing server node where you have installed the products Oracle Constraint Based Option (MSO), Oracle Inventory Optimization (MSC), Oracle Manufacturing Scheduling (WPS), or Oracle Work in Process (WIP).

Do not use AutoPatch to apply this patch, apply it manually. Contact Oracle for the release information in step 7 for Oracle Inventory Optimization.

You can apply this patch to UNIX, Linux, and Windows platforms. These instructions use UNIX and Linux syntax when describing directory structures and environment variables. If you are applying this patch on a Windows platform, substitute the appropriate syntax.

1. Log in to each concurrent processing server node as the owner of the Applications file system.
2. If the \$SHT\_TOP/lib/ilog/5.1 directory already exists, back up any files or directories that it contains.
3. Unzip the ilog51lib.zip file, located in the sht/lib directory of this patch, into the \$SHT\_TOP/lib directory. This will create the ilog/5.1 subdirectory if it doesn't already exist.
4. Change directories to \$SHT\_TOP/lib/ilog/5.1/<your platform>.
5. If your platform is HP-UX, then you need to change either the PA11 or PA20 subdirectory, depending on your processor type.

If you aren't sure which processor type you have, run the command `$ file /stand/vmunix`. If the line returned contains the string PA-RISC 2.0, change to the PA20 subdirectory; otherwise, change to the PA11 subdirectory.

6. Copy the library files from the current directory to the \$SHT\_TOP/lib/ilog/5.1 directory.

On UNIX and Linux, the files are libconcert.a, libcplex.a, libhybrid.a, libilocplex.a, libsched.a, and libsolver.a.

On Windows, the files are schedule.lib, concert.lib, cplex71.lib, hybrid.lib, ilocplex.lib, solver.lib, cplex71.dll.

7. Use AD Administration to relink these executables:

Oracle Constraint Based Option (MSO): MSONEW

Oracle Inventory Optimization (MSC): MSCNEW (for certain point releases only; contact Oracle for more information)

Oracle Manufacturing Scheduling (WPS): WPCWFS

Oracle Work in Process (WIP): WICDOL, WICMEX, WICMLX



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# Advanced Supply Chain Planning Business Flows

This chapter covers the following topics:

- 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

## 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:

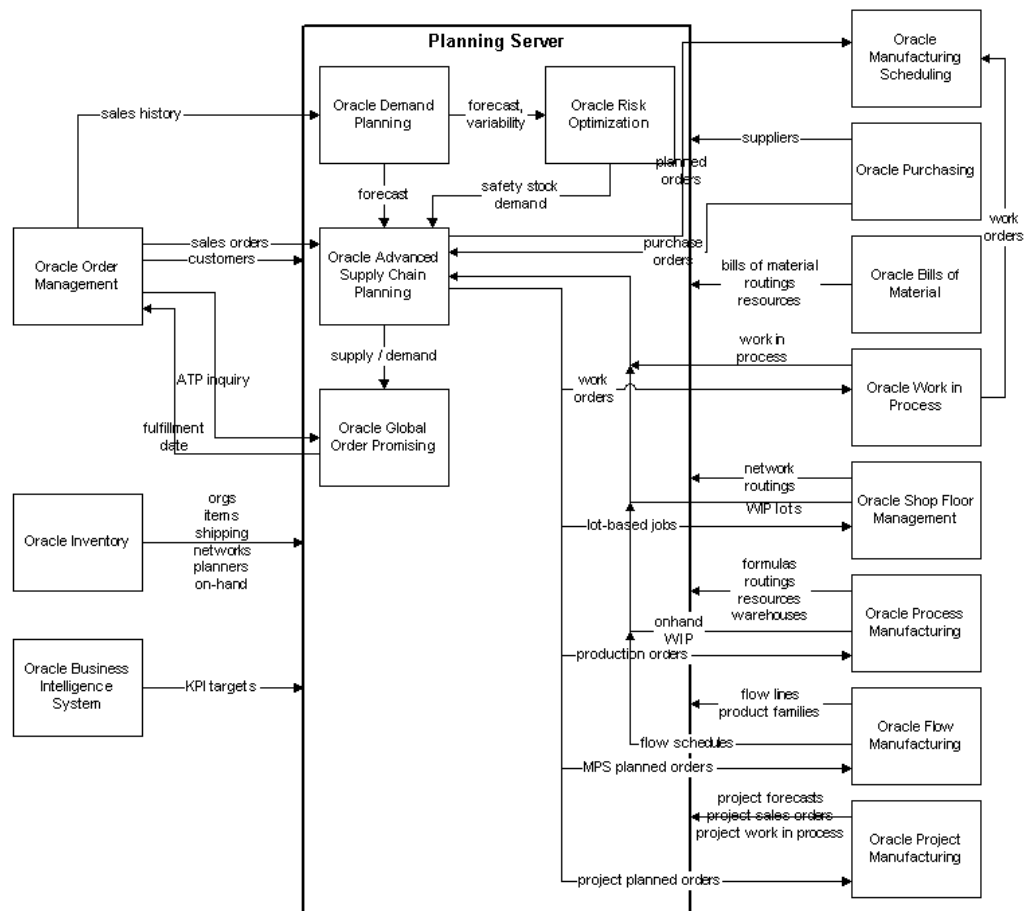
- APS Information Flows

- 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.

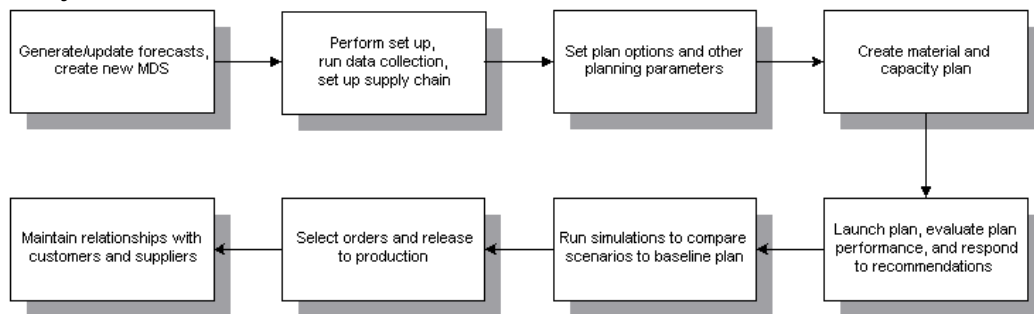
In the inquiry-to-order business flow, an inquiry for a potential order is sent from Oracle Order Management to Oracle Global Order Promising. The fulfillment date returned by Global Order Promising, if later than the original request date, is populated as the new request date of the order. This request 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

### To specify sources of demand

1. Load the adjusted (unconstrained) forecasts into a Master Demand Schedule (MDS) for use by Oracle ASCP.

**Note:** You can generate forecasts using Oracle Master Scheduling/MRP and Oracle Supply Chain Planning, or Oracle Demand Planning. If you generate a forecast using Oracle Demand Planning, you do not have to load an MDS or run collections. The forecast is available directly to Oracle ASCP on the APS Planner Server.

2. Choose MDS > Names to create the name of a new MDS or to use an existing MDS.
3. Choose MDS > Source List to associate individual forecasts with your MDS.
4. Individual forecasts for customers, sales regions, and so on, can be loaded into a single MDS so that all designated forecasts can be planned at once.
5. Choose MDS > Load-Copy-Merge to load merge your new or updated MDS with another MDS.

If you are using basic forecasting and MDS functionality found in Oracle Master Scheduling/MRP and Oracle Supply Chain Planning, see *Overview of Forecasting in Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*. If you are using Oracle Demand Planning, see *Oracle Demand Planning User's Guide*.

## 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, page 4-1 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 5-1 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.

See 'Planner Workbench', page 10-1 and 'Key Performance Indicators', page 21-80 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 9-1

## 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 9-1 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 3-6) 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	<ul style="list-style-type: none"><li>• Item is over committed</li><li>• Item has a shortage</li><li>• Item has excess inventory</li><li>• Items with expired lots</li><li>• Past due forecast</li><li>• Late supply pegged to a forecast</li><li>• Items below safety stock</li></ul>
Rescheduling Workflow	<ul style="list-style-type: none"><li>• Item has orders to be rescheduled in</li><li>• Item has orders to be rescheduled out</li><li>• Item has orders to be cancelled</li><li>• Item has orders with compression days</li><li>• Item has past due orders</li></ul>

Process	Exception Types
Sales Order Workflow	<ul style="list-style-type: none"> <li>• Past due sales orders</li> <li>• Late supply pegged to a sales order</li> </ul>
Project Workflow	<ul style="list-style-type: none"> <li>• Items with shortage in a project</li> <li>• Items with excess in a project</li> <li>• Items allocated across projects</li> </ul>
Material Workflow	<ul style="list-style-type: none"> <li>• Material constraint (supplier capacity constraint)</li> </ul>

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 10-92. 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 8-1 and Overview of Simulations, page 7-1 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 8-1 and 'Overview of Simulations, page 7-1 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 6-1

### **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 7-4 for 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.



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## Running Collections

This chapter covers the following topics:

- Overview of Running Collections
- Definitions
- Collection Strategy
- Architecture
- Collection Methods
- Running Standard Collections
- Data Changes That Can Be Collected in Net Change Mode
- Continuous Collections
- Legacy Collection
- Organization Specific Collections

### Overview of Running Collections

Oracle ASCP has a component architecture that allows a single instance of Oracle ASCP to plan one or more transaction instances. The transaction instances can be a mixture of releases. The Oracle ASCP planning instance (referred to as the planning server) can sit on the same instance as one of the transaction instances, or be a separate instance altogether. In either case (even if the planning server shares an instance with the transaction instance to be planned), data to be planned is brought from the transaction instance(s) to the planning server via a process called Collection.

This section describes the architecture used in the collection of planning data from multiple operational sources into Oracle ASCP. These sources could be different versions/instances of Oracle Applications or other legacy systems. Oracle ASCP uses a data store based on the planning data model that is exposed through interface tables. The data is pulled from the designated data sources into its data store; Oracle ASCP Collections are responsible for synchronization as changes are made to the data sources.

The configurability of the collections is enabled through a pull program based on AOL concurrent program architecture. Thus, for example, different business objects can be collected at different frequencies. Supplies and demands, which change frequently, can be collected frequently. Routings and resources, which change relatively less often, can be collected less frequently.

The data collection process consists of the Data Pull and the Operational Data Store (ODS) Load. The collection process lets you collect across several Oracle Application versions. It supports several configurations. The two types of collections process are standard and continuous.

- **Standard collections process:** Using the standard collections process, you can manually run three types of collection methods including a complete refresh, a net change refresh, or a targeted refresh on specific business entities.
- **Continuous collections process:** The continuous collections process is an automated process of data collection that efficiently synchronizes the data on the planning server by looking up the sources. If you opt for continuous collections, the system automatically determine the type of collection that needs to be run on entities selected by you. The continuous collections process collects data from the sources with the least user intervention. The Continuous Collections concurrent program performs continuous collections.

## Collections Data Notes

**Currency:** Currencies collected from Oracle Order Management and Oracle Purchasing are posted in functional currency even if their source is in transactional currency.

**Discrete Jobs:** A discrete job that is complete and not closed appears in the collected data with quantity zero. A discrete job that is complete and closed does not appear in the collected data.

**Drop ship purchase orders:** The collections process does not collect supplies against drop ship purchase orders because the planning engine does not plan drop ship sales orders.

**End-Item Substitutes:** You can see end-item substitutes in Collections Workbench as long as you have not defined a substitute set. If you have defined a substitute set, use Planner Workbench Items window to see the substitute set and end-item substitute.

**Global Forecasts:** You can review global forecast entries in Collections Workbench horizontal plan using rows Original and Cumulative Original.

**Inactive forecasts:** The collections process does not collect the demands of inactive forecasts if run in Full Refresh or Targeted Refresh collections mode

**Routings:** The collections process does not collect routing operation resources with Schedule = No and does not display them in their routings. It also does not collect alternate resources of primary resources that are Schedule = No, even if the alternate resources themselves are Schedule = Yes.

## Definitions

You should be familiar with the following terms before examining the data collections architecture:

Oracle Applications Data Store (ADS): The set of source data tables in each transaction instance that contain data relevant to planning.

Operational Data Store (ODS): The planning data tables in the planning server that act as destination for the collected data from each of the data sources (both ADS and Legacy).

Planning Data Store (PDS): The outputs of the planning process. The PDS resides in the same data tables as the ODS. However, PDS data are marked with plan IDs that show which plans they correspond to, while ODS data are marked with plan ID = -1.

Standard Data Collection: The standard data collection process enables you to select the mode of data collection from a complete refresh, an incremental refresh, or a targeted refresh. Standard data collection consists of the following processes:

- Pull program: Collects the data from the ADS and stores the data into the staging tables. This pull program is a registered AOL concurrent program that could be scheduled and launched by a system administrator. If you are using a legacy program, you must write your own pull program.
- ODS Load: A PL/SQL program which performs the data transform and moves the data from the staging tables to the ODS. This collection program is a registered AOL concurrent program that could be scheduled and launched by the system administrator.

Continuous Data Collection: The continuous data collection process automates the process of looking up the sources to populate the tables on the planning server. With the least user intervention, the continuous data collection process determines the type of collection to perform on each type of entity. The Continuous Collections concurrent process performs continuous collections.

Collection Workbench: The Collection Workbench is a user interface for viewing data collected over to the planning server from the transaction instances. The functionality here is similar to Planner Workbench functionality. For more information on the Planner Workbench, see 'Overview of Planner Workbench, page 10-1.

## Collection Strategy

Major features of the collection process include:

- Multiple Source Instances
- Pull Architecture

- Detect Net Changes to Synchronize Oracle Applications and Oracle ASCP
- Multi-Process Collection Architecture
- Data Consolidation
- Projects/Tasks, and Seiban Numbers
- Support for several Oracle Applications Versions and RDBMS Versions
- Support for Several Configurations

### Multiple Source Instances

You can register any number of source data instances and non-Oracle data sources on each Oracle ASCP installation.

### Pull Architecture

You can collect new source data instances into Oracle ASCP with minimal impact. The data is pulled from the source data instance by Oracle ASCP. Each instance can have its own refresh interval. A failure in one instance will not affect data collections from other instances.

### Detect Net Change to Synchronize Oracle Applications and Oracle ASCP

You can synchronize the data in Oracle Applications transaction instances and the Oracle ASCP planning server in a net change mode. Thus, only the changed source data is collected each time, reducing the computational burden on the collection process.

### Multi-Process Collection Architecture

You can enhance the performance of the pull program by distributing the tasks to multiple collection workers.

### Data Consolidation

The collection program can consolidate the entities shown in the following table across instances based on the corresponding user-defined keys.

Entity	User Key
MTL_SYSTEM_ITEMS	Concatenated Item Segments
MTL_CATEGORIES	Concatenated Category Name

Entity	User Key
MTL_CATEGORY_SETS	Category Set Name
PO_VENDORS	Vendor Name
PO_VENDOR_SITES	Vendor Site Code
RA_CUSTOMERS	Customer Name
RA_SITE_USES_ALL	Customer Name, Site Use Code, Location Operating Unit
Unit Of Measure	UOM Code

For all the entities not described in the table, the instance ID together with the entity key in each instance uniquely identifies each row.

### Projects/Tasks and Seiban Numbers

You can consider Projects, Tasks, and Seiban Numbers to be unique within the context of an Oracle Applications instance; no consolidation is required.

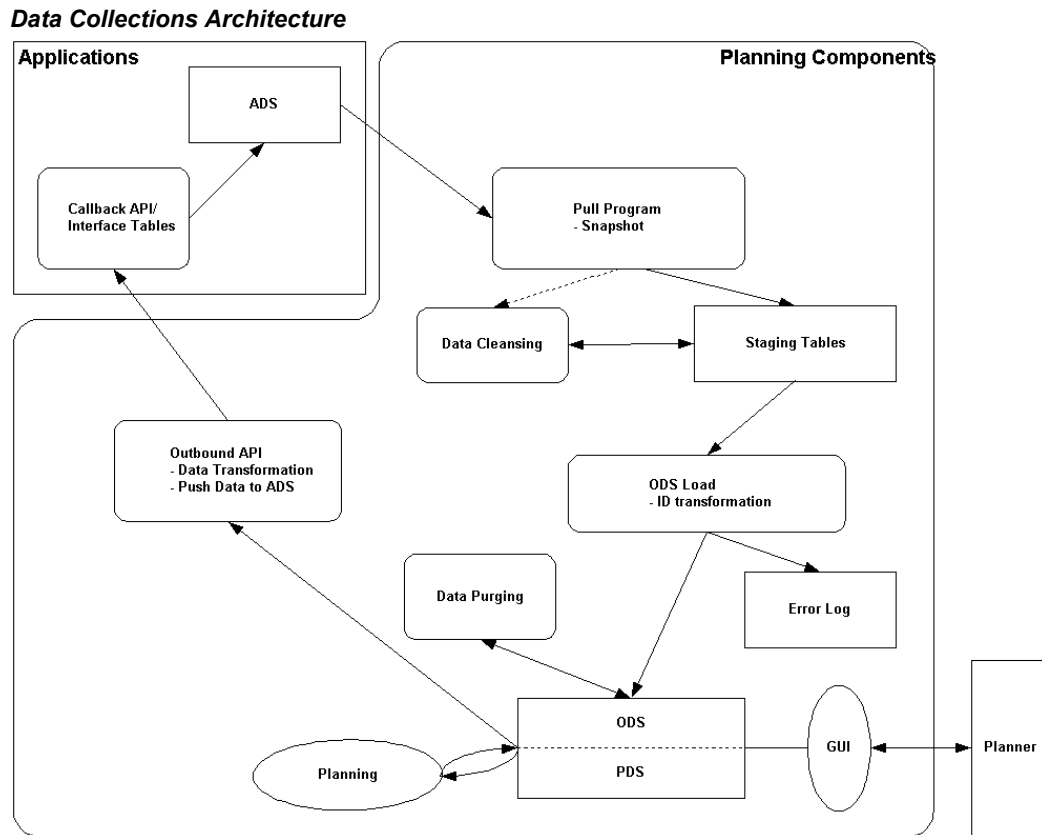
### Support for Several Configurations

You can perform centralized and decentralized configurations based on the scale of the enterprise and specific business needs. Source data applications and Oracle ASCP can reside on one server or on separate servers.

## Architecture

Oracle ASCP's data collection architecture, shown in the figure below, depicts the data objects, procedures, and data flow between source data and Oracle ASCP. The major repositories are ADS, ODS, and PDS. Procedures enable data cleansing, data collecting, data communication, and net-change handling between data repositories.

When Oracle ASCP and its source data reside on the same instance, communication between them is enabled by PL/SQL based public API procedures or interface tables. In a distributed environment, procedure calls are made using database links.



## Supported Configurations

Oracle ASCP supports the following planning configurations for installation and deployment:

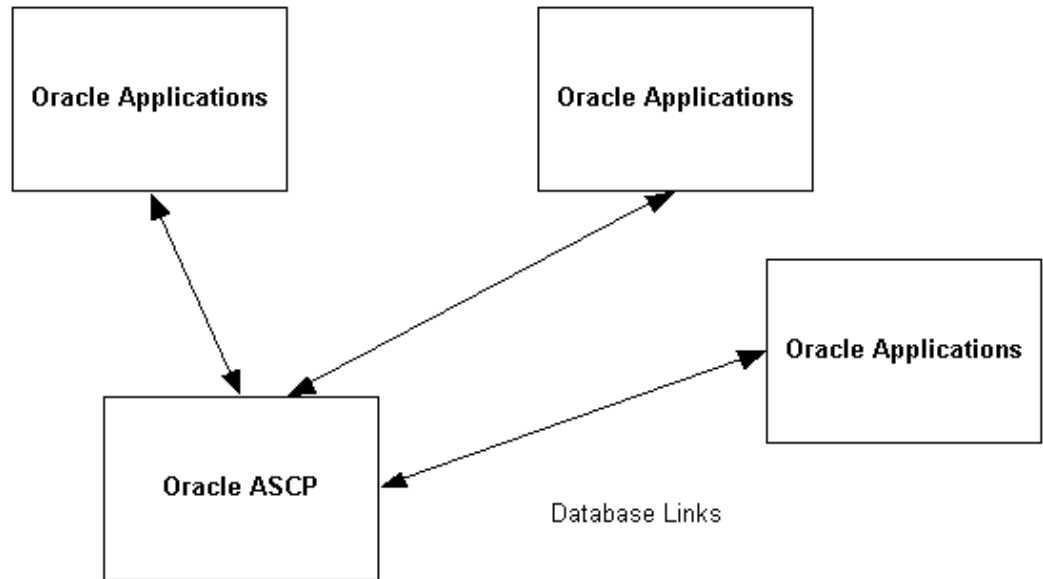
- Centralized
- Decentralized

These configurations offer you enough flexibility to design a mode of planning that suits your business objectives. Both configurations are supported using a consistent architecture as outlined in the previous section. The sole distinction is that centralized planning uses database links to pull data into the Oracle ASCP data store.

## Decentralized Planning

The following figure shows the decentralized planning configuration:



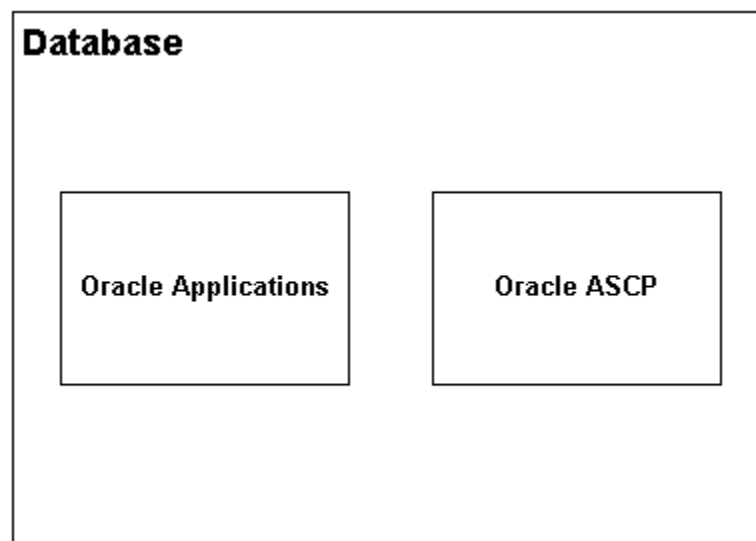


Oracle ASCP works as a central Planning Server across several source data instances. The collection program is installed on the planning server and the data stripped by instance is moved into staging tables within Oracle ASCP during the data collection process.

After the planning process, results can be pushed back to each instance.

## Centralized Planning

This figure shows the centralized planning configuration.

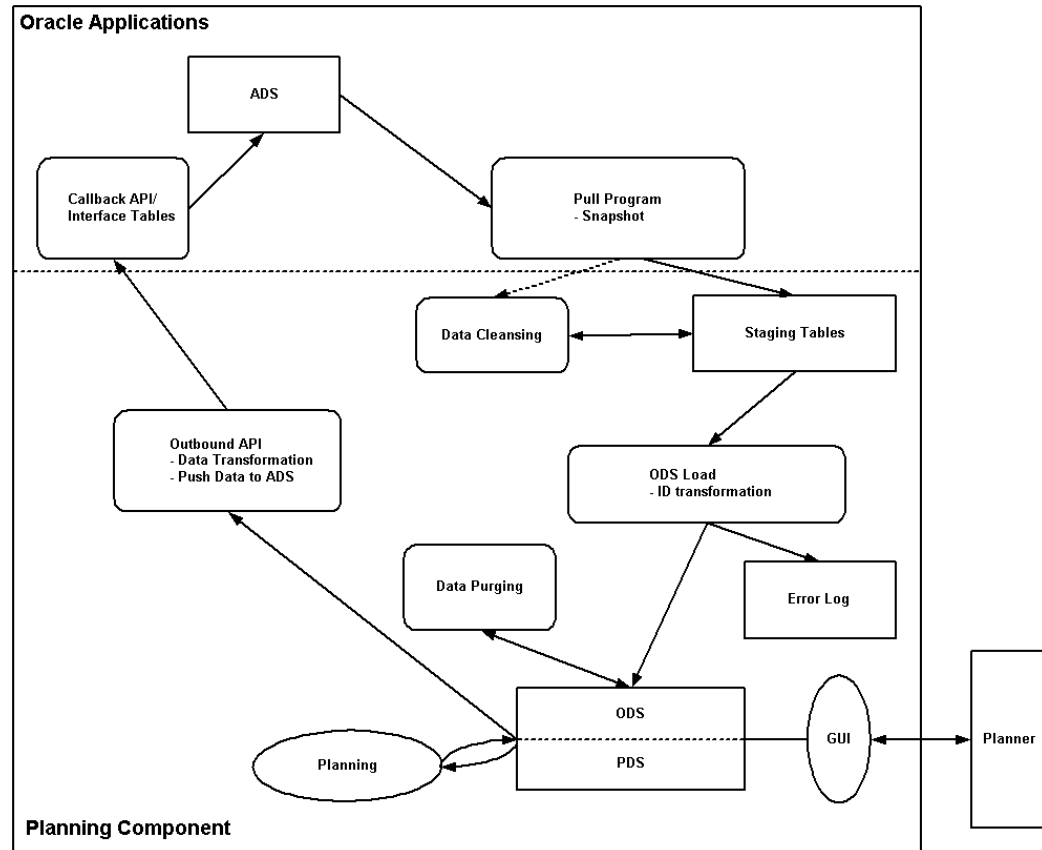


Oracle ASCP and its source data reside in the same database. No database link is required in this case. Two components can communicate through the planning object

APIs and the interface tables defined in Oracle Applications.

In this configuration, shown in the following figure, a simplified architecture is used, and the data transformation is not required.

#### ***Simplified Data Collections Architecture***



## **Collection In a Distributed Environment**

When performing complete collections in a distributed environment involving Oracle 8i databases, you must set the values of these profile options in the source instance as follows to prevent autonomous transaction errors in the Planning Data Pull concurrent process:

- FND: Log Enabled: No
- MO: Security Profile: Make the value null
- MO: Default Operating Unit: Make the value null
- MO: Distributed Environment: Yes

- OM: Debug Level: Make the value null

Beginning with Oracle 9i R2 databases, the database handles autonomous transactions

## Collection Methods

Collecting data can take a significant amount of time compared to the time for the overall planning cycle. Oracle Advanced Supply Chain Planning (ASCP) provides a collection method that allows the collections duration to be reduced in cases where information about some - but not all - planning-related business entities on the planning server needs to be updated.

There are three collection methods:

- The Complete Refresh method clears all transaction data for all business entities from the planning server (for the source instance being collected), then copies over information about the user-selected entities. This method can be time consuming.
- The Targeted Refresh method clears transaction data for only the user-selected business entities from the planning server, and then copies the entity information over from the transaction instance. Information about unselected entities remains intact on the planning server. All planning business entities are supported by Targeted Refresh collections. 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.
- The Net Change Refresh method copies only incremental changes to business entities to the planning server (and is thus faster), but is supported mainly for demand and supply business entities only.

## When To Use Each Collection Method

You should use Complete Refresh the first time you perform collections from a source instance to the planning server. You may also wish to use complete refresh collections after a significant proportion of the setup data in your transaction system has been altered, and you would like to make a fresh copy of all source instance business entities (items, bills of material, sourcing rules, resources, and so on) on the planning server. You typically collect all business entities in a Complete Refresh Collection.

You should use Net Change Refresh if you would like to update the supply and demand picture on the planning server as quickly as possible, and the incremental changes to supply and demand in the source instance since the last collection have not been extensive relative to the existing (already collected) body of supply and demand information. In this case, Net Change Refresh is the fastest way to achieve the desired update of the planning server operational data store, because it copies over from the

source instance only the incremental changes in supply and demand since the last collection.

You should use Targeted Refresh if you would like to update the planning server information for some (but not all) business entities, and some of these entities fall outside the category of supply and demand entities supported by Net Change Refresh. For example, to update the planning server with a newly rebuilt manufacturing calendar, you would run Targeted Refresh collections for just the calendar business entity. Data on the planning server about all other business entities would remain unaffected by this collection.

You would also use Targeted Refresh (in lieu of Net Change Refresh) to bring over the latest picture of supply and demand to the planning server in cases when the incremental changes to supply and demand on the source instance since the last collection are very extensive. In this case, the update mechanism employed by Targeted Refresh collections (wholesale deletion followed by rebuilding of data on the planning server) is faster than the mechanism employed by Net Change Refresh collections (incremental insertions into existing data on the planning server).

If you want the mode of data collection to be determined by the system, select Continuous Collections.

## Running Standard Collections

### To collect data from an Oracle Applications transaction instance

1. Sign on using the Advanced Supply Chain Planner responsibility or the Advanced Planning Administrator responsibility.
2. Navigate to the Planning Data Collection window by selecting Collections > Oracle Systems > Standard Collection.

The Planning Data Collection window appears.

### Planning Data Collection window

Program	Operating Unit	Stage	Parameters
Planning Data Pull		Planning Data Pull	
Planning ODS Load		Planning ODS Load	

This window shows you that the collections process consists of two sequentially executed concurrent programs. The first program, Planning Data Pull, copies information from the source instance into the APS staging tables on the planning server. Here, against the data held in the staging tables, ASCP performs some basic cleansing. For example, it ensures that items with the same names that are collected from different source instances will be assigned the same internal IDs (recognized as the same item). Further cleansing operations on the staging tables (if desired) may be done at this point via any custom concurrent program. This custom concurrent program would need to be inserted into the Planning Data Collection request set, in between Planning Data Pull and Planning ODS Load. The second program, Planning ODS Load, copies information from the APS staging tables into the operation data store on the planning server, where it becomes available for use during planning.

3. Select the Parameters field for the Planning Data Pull program.

The Planning Data Pull Parameters window appears.

**Data Pull Parameters window**

The screenshot shows a window titled "Parameters" with a list of settings. The settings are as follows:

Parameter	Value
Instance	[Empty field with dropdown arrow]
Number of Workers	2
Timeout (Minutes)	180
Purge Previously Collected Data	Yes
Collection Method	Complete Refresh
Analyze Staging Tables	No
Approved Supplier Lists (Supplier Capacities)	Yes
ATP Rules	Yes
Bills of Materials/Routings/Resources	Yes
Bills Of Resources	Yes
Calendars	Yes
Demand Classes	Yes
End Item Substitutions	Yes
Forecasts	Yes
Items	Yes
Key Performance Indicator Targets	Yes
Master Demand Schedules	Yes
Master Production Schedules	Yes

At the bottom of the window are four buttons: OK, Cancel, Clear, and Help.

4. Use the information in the following table to set up parameters in the Planning Data Pull Parameters window.

Parameter	Values
Instance	Source instance code from list of values.

Parameter	Values
Number of Workers	One or greater. Increase this number to increase the amount of computational resources devoted to the Planning Data Pull process. This allows you to specify the number of workers for the Data Pull, which can now be different from the number of workers specified for the ODS load process.
Timeout (Minutes)	The maximum amount of time you would like to allocate to the Planning Data Pull process. If the Planning Data Pull process has not completed within this amount of time, it will be terminated with an error.
Purge Previously Collected Data	Yes (default) or No. Setting this to Yes wipes out all data in the APS planning server operational data store associated with the selected source instance as the first step in the collections process. If you set this to Yes, the only allowable collection method is Complete Refresh. If you set this to No, the allowable collection methods are Targeted Replacement and Net Change.
Collection Method	Complete Refresh/Targeted Refresh/Net Change Refresh.
Analyze Staging Tables	Yes or No (default). Set this to Yes periodically to recompute database access statistics on the APS staging tables. This speeds up the subsequent Planning ODS Load process.

Parameter	Values
User Company Association	<p>The possible values are:</p> <ul style="list-style-type: none"> <li>• No: During data collections, the destination instance does not accept the following: New users' company association and existing users with changes to their company association.</li> <li>• Create users and enable user company association: A user created on one of the source instances can be automatically created on the planning server or destination instance. You can use this option when you need to work with multiple source instances or systems.</li> </ul> <p>Create a new user, specify the user's contact information during setup, and initiate a data collection. The user is created on the destination instance or planning server and is assigned the Supply Chain Collaboration Planner responsibility. The new user can log onto Oracle Collaborative Planning and view data that is visible to the associated company.</p> <ul style="list-style-type: none"> <li>• Create a new user, specify the user's contact information during setup, and initiate a data collection. The user is created on the destination instance or planning server and is assigned the Supply Chain Collaboration Planner responsibility. The new user can log onto Oracle Collaborative Planning and view data that is visible to the associated company.</li> </ul> <p>Create a new user on the source instance and specify the user's contact information during the setup. Create the user on the destination instance or planning system and assign the user responsibilities. Start a data collection to complete the user's company</p>



Parameter	Values
	association. This ensures that the user has all the assigned responsibilities.

The remaining parameters in the Planning Data Pull Parameters are a list of business entities. Selecting Yes for an entity means collect the information for that entity over from the source instance. Selecting No for an entity means don't collect the information for that entity over from the source instance.

**Note:** The default value for these entities is set to Yes. Collecting information for Resource Availability and Sourcing History takes a significant amount of time. Collect this information only when necessary.

5. Select OK.
6. Select the Parameters field for the Planning ODS Load program.  
The Parameters window appears.

**Planning ODS Load Parameters window**

7. Use the information in the following table to specify the fields and options in this window.

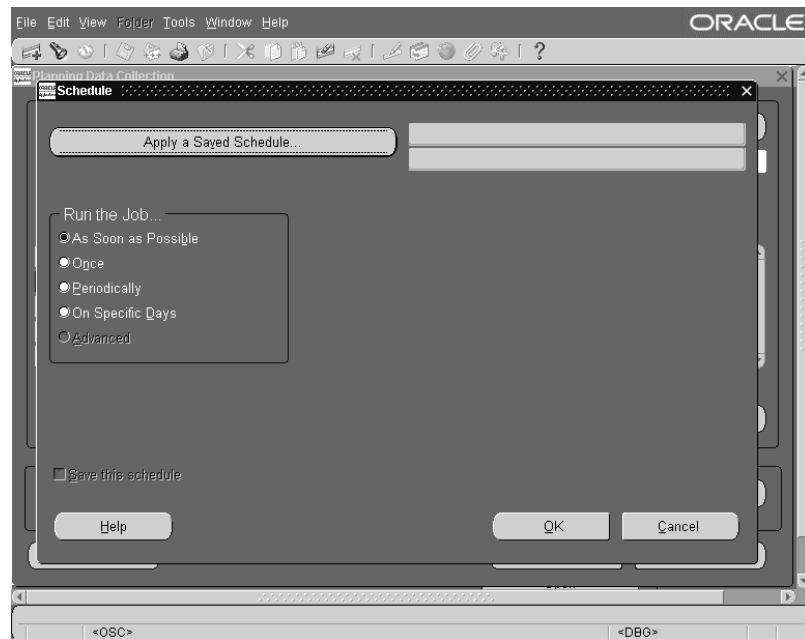
Parameter	Values
Instance	Source instance code from list of values.
Timeout (Minutes)	Number of minutes before the concurrent program will end.
Number of Workers	One or greater. Increase this number to increase the amount of computational resources to devoted to the Planning ODS Load process.
Recalculate Resource Availability	This defaults to the value (Yes or No) that you set for the Resources Availability business entity in the Planning Data Pull Parameters window. The value that you set here is the one that actually determines whether resources availability is collected or not.
Recalculate Sourcing History	This defaults to the value (Yes or No) that you set for the Sourcing History business entity in the Planning Data Pull Parameters window. The value that you set here is the one that actually determines whether sourcing history is collected or not. If you select Yes, then ASCP will collect all new sourcing history not already on the planning server in the time range [(today - x months) through (today)] from the source transaction system. The number x is given by the value that you set for the profile option MSC: Sourcing History Start Date Offset (in months). During planning, ASCP will use the total cumulative sourcing history on the planning server in addition to the planned sourcing in the plan to determine whether sourcing percentages in sourcing rules are being respected or not.
Purge Sourcing History	Valid values are Yes and No (default). If you select Yes, then all sourcing history present on the planning server will be deleted before the collection process commences.

8. Select OK.
9. Select Submit in the Planning Data Collection window to run collections immediately, or select Schedule to schedule collections for some later time.

If you select Schedule, the Schedule window appears.

**Note:** If you want to perform an incremental refresh frequently, use this feature.

### ***The Schedule Window***



You have complete control over the timing and frequency of the collection of data from the transaction systems, and the timing and frequency of planning. You can manage the balance between network traffic and the need to monitor current status in your plans.

10. Select a frequency for running the job in the left pane. Complete any additional fields that appear based on your selection.
11. Click OK.
12. Choose Submit in the Planning Data Collection window.
13. From the toolbar, choose View > Requests to view the status of the collection process.

The Find Requests window appears.

14. Select a type of requests to view then select Find.

The Requests Window displays data collection progress.

15. After the collection process completes, view your results.

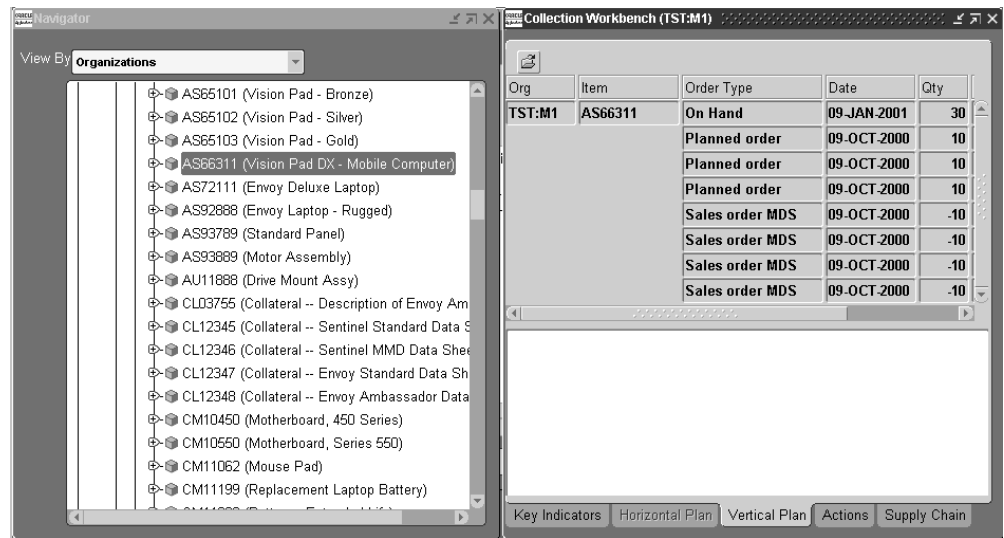
If concurrent process Refresh Snapshot ends in a warning and you have configure-to-order items, there may be a setup issue with those items. Concurrent process Refresh Snapshot calls the configure-to-order applications programming interface to explode the configured bills of material and create demand in the proper manufacturing organizations. Check the log file of the configure-to-order applications programming interface for details of the setup issues and take corrective action.

If your collections process runs on an Oracle 8i database and the collections process fails, attend to the following troubleshooting information:

- If it fails with an Autonomous Transaction within Distributed Databases error either at any point in the Data Pull /Pull Workers run or when launching Refresh Snapshots, set profile option FND:Log Enabled to No.
- If it fails in Planning Data Pull Worker when collecting sales orders or hard reservations, either set profile option OM:Debug Level to null value or set it to a value lower than 5

16. From the Navigator window, choose Collection > Workbench.

## The Collection Workbench



Notice that data is brought over from selected instances.

**Note:** Users can collect forecasts into the planning server. If you want the collections program to collect a forecast set, select the Advanced Planning Collections checkbox while defining the forecast set.

## Data Changes That Can Be Collected in Net Change Mode

When the net change mode for collections is selected (by setting the collections parameter Complete Refresh to No), the data changes shown in the following table can be collected. If you set the collections parameter Complete Refresh to yes, the collections program collects the entire data for the entity.

All other data changes must be collected by running full collections (by setting the collections parameter Complete Refresh to Yes). Net change collections run more quickly than full collections.

You can run data collections in net change mode for these transactions:

Data Element	Comments
Sales orders	Cancellations of or modifications to sales orders are captured. The Pull Sales Orders collections parameter must be set to Yes.

<b>Data Element</b>	<b>Comments</b>
Reservations against demands	Reservations against both external and internal sales order demands are captured. The Pull Reservations collections parameter must be set to Yes.
Master production schedule demands	MPS demands that are added, modified or relieved in the source instance are captured. The Pull MPS collections parameter must be set to Yes.
Master demand schedule	The Pull MDS collections parameter must be set to Yes.
WIP component demands	Demand changes due to cancellation of WIP jobs, changes in the state of WIP jobs (for example, operations within a job have been performed or cancelled), and changes to WIP jobs because of changes in item information are captured. The Pull WIP collections parameter must be set to Yes.
WIP repetitive item demands	Demand changes due to cancellation of WIP repetitive schedules, changes in the state of WIP repetitive schedules, and changes to WIP repetitive schedules because of changes in item information are captured. The Pull WIP collections parameter must be set to Yes.
Forecast demands	Changes and deletions in forecasts are captured. The Pull Forecast collections parameter must be set to Yes.
User demands	Changes to user demands because of changes to item information are captured.
Master production schedule supplies	Changes in supply schedules or item information are captured. The Pull MPS collections parameter must be set to Yes.
User supplies	Changes to user supplies because of changes to item information are captured.

<b>Data Element</b>	<b>Comments</b>
Purchase order supplies	Changes to PO supplies because of rejections, returns, or cancellations or changes to item information are captured. The collections parameter Pull PO collections parameter must be set to Yes.
On-hand supplies	The Pull On Hand collections parameter must be set to Yes.
Work orders in Oracle Work in Process	Changes in WIP Jobs are captured. The Pull WIP collections parameter must be set to Yes.
Resource availability	The Recalculate NRA collections parameter must be set to Yes.
Supplier capacity	The Pull Supplier Capacity collections parameter must be set to Yes.
Bills of material	All BOM changes are captured: new components, disabled components, component quantities, effectivity dates, BOM revisions, and component substitutes. The Pull BOM/Routing collections parameter must be set to Yes.
Routing operations	Changes to and deletions of routing operations as a result of changes to operation sequences (for example, the addition of new operations, the disabling of operations, or the changing of operation dates), the disabling of a routing, the changing of routing dates, or changes to item information (for example, the disabling of an item, the creation of a new item) are captured. The Pull/BOM Routing collections parameter must be set to Yes.
Components needed for a routing operation	Changes to and deletions of components needed for a routing operation are captured. The Pull BOM/Routing collections parameter must be set to Yes.

<b>Data Element</b>	<b>Comments</b>
Resources attached to a routing operation	Changes to and deletions of operation resources or operation resource sequences within a routing are captured. The Pull BOM/Routing collections parameter must be set to Yes.
Resource requirements for WIP jobs	Changes in resource requirements of WIP jobs because of completion of the WIP jobs, completion of operations within the WIP jobs, or changes in item information are captured. The Pull WIP collections parameter must be set to Yes.
Items or Item categories	Changes in items and items categories are captured.
Capacity	Changes in supplier capacity and resource capacity are captured.

Transactions (supply and demand) change more frequently than setup entities. After data collections, the collections program maintains snapshots of transaction entities. Each time you run data collections, the collections program looks at the snapshot to determine if the transaction entity has changed since the previous collections. If it has, the collections program collects the incremental data changes and updates the snapshot. As setup entities change less frequently, the collections process does not keep snapshots for these and cannot perform net change collections on them. Schedule either a targeted or a complete refresh for setup.

You cannot run data collections in net change mode for the following setup entities:

- Category sets
- Default item category
- Simulation sets
- Department resources
- Resource shift setup
- Hard reservations
- Projects or project tasks



- Units of measure (class conversion, conversions)
- Sourcing information
- Bills of resources
- Calendar information (start dates calendar dates, calendar week, calendar shifts, shift Dates, shift exceptions, shift times, period start dates)
- Interorganization ship methods
- Parameters
- Planners
- Business intelligence systems periods
- Purchase orders suppliers
- Resource groups
- Demand classes
- Supplier flex fences
- Availability to promise rules
- Trading partners (customer or customer sites, supplies, supplier sites, organization, organization sites, location associations, customer, vendor, buyer, contacts)

## Continuous Collections

Continuous collection is an automated process that synchronizes snapshot-enabled data entities (supply and demand) and snapshot-disabled setup entities (suppliers, customers and supplier rules) between the sources and the planning server. You can schedule separate collection programs for collecting data entities and setup entities.

The Continuous Collections concurrent program performs the process of continuous collections. You have to select only those business entities for which the collections process needs to run automatically. The Continuous Collections concurrent program determines the appropriate mode of performing collections for the selected business entities. You can run continuous collections on the following entities:

- For entities that have snapshots associated with the source, you need to specify a threshold value (as a percent). Based on this value, the Continuous Collections concurrent program determines whether the collections should run in the Targeted mode or the Net Change refresh mode. If continuous collections are run frequently,

then for most entities, the data collections are performed in the Net Change Refresh mode.

- If the changed records percent is below the threshold percent, the concurrent process collects only the changed records (Net Change Refresh) from the snapshot log.
- If the changed records percent is higher than the threshold percent, the concurrent process collects all of the rows (Targeted Change Refresh) from the snapshot.
- If there are no changed records, the concurrent process does not collect any data.

The following table details whether or not snapshots are associated for the entities supported by continuous collections:

Entities	Snapshot Associated
Approved supplier lists (Supplier capacity)	Yes
Bills of material	Yes
Routings	Yes
Resources	Yes
Bills of resources	Yes
Forecasts	Yes
Items	Yes
Master demand schedule	Yes
Master production schedule	Yes
On hand quantity	Yes
Purchase orders	Yes
Purchase requisitions	Yes
Sales orders	Yes

<b>Entities</b>	<b>Snapshot Associated</b>
User supplies and demands	Yes
Work in process	Yes
Available to promise rules	No
Calendars	No
Demand classes	No
End item substitution	No
Key performance indicator targets	No
Planning parameters	No
Planners	No
Projects and tasks	No
Reservations	No
Resource availability	No
Safety stock	No
Sourcing history	No
Sourcing rules	No
Subinventories	No
Trading partners (customers and suppliers)	No
Unit numbers	No
Units of measure	No
User company association	No

For entities without snapshots, the concurrent program always initiates targeted

refresh.

You can plan to use continuous collections when extensive transactions are involved. For example, a manufacturing company with extensive work in process transactions might setup continuous collections to run every 20 minutes to collect on hand balance. Similarly, Oracle Collaborative Planning users might schedule continuous collections every 2 minutes if they want to view the current supplies status.

## Running Continuous Collections

### To collect data from an Oracle Applications transaction instance

1. Sign on using the Advanced Supply Chain Planner responsibility or the Advanced Planning Administrator responsibility.
2. From the Navigator, select Collections > Oracle Systems > Continuous Collection.  
The Continuous Collections window appears.

#### *The Continuous Collections window*

**Run this Request...**

Name: **Continuous Collections** [...]

Parameters: [ ]

Language: **American English** [Languages...]

**At these Times...**

Run the Job: **As Soon as Possible** [Schedule...]

**Upon Completion...**

☒ Save all Output Files

Notify: [ ] [Options...]

Print to: **noprint**

[Help (B)] [Submit] [Cancel]

This window enables you to schedule the process of data collection, set parameters that are required for running Continuous collections, select language preferences, and specify the notification tasks that need to be triggered on completion of Continuous collections.

3. Click in the Parameters field to set values that the concurrent program would require to perform Continuous collections.

The Parameters window appears.

**The Parameters window**

The Parameters window is a dialog box with a title bar that says "Parameters" and a close button (X). It contains a list of parameters with corresponding input fields. The parameters and their values are as follows:

Parameter	Value
Instance	
Number of Workers	3
Timeout (minutes)	180
Snapshot Threshold (%)	40
Analyze Staging Tables	Yes
Approved Supplier Lists (Supplier Capacities)	Yes
BOM/Routings/Resources	Yes
Bill Of Resources	Yes
Forecasts	Yes
Items	Yes
Master Demand Schedule (MDS)	Yes
Master Prod. Schedule (MPS)	Yes
On Hand	Yes
Purchase Orders/Purchase Requisitions	Yes
Sales Orders	Yes
Supplier Responses	Yes
User Supplies/Demands	Yes
Work in Process (WIP)	Yes

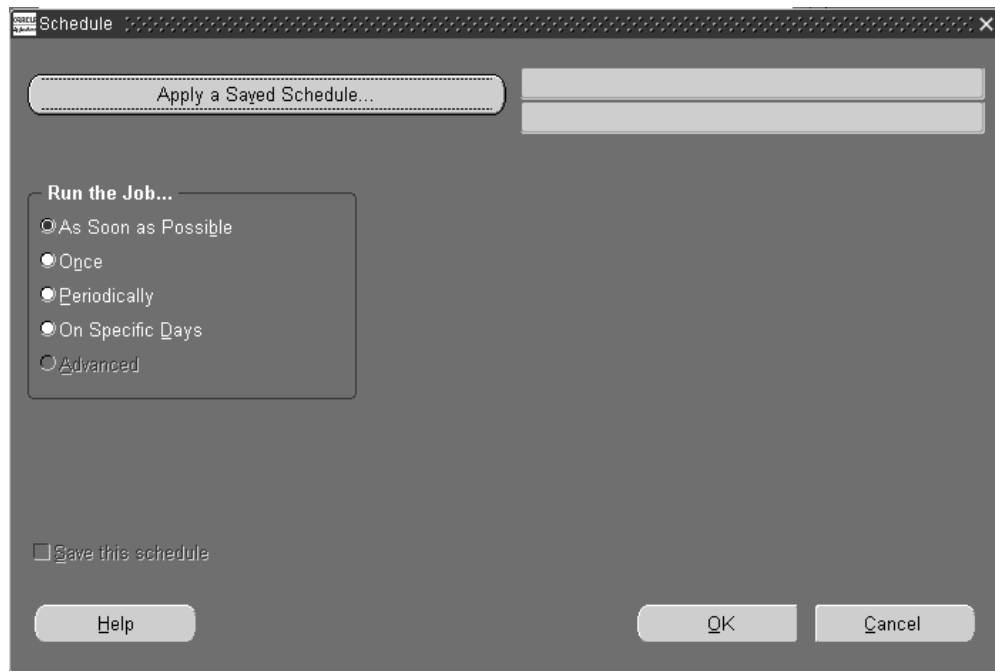
At the bottom of the window, there are four buttons: OK, Cancel, Clear, and Help.

Specify Yes for the entities that you want the Continuous Collections concurrent program to consider for collection. Most of the fields in this window are similar to the parameter fields for the Standard collections process. The parameter that distinguishes the Continuous collections process from the Standard collections process is Snapshot Threshold (%). By default, the threshold value is set to 40%. You can change this value.

4. Select OK.
5. Select Schedule in the Continuous Collections window to schedule collections.

The Schedule window appears.

### ***The Schedule window***



6. Select the frequency for running collections in the left pane. Complete any additional fields that appear based on your selection.
7. Click OK.
8. Select Submit in the Continuous Collections window.
9. From the toolbar, choose View > Requests to view the status of the collections process.

The Find Requests window appears.

**The Find Requests window**

The screenshot shows a window titled "Find Requests" with a standard Windows-style title bar. Inside the window, there are four radio buttons for selecting the type of requests to find: "My Completed Requests", "My Requests In Progress", "All My Requests", and "Specific Requests". The "Specific Requests" option is selected. Below these radio buttons is a group box containing several input fields: "Request ID", "Name", "Date Submitted", "Date Completed", "Status", "Phase", and "Requestor". Each field has a corresponding text input area. Below the group box, there is a checkbox labeled "Include Request Set Stages in Query" which is checked. Below the checkbox is an "Order By" label followed by a dropdown menu currently showing "Request ID". At the bottom of the window, there are three buttons: "Submit a New Request...", "Clear", and "Find".

10. Specify the type of request you want to view.

11. Select Find.

The Requests window displays the status of the data collection process.

### The Requests window

Request ID	Name	Parent	Phase	Status	Parameters
1605985	Refresh Collection Snaps	1605984	Completed	Normal	1, ALL SNAPSHOTS, 0, 0, 1, T
1605984	Continuous Collections		Completed	Normal	21, 3, 180, US, 40, 2, 1, 1, 1, 1, 1,
1605874	Refresh Collection Snaps	1605873	Completed	Normal	1, ALL SNAPSHOTS, 0, 0, 1, T
1605873	Continuous Collections		Completed	Normal	21, 3, 180, US, 40, 2, 1, 1, 1, 1, 1,
1605869	Collections Triggers		Completed	Normal	
1605868	Collections Views		Completed	Normal	
1605867	Collections Synonyms		Completed	Normal	
1605866	Create OE Snapshots		Completed	Normal	
1605865	Create PO Snapshots		Completed	Normal	
1605864	Create MRP Snapshots		Completed	Normal	

After the collection process completes, view the result in the Collection Workbench.

## Legacy Collection

Legacy Collection provides an open framework for consulting and system integrators to bring data from legacy systems into Oracle APS / CP. You can upload data by batch upload of flat files. This is achieved in part by extending the interface table capabilities. A preprocessing engine validates the incoming data from legacy application and ensures that referential integrity is maintained. All business objects can be imported into APS using flat files.

In addition to collecting data from your ERP instance to your planning instance, you can collect data to the Planning instance from:

- Your non-Oracle (legacy) systems
- Your trading partners' non-Oracle systems

To collect data from your non-Oracle ERP systems or your trading partners' systems, you model each non-Oracle ERP system or trading partner as an Oracle Applications organization and store their setup and transaction data there. Setup information includes organization setup, items, bills of material, resources, routings, and sourcing information. Transaction data is of the following types:

- On-hand balance



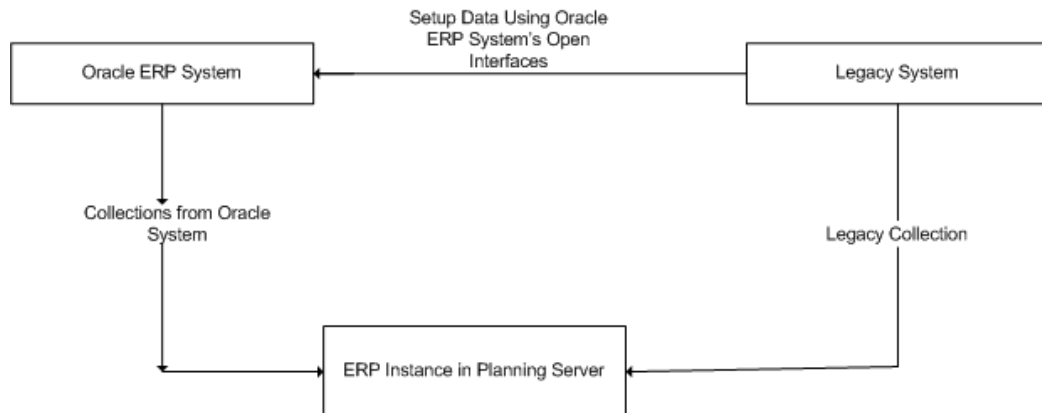
- Purchase orders
- Purchase requisition
- Work orders
- Work Order component demand
- Intransit shipment and receipt
- Planned orders
- Local forecasts
- Global forecasts
- Demand schedules
- Sales orders
- Item suppliers
- Supplier capacities
- Supplier flex fences

You can perform the following steps to collect data from your trading partners' non-Oracle systems to your planning instance:

- Load setup data (such as items, BOMs, Trading Partners) from the trading partner's system to flat files. Load the flat files to the source (Oracle ERP) instance using the standard interfaces and use standard collections to move it to the destination (planning) server.
- Load transaction data from flat files to the ERP instance (representation of Oracle ERP system's data) of your planning server. Use legacy collections to move data from the legacy instance to the planning server.

The following diagram illustrates the flow of data from non-Oracle ERP (legacy) systems to an Oracle ERP application and the planning server.

### Data Flow



## Setup for Collection of Transaction Data into the Planning Server

- Define two types of organizations in the source instance. The first organization is for OEM and the second is for supplier and customer. You also need to define sourcing rules between the OEM organization and the supplier and customer organization.
- Import the setup data from your non-Oracle ERP system into the supplier and customer organization using the Oracle ERP open interfaces such as Items open interface, BOM open Interface.

To load the organizations for trading partners, you must first define the trading partners in previous loads .

- Collect all data from the OEM and supplier and customer organizations into your destination instance (planning server).
- Load transaction data into the each supplier and customer organizations flat files. Using either an Oracle Applications form or the self-service application, you can load data from the non-Oracle ERP system into the organizations. If you are using the self-service method, you can upload a zip file containing all the data.

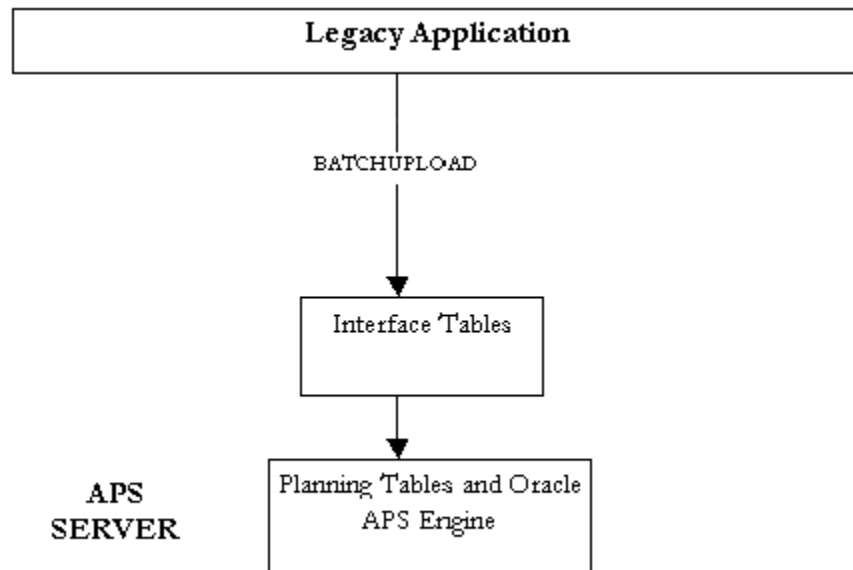
## Process

You push legacy data, such as items, bills of materials, routings, etc. into Oracle APS interface tables using batch upload. Batch upload is done using Oracle SQL\*Loader. SQL\*Loader requires that data is brought over in a format described in a control file. Oracle has provided control files for all the interface tables. The list of control files is available in Oracle iSupport.

The following diagram shows the movement of data from legacy systems into the

Oracle APS server via interface tables using the batch upload process.

#### **Legacy Application**



## **Setting up Batch Uploads**

The System Integrator must do the following to set up the batch uploads:

1. Map the Oracle APS interface tables' control files (a control file is a template that specifies the input data format) to the legacy system's tables. The list of control files is available in Oracle iSupport.
2. Create scripts to extract data from the legacy system in the format prescribed by the control files.

When loading for trading partner sites, provide values for the location for organizations (Partner Type = 3); do not provide values for the location for customer and supplier sites (Partner Type = 1 or 2).

For example, the following is the control file for Purchase Order Supplies (MSC\_ST\_SUPPLIES\_POctl)

```
OPTIONS (BINDSIZE=1000000, ROWS=1000, SILENT=(FEEDBACK,DISCARDS))
LOAD DATA
INFILE 'MSC_ST_SUPPLIES_PO.DAT'
APPEND
INTO TABLE MSC.MSC_ST_SUPPLIES
```

```

FIELDS TERMINATED BY '~'
(
ITEM_NAME,
ORGANIZATION_CODE,
NEW_SCHEDULE_DATE,
SUPPLIER_NAME,
FIRM_PLANNED_TYPE" NVL(:FIRM_PLANNED_TYPE,1)",
SUPPLIER_SITE_CODE,
PURCH_LINE_NUM,
ORDER_NUMBER,
SR_INSTANCE_CODE,
REVISION "NVL(:REVISION,1)",
UNIT_NUMBER,
NEW_ORDER_QUANTITY,
NEW_DOCK_DATE,
PROJECT_NUMBER,
TASK_NUMBER,
PLANNING_GROUP,
DELIVERY_PRICE,
QTY_SCRAPPED,
FROM_ORGANIZATION_CODE,
ORDER_TYPE CONSTANT '1',
DELETED_FLAG "DECODE(:DELETED_FLAG,1,1,2,2,2)",
COMPANY_NAME "NVL(:COMPANY_NAME,-1)",
END_ORDER_NUMBER,
END_ORDER_RELEASE_NUMBER,
END_ORDER_LINE_NUMBER,
ORDER_RELEASE_NUMBER,
COMMENTS,
SHIP_TO_PARTY_NAME,
SHIP_TO_SITE_CODE,
SR_INSTANCE_ID CONSTANT '0',

```

```

PROCESS_FLAG CONSTANT '1',
DATA_SOURCE_TYPE CONSTANT 'BATCH',
LAST_UPDATE_LOGIN CONSTANT '-1',
LAST_UPDATE_DATE SYSDATE,
CREATION_DATE SYSDATE
)

```

The script to extract Purchase Order data for this format from a legacy system hosted on an Oracle database could look like the following:

```

SET HEAD OFF;
SET LINESIZE 200;
SET PAGESIZE 50000;
SPOOL ON;
SPOOL MSC_ST_SUPPLIES_PO.dat;
SELECT
DISTINCT
ITEM_TAB.ITEM_NAME||'~'||
ITEM_TAB.ORGANIZATION_CODE||'~'||
PO_TAB.EXPECTED_DELIVERY_DATE||'~'||
SITES_TAB.TP_NAME||'~'||
1||'~'|| /* All orders are treated as Firmed */
SITES_TAB.TP_SITE_CODE||'~'||
PO_TAB.LINE_NUM||'~'||
PO_TAB.PO_NUMBER||'~'||
&&SR_INSTANCE_CODE||'~'||
NVL(ITEM_TAB.ITEM_REVISION,1)||'~'||
YES||'~'||
PO_TAB.MRP_PRIMARY_QUANTITY||'~'||
PO_TAB.EXPECTED_DOCK_DATE||'~'||
PO_TAB.PROJECT_ID||'~'||
PO_TAB.TASK_ID||'~'||
YES||'~'||
PO_TAB.UNIT_PRICE||'~'||

```

```

0||'~'||
YES||'~'||
1||'~'|| /* All records are either for Insert/Change. No deletions are being uploaded */
-1||'~'||
YES||'~'||
YES||'~'||
YES||'~'||
YES||'~'||
YES||'~'||
YES||'~'||
YES||'~'||
YES||'~'||
0||'~'||
1||'~'||
'BATCH'||'~'||
-1||'~'||
SYSDATE||'~'||
SYSDATE
FROM <LEGACY_SUPPLY_TABLE> PO_TAB,
<LEGACY_ITEMS> ITEM_TAB,
<LEGACY_PARTNER_SITES> SITES_TAB
WHERE PO_TAB.ORGANIZATION_ID = ITEM_TAB.ORGANIZATION_ID
AND PO_TAB.ITEM_ID = ITEM_TAB.INVENTORY_ITEM_ID
AND PO_TAB.VENDOR_ID = SITES_TAB.SR_TP_ID
AND PO_TAB.VENDOR_SITE_ID = SITES_TAB.SR_TP_SITE_ID;

```

1. Run the scripts to get the Data files and ftp these to the APS concurrent manager node. The steps to upload these files into Oracle APS are described below under Running Legacy Collections.

## Sequence of Data Uploads

Load all this information either together or in the following order:

1. Upload calendar data information. All the calendar data files corresponding to calendar's control files (MSC\_ST\_CALENDARS.ctl, MSC\_ST\_WORKDAY\_PATTERNS.ctl, MSC\_ST\_SHIFT\_TIMES.ctl,

MSC\_ST\_CALENDAR\_EXCEPTIONS.ctl, MSC\_ST\_SHIFT\_EXCEPTIONS.ctl) need to be uploaded in one single run. Based on the information provided, the calendar is built in the planning system. If calendar already exists in ODS tables (Planning System) and you want to rebuild the calendar again, then the entire information (all the above mentioned files) must be sent again. Also, in this case for MSC\_ST\_CALENDARS.ctl the OVERWRITE\_FLAG should be sent as Y.

2. Upload the UOM information. The control file for this is MSC\_ST\_UNITS\_OF\_MEASURE.ctl.
3. Upload the Demand Class information.
4. Upload the Trading Partner information. The control files for setting up trading partners are MSC\_ST\_TRADING\_PARTNERS.ctl, MSC\_ST\_TRADING\_PARTNER\_SITES.ctl, MSC\_ST\_LOCATION\_ASSOCIATIONS.ctl, MSC\_ST\_SUB\_INVENTORIES.ctl and MSC\_ST\_PARTNER\_CONTACTS.

The trading partner sites, location associations, sub inventories and contacts can be uploaded along with the trading partner information and also in subsequent runs. Only MSC\_ST\_TRADING\_PARTNERS.ctl can be uploaded in the first run.

MSC\_ST\_TRADING\_PARTNERS.ctl has CALENDAR\_CODE field. This should refer to a valid calendar code existing in the planning system or to a calendar code that you are uploading in this run of collections. If calendar does not exist in the planning system and has not been uploaded either, then the trading partner record is not accepted and is marked as error.

5. Upload the category sets information. The control file for setting up category sets is MSC\_ST\_CATEGORY\_SETS.ctl
6. Upload the designators information for forecast, MDS and MPS. The control files required are: MSC\_ST\_DESIGNATORS\_MDS.ctl, MSC\_ST\_DESIGNATORS\_FORECAST.ctl and MSC\_ST\_DESIGNATORS\_PLAN\_ORDERS.ctl. The forecast, MDS and MPS records can be uploaded now or in subsequent runs.
7. Upload the projects and tasks information. The control file name is MSC\_ST\_PROJECT\_TASKS.ctl
8. Upload the items information as per the MSC\_ST\_SYSTEM\_ITEMS.ctl file. If the UOM\_CODE of the data file has an invalid value (that is, a value that does not exist in the planning system and is also not being uploaded along with items as per the MSC\_ST\_UNITS\_OF\_MEASURE.ctl in this upload) the item records are errored out.
9. Upload the item related information; for example, supplier capacity, supplies and demands, categories, UOM conversions, and sourcing rules. Upload the data as per

the preprocessing diagram shown below and make sure that the items are valid; that is, the items exist in the planning system or are being uploaded in this run of legacy collections.

10. Upload categories using control file MSC\_ST\_ITEM\_CATEGORIES.ctl.
11. Upload sourcing rules using control file MSC\_ST\_ITEM\_SOURCING.ctl.
12. Upload UOM conversions using MSC\_ST\_UOM\_CONVERSIONS.ctl, MSC\_ST\_UOM\_CLASS\_CONVERSIONS.ctl.
13. Upload resources using control file MSC\_ST\_DEPARTMENT\_RESOURCES.ctl.
14. Upload bill of materials using the following control files: MSC\_ST\_BOMS.ctl, MSC\_ST\_BOM\_COMPONENTS.ctl, and MSC\_ST\_COMPONENT\_SUBSTITUTES.ctl. You can upload BOM components and substitutes to BOM at the same time or upload these in later runs.
15. Upload routings using the following control files: MSC\_ST\_ROUTINGS.ctl, MSC\_ST\_ROUTING\_OPERATIONS.ctl, and MSC\_ST\_OPERATION\_RESOURCES.ctl. You can upload resources to operations at the same time or upload these in later runs.
16. Upload supplier capacity using the following control files: MSC\_ST\_ITEM\_SUPPLIERS.ctl, MSC\_ST\_SUPPLIER\_CAPACITIES.ctl, and MSC\_ST\_SUPPLIER\_FLEX\_FENCES.ctl. You can upload MSC\_ST\_SUPPLIER\_CAPACITIES.ctl with MSC\_ST\_ITEM\_SUPPLIERS.ctl or in subsequent runs. You can also upload MSC\_ST\_SUPPLIER\_FLEX\_FENCES.ctl with MSC\_ST\_ITEM\_SUPPLIERS.ctl or in subsequent runs.
17. Load material supply for work order after routings are loaded because there is a field ROUTING\_NAME in MSC\_ST\_SUPPLIES\_WO.ctl.
18. Upload resource demand using the control file MSC\_ST\_RESOURCE\_REQUIREMENTS.ctl. If WIP\_ENTITY\_NAME is not valid (it was not previously loaded using the MSC\_ST\_SUPPLIES\_WO.ctl and also is not loaded in this run using this control file) the record is errored out.

## Preprocessing

After data from legacy application has been loaded into the planning system, it undergoes preprocessing before it can be used by the planning engine.

Preprocessing generates IDs for the entities coming into the planning system based on a set of user-defined keys (UDKs). For example, to identify an item record in the planning system, the UDK is Instance Code, Organization code, Item Name and Company Name (Company Name is required only if SCE is installed. For standalone APS, this is



defaulted to -1). A UDK uniquely identifies an existing record in the planning system. UDKs are used as reference to update existing records in the planning system.

The preprocessing program is a concurrent program that runs independently from the planning engine and global ATP engine.

After the data files have been brought over to the concurrent manager node, as described in the Running Legacy Collections section below, the legacy collection's request set program can be configured to read and load the data files into interface tables. Following which, this program can preprocess the data and finally load the data into the main planning tables, all in a single run.

The preprocessing engine has the intelligence to handle scenarios wherein transaction data and any prerequisite setup data needed to perform this transaction co-exist in a single data load.

The figure below shows the sequence in which the uploaded data is processed by the preprocessing engine. The preprocessing engine possesses parallel processing capabilities. Parallel processing is enabled for processing Items and Item-related entities as shown in the diagram. Items, supplies and demand records can further be broken into sub-batches and processed in parallel.

## Preprocessing



The above architecture also makes it necessary to ensure that all the setup related data is sent to the planning system to avoid errors while processing the transactions. For example, a purchase order line coming into the planning system referring to an item that has not been sent to the system is flagged as an error. Also, the supplier for the item should have been defined on the system as a valid one.

Records in the staging tables are checked for multiple occurrences of the same UDK combination. For instance, in the case of data coming in via XML, if two or more item records are found in the interface table having the same combination of instance code, organization code, item name and company name, preprocessing picks the latest record for further processing and the older records are flagged as errors. For instance, for data coming in via batch upload, if two or more item records are found in the interface table having same combination of instance code, organization code, item name and company name, preprocessing flags those records as errors because preprocessing is not able to determine which is the correct record to be picked up.

## To set up Legacy Instance

1. Apply the legacy integration patch on the concurrent manager node on which you have installed Oracle APS. If you have multiple concurrent manager nodes that are not NFS mounted, then you need to apply this patch on all the nodes. The patch copies all the control files to the \$MSC\_TOP/patch/<version>/import directory. You will have to enter the complete path of this directory as a value to the Control Files Directory parameter of the Flat File Load stage when you run the Legacy Systems' Data Collection.

Use steps '2, page 4-41 through '6, page 4-41 to create a partition for a new instance.

2. Log in using the System Administrator's responsibility.
3. From the Navigator, select Requests > Run.  
The Submit a New Request screen appears.
4. Select Single Request and select the OK button.  
The Submit Request form appears.
5. In the Name field, select Create APS Partitions and select the OK button.  
The Parameters screen appears.
6. Enter the number of plan partitions and instance partitions and select the OK button.  
The partitions are created.
7. Change to the Advanced Planning Administrator responsibility. From the Navigator, select Admin > Instances.  
The Application Instances screen appears.

## Application Instances

Instance Code	Instance Type	Version	From Source To APS	From APS To Source
DMT	Discrete	11i	apsqa115	omtst11i
TR1	Discrete	11i	apsqa115	tst115rw
v11	Discrete	11i		
ncr	Others			
sr7	Discrete	10.7	apsqa115	src107
EAM	Discrete	11i	apsqa115	eambeta
154	Discrete	11i	apsqa115	qa1154
LEG	Others			
qa2	Discrete	11i	apsqa115	mscqa2
dmt	Discrete	11i	apsqa115	dmtst11i

- Specify the Instance Code for the Legacy Instance and set the Instance Type as Other. Leave the fields From Source to APS and From APS To Source blank. Fill the other fields for the instance as specified in the online help.

You are now set to use the Batch Load solution. Using the Running Legacy Collections process described below, upload the Workday Calendar data and Planning Organizations for this instance. This data can be uploaded along with the other entities' data. Preprocessing has the intelligence to consider the new organizations that have come in the same batch upload. After Legacy Collection is completed, you can view these organizations using the Organizations button at the bottom of the Instance Setup form.

**Note:** Setting up batch uploads and setting up legacy instance steps can occur in parallel up to creation of scripts for data uploads. However, for getting the data files from the scripts, the instance code is required.

## Running Legacy Collections

Using either an Oracle Applications form or the self-service application page, you can upload data from flat files to the legacy instance and finally to the planning engine. Using the form, you upload each data file separately.

Using the self-service method, you can upload a zip file containing all data files. Each type of data file, such as work order supply or BOM header, is identified using a tag in the file name. Ensure that you do not zip the entire directory but add individual files to

the zip file.

## **To collect into a legacy instance using the form-based application**

1. Copy all the data files conforming to the control files in the \$MSC\_TOP/patch/<version>/import in a directory on the concurrent manager node. If there are more than one concurrent manager nodes and if these are not NFS mounted, then the data files need to be copied to all the nodes in same directory structure. This directory (or all the directories in case of multiple non-NFS mounted concurrent manager nodes) should have read/write privileges to all users, because SQL\*Loader discards files for the data that could not be uploaded due to errors.
2. Choose the Advanced Planning Administrator responsibility.
3. In the Navigator, choose Collections > Legacy Systems > Collect Flat File Data.  
The Planning Data Collection screen appears showing three programs: Flat File Loader, Pre-Process Monitor, and Planning ODS Load. Planning ODS Load moves the data from the interface tables to the planning system's main tables.
4. Choose the Parameters field for Flat File Loader.  
The Parameters screen appears.

### Flat File Loader Parameters screen

5. Enter the required information and the File Names for all the data files that you want to upload. You can either enter the directory path in the Data File's Directory field and then enter the file names for each entity to be uploaded in the File Name fields, or you can leave the Data File's Directory field blank and enter the complete path and file name of each entity in the File Name fields. The second option is useful if all the data files are not kept in the same directory.

The Total Number of Workers field specifies the number of maximum number of loader workers that should be running in parallel at any given point in time. A loader worker is launched for each File Name specified.

6. When finished entering information for this screen, choose the OK button.
7. Choose the Parameters field for Pre-Process Monitor.  
The Parameters screen appears.

### Pre-Process Monitor Parameters screen

Run this Request...

Request Set **Legacy Collections**

Program	Stage
Flat File Loader	Flat File
Pre-Process Monitor	Pre-Pro
Planning ODS Load	Planning

At these Times...

As Soon As Possible

Help (A)

Parameters

Instance

Processing Batch Size **1000**

Total Number of Workers **3**

Process Calendars **No**

Process Demand Class **Yes**

Process Trading Partners **Yes**

Process Category Sets **Yes**

Process Product Categories **Yes**

Process Units of Measure **Yes**

Process UOM conversions **Yes**

Process Designators **Yes**

Process Projects and Tasks **Yes**

Process Items **Yes**

Process Suppliers **Yes**

Process Safety Stocks **Yes**

Process Shipping Methods **Yes**

Process Sourcing Rules **Yes**

Process Bills of Material **Yes**

OK Cancel Clear Help

8. Specify the entities that you want to be preprocessed for the legacy instance.

The Processing Batch Size field determines the size of batches while processing the records in the interface tables. A larger batch size is faster but requires more system resources. The current default batch size is 1000.

The Total Number of Workers field specifies the number of concurrent processes to be launched to process the data in parallel.

9. When finished entering information for this screen, choose the OK button.

10. Choose the Parameters field for Planning ODS Load.

The Parameters screen appears.

### Planning ODS Load Parameters screen

Run this Request...

Request Set **Legacy Collections** Copy...

Program

- Flat File Loader
- Pre-Process Monitor
- Planning ODS Load**

Parameters

Instance

Number of Workers

Recalculate Resource Availability

Recalculate Sourcing History

Purge Sourcing History

OK Cancel Clear Help

At these Times...

**As Soon As Possible** Schedule...

Help (A) Submit Cancel

11. Specify whether you want Resource Availability and Sourcing History to be recalculated after the data has been moved.
12. When finished entering information for this screen, choose the OK button.  
The Planning Data Collection screen appears.
13. Press the Submit button to allow the concurrent manager to schedule the request as per the schedule options that you specify in the At these Times... section.
14. Use the View Requests Form to monitor the progress of the different programs.
15. Use the View Collected Data menu option under Collections in the Navigator to view the data coming into the planning system.

### To collect into a legacy instance using the self-service application

1. Double-click Collections > Legacy Systems Collect Flat File Data - Self Service.  
The Oracle Collaborative Planning suite page appears.



### Collaborative Planning Suite page



#### Information

**Information** - Concurrent request submitted with request id 1606831

#### Load Data Files

To load a data file, select the file using Browse, then click Start Load Now.

[Download](#) templates.

File Name

Note: This file may take several minutes to load

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2. Click the Download link to download the Oracle Applications (OA) template.

All zipped .dat files, for example, bills of material and calendar appear.

You can read the OATemplateReadme.html file for information on how to load various entities into Oracle Advanced Planning and Scheduling suite of products using flat files. You can open the ExcelLoad.xlt file and import your data files to view and modify.

3. In the Collaborative Planning suite page, click Browse to navigate to the data files location.
4. Select the zip file containing data files to be uploaded.
5. Click Start Load Now.

The concurrent request starts. You can note down the request id for your reference.

After the completion of this request, navigate to Collections Workbench to view the collected data.

## Purge Program

The Purge program deletes the data from the ODS table as well as the local id table (MSC\_LOCAL\_ID\_XXX). Depending upon the option selected while submitting the concurrent program, it behaves differently as explained below.

## To access purge UI

1. Choose the Advanced Supply Chain Planner responsibility.
2. From the Navigator, choose Collections > Legacy System > Purge Collected Data.

If you selected Yes for Complete Refresh when you submitted the concurrent program, the following screen appears.

### **Purge Parameters screen**

The screenshot shows the 'Launch Purge Program for Collected data' window. The main window has sections for 'Run this Request...', 'At these Times...', and 'Upon Completion...'. The 'Run this Request...' section includes fields for Name ('Purge Legacy Data'), Parameters, and Language ('American English'). The 'At these Times...' section has a dropdown set to 'As Soon as Possible'. The 'Upon Completion...' section has a checked 'Save all Output' checkbox, a 'Notify' field, and a 'Print to' field set to '30P535ap'. A 'Parameters' dialog box is open over the main window, showing fields for Instance ('LEG'), Complete Refresh ('Yes'), Delete Records Up to Date ('4-JAN-2002'), Delete Supplies ('Yes'), and Delete Demands ('Yes'). Buttons for 'OK', 'Cancel', 'Clear', and 'Help' are at the bottom of the dialog. The main window also has 'Help (B)', 'Submit', and 'Cancel' buttons at the bottom.

The following table shows the values for this screen.

Field	Value
Instance	Legacy instance against which the purge program is to be run.
Complete Refresh	Yes
Delete records up to date	User-entered date (defaults to the current date)
Delete supplies	Yes (will always be Yes if complete refresh is Yes)

Field	Value
Delete demands	Yes (will always be Yes if complete refresh is Yes)

In this case, the following tables get purged from ODS:

MSC\_SYSTEM\_ITEMS

MSC\_BOMS

MSC\_BOM\_COMPONENTS

MSC\_COMPONENT\_SUBSTITUTES

MSC\_ROUTINGS

MSC\_ROUTING\_OPERATIONS

MSC\_OPERATION\_RESOURCES

MSC\_OPERATION\_COMPONENTS

MSC\_OPERATION\_RESOURCE\_SEQS

MSC\_PROCESS\_EFFECTIVITY

MSC\_DEPARTMENT\_RESOURCES

MSC\_RESOURCE\_SHIFTS

MSC\_RESOURCE\_CHANGES

MSC\_SIMULATION\_SETS

MSC\_PROJECTS

MSC\_PROJECT\_TASKS

MSC\_ITEM\_CATEGORIES

MSC\_DESIGNATORS (Here program updates disable date as current date instead of deleting)

MSC\_DEMANDS

MSC\_SALES\_ORDERS

MSC\_SUPPLIES

MSC\_INTERORG\_SHIP\_METHODS

MSC\_ABC\_CLASSES

MSC\_ST\_RESOURCE\_GROUPS

MSC\_ST\_DEMAND\_CLASSES

## MSC\_ST\_RESERVATIONS MSC\_ST\_SAFETY\_STOCKS

In addition, the entities listed in the following table, which are stored in the LID table will be deleted.

Entity Name	LID Table Name	Business Object
SR_INVENTORY_ITEM_ID	MSC_LOCAL_ID_ITEM	Item
ABC_CLASS_ID	MSC_LOCAL_ID_MISC	Item
BILL_SEQUENCE_ID	MSC_LOCAL_ID_SETUP	BOM
COMPONENT_SEQUENCE_ID	MSC_LOCAL_ID_SETUP	BOM
ROUTING_SEQUENCE_ID	MSC_LOCAL_ID_SETUP	Routing
OPERATION_SEQUENCE_ID	MSC_LOCAL_ID_SETUP	Routing
RESOURCE_SEQ_NUM	MSC_LOCAL_ID_SETUP	Routing
DEPARTMENT_ID	MSC_LOCAL_ID_SETUP	Department/Resources
LINE_ID	MSC_LOCAL_ID_SETUP	Department/Resources
RESOURCE_ID	MSC_LOCAL_ID_SETUP	Department/Resources
PROJECT_ID	MSC_LOCAL_ID_MISC	Project/Tasks
TASK_ID	MSC_LOCAL_ID_MISC	Project/Tasks
COSTING_GROUP_ID	MSC_LOCAL_ID_MISC	Project/Tasks
SR_CATEGORY_ID	MSC_LOCAL_ID_MISC	Categories
DISPOSITION_ID_FCT	MSC_LOCAL_ID_DEMAND	Demand (Forecast)
DISPOSITION_ID_MDS	MSC_LOCAL_ID_DEMAND	Demand (MDS)

Entity Name	LID Table Name	Business Object
SALES_ORDER_ID	MSC_LOCAL_ID_DEMAND	Demand (Sales Order)
DEMAND_ID	MSC_LOCAL_ID_DEMAND	Demand (Sales Order)
DISPOSITION_ID	MSC_LOCAL_ID_SUPPLY	Supplies
PO_LINE_ID	MSC_LOCAL_ID_SUPPLY	Supplies (PO/Req)
SCHEDULE_GROUP_ID	MSC_LOCAL_ID_SUPPLY	Supplies (MPS)
DISPOSITION_ID_MPS	MSC_LOCAL_ID_SUPPLY	Supplies (MPS)
SR_MTL_SUPPLY_ID	MSC_LOCAL_ID_SUPPLY	Supplies (On Hand)
WIP_ENTITY_ID	MSC_LOCAL_ID_SUPPLY	Supplies (WIP)

The Purge program does not delete records related to following business objects from ODS or LID tables.

- Trading partners (organization, supplier, customer)
- Calendars
- Category sets
- Sourcing rules
- UOM

If you selected No for Complete Refresh when you submitted the concurrent program, the following screen appears.

### Purge Parameters screen

The following table shows the values for this screen.

Field	Value
Instance	Legacy instance against which the purge program is to be run.
Complete Refresh	No
Delete records up to date	User-entered date (defaults to the current date)
Delete supplies	Yes/No (defaults to Yes)
Delete demands	Yes/No (defaults to Yes)

In this case, only supply/demand business object records and those records whose creation date is less than user-entered date get deleted from the ODS and LID tables.

## Loading Transaction Data Using Flat Files Into ERP Instance

Using either an Oracle Applications form or the self-service application, you can upload

transaction data (supply and demand) from flat files to the ERP instance.

Ensure that the transaction data is uploaded to the planning server using either legacy systems directly or an Oracle ERP application. To avoid double counting, do not upload the same transaction data to both Legacy and ERP instances. For example, a sales order should not be uploaded using both ERP and Legacy instances.

### **Loading Transaction Data Notes**

If you are importing the .dat file for the first time, then Excel prompts you to enter these values. Once you enter them, you do not need to enter them again:

- **Date format:** The format of all the dates in the dat files
- **Delimiter:** Used internally to separate different columns in the dat file; make sure that it matches the value of profile option MSC: Self Service Loads Delimiter. Change these values in APS Menu > User Options. It opens a window to modify the values and select an action:
- **Apply:** Applies the changes to the open sheet
- **Apply & Save:** Applies the changes to the open sheet and saves the settings

Before uploading CSDData.dat, set the date format in ExcelLoader to YYYY/MM/DD.

### **To collect into an ERP instance using the form-based application**

1. Navigate to the Planning Data Collection form (Collections > Oracle Systems > Load Transaction Data using Flat Files).

The Planning Data Collection form appears showing three programs: Load Transaction Data, Pre-Process Transaction Data, and Planning ODS Load. The Load Transaction Data program loads the transaction data through flat files into interface tables. Load Transaction Data accepts parameter values including the path for control and data files.

The Pre-Process Transaction Data program preprocesses the transaction data and generates ids. Pre-Process Transaction Data enables you to specify the instance in which you want to load the transaction data.

Planning ODS Load program moves the data from the interface tables to the main tables of the planning server.

### Planning Data Collections window

Run this Request...

Request Set **ERP Legacy Collections** Copy...

Program	Stage	Parameters	Language
Load Transaction Data	Load Transaction Data		American English
Pre-Process Transaction Data	Pre-Process Transaction		American English
Planning ODS Load	Planning ODS Load		American English

Options...

At these Times...

**As Soon As Possible** Schedule...

Help (A) Submit Cancel

2. Click in the Parameters field for Load Transaction Data.  
The Parameters window appears.



### Load Transaction Data Parameters window

Parameters

Time Out Duration 1440

File Path Separator /

Control Files' Directory

Data Files' Directory

Total Number of Workers

File Name: Supplier Capacities

File Name: Work Order Supplies

File Name: Requisition Supplies

File Name: Onhand Supplies

File Name: Intransit 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

OK Cancel Clear Help

3. Enter the required information and the file names for all the data files that you want to upload. Specify the maximum amount of time you would like to allocate to the concurrent program in the Time Out Duration field. You can either enter the directory path in the Data File's Directory field and then enter the file names for each entity to be uploaded in the File Name fields, or you can leave the Data File's Directory field blank and enter the complete path and file name of each entity in the File Name fields. The second option is useful if all the data files are not kept in the same directory.
4. When you finish entering information in the fields, click OK.
5. Click in the Parameters field for Pre-Process Transaction Data.  
The Parameters window appears.

**Pre-Process Transaction Data Parameters window**

Parameters

Instance

Time Out Duration

Processing Batch Size

Total Number of Workers

Process Designators

Process Suppliers

Process Material Supplies

Process Material Demands

OK Cancel Clear Help

6. Select the instance from a list of values.
7. After specifying the instance in which you want to load the transaction data, specify the maximum time allowed for the process in the Time Out Duration field (in minutes).

The Processing Batch Size field determines the size of batches while preprocessing the records in the interface tables. A larger batch size is faster but requires more system resources. The current default batch size is 1000.

The Total Number of Workers field specifies the number of concurrent processes to be launched to process the data in parallel.

8. Specify the entities that you want to be preprocessed for the ERP instance. Yes indicates the entities that need to be preprocessed.
9. When you finish entering information in the fields, click OK.
10. Click in the Parameters field for Planning ODS Load.

The Parameters window appears.

**Planning ODS Load Parameters window**

Instance	
Timeout (Minutes)	60
Number of Workers	3
Recalculate Resource Availability	Yes
Recalculate Sourcing History	Yes
Purge Sourcing History	No

OK Cancel Clear Help

The Planning ODS Load parameters required for data collection in the ERP instance is similar to the parameters required for legacy collections.

11. Specify the values for the parameters and click OK.
12. Click Submit in the Planning Data Collection window.
13. From the toolbar, choose View > Requests to view the status of the collections process.

When the request is complete, you can view the data in Collection Workbench.

**To collect into an ERP instance using the self-service application**

1. Double-click Collections > Oracle Systems > Load Transaction Data using Self Service Loads.

The Oracle Collaborative Planning suite page appears.



## Load Data Files

To load a data file, select the file using Browse, then click Start Load Now.

[Download](#) templates.

File Name

Note: This file may take several minutes to load

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2. Click the Download link to download the Oracle Applications (OA) template.  
All zipped .dat files, for example, bills of material and Calendar appear. A readme providing information on how to use the templates is also provided in this zip file.
3. Open the ExcelLoad.xlt file and import your data files to view and modify. After making the changes, export the data file. Finally, zip all data files that need to be uploaded.
4. Click Browse to navigate to the data files location.
5. Select the zip file containing data files to be uploaded.
6. Click Start Load Now.  
A concurrent request is triggered.



### Information

**Information** - Concurrent request submitted with request id 1606831

### Load Data Files

To load a data file, select the file using Browse, then click Start Load Now.

[Download](#) templates.

File Name

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After the completion of this request, navigate to Collections Workbench to view the collected data.

## Customization

System integrators may want to add custom validations for enabling preprocessing to filter out unwanted incoming data. The preprocessing engine provides hooks for each entity, which can be used to plug-in custom validations.

## Organization Specific Collections

Oracle Advanced Supply Chain Planning supports organization-specific collections, which helps you in maintaining independent planning processes in independent business units of a company that is running a single instance of the Oracle e-Business Suite.

You can run collections for collecting data from only specified organizations of a source instance. This helps you in elimination of unnecessary data collection from organizations that are not planned in your planning process and reduce the processing time.

Oracle Advanced Supply Chain Planning allows organization-specific collection for:

- Standard collections:

- Complete refresh method
  - Net change refresh method
  - Targeted refresh method
- Continuous collections
    - Note:** Organization-specific collection is not available for legacy collections.

### To setup organization specific collections

1. Select Advanced Planning Administrator responsibility.
2. Navigate to Admin > Instances.

The Application Instances form appears.

#### *Application Instances form*

Instance Code	Instance Type	Version	From Source To APS	From APS To Source
TST1	Discrete & Process	11i		

Organizations

3. Define the instance.
  4. Click Organizations.
- The Organizations form appears.

### Organizations form

Org	Description	Enabled	Collection Group
PRG	Progress Organization-wide	<input checked="" type="checkbox"/>	
PW	Progress Warehouse	<input checked="" type="checkbox"/>	
V1	Vision Operations	<input checked="" type="checkbox"/>	
S1	Chicago Subassembly Plant	<input checked="" type="checkbox"/>	
M1	Seattle Manufacturing	<input checked="" type="checkbox"/>	
M2	Boston Manufacturing	<input checked="" type="checkbox"/>	
VS	Vision Services	<input checked="" type="checkbox"/>	
VA	Vision ADB	<input checked="" type="checkbox"/>	
D1	Singapore Distribution Center	<input checked="" type="checkbox"/>	
D2	Miami Distribution Center	<input checked="" type="checkbox"/>	

5. Select the Enable check box for the organizations of the defined instance.

6. Specify Collection Group for the organizations.

Assign all related organizations to the same collection group to ensure that group organizations are collected together.

### To perform organization specific collections

1. Select the Advanced Supply Chain Planner responsibility.
2. Navigate to Collections > Oracle Systems > Standard Collections.
3. The Planning Data Collection form appears.
4. Click the Parameters field for the Planning Data Pull program.
5. The Parameters window appears.

### Parameters window

The Parameters window displays the following settings:

Parameter	Value
Instance	dmf
Collection Group	All
Number of Workers	2
Timeout (Minutes)	100
Purge Previously Collected Data	Yes
Collection Method	Com
Analyze Staging Tables	No
Approved Supplier Lists (Supplier Capacities)	Yes
ATP Rules	Yes
Bills of Materials/Routings/Resources	Yes
Bills Of Resources	Yes
Calendars	Yes
Demand Classes	Yes
End Item Substitutions	Yes
Forecasts	Yes
Items	Yes
Key Performance Indicator Targets	Yes

The 'Collection Group' dialog box is open, showing a list of collection groups:

Collection Group	Description
All	All Enabled Organizations
CG1	M2
DR	D1,S1,SD1
DR1	M1

#### 6. Select the Collection Group.

Regardless of the Collection Group value, Oracle Advanced Supply Chain Planning always collects the following:

- ATP Rules
- Demand Classes
- Trading Partners (Customers)
- Trading Partners (Suppliers)
- Units of Measure
- User Company Association
- Sourcing Rules and Assignment Sets
- Shipping Networks and Shipping Methods

In addition, the collection programs collect all calendars to accommodate all trading partner shipping and receiving calendars.



## Collection from a Single Source to Multiple Destinations

Oracle Advanced Supply Chain Planning allows you to collect a single source instance to multiple destination instances. This is useful when you need to perform volume testing, where you need to collect from a source production instance to a test destination instance while still generating production plans out of a production planning server instance. Both of the planning server instances can share the same production source transaction instance.

Collection from a single source to multiple destinations allows you to leverage the setup and transaction data in the production source instance to do volume testing on the test planning server instance. You can avoid duplicating the source instance and reduce substantial amount of storage and maintenance costs.

**Note:** Both the source and destination (planning server) instances must be on the same Oracle Advanced Supply Chain Planning release.

### To setup collection from a single source to multiple destinations

1. Select Advanced Planning Administrator responsibility.
2. Navigate to Admin > Instances.  
The Application Instances form appears.
3. Associate destination instances to source instance in each destination instance separately.
4. Select the Allow ATP check box for the destination instance that you want to consider in the ATP process from the source instance.

You can select the Allow ATP check box for only one of the destinations that are associated to a single source.

The planning engine displays an error message if you attempt to select more than one destination for ATP.

### Application Instance window, error message

The screenshot shows the 'Application Instances' window with a table of instances. A 'Note' dialog box is open, displaying an error message.

Version	From Source To APS	From APS To Source	Enable Flag	Allow ATP	Allow Release
11i	apsst11i	tpst11i	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11i	mfgit11i	mfgexpj	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11i	mfgit11i	dmtst11i	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11i	mfgit11i	omtst11i	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11i	apsst11i	mfgit11i	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11i	apsst11i	dmtst11i	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11i			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Note**

Source instance TST already has a designated ATP destination instance as pointed to by db link apsst11i. Please uncheck first 'Allow ATP' flag in the destination instance corresponding to source TST .

OK

Organizations

5. Select the Allow Release ATP check box for the destination instances that are allowed to release to the source instance.

The Allow Release Flag check box is used for both auto release and manual release processes.

You can select the Allow Release check box for multiple destinations that are associated to a single source.

### To trigger the Auto Release process for a plan:

1. Select the Allow Release check box for the instance where the plan is defined in the Application Instances form.
2. Select the Production check box for the plan in the Plan Names form.

### Plan Names form

Version	From Source To APS	From APS To Source	Enable Flag	Allow ATP	Allow Release
11i	apsst11i	tps11i	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11i	mfs11i	tps11i	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11i	mfs11i	tps11i	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11i	mfs11i	tps11i	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11i	aps11i	tps11i	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11i	aps11i	tps11i	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11i	aps11i	tps11i	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Name	Description	ATP	Notifications	Plan Type	Inactive Date
EG-OS-04	OSFM Plan 04 - Primary	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
EG-OS-04A	OSFM Plan 04 - Primary - Alt Res	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
EG-OS-04AD	OSFM Plan 04 - Primary - Alt Res - Sim	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
EG-OS-04AE	OSFM Plan 04 - Primary - Alt Res - Sim	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
EG-OS-04AF	OSFM Plan 04 - Primary - Alt Res - Sim	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
EG-OS-04AG	OSFM Plan 04-Primary-Alt Res-SimSe	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
EG-OS-04AH	OSFM Plan 04-Primary-Alt Res-SimSe	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
EG-OS-04AI	OSFM Plan 04-Primary-Pri Res/Daily4	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
EG-OS-04AJ	OSFM Plan 04-Primary-Pri Res/Daily4	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
EG-OS-04AK	OSFM Plan 04-Primary-Pri Res/Daily4	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	

Copy Plan    Launch Plan    Plan Options

### Example: Using the Allow ATP option

Consider:

- A single source instance S that is associated to two destination instances D1 and D2.
- The Allow ATP check box is selected for destination instance D1 related to source S.

The ATP request from source S points to D1. The planning engine performs the ATP process in D1 taking into consideration the plans that have ATP check box selected in the Plan Names form.

In destination instance D2, there could be plans with the ATP check boxes selected in the Plan Names form. The ATP process from D2 uses these plans. There are no restrictions in checking the ATP check boxes in the Plan Names form in destinations.

Conclusion: You can select the Allow ATP check box in the Application Instances form for only one of the destinations associated to a single source

### Example: Using the Allow Release option

Consider:

- A single source instance S that is associated to two destination instances D1 and D2.
- The Allow Release check box is selected for D2 and not for D1.

The plans in D2 with the Production check boxes selected in the Plan Options form trigger the Auto Release process to source.

You can select the Production check boxes for plans in D1 but they will not trigger any Auto Release process to source. This is because the Allow Release check box is not checked for D1 in the Application Instances form.

Conclusion: You can select the Allow Release check box for multiple destinations that are associated to a single source.

---

## Defining Supply Chain Plans

This chapter covers the following topics:

- Overview of Defining Plans
- Global Supply Chain Planning
- Subset Plans
- Master Scheduling
- Choosing a Plan Type
- Choosing Plan Classes
- Setting Plan Options
- Choosing Aggregation Levels
- Choosing an Objective Function
- Controlling Planned Items

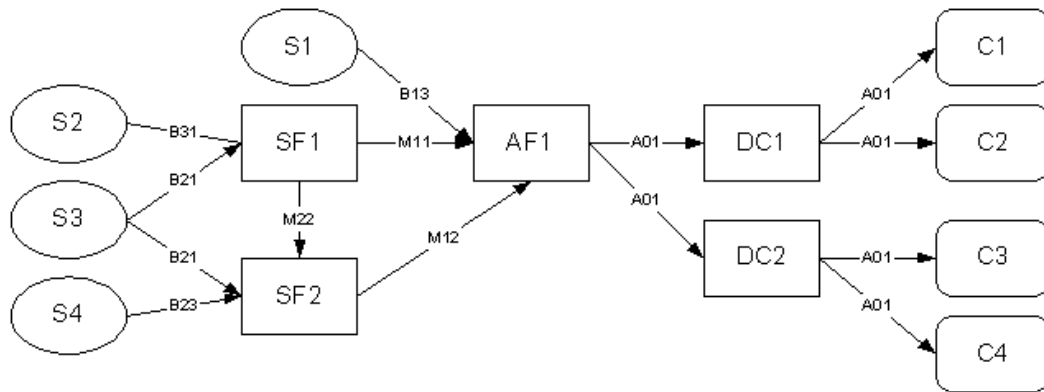
### Overview of Defining Plans

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.

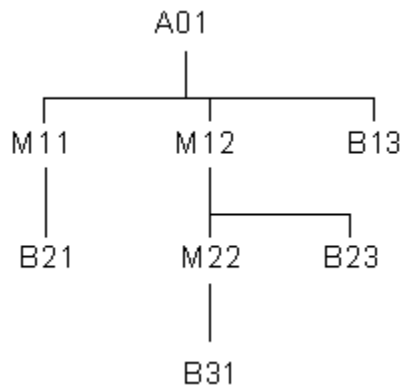
### Global Supply Chain Planning

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 also 'Sample Supply Chain, page 5-2) and 'Sample Bill of Material, page 5-2

:



### 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.

#### Supply Chain Plan Names window

The screenshot shows the 'Supply Chain Plan Names (TST:M1)' window. It contains a table with the following columns: Name, Description, ATP, Production, Notifications, Plan Type, and Inactive Date. The table lists several plans, including 1MA-MRP, 1MA-MRP2, 1PF-MPS, 1PF-MPS2, A1, ATP, CT-H-PLAN, CTO-H-PLAN, Con-NewL, and Con-OldL. Each row has checkboxes for ATP and Production, and a dropdown menu for Plan Type. The ATP checkbox is checked for 1MA-MRP, 1MA-MRP2, 1PF-MPS, and 1PF-MPS2. The Production checkbox is checked for 1PF-MPS and 1PF-MPS2. The Plan Type dropdown is set to 'Manufacturing Plan' for most plans, and 'Production Plan' for 1PF-MPS and 1PF-MPS2. The Inactive Date column is empty for all plans. Below the table are three buttons: 'Copy Plan', 'Launch Plan', and 'Plan Options'.

Name	Description	ATP	Production	Notifications	Plan Type	Inactive Date
1MA-MRP	MRP Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
1MA-MRP2	MRP Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
1PF-MPS	PF-MPS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Production Plan	
1PF-MPS2	PF-MPS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Production Plan	
A1	Optimized Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
ATP	Global ATP Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
CT-H-PLAN	CTO-H-PLAN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
CTO-H-PLAN	CTO-H-PLAN2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
Con-NewL	Constrained Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	
Con-OldL	Constrained Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manufacturing Plan	

Copy Plan Launch Plan Plan Options

This table describes the fields and options.

Object	Description
Name	Define a plan name.
Description	Define a plan description.



Object	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.
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 5-30 for further details.

2. Save your work.
3. Select Plan Options for the Plan Options window.

### Plan Options window

The screenshot shows the 'Plan Options' window for 'ProdPlan1' (Production Plan). The 'Main' tab is active, displaying various configuration options:

- Plan:** ProdPlan1
- Plan Type:** Distribution Plan
- Planned Items:** Demand schedule ...
- Material Scheduling Method:** Order Start Date
- End Item Substitution Set:** (empty)
- Schedule By:** Schedule Ship Date
- Assignment Set:** RS Boat/Air 6 Orgs
- Demand Priority Rule:** (empty)
- Overwrite:** All
- Demand Class:** (empty)
- Forecast Allocation and Consumption:**
  - ☒ Do Not Spread Forecast
  - ☐ Spread Forecast Evenly
  - ☐ Consume by Forecast Bucket
  - ☐ Explode Forecast
  - Backward Days:** (empty)
  - Forward Days:** (empty)
- Forecast Distribution Assignment Set:** (empty)
- Enable Pegging:** ☒
  - ☒ Peg Supplies by Demand Priority
  - Reservation Level:** None
  - Hard Pegging Level:** None
- Other options:**
  - ☐ Demand Time Fence Control
  - ☒ Planning Time Fence Control
  - ☒ Display Key Performance Indicators
  - ☐ Include Critical Components
  - ☒ Append Planned Orders
  - ☐ Move Jobs to PIP
  - ☒ Lgt for Lot

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.

**Copy Plan window**

Copy Plan (TST:M1)

Source Plan Name **1MA-MRP**

Destination

Name **1MA-MRP**

Description **MRP Plan**

ATP ☒

Production ☐

Notifications ☐

Copy Plan Options Only ☐

Plan Type **Manufacturing Plan**

Inactive Date

OK Cancel Clear

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 on 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 5-2), which makes M12 (Figure: Sample Bill of Material, page 5-2), 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 5-2), 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
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. Non bottleneck resource may be scheduled with overloads.
- 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 5-14.

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.

### Supply/Demand window

Org	Item	For Release	Firm	Order Type	Item From Source Plan	Qty/Rate	Sugg Order Date	Sugg Start Date
tps:M1	RT-8250XP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Planned order	<input checked="" type="checkbox"/>	160	26-JAN-2006 08:36	31-JAN-2006
tps:M1	RT-8250XP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Planned order	<input checked="" type="checkbox"/>	145	30-JAN-2006 09:12	01-FEB-2006
tps:M1	RT-8250XP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Planned order	<input checked="" type="checkbox"/>	160	15-FEB-2006 00:00	17-FEB-2006
tps:M1	RT-8250XP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Planned order	<input checked="" type="checkbox"/>	80	15-FEB-2006 13:24	20-FEB-2006
tps:M1	RT-8250XP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Planned order	<input checked="" type="checkbox"/>	160	16-FEB-2006 08:36	21-FEB-2006
tps:M1	RT-8250XP	<input type="checkbox"/>	<input type="checkbox"/>	Forecast	<input checked="" type="checkbox"/>	-305		
tps:M1	RT-8250XP	<input type="checkbox"/>	<input type="checkbox"/>	Forecast	<input checked="" type="checkbox"/>	-400		
tps:M1	RT-8250XP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sales Orders	<input checked="" type="checkbox"/>	-50		

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 5-17
- 'Single organization MPP with critical components as a demand schedule to an MRP, page 5-18
- 'Multi organization MPP with critical components as a demand schedule to an

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

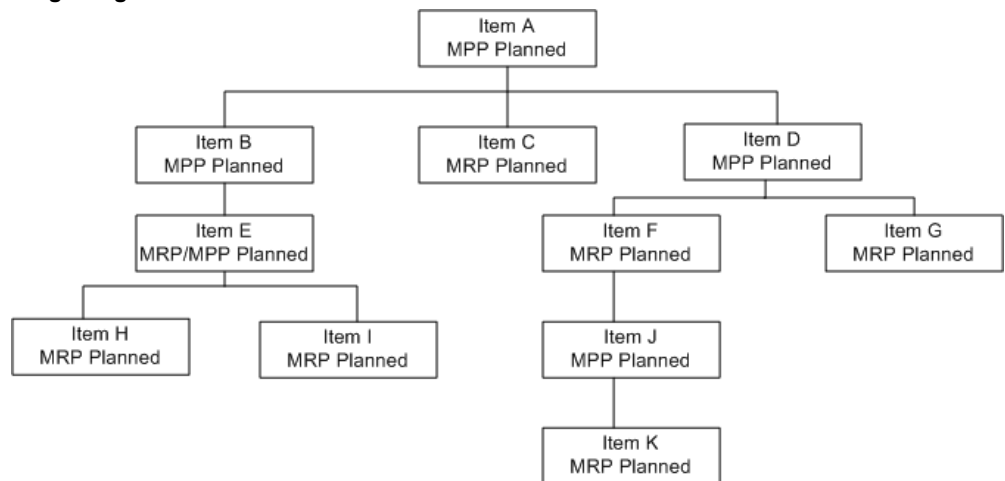
**Example 1: Single organization MPP as a demand schedule to an MRP with Interplant not Checked**

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 5-17 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**

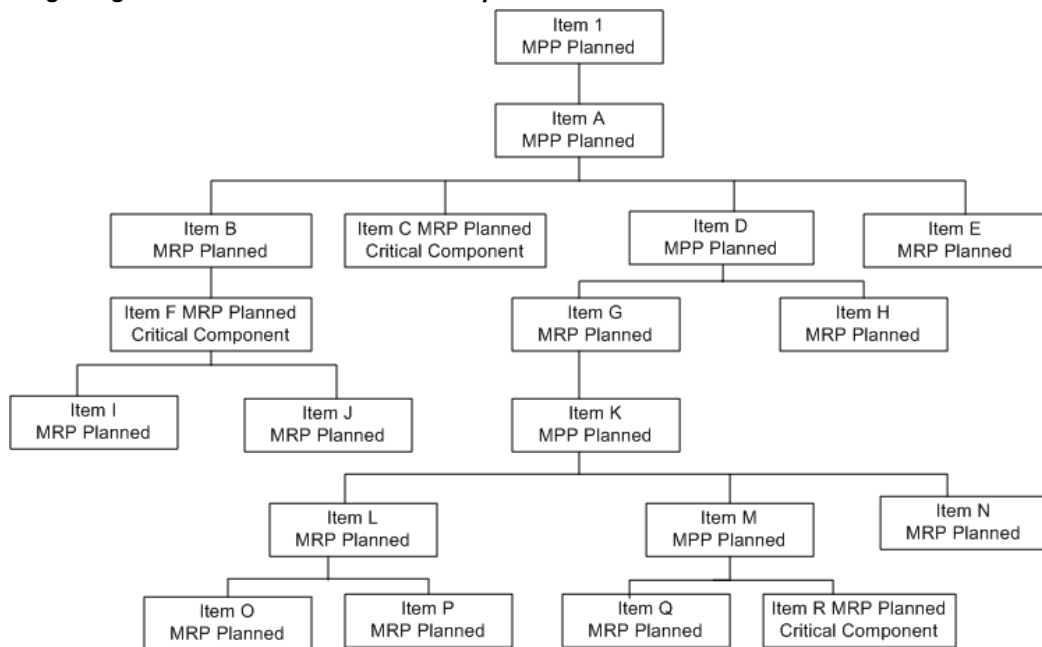


Figure 'Single organization MPP with critical components, page 5-18 illustrates the following:

- 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
MRP	N			Discrete Job Demand	-1	-1		18-Dec-02	19-Dec-02		None



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			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

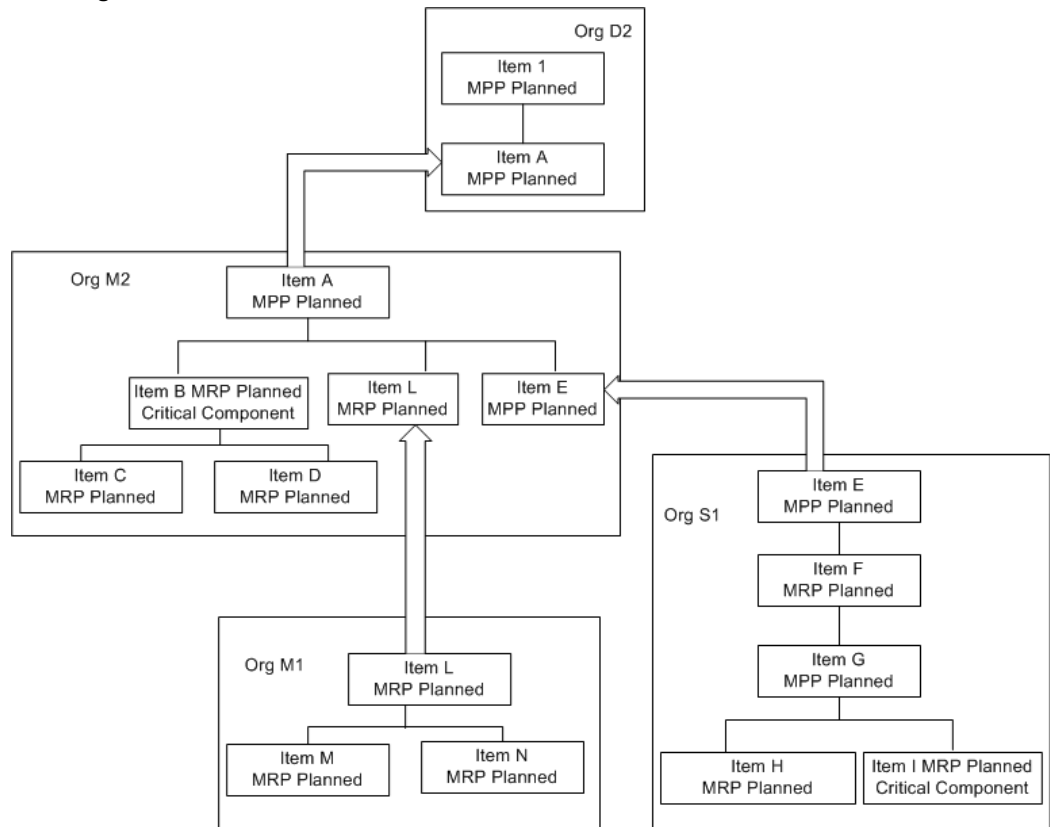


Figure 'Multi organization MPP, page 5-23 illustrates that the interorganization transfers, which are possible between the four organizations are:

- 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.

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 5-24
- 'Interplant option is selected, page 5-24

**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 Scheduling

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 5-25
- 'Production Forecast, page 5-26
- 'Product Family Item Sourcing, page 5-28
- 'Constrained Master Scheduling, page 5-29
- 'Product Family and Member Item Drill Down, page 5-30
- 'Forecast and Production Forecast Pegging, page 5-30

## 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.

**Organization Items window, MPS/MRP Planning tab**

Organization Item (V1)

Organization: V1 Vision Operations

Item:

Description: [ ]

Display Attributes: ☐ Master ☒ Org ☐ All

Main Inventory Bills ... Asset... Costing Purch... Recei... Physi... Gener... MPS/M... Lead ...

Planning Method: Not planned

Forecast Control:

Pegging: None

☐ Round Order Quantities ☐ Planned Inventory Point

☐ Exclude From Budget ☒ Create Supply

☐ Repetitive Planning

Overrun: %

Acceptable Rate +: 0

Acceptable Rate -: 0

MPS Planning: ☐ Calculate ATP

Reduce MPS:

Exception Set:

Shrinkage Rate:

Acceptable Early Days:

Planning Time Fence: User-Defined

Demand Time Fence:

Release Time Fence:

Days: 1

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.

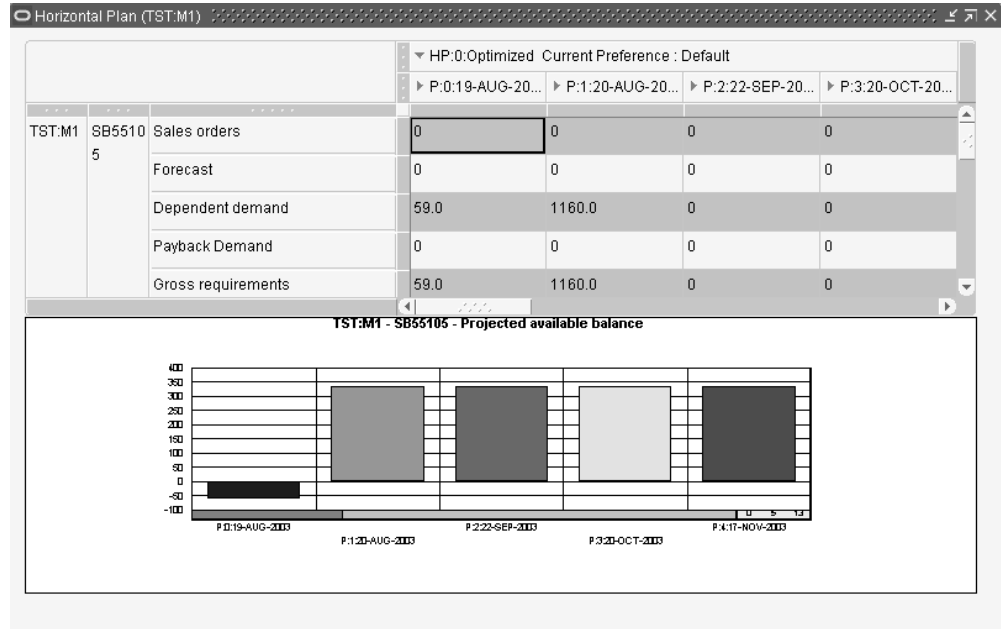
For more details, see section: MPS/MRP Planning Attribute Group in *Oracle Inventory User's Guide*.

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.

## Horizontal Plan



## 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 section: Assigning Sourcing Rules and Bills of Distribution in *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.

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.

## **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.

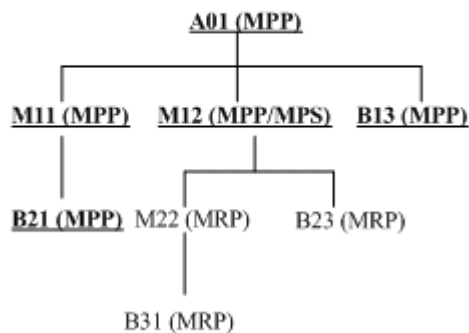
Each type of plan includes or ignores an item for planning depending on the setting of its MRP Planning Type attribute. The discussion below focuses on the principal ways in which plan type (Master, Production, or Manufacturing) can be used in conjunction with MRP Planning Type item attribute values (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 5-2) and BOM ('Sample Bill of Material, page 5-2), 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 5-2):

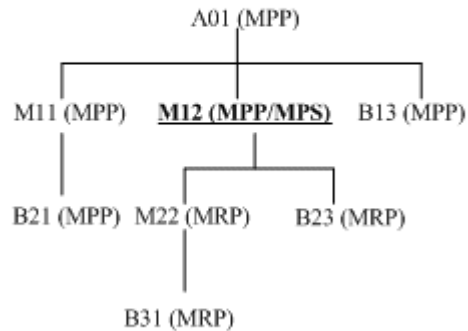
Plan Name: MPP-1  
Plan Type: Master  
Planning Organizations: SF1, SF2, AF1, DC1, DC2



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

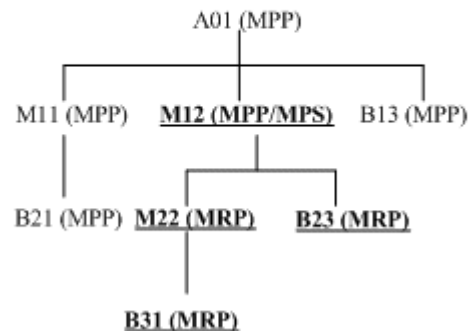


3. Manually modify the MPS for M12 as necessary.

**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 5-2).

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/disposition 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?	<p>Difficult to change resource capacity, but increased outsourcing is an option.</p> <p>Decisions can be made on supplier sourcing to address the exceptions.</p>
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?	<p>Difficult to change material availability but internal resource acquisition/disposition is an option.</p> <p>Decisions can be made on resource acquisition/disposition to address the exceptions.</p>
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.

Optimization Level	Planning Horizon	Question/Goals	Scenario
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)  (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.  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.  The planned orders for the Unconstrained time portion of the supply chain plan are always generated using traditional MRP type logic.
Optimized  (Optimized option checked which applies to the entire planning horizon)	Global setting that applies to the entire supply chain plan.  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.

## 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

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

**Plan Options window, Main tab**

Plan Options (SLF.M1)

Plan: GLFC-RT-1    GLFC.Aset @ Item-Inst-Zone, DP @    Plan Type: Manufacturing Plan

Main    Aggregation    Organizations    Constraints    Optimization    Decision Rules

Planned Items: Demand schedule ...    Assignment Set: SLF GLFC Assignme...

Material Scheduling Method: Order Start Date    Demand Priority Rule:

End Item Substitution Set:

Schedule By: Schedule Ship Date    Overwrite: All

☒ Demand Time Fence Control    ☒ Append Planned Orders

☒ Planning Time Fence Control    ☐ Move Jobs to PIP

☒ Display Key Performance Indicators    ☐ Lgt for Lot

☐ Include Critical Components

**Forecast Allocation and Consumption**

☒ Do Not Spread Forecast    ☐ Consume by Forecast Bucket    ☐ Explode Forecast

☐ Spread Forecast Evenly

Backward Days: 10    Forward Days: 10

☒ Enable Pegging    Reservation Level: None

☐ Peg Supplies by Demand Priority    Hard Pegging Level: None

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 5-30 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.

Object	Description
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.
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 5-95 .
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 21-1. 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.
Overwrite	Overwrite planned orders. For further details, please see 'Overwrite Options, page 5-89.

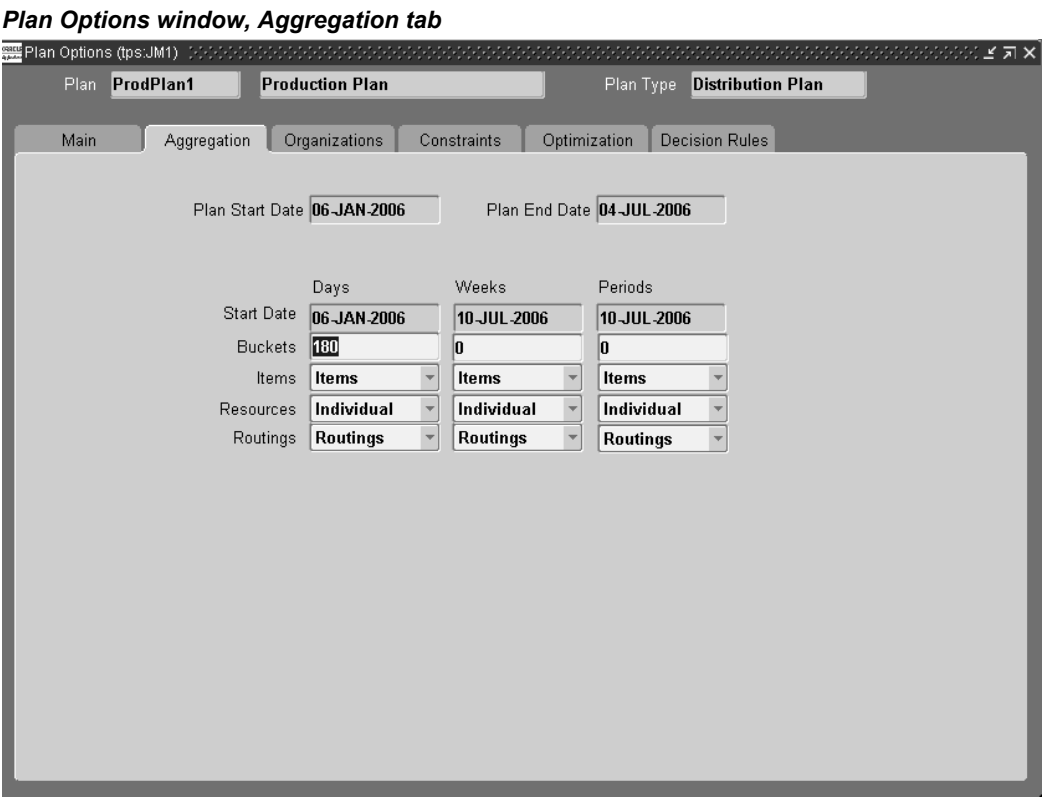
Object	Description
Schedule By	<p data-bbox="873 310 1365 373">Set this option to instruct the planning engine to:</p> <ul data-bbox="873 394 1365 741" style="list-style-type: none"> <li data-bbox="873 394 1365 489">- Plan supplies based on sales order line request, promise, or schedule dates for either ship or arrival</li> <li data-bbox="873 510 1365 741">- 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.</li> </ul> <p data-bbox="873 762 1365 825">Select one of the following sales order line dates:</p> <ul data-bbox="873 846 1125 1140" style="list-style-type: none"> <li data-bbox="873 846 1092 877">- Schedule Ship Date</li> <li data-bbox="873 898 1125 930">- Schedule Arrival Date</li> <li data-bbox="873 951 1084 982">- Request Ship Date</li> <li data-bbox="873 1003 1117 1035">- Request Arrival Date</li> <li data-bbox="873 1056 1084 1087">- Promise Ship Date</li> <li data-bbox="873 1108 1117 1140">- Promise Arrival Date</li> </ul> <p data-bbox="873 1161 1239 1192">The default is Schedule Ship Date.</p> <p data-bbox="873 1213 1365 1276">For forecast consumption, the planning engine uses:</p> <ul data-bbox="873 1297 1365 1581" style="list-style-type: none"> <li data-bbox="873 1297 1365 1371">• Schedule Date: If you select Schedule Ship Date or Schedule Arrival Date</li> <li data-bbox="873 1392 1365 1465">• Request Date: If you select Request Ship Date or Request Arrival Date</li> <li data-bbox="873 1486 1365 1560">• Promise Date: If you select Promise Ship Date or Promise Arrival Date</li> </ul> <p data-bbox="873 1602 1365 1801">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.</p>

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.
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 5-89.
Planning Time Fence Control	Check this option to enforce item attribute planning time fence control.
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.
Include Critical Components	<p>Select this plan option to instruct the planning engine to plan considering critical components.</p> <p>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.</p> <p>To mark an item as a critical component, select its item attribute Critical Component.</p>
Do Not Spread Forecast	The planning engine should use forecast entries as they exist for planning.

Object	Description
Spread Forecast Evenly	The planning engine should spread aggregate forecast demand evenly across the daily buckets from the workday calendar.
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.
Explode Forecast	<p>Select this plan option to instruct the planning engine to explode forecasts as follows during the consumption process:</p> <ul style="list-style-type: none"> <li>- Product family forecasts to product family member item forecasts</li> <li>- Model forecasts to other model, option class, and item forecasts.</li> </ul> <p>This option applies to forecasts with forecast control Consume and derive.</p> <p>If you clear this plan option, you have arranged for this explosion to occur in the source instance or in Oracle Demand Planning before the planning run.</p>
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 5-63 for more details.
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 5-63 for more details.

Object	Description
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.

# The Aggregation Tabbed Region



This table describes the fields and options.

Object	Description
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	<p>Number of buckets of this bucket type.</p> <p>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.</p>
Items	<p>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.</p>
Resources	<p>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.</p>
Routings	<p>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.</p>

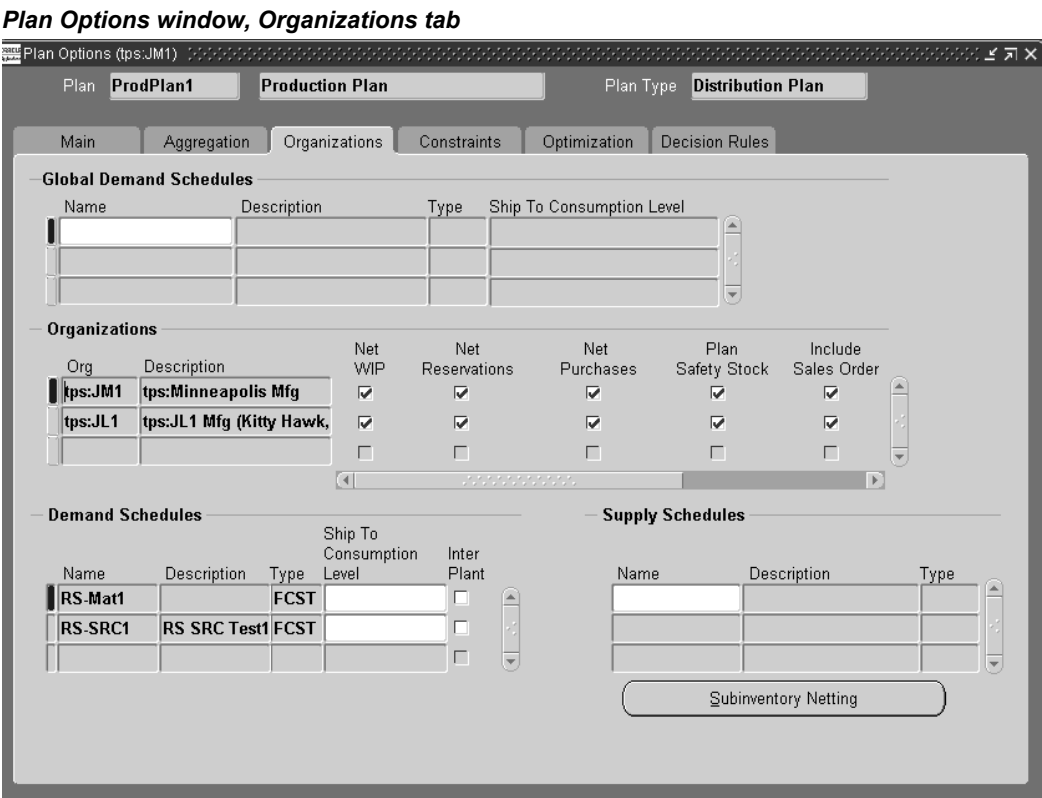
## Resource Utilization Calculation

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).

Object	Description
Ship To Consumption Level	<p>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.</p> <p>You can select:</p> <ul style="list-style-type: none"> <li>- Customer</li> <li>- Customer Site</li> <li>- Zone</li> <li>- Customer Zone</li> <li>- Demand Class</li> <li>- Item</li> </ul> <p>The choices in the list of values changes depending on the published level of the scenario.</p>
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.

Object	Description
Plan Safety Stock	Select to consider plan safety stock demand and supply in the planning demand/supply netting process. See Safety Stock, page 6-167.
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.
Bill of Resource	Select Bill of Resources from the list of values.

Object	Description
Simulation Set	<p data-bbox="971 306 1458 720">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.</p> <p data-bbox="971 747 1458 1098">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.</p> <p data-bbox="971 1125 1458 1570">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.</p>
Demand Schedules	Select the names of demand schedules, forecasts, and plans that drive this plan.

Object	Description
Ship To Consumption Level	<p>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.</p> <p>You can select:</p> <ul style="list-style-type: none"> <li>- Customer</li> <li>- Customer Site</li> <li>- Demand Class</li> <li>- Item-org</li> </ul>
Interplant	<p>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.</p>
Supply Schedules	<p>Select the name of supply schedules that participate in this plan.</p>
Subinventory Netting	<p>Opens the Subinventory Netting window.</p>

## The Constraints Tabbed Region

**Plan Options window, Constraints tab**

Plan Options (tps:JM1)

Plan: **ProdPlan1**    Production Plan    Plan Type: **Distribution Plan**

Main    Aggregation    Organizations    **Constraints**    Optimization    Decision Rules

---

☒ **Constrained Plan**

☐ Enforce Demand Due Dates      ☒ Enforce Capacity Constraints

	Days	Weeks	Periods
Start Date	06-JAN-2006	10-JUL-2006	10-JUL-2006
Buckets	180	0	0
Resource Constraints	Yes	Yes	Yes
Supplier Capacity Constraints	Yes	Yes	Yes

☒ Enforce Purchasing Lead-time Constraints

**Scheduling**

Minutes Bucket Size (in Days)	180
Hours Bucket Size (in Days)	0
Days Bucket Size (in Days)	0

---

☒ **Calculate Resource Requirements**

Planned Resources: **All Resources**

Bottleneck Resource Group:

This table describes the fields and options.

Object	Description
Constrained Plan	If selected, Enforce Demand Due Dates is selected, all fields in the tabbed region are updateable with all constraints defaulted to Yes. The default is cleared. 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.

Object	Description
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 11-27.
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 11-28.
Start Date	Displays the start date for each bucket type.
Buckets	Displays the number of buckets of this bucket type.
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	<p>Select this plan option to instruct the planning engine to constrain the plan by purchased item lead-times (item attributes or approved supplier list).</p> <p>Clear it to instruct the planning engine never to miss a demand due date because of a purchased item lead-time.</p> <p>For more details, see 'Enforce Purchasing Lead-time, page 11-30.</p>



Object	Description
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.
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

*Plan Options window, Optimization tab*

Plan Options (tps:JM1)

Plan: **ProdPlan1**    Production Plan    Plan Type: **Distribution Plan**

Main    Aggregation    Organizations    Constraints    **Optimization**    Decision Rules

☒ Optimize

☐ Enforce Sourcing Constraints

**Objectives**

Maximize inventory turns	<input type="text"/>
Maximize plan profit	<input type="text"/>
Maximize on-time delivery	<input type="text"/>

**Plan Level Penalty Factors**

Exceeding material capacity %	<input type="text"/>	Exceeding resource capacity %	<input type="text"/>
Exceeding transportation capacity %	<input type="text"/>	Demand lateness %	<input type="text"/>

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.

Object	Description
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%.
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

*Plan Options window, Decision Rules tab*



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.

For buy items in unconstrained plans and constrained plans in which this tabbed region is not available, you can duplicate the functionality of this region's Use Alternate Sources parameter; set profile option MSC: Enable Enhanced Sourcing to Yes. You cannot duplicate this functionality for transfers from other organizations.

When this tabbed region is enabled, the planning engine does not consider the profile option MSC: Enable Enhanced Sourcing.

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.
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.

## 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.

#### Subinventory Netting window

Name	Description	Net
ConsignVen	Vendor Consigned Inventory	<input checked="" type="checkbox"/>
Consumable	Consumables Inventory	<input type="checkbox"/>
CustReturn	Customer Returns	<input type="checkbox"/>
DropShip	DropShipments wash Inventory	<input type="checkbox"/>
Engineer	Engineering Inventory	<input type="checkbox"/>
FGI	Finished Goods Inventory	<input checked="" type="checkbox"/>
FS_Truck6	Field Service Truck 6	<input checked="" type="checkbox"/>
FS_Truck7	Field Service Truck 7	<input checked="" type="checkbox"/>
FS_Truck8	Field Service Truck 8	<input checked="" type="checkbox"/>
FS_Truck9	Field Service Truck 9	<input checked="" type="checkbox"/>

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.

## Forecast Explosion

The types of 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. See *Forecasting in Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*

- Global: Forecasts with no pre-specified ship from organization associated to them. You create and manage them in Oracle Demand Planning. See *Global Forecasting*, page 6-2.

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 them 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 19-3.

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 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.

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

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

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.



You can explode forecasts in:

- The source instance (local only): Then collect the exploded forecasts to the planning server. See Forecast Explosion in *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning 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 Planning 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 Planning 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.

1. Navigate to Supply Chain Plan > Plan Options > Main tab.
2. Select the Explode Forecast check box.

## Forecast Consumption

This section explains forecast consumption:

- General information
- Consumption options
- Using inline forecast consumption
- Viewing forecast consumption

### General Information

Forecast consumption reduces forecast entry quantities by the quantities of sales order line item which are scheduled during the same time period. You use it when you drive plans using both forecasts and sales orders to avoid double counting demand.

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

Order Type	Quantity	Date
SO1	10	June 1
SO 2	25	June 1

### Forecast 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.

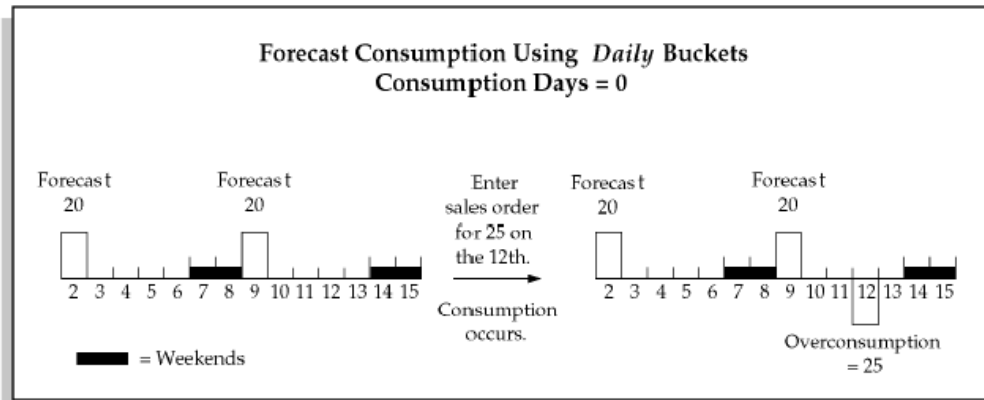
Forecast consumption works as follows:

- 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.

For example, this diagram shows a daily forecast with no consumption days. You enter a sales order line for quantity 25 on day 12.

Since there are no forecasts on day 12, the forecast consumption process creates an overconsumption entry on the 12th and the forecasts remain the same.

### Forecast Consumption Using Daily Buckets

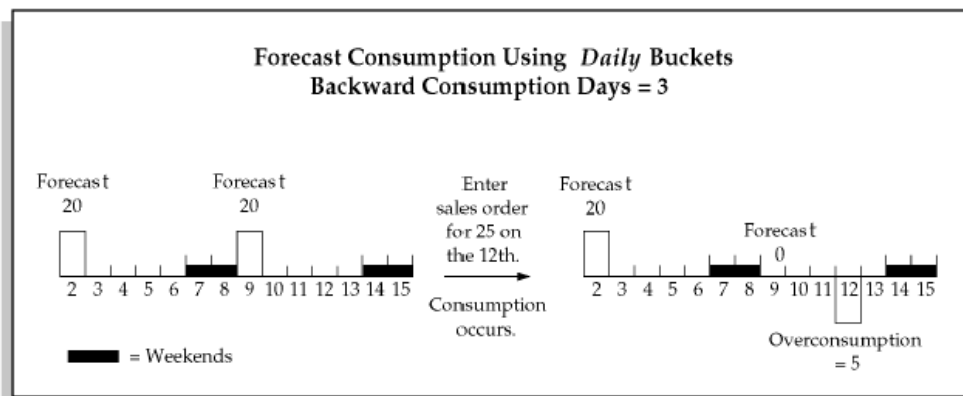


This diagram shows a daily forecast with 3 backward consumption days. You enter a sales order line for quantity 25 on day 12.

The forecast consumption process can consume forecast entries between day 12 (the sales order line schedule date) and day 9 (day 12 - 3 backward consumption days). It:

- Consumes the forecast for quantity 20 on day 9 for quantity 20
- Creates an overconsumption entry on day 12

### Forecast Consumption Using Daily Buckets



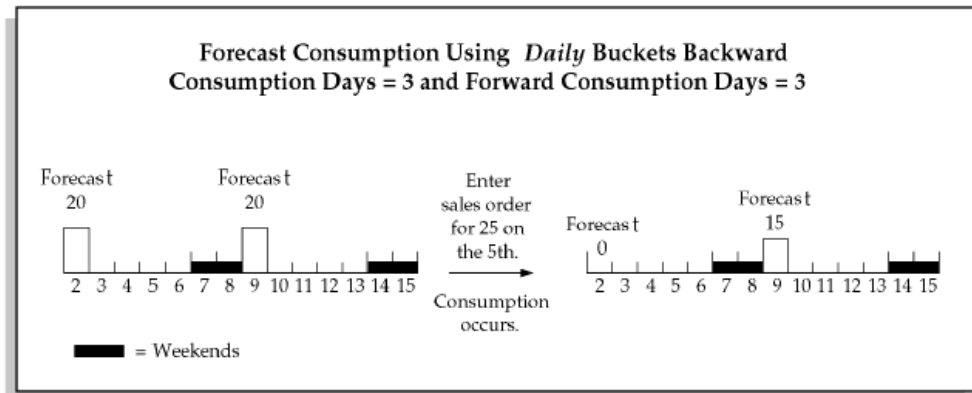
This diagram shows a daily forecast with 3 backward consumption days and 3 forward consumption days. You enter a sales order line for quantity 25 on day 5.

The forecast consumption process can consume forecast entries between day 5 (the sales order line schedule date) and day 2 (day 5 - 3 backward consumption days). It consumes the forecast for quantity 20 on day 2 for quantity 20.

The forecast consumption process can consume forecast entries between day 5 (the sales order line schedule date) and day 10 (day 5 + 3 forward consumption days + 2 non-work days). It:

- Consumes the forecast for quantity 20 on day 9 for quantity 5
- Leaves quantity 15 in the forecast entry on day 9

#### **Forecast Consumption Using Daily Buckets**



#### **Consumption Options**

The types of 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. See Forecasting in *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*
- **Global:** Forecasts with no pre-specified ship from organization associated to them. You create and manage them in Oracle Demand Planning. See Global Forecasting, page 6-2.

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.

For more information, see 'Overview of Forecast Consumption', *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning Users Guide*.

- 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.

See also:

- Global Forecasting, page 6-2, sections Global Forecast Consumption, To set up global forecast consumption, To consume global forecasts, Internal Sales Order Forecast Consumption, and Lower Level Pre-configuration Consumption.
- Configure to Order Forecast Consumption, page 19-6.

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

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

### Using Inline Forecast Consumption

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

### 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

For more information, see 'Overview of Forecast Consumption , *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning Users Guide*.

### 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.

### **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

### **Outlier Percentage**

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

For example, the forecast set outlier is 50%, the forecast is for quantity 100, and the sales order is for quantity 70. The sales order can only consume 50 (100 forecast entry \* 0.5 outlier percentage) from the forecast.

### **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.

## Setting Up

You control forecast consumption against each component 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 5-59.
- 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 5-66.

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.



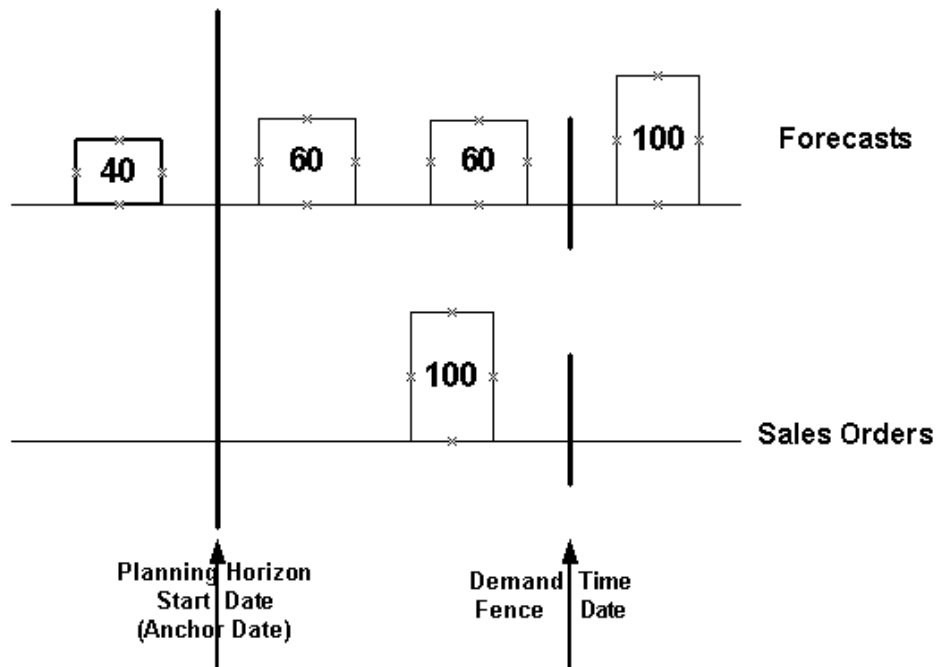
- If the value is Yes, the planning engine performs consumption across the planning horizon and then applies the demand time fence to the item. It drops the forecast entries inside the demand time fence and uses the forecast entries outside the demand time fence in the gross-to net explosion.

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**



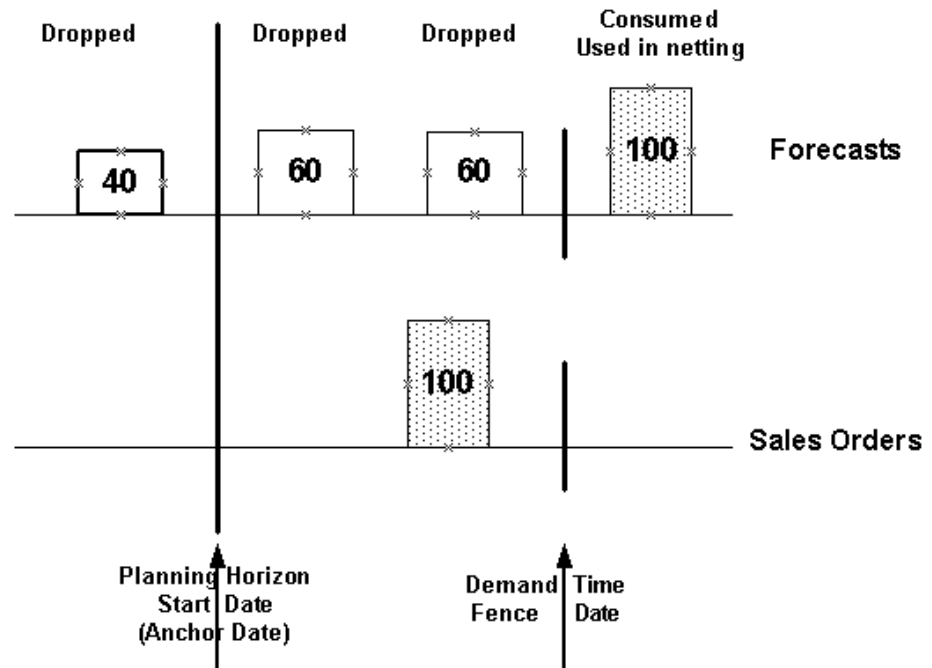
The planning engine checks the profile option MSC: Consume forecast within demand time fence and does the following depending on its value:

- 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

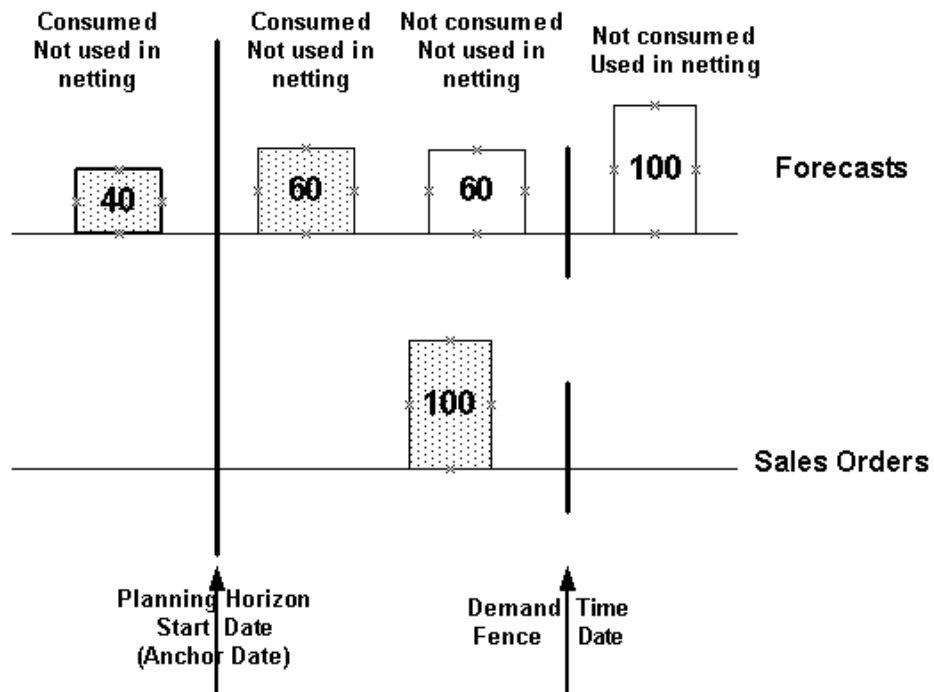


- If the value is Yes, the planning engine uses the sales order for 100 to consume the forecast entry for 40 which is past due and to consume one forecast entry for 60 between the anchor date and the demand time fence date.

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-64.
- 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-64.
- 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-64.

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, 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.

<b>Data or Calculation</b>	<b>25 May - 31 May</b>	<b>1 June - 7 June</b>	<b>8 June - 14 June</b>	<b>15 June - 21 June</b>	<b>22 June - 28 June</b>
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 from the period, it would not consume from the forecast entry in week 25 May - 31 May.

<b>Data or Calculation</b>	<b>25 May - 31 May</b>	<b>1 June - 28 June</b>
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.

## 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 from the workday 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

### Forecast Spreading Setup

To use this feature, set the following information:

- Use only week or period forecast buckets in Oracle Demand Planning.
- If you are publishing forecasts from 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.
- If you are publishing master demand schedules and sales orders from 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:

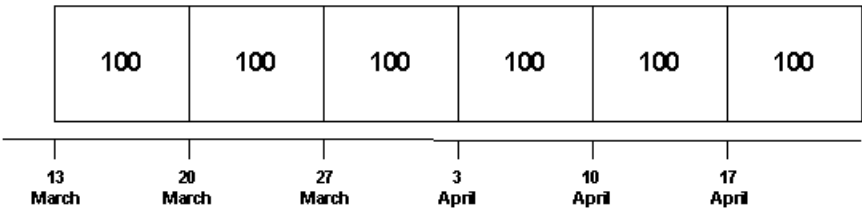
- You entered forecasts of quantity 100 for the weeks of 13 March, 20 March, 27 March, 3 April, 10 April, and 17 April. Each week begins on Thursday.
- The planning buckets are five days, two weeks, and one period.
- The workdays are Monday through Friday and there is a holiday on Tuesday 1 April.



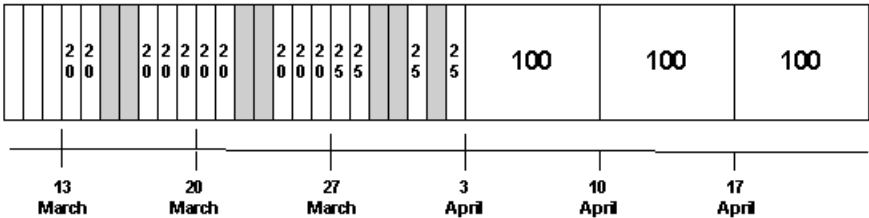
- You set plan parameter Include Past Due Forecast to 0 and selected plan option Spread Forecast Evenly.
- The planning engine spreads each weekly forecast of quantity 100 for the weeks beginning 13 March and 20 March to five daily forecasts of quantity 20.
- The planning engine spreads the weekly forecast 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**

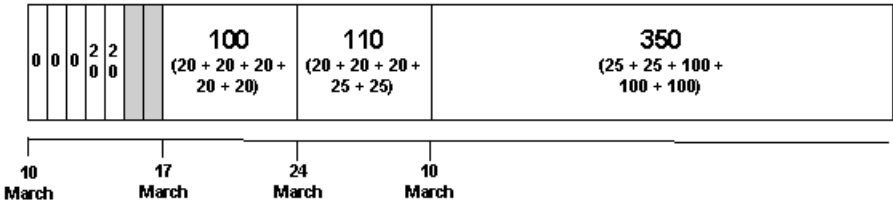
**Forecast Buckets**



**Forecast Spreading**



**Planning Buckets**



**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 this workday forecast recalculation. Oracle Demand Planning has daily forecasts for 15 days beginning on 8 June. 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.

Date	Oracle Demand Planning Forecast Quantity	Forecast Quantity for Recalculation	Oracle Advanced Supply Chain Planning Forecast Quantity
8 June (non-workday)	10	0	-
9 June (non-workday)	10	0	-
10 June	9	9	9
11 June	13	13	13
12 June	10	10	10
13 June	7	7	17
14 June	10	10	30 (10 + 10 + 10)
15 June (non-workday)	10	10	-
16 June (non-workday)	10	10	-
17 June	7	7	7
18 June	13	13	13
19 June	10	10	10
20 June	10	10	10
21 June	11	11	11
22 June (non-workday)	10	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	20	0	0	0	0	0	60	0
Consumed Forecast After Demand Time Fence						50	20	20	20	20	0	0	0	0	0	60	0
Total Demand						35	0	0	0	20	50	60	80	0	0	100	140

Plan Run Date  
Planning Time Fence

## 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.

<b>Relationship type on the sales order</b>	<b>Forecast consumption performed on forecast of ordered item?</b>	<b>Forecast consumption performed on forecast of original ordered item?</b>
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.



### Related Items window

Order Information Line Items

IB Order Total 100.00

Main Pricing Shipping Addresses Returns Services Others

Line	Ordered Item	Original Ordered Item	Qty	UOM	Unit Selling Price	Request Date	Schedule Ship Date	St:
1.1	1GMXY111		100	Ea	0.00	28-JAN-2004 09:37:25		En

Related Items (1GMXY111) - 1GMXY111-item has upsold/cross sold item

☒ Show Available Qty ☒ Show Unit Selling Price

Related Item	Description	UOM	Type	Available Qty	Unit Selling Price
<input type="checkbox"/> AS54888	Dimension 4550	Ea	Cross-Sell	ATP not applic	1,624.99
<input checked="" type="checkbox"/> 1GMXY222	1GMXY222 -upsold item for 1GM	Ea	Up-Sell	ATP not applic	0.00
<input type="checkbox"/> 1GMXY333	1GMXY333-cross sold item for 1G	Ea	Cross-Sell	ATP not applic	0.00
<input type="checkbox"/> 1GMXY444	substitute for 1GMXY111	Ea	Substitute	ATP not applic	0.00

Line Total Description 1GMXY111

Description 1GMXY222 -upsold item for 1GM Warehouse V1 Qk Cancel

Actions Related Items Configurator Availability Book Order

- 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.

### Sales Order window

Order Information Line Items

IB Order Total 100.00

Main Pricing Shipping Addresses Returns Services Others

Line	Ordered Item	Original Ordered Item	Qty	UOM	Unit Selling Price	Request Date	Schedule Ship Date	St:
1.1	1GMXY222	1GMXY111	100	Ea	0.00	28-JAN-2004 09:37:25		En

Line Total 0.00 Line Qty 100 Service Total 0.00

Description 1GMXY222 -upsold item for 1GMXY111

Actions Related Items Configurator Availability Book Order

To use up-sell cross-sell substitution item relationships

- 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 5-88.
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.

### Supply/Demand window

Supply/Demand (TST.M1)

Plan **CPPlan1** Collaborative Planning Plan #1 Type **Manufacturing**

Supply/Demand Folder

Order Release Properties Sourcing Line Project

Org	Item	For Release	Firm	Order Type	Sugg Due Date	Qty/Rate	Order Number
TST:D2	AS66201	<input type="checkbox"/>	<input type="checkbox"/>	Forecast	19-SEP-2003 00:00:00	.574	
TST:D2	AS66201	<input type="checkbox"/>	<input type="checkbox"/>	Forecast	19-SEP-2003 00:00:00	.586	
TST:D2	AS66201	<input type="checkbox"/>	<input type="checkbox"/>	Forecast	19-SEP-2003 00:00:00	.597	
TST:D2	AS66202	<input type="checkbox"/>	<input type="checkbox"/>	Forecast	19-SEP-2003 00:00:00	.322	
TST:D2	AS66202	<input type="checkbox"/>	<input type="checkbox"/>	Forecast	19-SEP-2003 00:00:00	.325	
TST:D2	AS66202	<input type="checkbox"/>	<input type="checkbox"/>	Forecast	19-SEP-2003 00:00:00	.324	
TST:M1	AS66201	<input type="checkbox"/>	<input type="checkbox"/>	Planned order demand	22-SEP-2003 00:00:00	-2,366	7083856
TST:M1	AS66202	<input type="checkbox"/>	<input type="checkbox"/>	Planned order demand	22-SEP-2003 00:00:00	-1,297	7083919

Pegging for AS66201/TST:D2 Qty 574 on 19-SEP-2003 00:00:00 (Forecast /)

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.

### Consumption Details window

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

Input data stream	Relationship type on the sales order	History recorded on ordered item?	History recorded on original item?
	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



Schedule Date	Quantity	Order Status
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.

### Define Priority Rules window

Criteria Name	Criteria Order
Sales Orders & MDS Entries Priority	1
Schedule Date	2

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 5-38 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 10-92.

## **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 planning 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

## 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

Selecting Plan Profit Objective has the net effect of asking the optimization engine to do a dynamic cost rollup for all planned items. All other optimization objectives use standard costs and do not dynamically calculate a rolled-up cost.

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)\*  
Item 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.

## On-time Delivery Objective

The calculation for on-time delivery objective is

- On-time delivery = Penalty cost for late demand

On-time delivery 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)

On-time delivery 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 user-set profile option.

Penalty cost factor for late demand is a user-specified plan option.

Penalty cost factor for unmet demand is a system-supplied 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  $w_1 * (\text{Plan profit}) + w_2 * (\text{On-time delivery}) + w_3 * (\text{Inventory turns}) + 1.0 * (\text{Implicit objectives})$

Objective weights  $w_1$ - $w_3$  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  $w_1$ - $w_3$  may be set independently.

Objective weights  $w_1$ - $w_3$  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.

<b>Cost-Price/Objectives</b>	<b>Inventory Turns</b>	<b>On-time Delivery</b>	<b>Plan Profit</b>
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



<b>Factor</b>	<b>Penalty Cost for Late Demand</b>	<b>Penalty Cost for Resource Capacity Violation</b>	<b>Penalty Cost for Transport Capacity Violation</b>	<b>Penalty Cost for Material Capacity Violation</b>	<b>Penalty Cost for Safety Stock Violation</b>
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
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

<b>Factor</b>	<b>Penalty Cost for Using Alternate Sources</b>	<b>Penalty Cost for Using Alternate Routings</b>	<b>Penalty Cost for Using Alternate Resources</b>	<b>Penalty Cost for Using Substitute Items</b>	<b>Implicit Carrying Cost</b>
Resource Cost	Yes	No	Yes	No	No
Item Standard Cost	Yes	Yes	No	Yes	Yes
Carrying Cost Percentage	No	No	No	No	Yes
Sourcing Rank	Yes	No	No	No	No
Substitute Item Priority	No	No	No	Yes	No
BOM/Routin g 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 5-34), 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 5-102Aggregation 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
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

<b>Item B</b>	<b>Current</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
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.

<b>Item A</b>	<b>Current</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
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
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 Component s 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	<ol style="list-style-type: none"> <li>1. All critical items.</li> <li>2. Any assembly that has a critical item anywhere in its supply chain bill.</li> <li>3. All items sandwiched between 1 and 2.</li> </ol> <p><b>Note:</b> If the primary component is critical then ASCP also selects the non-critical substitute components.</p> <p>If the primary component is not critical then ASCP does not select the substitute components even if these substitutes are critical.</p> <p>This behavior is applicable for all variations of Plan Type and Planned Items plan option.</p>
All Planned Items	Production Plan	Unchecked	<ol style="list-style-type: none"> <li>1. Items with Planning Method of MPS Planning or MPS/MPP Planned.</li> <li>2. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill.</li> <li>3. All items sandwiched between 1 and 2.</li> </ol>

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All Planned Items	Production Plan	Checked	<ol style="list-style-type: none"> <li>1. Items with Planning Method of MPS Planning or MPS/MPP Planned.</li> <li>2. Any assembly that has an item with Planning Method of MPS Planning or MPS/MPP Planned anywhere in its supply chain bill</li> <li>3. All items sandwiched between 1 and 2.</li> <li>4. All critical items.</li> <li>5. Any assembly that has a critical item anywhere in its supply chain bill.</li> <li>6. All items sandwiched between 4 and 5.</li> </ol>
All Planned Items	Master Plan	Unchecked	<ol style="list-style-type: none"> <li>1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.</li> <li>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.</li> <li>3. All items sandwiched between 1 and 2.</li> </ol>

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All Planned Items	Master Plan	Checked	<ol style="list-style-type: none"> <li>1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.</li> <li>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.</li> <li>3. All items sandwiched between 1 and 2.</li> <li>4. All critical items.</li> <li>5. Any assembly that has a critical item anywhere in its supply chain bill.</li> <li>6. All items sandwiched between 4 and 5.</li> </ol>
Demand schedule items only	Manufacturing Plan	Unchecked	<ol style="list-style-type: none"> <li>1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).</li> <li>2. All components and subcomponents of 1.</li> </ol> <p><b>Note:</b> 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.</p>
Demand schedule items only	Manufacturing Plan	Checked	<ol style="list-style-type: none"> <li>1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).</li> <li>2. Only critical components and subcomponents of 1.</li> <li>3. All items sandwiched between 1 and 2.</li> </ol>

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Demand schedule items only	Production Plan	Unchecked	<ol style="list-style-type: none"> <li>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).</li> <li>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.</li> <li>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.</li> <li>4. All items sandwiched between 1 and 3.</li> </ol>
Demand schedule items only	Production Plan	Checked	<ol style="list-style-type: none"> <li>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).</li> <li>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.</li> <li>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.</li> <li>4. All items sandwiched between 1 and 3.</li> <li>5. All critical components of 1.</li> <li>6. All items sandwiched between 1 and 5</li> </ol>

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Demand schedule items only	Master Plan	Unchecked	<ol style="list-style-type: none"> <li>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).</li> <li>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.</li> <li>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.</li> <li>4. All items sandwiched between 1 and 3.</li> </ol>
Demand schedule items only	Master Plan	Checked	<ol style="list-style-type: none"> <li>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).</li> <li>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.</li> <li>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.</li> <li>4. All items sandwiched between 1 and 3.</li> <li>5. All critical components of 1.</li> <li>6. All items sandwiched between 1 and 5.</li> </ol>

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Supply schedule items only	Manufacturing Plan	Unchecked	<ol style="list-style-type: none"> <li>1. All items contained within supply schedules that are specified as input to the plan.</li> <li>2. All components and subcomponents of 1.</li> </ol> <p><b>Note:</b> 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.</p>
Supply schedule items only	Manufacturing Plan	Checked	<ol style="list-style-type: none"> <li>1. All items contained within supply schedules that are specified as input to the plan.</li> <li>2. Only critical components and subcomponents of 1.</li> <li>3. All items sandwiched between 1 and 2.</li> </ol>
Supply schedule items only	Production Plan	Unchecked	<ol style="list-style-type: none"> <li>1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within supply schedules that are specified as input to the plan.</li> <li>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.</li> <li>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.</li> <li>4. All items sandwiched between 1 and 3.</li> </ol>

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Supply schedule items only	Production Plan	Checked	<ol style="list-style-type: none"> <li>1. Items with Planning Method of MPS Planning or MPS/MPP Planned contained within supply schedules that are specified as input to the plan.</li> <li>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.</li> <li>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.</li> <li>4. All items sandwiched between 1 and 3.</li> <li>5. All critical components of 1.</li> <li>6. All items sandwiched between 1 and 5.</li> </ol>
Supply schedule items only	Master Plan	Unchecked	<ol style="list-style-type: none"> <li>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.</li> <li>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.</li> <li>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.</li> <li>4. All items sandwiched between 1 and 3.</li> </ol>



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Demand & Supply schedule items	Manufacturing Plan	Unchecked	<ol style="list-style-type: none"> <li>1. All items contained within demand or supply schedules that are specified as input to the plan.</li> <li>2. All components and subcomponents of 1.</li> </ol> <p><b>Note:</b> In this option (Demand &amp; 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.</p>

Demand & Supply schedule items	Manufactu ring Plan	Checked	<ol style="list-style-type: none"> <li>1. All items contained within demand or supply schedules that are specified as input to the plan.</li> <li>2. Only critical components and subcomponents of 1.</li> <li>3. All items sandwiched between 1 and 2.</li> </ol>
Demand & Supply schedule items	Production Plan	Unchecked	<ol style="list-style-type: none"> <li>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.</li> <li>2. All components and subcomponents of 1 with Planning Method of MPS Planning or MPS/MPP Planned.</li> <li>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.</li> <li>4. All items sandwiched between 1 and 3.</li> </ol>

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Demand schedule and WIP Components	Manufacturing Plan	Unchecked	<ol style="list-style-type: none"> <li>1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).</li> <li>2. All components and subcomponents of 1.</li> <li>3. All WIP components used in existing work orders (discrete job, lot-based job, process batch).</li> </ol> <p><b>Note:</b> 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.</p>

Demand schedule and WIP Components	Manufactu ring Plan	Checked	<ol style="list-style-type: none"> <li>1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).</li> <li>2. Only critical components and subcomponents of 1.</li> <li>3. All items sandwiched between 1 and 2.</li> <li>4. All critical WIP components used in existing work orders (discrete job, lot-based job, process batch) .</li> </ol>
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Demand schedule and WIP Components	Master Plan	Unchecked	<ol style="list-style-type: none"> <li>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).</li> <li>2. All components and subcomponents of 1 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.</li> <li>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.</li> <li>4. All items sandwiched between 1 and 3.</li> <li>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).</li> </ol>
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Planned Items Plan Option	Plan Type	Include Critical Compon ents Plan Option	Include Sales Order Plan Option (organiz ation specific)	Planned Items



Demand schedule items and all sales orders	Manufacturing Plan	Unchecked	Unchecked	<ol style="list-style-type: none"> <li>1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).</li> <li>2. All items with sales orders.</li> <li>3. All components and subcomponents of 1 and 2.</li> </ol> <p><b>Note:</b> Sales order demands are ignored and not seen in the plan.</p>
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Demand schedule items / WIP components / all sales orders	Manufactu ring Plan	Uncheck ed	Uncheck ed	<ol style="list-style-type: none"> <li>1. All items contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).</li> <li>2. All items with sales orders.</li> <li>3. All components and subcomponents of 1 and 2.</li> <li>4. All WIP components used in existing work orders (discrete job, lot-based job, process batch).</li> </ol> <p><b>Note:</b> Sales order demands are ignored and not seen in the plan.</p>
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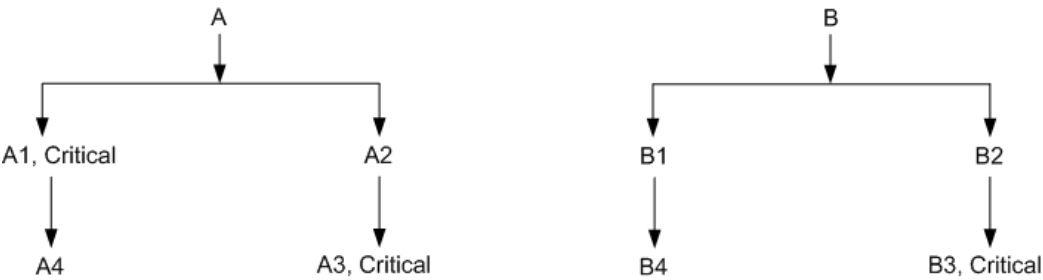
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Demand schedule items / WIP components / all sales orders	Master Plan	Checked	Checked	<ol style="list-style-type: none"> <li>1. Items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned contained within demand schedules that are specified as input to the plan (Forecast, MDS, DP Scenario).</li> <li>2. All items with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned and with sales orders.</li> <li>3. All components and subcomponents of 1 and 2 with Planning Method of MPP Planned, MPS/MPP Planned, or MRP/MPP Planned.</li> <li>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.</li> <li>5. All items sandwiched between 1 and 3 as well as 2 and 3.</li> <li>6. All items sandwiched between 1 and 4 as well as 2 and 4.</li> <li>7. All critical components of 1.</li> <li>8. All items sandwiched between 1 and 7.</li> <li>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).</li> </ol>
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**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.

<b>Item</b>	<b>Organization</b>	<b>Planned Items with Demand schedule items only and Include Critical Component Option Set to No (Scenario 1)</b>	<b>Planned Items with Demand schedule items only and Include Critical Component Set to Yes (Scenario 2)</b>	<b>Planned Items with Demand schedule items and all sales orders and Include Critical Component Set to No (Scenario 3)</b>	<b>Planned Items with Demand schedule items and all sales orders and Include Critical Component Set to Yes (Scenario 4)</b>
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.

<b>Item</b>	<b>Organization</b>	<b>Planned Items with Demand schedule items only and Include Critical Component Option Set to No (Scenario 1)</b>	<b>Planned Items with Demand schedule items only and Include Critical Component Set to Yes (Scenario 2)</b>	<b>Planned Items with Demand schedule items and all sales orders and Include Critical Component Set to No (Scenario 3)</b>	<b>Planned Items with Demand schedule items and all sales orders and Include Critical Component Set to Yes (Scenario 4)</b>
A	M1	Yes	Yes	Yes	Yes



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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

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## Supply Chain Plan Modeling

This chapter covers the following topics:

- Overview of Supply Chain Modeling
- Global Forecasting
- Publishing Plan Results to Oracle Order Management
- Setting Outbound Ship Method
- Setting up the Supply Chain
- 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
- Viewing the Supply Chain
- Performing Tasks on the Planning Server

### 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.

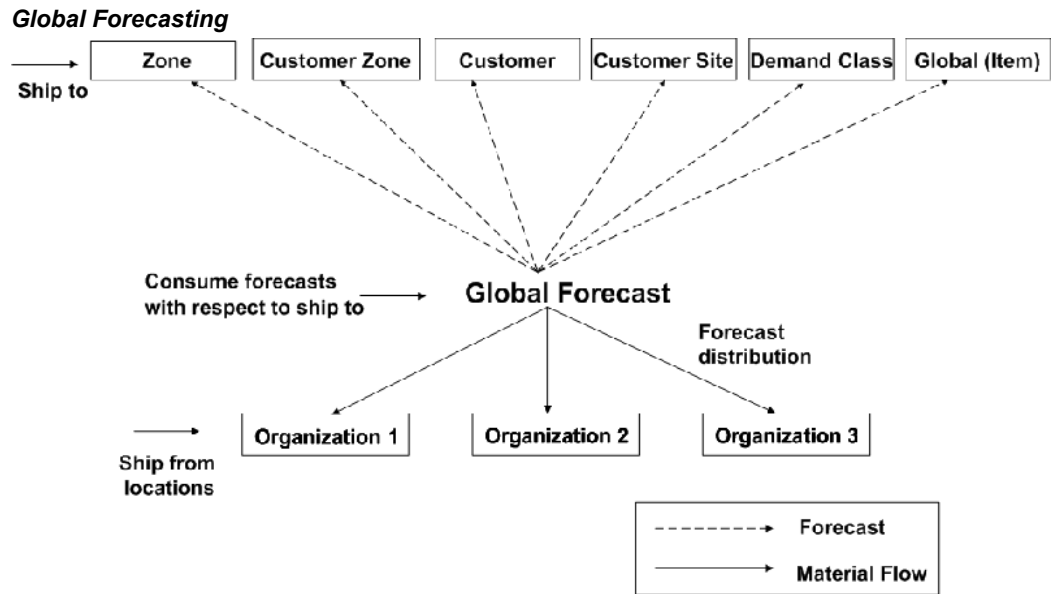
## Global Forecasting

Global forecasts are 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 Master Scheduling/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 5-59.

## 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 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.

## Plan Options > Organization tab

Plan Options (SLF M1)

Plan: GLFC-RT-1    GLFC.Aset @ Item-Inst-Zone, DP @    Plan Type: Manufacturing Plan

Main    Aggregation    **Organizations**    Constraints    Optimization    Decision Rules

**Global Demand Schedules**

Name	Description	Type	Ship To Consumption Level
glfc_zone	PSJGLFC2:glfc_zone	DPSCN	Zone

**Organizations**

Org	Description	Net WIP	Net Reservations	Net Purchases	Plan Safety Stock	Include Sales Order
SLF:M1	SLF:Seattle Manufactur	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SLF:M2	SLF:Boston Manufacturi	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Demand Schedules**

Name	Description	Type	Ship To Consumption Level	Inter Plant
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>

**Supply Schedules**

Name	Description	Type

Subinventory Netting

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.

## Global Forecast Planning

### 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

### Horizontal Plan window

Horizontal Plan (SLF:M1)				HP:0:GLFC-RT-1 ( Ship From: Global Ship To: US-WEST ) Current Preference : Sridhar1			
				P:0:05-JAN-2006	P:1:06-JAN-2006	P:2:16-JAN-2006	
					W:1:06-JAN-2006	W:2:09-JAN-2006	W:3:16-JAN-2006
...	...	...	...				
Global	GLFC-	Original		163.62	0	0	163.62
Org	Widget2	Cumulative Original		163.62	163.62	163.62	327.24
		Consumed		0	0	0	89.0
		Cumulative Consumed		0.0	0.0	0.0	89.0
		Current		163.62	0	0	74.62
		Cumulative Current		163.62	163.62	163.62	238.24
		Expired		0	0	0	0
All Orgs	GLFC-	Sales orders		0	0	0	20.0
for this	Widget2	Forecast		0	253.62	0	124.62
Plan		Production forecast		0	0	0	0
		Dependent demand		0	0	0	0
		Other independent demand		0	0	0	0
		Gross requirements		0	253.62	0	144.62
		Planned orders		0	0	0	40.0
		Total supply		0	0	0	40.0
		Beginning on hand		0	0	0	0
		Projected available balance		0.0	-253.62	-253.62	-358.24
		Current scheduled receipts		0	0	0	0
		Projected on hand		0.0	-253.62	-253.62	-398.24

- 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.



## Global Forecasting based on zones

Horizontal Plan (SLF:M1)

HP:0:GLFC-RT-1 ( Ship From: Global Ship To: US-WEST ) Current Preference : Sridhar1

		▼ P:0:05-JAN-2006				▼ P:1:06-JAN-2006		▼ P:2:16-JAN-2006			
						▶ W:1:06-JAN-2006		▶ W:2:09-JAN-2006		▶ W:3:16-JAN-2006	
Global Org	GLFC-Widget2	Orig	Hide	▶	163.62	0	0	0	163.62		
		Curr	Show	▶	163.62	163.62	163.62	163.62	327.24		
		Con			0	0	0	0	89.0		
		Curr	Enterprise view		0.0	0.0	0.0	0.0	89.0		
		Curr	View Substitution	▶	163.62	0	0	0	74.62		
		Curr	Preferences		163.62	163.62	163.62	163.62	238.24		
		Expi	Copy horizontal plan		0	0	0	0	0		
All Orgs for this Plan	GLFC-Widget2	Sale	Save Settings		0	0	0	0	20.0		
		Fore	Change Preferences	▶	0	253.62	0	0	124.62		
		Proc			0	0	0	0	0		
		Dep	Global Forecasting	▶	US-WEST	0	0	0	0		
		Othe	Hide/Show graph	▶	US-CENTRAL	0	0	0	0		
		Gros			0	253.62	0	0	144.62		
		Planned orders			0	0	0	0	40.0		
		Total supply			0	0	0	0	40.0		
		Beginning on hand			0	0	0	0	0		
		Projected available balance			0.0	-253.62	-253.62	-253.62	-358.24		
		Current scheduled receipts			0	0	0	0	0		
		Projected on hand			0.0	-253.62	-253.62	-253.62	-398.24		

- 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.

## Supply/Demand window

Supply/Demand (SLF:M1)

Plan GLFC-RT-1 GLFC.Aset @ Item-Inst-Zone, DP @ Zone, Sch Sh Type Manufacturing

Order Release Properties Sourcing Line Project

Org	Item	For Release	Firm	Order Type	Sugg Due Date	Qty/Rate
SLF:M1	GLFC-Widget2	<input type="checkbox"/>	<input type="checkbox"/>	Sales Orders	24-JAN-2006 23:59:00	-10.000
SLF:M1	GLFC-Widget2	<input type="checkbox"/>	<input type="checkbox"/>	Sales Orders	16-JAN-2006 23:59:00	-20.000
SLF:M1	GLFC-Widget2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sales Orders	07-FEB-2006 23:59:00	-10.000
SLF:M1	GLFC-Widget2	<input type="checkbox"/>	<input type="checkbox"/>	Sales Orders	30-JAN-2006 23:59:00	-22.000
SLF:M1	GLFC-Widget2	<input type="checkbox"/>	<input type="checkbox"/>	Sales Orders	09-FEB-2006 23:59:00	-22.000
SLF:M1	GLFC-Widget2	<input type="checkbox"/>	<input type="checkbox"/>	Sales Orders	13-FEB-2006 23:59:00	-5.000
		<input type="checkbox"/>	<input type="checkbox"/>			
		<input type="checkbox"/>	<input type="checkbox"/>			

Pegging for GLFC-Widget2/SLF:M1 Qty 10 on 24-JAN-2006 23:59:00 (Sales Orders 50932, Mixed ORDER ENTRY(2,1))

- GLFC-Widget2/SLF:M1 Qty 1 Pegged Qty 1 on 24-JAN-2006 23:59:00 (Planned order)
- GLFC-Widget2/SLF:M1 Qty 9 Pegged Qty 8.24 on 25-JAN-2006 03:02:00 (Planned order)
- GLFC-Widget2/SLF:M1 Qty 23 Pegged Qty .76 on 26-JAN-2006 21:05:00 (Planned order)

**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.

### Consumption Details window

Consumption Details

Forecast Set  Forecast  Item

DP Scenario  Original Qty

Sales Order	Sales Order Sched Date	Consumed Qty	Consumption Date	Promise Date	Request Date
50976.Mixed.ORDER EN	06-FEB-2006	22	16-JAN-2006	06-JAN-2006	18-JAN-2006

Demand Class  Zone  Customer

Ship Address  Bill Address

- 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

### Exception Details window

Exception Details (SLF:M1)

Plan: GLFC-RT-1    GLFC-Aset @ Item-Inst-Zone, DP @ Zone, Sch Sh    Type: Manufacturing

Action	Exception	Org	Item	Date	Qty
<input type="checkbox"/>	Late replenishment for sales order	SLF:M1	GLFC-Widget2	16-JAN-2006 23:59	
<input type="checkbox"/>	Changes recommended for sales orders	SLF:M1	GLFC-Widget2		
<input type="checkbox"/>	Late replenishment for sales order	SLF:M1	GLFC-Widget2	24-JAN-2006 23:59	
<input type="checkbox"/>	Changes recommended for sales orders	SLF:M1	GLFC-Widget2		
<input type="checkbox"/>	Changes recommended for sales orders	SLF:M1	GLFC-Widget2		
<input type="checkbox"/>	Late replenishment for forecast	SLF:M1	GLFC-Widget2	06-JAN-2006 00:00	
<input type="checkbox"/>	Late replenishment for forecast	SLF:M1	GLFC-Widget2	06-JAN-2006 00:00	
<input type="checkbox"/>	Late replenishment for forecast	SLF:M1	GLFC-Widget2	16-JAN-2006 23:59	
<input type="checkbox"/>	Late replenishment for forecast	SLF:M1	GLFC-Widget2	16-JAN-2006 23:59	
<input type="checkbox"/>	Changes recommended for sales orders	SLF:M1	GLFC-Widget2		

Suppliers    Resources    Items    Mgr Details    Supply/Demand

### Examples

This section lists a few examples to further explain the global consumption and explosion process based on different scenarios:

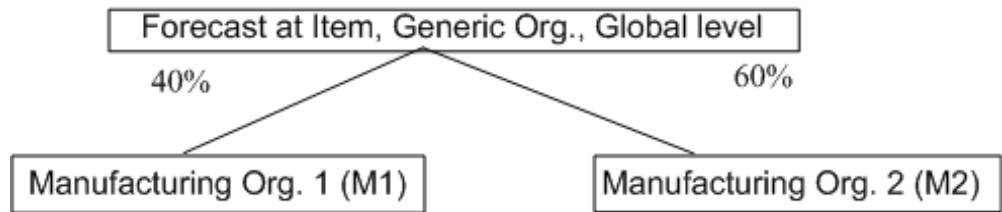
- 'Example 1: Standard item, page 6-18
- 'Example 2: Product family Items in multiple organizations, page 6-19
- 'Example 3: Single level single org ATO assembly, page 6-23
- 'Example 4: Multi level single org ATO assembly, page 6-25
- 'Example 5: Single level multi org ATO assembly, page 6-28
- 'Example 6: Multi level multi org ATO assembly, page 6-32

#### 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 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.

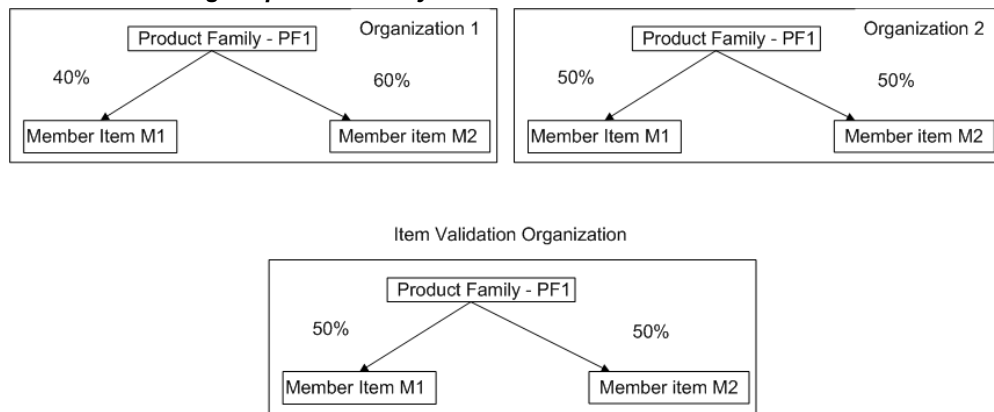
### Example 2: Product family Items in multiple organizations

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

Sales Order No	Item	Date	Qty	Customer	Customer Site
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	50	10	20
M1	20	25	25	50	25	50
Sales Order No	1001	-	-	1002	-	-
M2	40	25	25	50	25	50

Item	1/10	1/17	1/24	D2/1	2/8	2/15
Sales Order	-	-	-	1003	1003	1004
No				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.



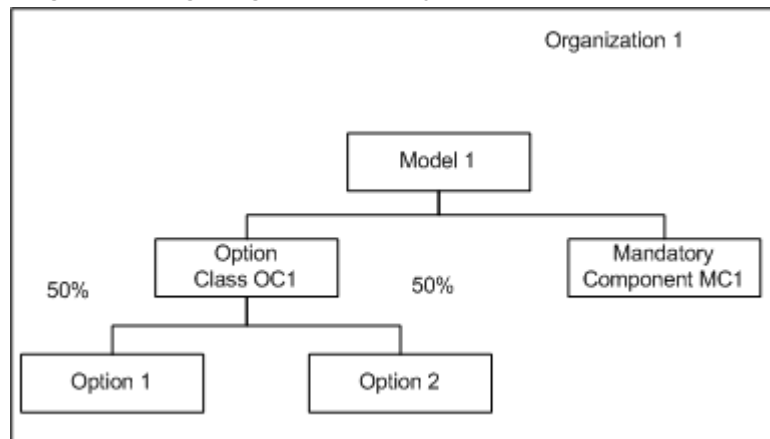
- Oracle Advanced Supply Chain Planning explodes the demand to member items during the bill of material explosion as it does for standard items during regular planning process. When Oracle Advanced Supply Chain Planning explodes the bill of material in this case, it picks up the bill of material in the 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

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
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
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	-

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
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.

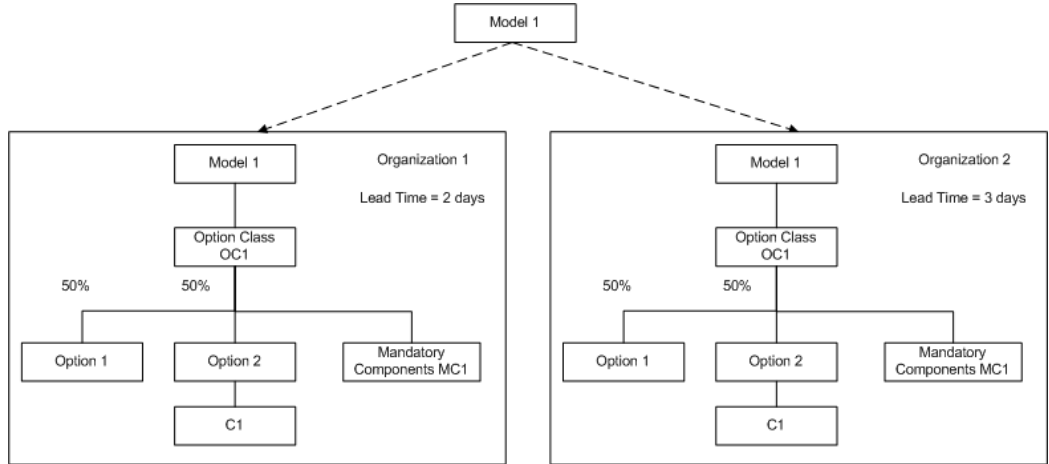
Oracle Advanced Supply Chain Planning consumes the forecasts at the chosen level and distributes the forecasts based on the sourcing rules provided for Model 1, which is the top level model.

## 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:

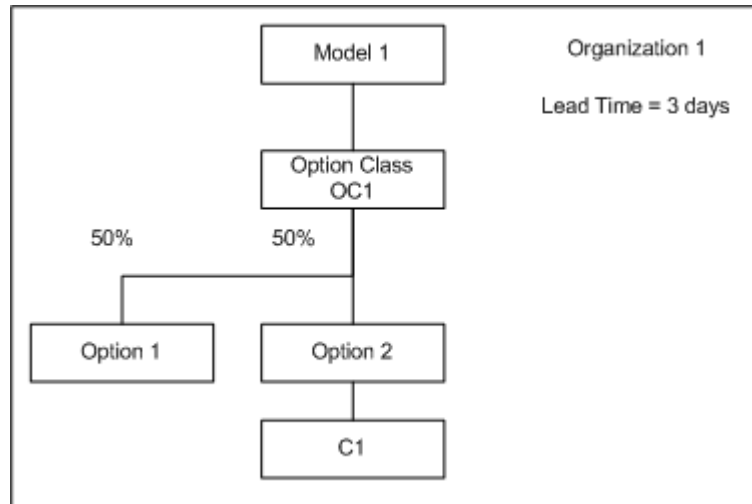
Forecast control is set to Consume and Derive

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	-

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
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

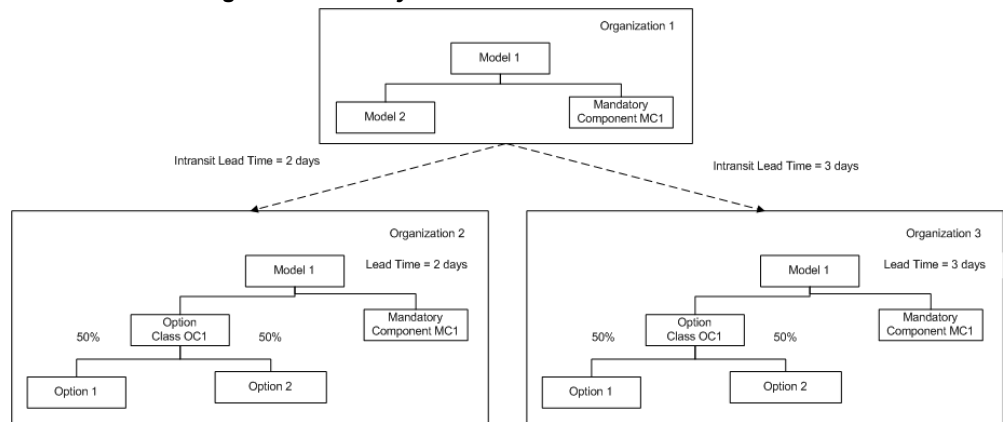
Consider:

- 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
Option 1	6	5	8	4	2	10	8	10

Item	1/18	1/24	1/24	2/1	2/2	2/8	2/9	2/15
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.

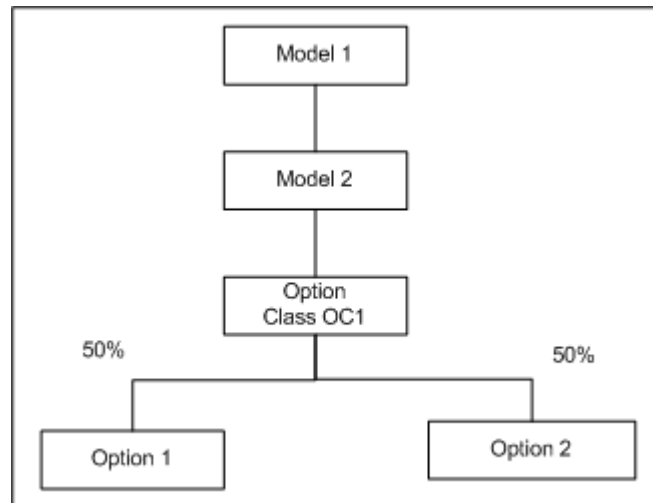
## Scenario 2:

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	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 8	2/12	2/14	2/15 5
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.

## 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

### Release window

Instance	Released SOs	Affected SOs	PO Reschedule	SO Release Re
mfg	1	1		3047904

OK

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 viewed 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.

## 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

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 up the Supply Chain

You can define the rules that govern the movement of goods throughout your supply chain. This network is the backbone of your material flow, and you can further control its behavior by defining a time-phased replenishment strategy. Oracle ASCP implements this strategy with sourcing rules and bills of distribution (BODs).

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).

## 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.

For more information on defining sourcing rules, see 'Defining Sourcing Rules, *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning Users Guide* in the *Oracle Master*

*Scheduling/MRP and Oracle Supply Chain Planning User's Guide*. For information on viewing sourcing rule assignments, see 'Viewing the Supply Chain, page 6-193 .

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

## Defining BODs

You can define BODs that specify a multilevel replenishment network of warehouses, distribution centers, manufacturing centers (plants), and trading partners.

For more information on defining BODs, see 'Defining Bills of Distribution, *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning Users Guide* in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*. For information on viewing BOD assignments, see "'Viewing the Supply Chain", page 6-193.

## Defining Assignment Sets

Once you have defined your sourcing rules and BODs, you must assign them to particular items and/or organizations. These assignments are grouped together in assignment sets. This is where various sourcing strategies define a particular supply chain network.

Each assignment set represents a 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, you can assign your sourcing rules and BODs at different levels, as follows:

- 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

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 to this category.

For more information on assigning a sourcing rule or BOD, 'Assigning Rules and Bills, *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning Users Guide* in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*. For information on viewing sourcing rule and BOD assignments, see 'Viewing the Supply Chain, page 6-193.

## Assignment Hierarchy

In the preceding list of assignment levels, rows above override rows below. For instance, Item-Organization overrides Item.

For information on viewing assignments, see 'Viewing the Supply Chain, page 6-193.

## 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 on 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	10
Daily supplier capacity in planning instance	10	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	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
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: Purchase Order Dock Date Calculation Preference: Specifies the purchase order date that the planning engine uses as the Dock Date, the scheduled date of purchase order receipt. If you select Promise Date, the Dock Date is Promise Date. If you select Promise Date and the delivery has not been acknowledged (Promise Date is blank), Dock Date is Need By Date. If you select Need By Date, Dock Date is Need By Date.

It also specifies whether purchase orders without promise dates consume supplier capacity. If you select Promise Date, the planning engine consumes supplier

capacity with purchase order deliveries that have not been acknowledged (Promise Date is blank). If you select Need By Date, it does not.

- **MSC: Supplier Capacity Accumulation (multiplier):** Specifies the date that the planning engine begins supplier capacity accumulation. You enter it as a multiplier of the Approved Supplier List Processing Lead-time.

To begin accumulation at the Approved Supplier List Processing Lead-time, enter 1 (the default). To begin accumulation at the plan start date, enter 0. To begin accumulation at a multiple of the Approved Supplier List Processing Lead-time, enter another whole number.

### **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 iSupplier 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 use 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



Order Type	Order Number	Order Line	Quantity	Need by Date	Promise Date	Dock Date
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
10	6 May
100	29 April
200	13 May
200	10 May
300	14 May
100	20 May
100	27 May

Quantity	Date
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
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

Order Type	Order Number	Order Line	Quantity	Date
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
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
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.

### The Supplier Item Attributes window

The screenshot shows the 'Supplier Item Attributes' window for item 'AS54888' (Sentinel Standard Desktop). The window includes fields for Item, Alternate, Revision (A), Date (04-JAN-2002), and Display (Future and Current). Below these are tabs for Main, WIP, and Description. The 'Main' tab is active, showing a table of operations with columns for Seq, Code, Count Point, Autocharge, Backflush, and Min Transfer Qty. The table lists five operations: 10 SDAS, 20 SBAS, 30 SFAS, 40 STST, and 50 DSAS, all with checked Count Point, Autocharge, and Backflush options, and a Min Transfer Qty of 0.

Seq	Code	Count Point	Autocharge	Backflush	Min Transfer Qty
10	SDAS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
20	SBAS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
30	SFAS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
40	STST	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
50	DSAS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0

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 . 'Sourcing Rules and Bills of Distribution, *Oracle Advanced Supply Chain Planning Implementation and Users Guide*.

### 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

In unconstrained plans, demand can be divided and allocated to multiple sources according to target sourcing percentages set in the rules.

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:  $300 \times 0.40 = 120$
- S2:  $300 \times 0.30 = 90$
- S3:  $300 \times 0.30 = 90$

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

The next eight tables contain the set up data required to explain the example. The ninth table has historical allocation data, which results from previous allocations.

This table shows demand for item A.

Demand for Item A	Due Date	Quantity
1	7/15/98	310
2	7/16/98	280

This table shows sourcing rules data for item A.

Item	Source	Rank	Percentage	Effective From	Effective To
A	S1	1	50	5/15/97	12/31/97
A	S2	1	50	5/15/97	12/31/97
A	S1	1	100	1/1/98	7/14/99
A	S2	2	60	1/1/98	7/14/99
A	S3	2	40	1/1/98	7/14/99

This table shows supplier capacity profile for item A.

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tue)	7/16/98 (Wed)
S1	60	60	60	60	60
S2	80	80	80	80	80
S3	20	20	20	20	20

This table shows supplier capacity tolerance percentages for item A. The numbers in this table are from applying tolerance percentages to the supplier capacity profile; refer to those tables. For example, for supplier S1 on 7/16/98, total supplier capacity is  $60 + 10\%(60) = 66$ .

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tue)	7/16/98 (Wed)
S1	0	0	0	0	10
S2	0	0	0	5	10
S3	0	0	0	5	10
S1	60	60	60	60	66
S2	80	80	80	84	88
S3	20	20	20	21	22

This table shows supplier delivery patterns for item A.

Source	Reception Pattern
S1	Mondays and Wednesdays
S2	Mondays
S3	All days except Fridays

This table shows supplier processing information for item A.

Source	Processing (days)
S1	3
S2	2
S3	2

This table shows order modifiers at each source for item A.

Source	Min. Order Quantity	Fixed Lot Multiple
S1	50	5
S2	25	25
S3	21	7

Order Modifiers for Item A:

- Minimum Order Quantity: 17
- Fixed Lot Multiple: 88

Lead Times for Item A:

- Preprocessing: 0
- Postprocessing: 1

This table shows historical allocation totals.

Source	Quantity
S2	1400
S3	1000

This table shows the horizontal plan.

Item A	7/10/98	7/11/98	7/14/98	7/15/98	7/16/98
Demand	0	0	0	310	280
Excess Schedule Receipts	0	0	0	16	0
Planned Orders - Org S1	0	0	288	0	0
Planned Orders - Org S2	0	0	125	100	0
Planned Orders - Org S3	0	0	21	56	0

Allocations for Demand #1

Allocation Calculation Using Historical Allocation Information and Target Percentages for Demand #1:

Quantity = 310

Due Date = 7/15/98 (Tuesday)

**Note:** The first date of planning horizon is 7/9/98. Only the last three rows in the source rules data table apply due to effectivity dates. S1 has rank 1 with allocation percentage = 100 (sourcing rules data table). This indicates that the system should allocate as much as possible to S1 before allocating the excess to other sources.

Based on the input demand data, we can now calculate how the demand for Item A will be satisfied.

#### Step 1: Allocation to S1

Monday 7/14/98 is the latest reception date (supplier delivery patterns table) before due date (7/15/98). This respects the processing and postprocessing lead-times (supplier processing information table).

Cumulative capacity = 180 from supplier capacity profile with tolerance percentages table (tolerance percentage = 0)

Unsatisfied demand = 310 - 180 = 130

Allocation to S1 = 180

This table shows you the resource availability after the allocation of 180 items consumes capacity. The values in are derived from subtracting demand satisfied from supplier capacity tolerance percentages.

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tu)	7/16/98 (Wed)
S1	0	0	0	60	66
S2	80	80	80	84	88
S3	20	20	20	21	22

**Step 2: Calculation of Historical Allocations for Alternate Sources.**

Consider S2 and S3 from historical allocation totals with rank 2. Historical allocations beginning 1/1/98.

- S2 = 1400
- S3 = 1000

Total allocations for S2 and S3 = 2400

**Step 3: Calculate Allocations to S2 Based on Historical Allocations and Target Sourcing Percentages.**

**Note:** Because S2 has a higher sourcing percentage, we will begin with allocations to S2.

Target source percentages: S2 = 60% (see sourcing rules data table)

Total target allocation = historical allocation + unsatisfied demand = 2400 + 130 = 2530

Using the S2 target allocation percentage, calculate the allocation to S2.

Allocation to S2 + 1400 (historical allocation) / 2530 (total target allocation) = 0.6 (source percent)

S2 allocation = 118

**Step 4: Respect Order Modifiers If They Exist**

S2 Allocation: 118 becomes 125 because S2 has a fixed lot multiple of 25 (see order modifiers at each source table). To respect that, 125 needs to be allocated.

**Step 5: Allocation to S2 with Following Constraints: Capacity, Lead Times, and Reception Calendars.**

S2: Allocation = 125, Date = 7/15/98

Monday, 7/14/98, is the latest reception date before the due date. This respects the processing and postprocessing lead-times.

Cumulative Available Capacity = 240 (tolerance percentage = 0); see supplier capacity profile after S1 allocation table.

This table shows you the resource availability after all allocations so far have consumed capacity.

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/16/98 (Tue)	7/16/98 (Wed)
S1	0	0	0	60	66
S2	80	35	0	84	88
S3	20	20	20	21	22

**Step 6: Calculate Allocations to S3 Based on Allocation to S2.**

Remaining quantity to allocate = 130 - 125 = 5

**Step 7: Respect Order Modifiers If They Exist**

S3 allocation: 5 becomes 21 because the minimum order quantity for S3 is 21 (see order modifiers at each source table).

**Step 8: Allocation to S3 with Following Constraints: Capacity, Lead Times, and Reception Calendars.**

Tuesday is a valid reception date. The reception date must be moved to Monday 7/14 due to postprocessing lead-time. This respects all lead-times (see supplier delivery patterns table and supplier processing information table).

Cumulative Available Capacity = 60

This table shows you the resource availability after all allocations so far have consumed capacity.

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tue)	7/16/98 (Wed)
S1	0	0	0	60	66

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tue)	7/16/98 (Wed)
S2	80	35	0	84	88
S3	20	19	0	21	22

**Note:** Scheduled receipt excess = 16 (for netting gross requirements for the next planning period) (see horizontal plan table).

This table shows summary of planned order allocations for demand #1.

Source	Allocation	Date
S1	180	7/14/98
S2	125	7/14/98
S3	21	7/14/98

The values for S1 come from 'Step 1: Allocation to S1, page 6-66, the values for S2 come from 'Step 4: Respect Order Modifiers If They Exist, page 6-67, and the values for S3 come from 'Step 7: Respect Order Modifiers If They Exist, page 6-68.

#### Input Data for Demand #2

See demand table.

Quantity = 280

Due Date = 7/16/98 (Wednesday)

Unsatisfied Demand = 280 - 16 (scheduled receipt excess) = 264

#### Allocations for Demand #2

##### Step 1: Allocation to S1

Wednesday is delivery date. The receiving date must be moved to Tuesday, 7/15, due to postprocessing lead-time.

Tuesday is not a reception date. The allocation date is moved to Monday, 7/14/98.

Cumulative available capacity = 0 (tolerance percentage = 0) (see supplier capacity profile after S3 allocation table), hence allocation to S1 = 0.

Unsatisfied demand = 280 - 16 (excess supply due to order modifiers from previous

bucket(s) = 264.

**Step 2: Calculation of Historical Allocations for Alternate Sources**

Consider S2 and S3 with rank 2 from the historical allocation totals table and the summary of planned order allocations for demand #1 table.

Historical Allocations beginning 1/1/98.

S2:  $1400 + 125 = 1525$

S3:  $1000 + 21 = 1021$

Total Allocations for S2 and S3 = 2546

**Step 3: Calculate Allocations to S2 Based on Historical Allocations and Target Sourcing Percentages.**

**Note:** Because S2 has a higher sourcing percentage, we will begin with allocations to S2.

Target Sourcing Percentages: S2 = 60%

Total Target Allocation = Historical allocation + New allocation =  $2546 + 264 = 2810$

Using the S2 target allocation percentage, calculate the allocation to S2.

$(S2 + 1525)/2810 = 0.6$

S2 Allocation = 161

**Step 4: Respect Order Modifiers If They Exist.**

S2 Allocation: 161 becomes 175 because S2 has a fixed lot multiple of 25 (see order modifiers at each source table), and to respect that  $7 \times 25 = 175$  needs to be allocated.

**Step 5. Allocation to S2 With Following Constraints: Capacity, Lead Times, and Reception Calendars.**

S2: Allocation = 175.

Date = 7/16/98 (Wednesday)

Reception date must be moved to Tuesday 7/15 due to postprocessing lead-time of one day (see order modifiers at each source table). Tuesday is not a reception date.

Allocation date moved to Monday 7/14/98. This respects the processing and postprocessing lead-times.

Cumulative Available Capacity = 115 (see supplier capacity profile after S3 allocation table)

Respecting order modifiers: allocation of 115 becomes 125 because S2 has a fixed lot multiple of 25. To respect that,  $5 \times 25 = 125$  needs to be allocated. However, accumulated capacity for S2 by 7/14/98 is 115, which is not a multiple of 25. Therefore, 100 units, which is the next lower value respecting order modifier and capacity will be scheduled.

This table shows you the resource availability after all allocations so far have consumed capacity.



Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tue)	7/16/98 (Wed)
S1	0	0	0	60	66
S2	15	0	0	84	88
S3	20	19	0	21	22

**Step 6: Calculate Allocations to S3 Based on Allocation to S2.**

Remaining quantity to allocate =  $264 - 100 = 164$

**Step 7: Respect Order Modifiers If They Exist.**

S3 Allocation: 164 becomes 168 because S3 has a fixed lot multiple of 7, so  $24 \times 7 = 168$  needs to be ordered.

**Step 8. Allocation to S3 With Following Constraints: Capacity, Lead Times, and Reception Calendars.**

Allocation date moved to Tuesday 7/15/98 due to postprocessing lead-time. Tuesday is a valid reception date. This respects all lead-times.

Cumulative Available Capacity = 60

Respecting order modifiers: allocation of 60 becomes 63 because S3 has an order modifier of 7. To respect that,  $9 \times 7 = 63$  needs to be allocated. However, accumulated capacity at S3 by 7/14/98 is 60, which is not a multiple of 7. Therefore, 56 units, which is the next lower value respecting order modifiers and capacity will be scheduled.

Unsatisfied quantity =  $164 - 56 = 108$

This table shows you the capacity available after all allocations so far have consumed capacity.

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tue)	7/16/98 (Wed)
S1	0	0	0	60	66
S2	15	0	0	84	88
S3	4	0	0	0	22

Search for Alternative Sources:

- S1: Not possible due to postprocessing lead-time and reception date constraints.
- S2: Wednesday is not a delivery date. Tuesday is not a delivery date.

Allocation of Excess Demand:

- Excess Demand = 108
- Allocate excess demand to primary source S1.
- Postprocessing = 1 day becomes Tuesday, 7/15/98 (7/16 minus 1 day of postprocessing = Tuesday, 7/15).
- Because Tuesday 7/15 is not a delivery date, the load excess is moved to Monday 7/14/98.

This table 6-17 shows you the capacity availability after all allocations so far have consumed capacity.

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tue)	7/16/98 (Wed)
S1	0	0	0	60	66
S2	15	0	0	9	88
S3	4	0	0	0	22

This table shows the summary of allocations for planned order #2.

Source	Allocation	Date
S1	108	7/14/98
S2	100	7/14/98
S3	56	7/16/98

This table shows the planned order allocations summary.

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tue)	7/16/98 (Wed)
S1	0	0	288 (180 + 108)	0	0

Source	7/10/98 (Thu)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tue)	7/16/98 (Wed)
S2	0	0	125	100	0
S3	0	0	21	56	0

## 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.

### Sourcing Rule screen



**Name:**  ☐ All Orgs ☒ Planning Active

**Description:**  ☐ Org

**Effective Date**

From Date:  To Date:

**Shipping Organization**

Type	Org	Supplier	Supplier Site	Allocation %	Rank	Shipping Method	Intransit Time
Buy From		Allianz AG	ROMA	60	1		
Buy From		Acme Corpora	UNION ST	40	1		

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.

### System Profile Values screen

Profile	Site	Application	Responsibility	User
MRP:Default Sourcing Assignm	Supplier Schedulin			
MRP:Sourcing Rule Category S	Product Family			
MSC: Sourcing Variance Tolera				
MSC:Sourcing Rule Category S	Product Family			
MSO: Sourcing Allocation Wind				
PO: Automatic Document Sourc				
Start Date Offset for Sourcing H	0			

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.



- Operation Resources screen appears.

- 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

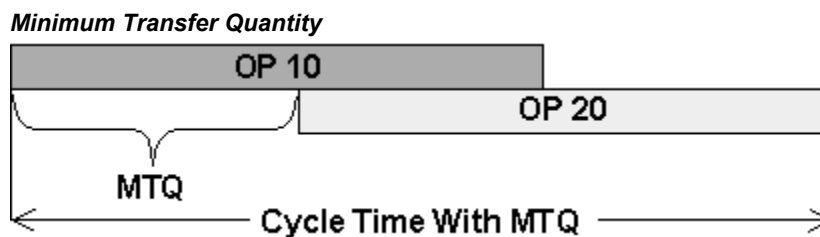
Oracle Advanced Supply Chain Planning allows you to specify a Minimum Transfer Quantity, which is the minimum amount that an operation must be completed in order to trigger the start of the next operation.

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:



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.

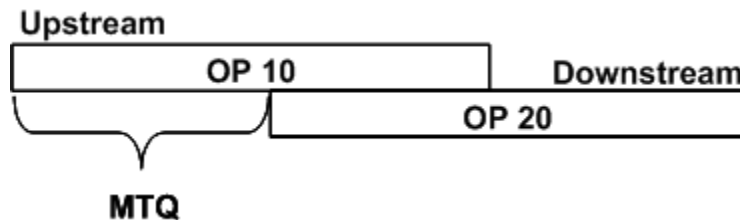
#### Example - Downstream process is slower than the upstream process or it has the same rate

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:

- $R1 \text{ Run Rate} \geq R2 \text{ Run Rate}$

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

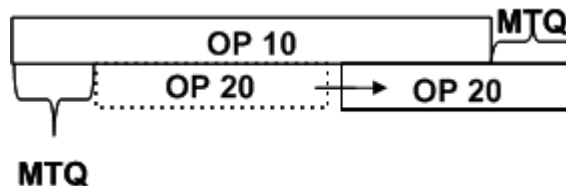
Consider a routing with two operations, Operation 10 using resource R1 and Operation 20 using resource R2. There is an MTQ between Operations 10 and 20. The following equation presents the relationship between the resources run rates:

- $R1 \text{ Run Rate} < R2 \text{ Run Rate}$

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:  $\text{Operation 20 Finish Time} - \text{Operation 10 Finish Time} \geq \text{MTQ}$

#### *Downstream process is faster than the upstream process*



A similar constraint holds for activities with respect to MTQ. Consider an operation

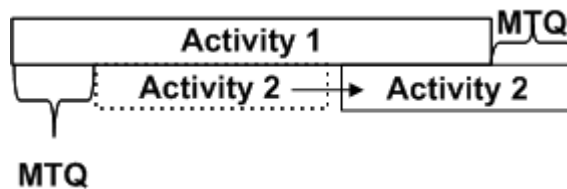
with two activities, Activity 1 using resource R1 and Activity 2 using resource R2. The MTQ between Activity 1 and Activity 2 is inferred for the operation MTQ. The following equation presents the relationship between the resources run rates:

$R1 \text{ Run Rate} < R2 \text{ Run Rate}$

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  $\geq$  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 6-82
- 'Resource Break: Scenario 2, page 6-83
- 'Resource Break: Scenario 3, page 6-85
- 'Resource Break: Scenario 4, page 6-86

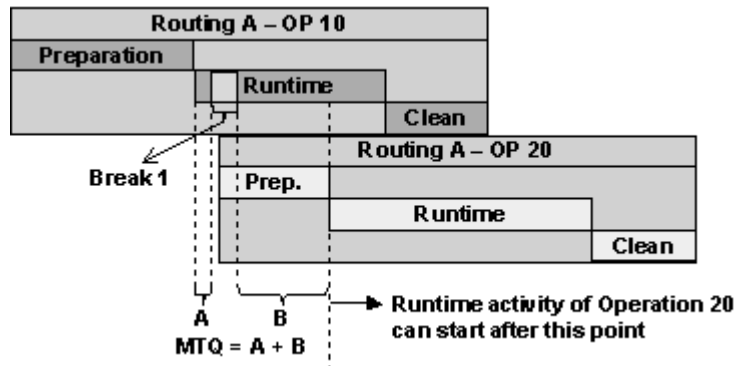
#### Resource Break: Scenario 1

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  $\geq$  (Runtime Activity OP 10 Start Time) + MTQ + Break 1

**Resource Break: Scenario 2**

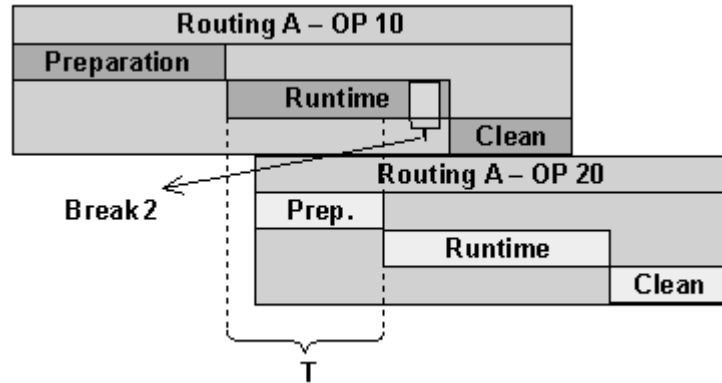
Consider:

- 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**



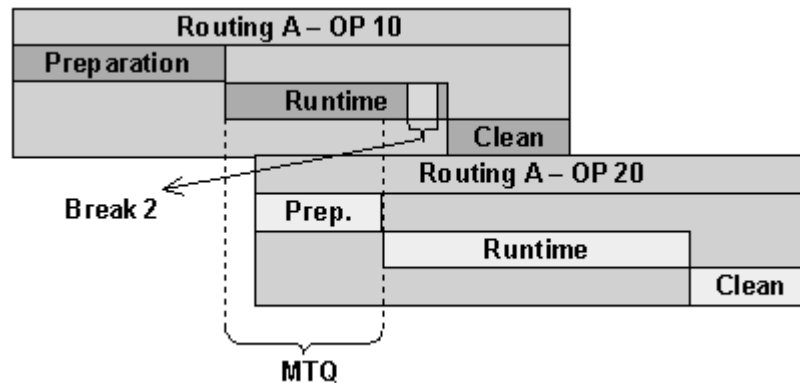
Result:

- $T \geq \text{MTQ} + \text{Break 2}$
- $\text{Runtime Activity OP 20 Start Time} \geq (\text{Runtime Activity OP 10 Start Time}) + \text{MTQ} + \text{Break 2}$

**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**

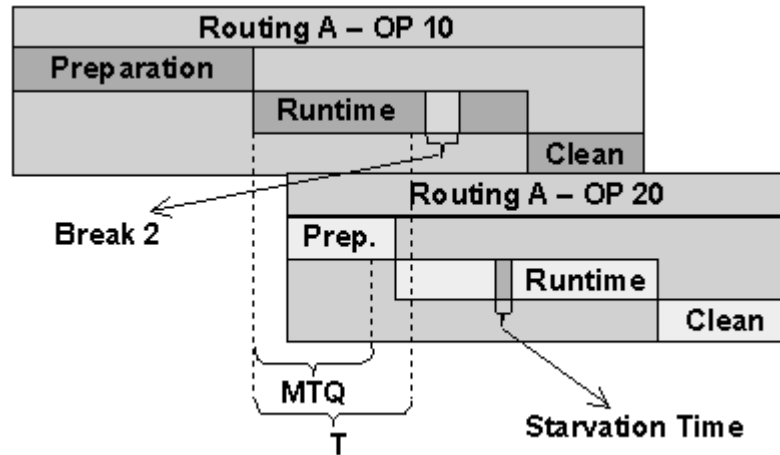


Result:

- $\text{Runtime Activity OP 20 Start Time} \geq (\text{Runtime Activity OP 10 Start Time}) + \text{MTQ}$

- 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**



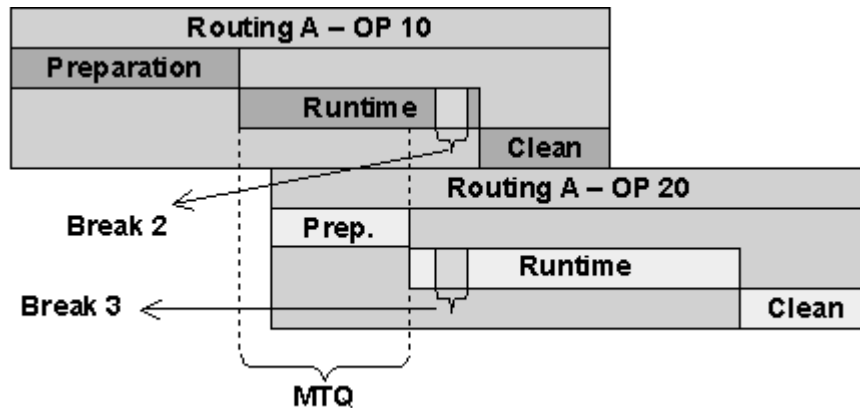
This implies that the above constraint can be violated with respect to firm requirements.

**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  $\geq$  (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  $\geq$  (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 6-88
- 'To model continuous transfer across organization, page 6-91
- 'To model non-continuous transfers inside one organization with incremental supplies, page 6-93
- 'To model non-continuous transfers inside one organization with incremental consumption, page 6-94
- 'To model non-continuous transfers across organizations with incremental supplies, page 6-95
- 'To model non-continuous transfers across organizations with incremental consumption, page 6-97
- 'To model non-continuous transfers across organizations with both incremental supplies and incremental consumption, page 6-98
- 'To model non-continuous transfers between suppliers and internal organizations, page 6-100

**To model continuous transfer inside one organization**

1. Select the Manufacturing and Distribution Manager responsibility.
2. Navigate to Bill of Materials > Routings > Routings.

## Routings

**Routings (V1)**

Item: **10-40W Oil**    **10-40W Car / Truck Motor Oil**    UOM: **QT**

Alternate:     ☐ Capable To Promise

Revision: **A**    Date: **29-NOV-2004 16:17:13**    [ ]

Display: **Future and Current**    ☒ Implemented Only

---

**Operations**

Main    Date Effectivity    **WIP**    Operation Yield    ECO    Description

Referenced			Count Point	Autocharge	Backflush	Min Transfer Qty
Seq	Code					
<b>10</b>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<b>0</b>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Routing Details    Routing Revisions    Operation Resources

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.

### Operation Details Activities Form

Operation Details:Activities

Operation: I-TEST Status: Approved for General Use

Version: 0 Description: Testing Operation

Class: TEST Class Description:

Valid From: 10-JAN-2000 To:

Owner Organization: PR1 Description: Main Production Facility

Minimum Transfer Qty: Process Qty UOM: LB

**Activities**

Activity	Description	Activity Factor	Sequence Dependent
<input checked="" type="checkbox"/> RUN-TIME	Run-Time Activity	1	<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>

Resources Edit Activity Line

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

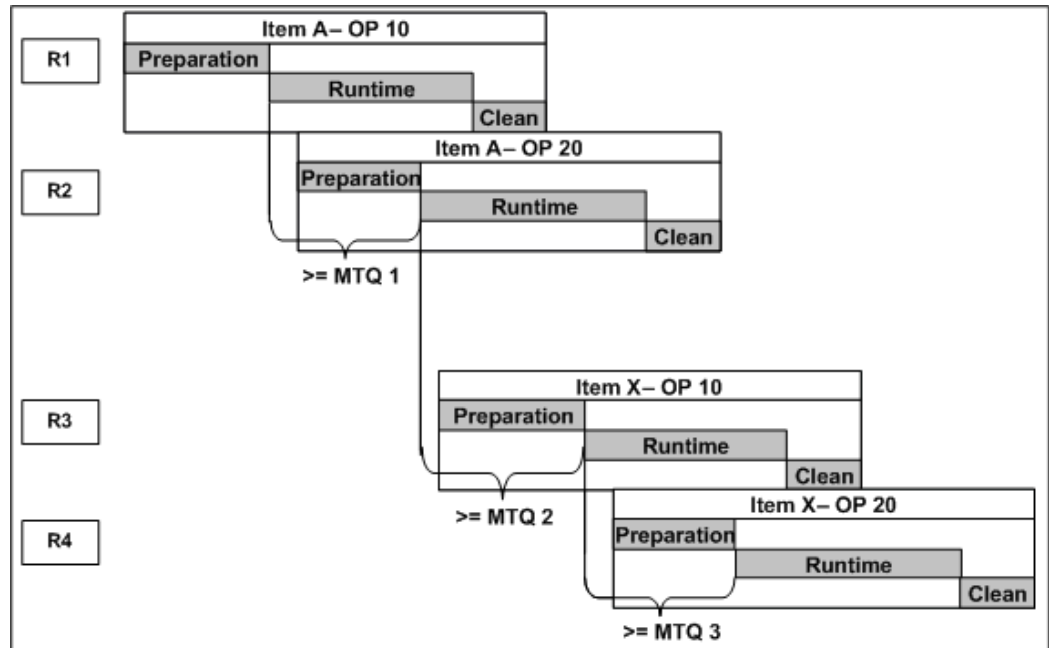
**Example: Continuous transfer inside one organization**

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 6-88.
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

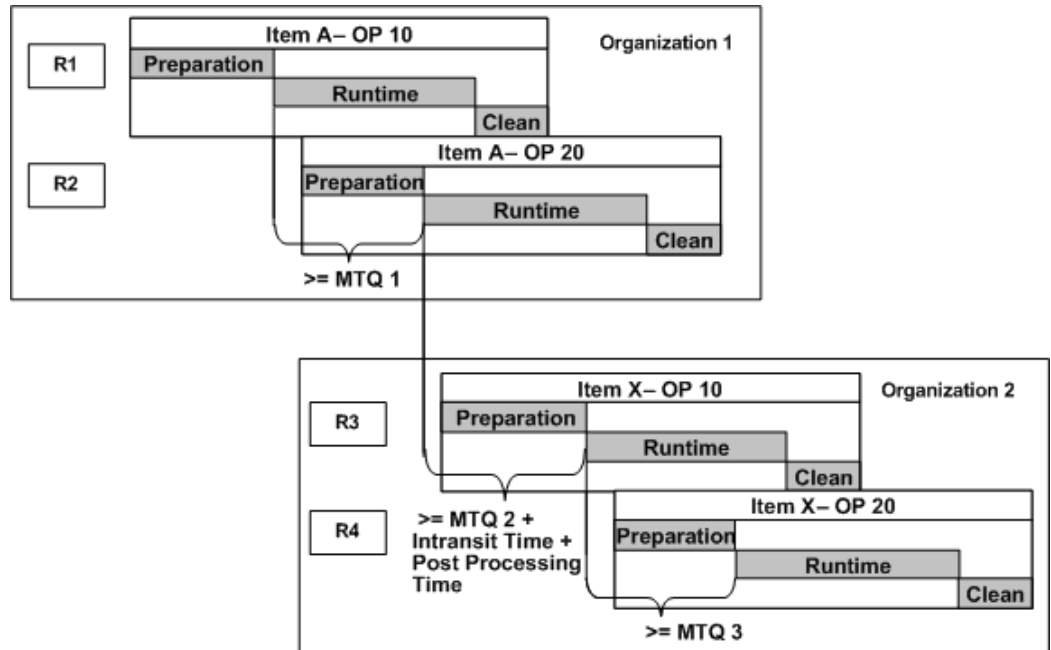
### **Example: Continuous transfer across organizations**

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:

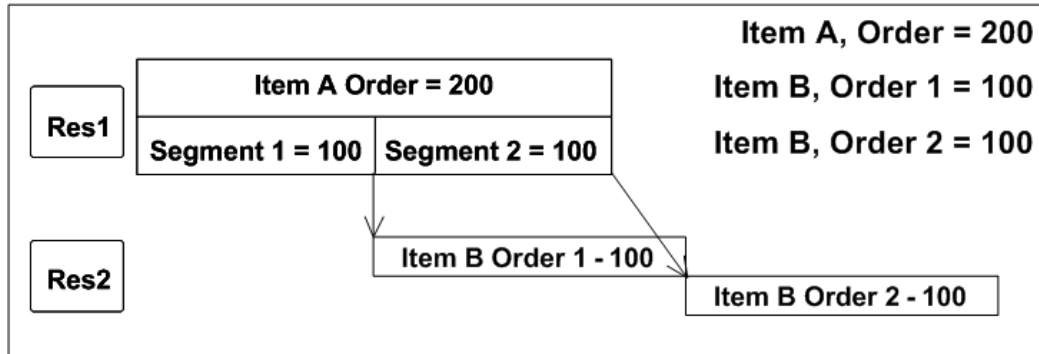
- Maximum Order Quantity
- Fixed Order Quantity

- 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**

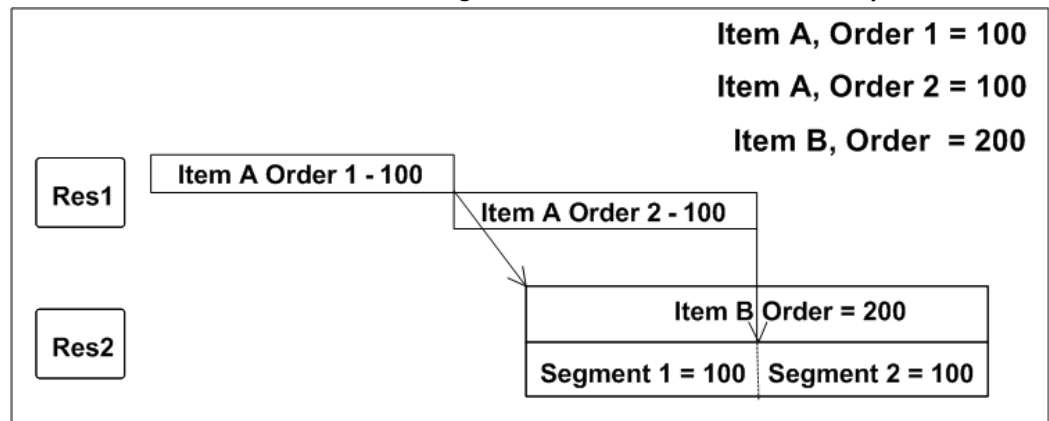
1. Navigate to Item > Organization Items > MPS/MRP Planning tab.
2. Set the Convergence Pattern item attribute to Series.  
Alternatively, you can set the profile option MSO: Convergent Supplies Consumption Pattern for Intra-Org Sourced orders to Series in the Personal Profile Values form
3. Navigate 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.

### Organization Items window, MPS/MRP Planning tab

Organization Item (V1)

Organization: V1 Vision Operations

Item: 9235

Description: Sausage Mix - Low Fat Content

Display Attributes: ☐ Master ☒ Org ☐ All

Receiving Physical Attributes General Planning **MPS/MRP Planning** Lead Times Work In Process Order Management

Acceptable Rate - 0

Planning Time Fence: User-Defined Days: 1

Demand Time Fence: Days:

Release Time Fence: Days:

Substitution Window: Days:

Incremental Supply Pattern

Continuous Inter-Org Transfers: Use Global Value

Convergence Pattern: Use Global Value

Divergence Pattern: Use Global Value

Distribution Planning

☐ Distribution Planned

Days Of Supply Window

Maximum Inventory:

Target Inventory:

Repair

Repair Program: Repair Return

Repair Yield:

Repair Lead-time:

☐ Preposition Point

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

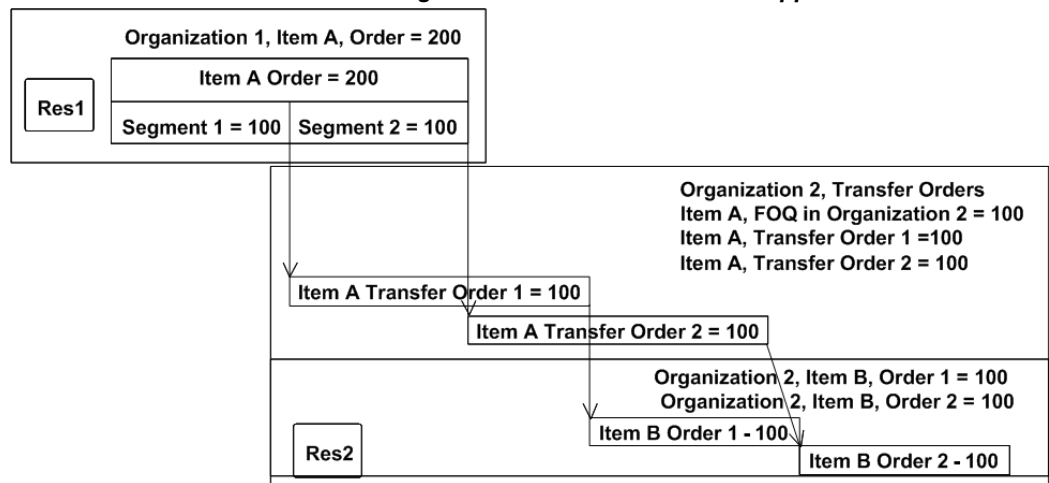
Whereas, non-continuous transfers with incremental supplies in case of across organizations use the profiles options:

- 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.

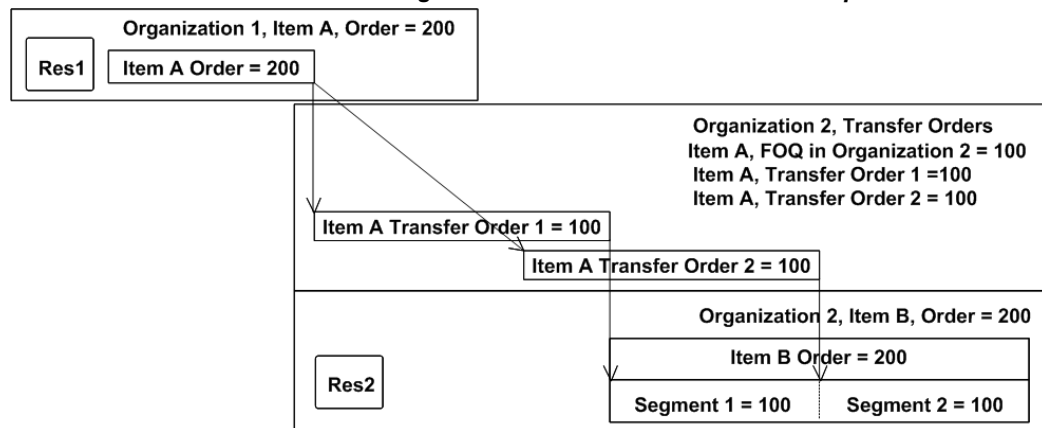
Alternatively, you can set the profile option MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders to Series in the Personal Profile Values form.

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

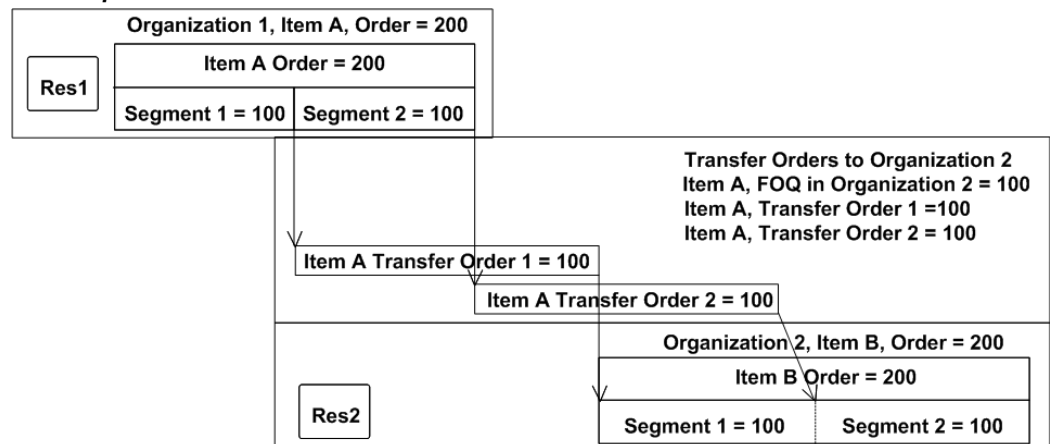
Personal Profile Values form.

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.

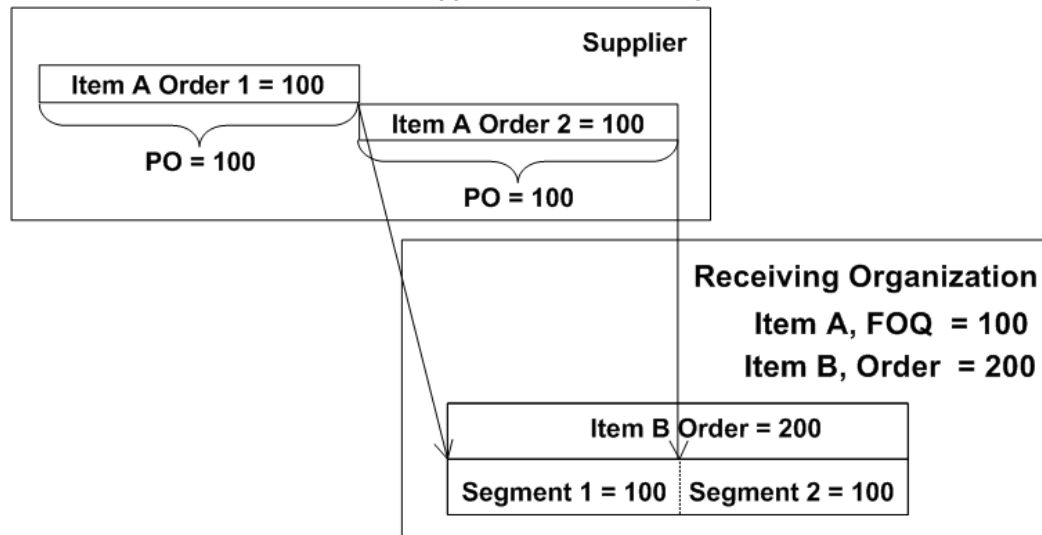
Alternatively, you can set the profile option MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders to Series in the Personal Profile Values form.

**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.

### The Routings window

The screenshot shows the 'Routings (M1)' window. At the top, there are input fields for 'Item' (AS55888), 'Sentinel Standard Desktop', and 'UOM' (Ea). Below these are fields for 'Alternate', 'Revision' (A), 'Date' (07-JAN-2011 00:06:06), and 'Display' (Future and Current). A checkbox for 'Capable To Promise' is also present. A 'Find' button is on the right. Below the search fields is a section titled 'Operations' with a tree view icon. The 'Main' tab is selected, showing a table of operations. The table has columns for 'Seq', 'Code', 'Department', 'Option Dependent', and 'Lead Time %'. The operations listed are: 10 SDAS ASSEMBLY (Lead Time 0), 20 SBAS ASSEMBLY (Lead Time 2.87), 30 SFAS ASSEMBLY (Lead Time 5.74), 40 STST TESTING (Lead Time 35.89), and 50 DSAS PACKING (Lead Time 64.59). At the bottom of the window are three buttons: 'Routing Details', 'Routing Revisions', and 'Operation Resources'.

Seq	Code	Department	Option Dependent	Lead Time %
10	SDAS	ASSEMBLY	<input type="checkbox"/>	0
20	SBAS	ASSEMBLY	<input type="checkbox"/>	2.87
30	SFAS	ASSEMBLY	<input type="checkbox"/>	5.74
40	STST	TESTING	<input type="checkbox"/>	35.89
50	DSAS	PACKING	<input type="checkbox"/>	64.59

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.



### The Operation Resources - Scheduling page

Operation Resources (M1) - 20

Item: AS55888      Alternate:      Sequence: 20      Effective Date: 28-OCT-2002 00:00:00

Resources

Main   Scheduling   Costing

Seq	Resource	Available 24 Hours	Schedule Seq.	Substitute Group Number	Assigned Units	Schedule	Offset %	Principal Flag	Setup Type
10	LBR-DTASSY	<input type="checkbox"/>			98	Yes	2.870813	<input type="checkbox"/>	
		<input type="checkbox"/>						<input type="checkbox"/>	
		<input type="checkbox"/>						<input type="checkbox"/>	
		<input type="checkbox"/>						<input type="checkbox"/>	
		<input type="checkbox"/>						<input type="checkbox"/>	
		<input type="checkbox"/>						<input type="checkbox"/>	
		<input type="checkbox"/>						<input type="checkbox"/>	
		<input type="checkbox"/>						<input type="checkbox"/>	

Alternates

#### 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.

### The Operation Alternate Resources window

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.

### 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).

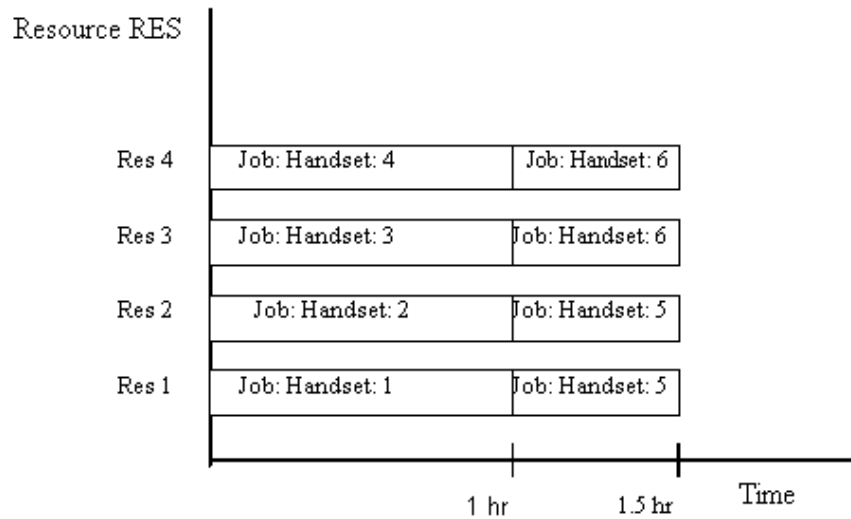
A manufacturing house is assembling telephone handsets. The handset assembly job consists of one assembly operation that takes one hour. The manufacturing house has one resource called RES. The resource RES has 4 resource units which are 4 assemblers (Res 1, Res 2, Res 3, Res 4). Please note that within 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:

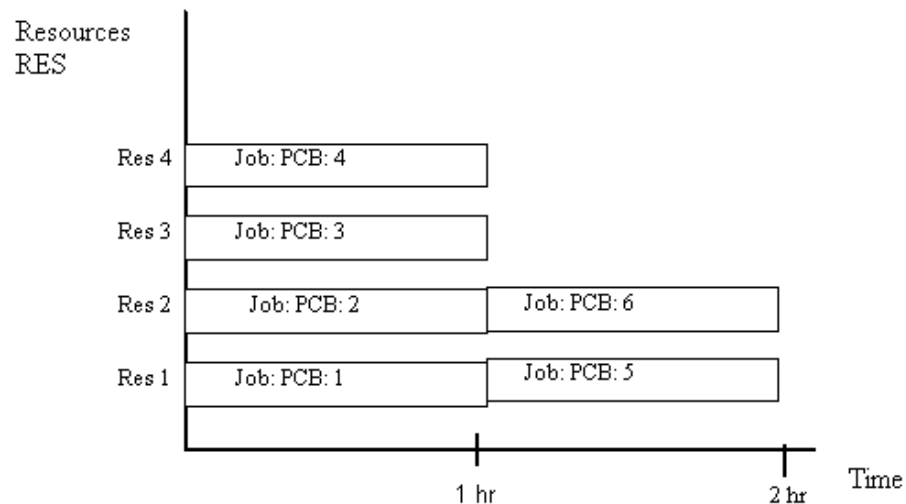
- Job: PCB assembly
- Job Qty: 6

- 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**

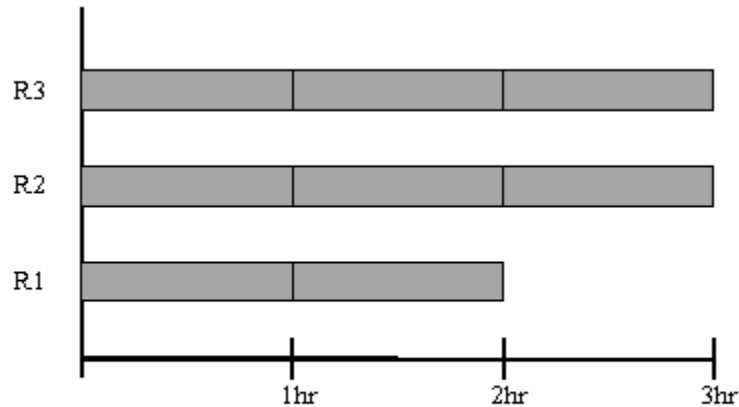
The job parameters are:

- 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

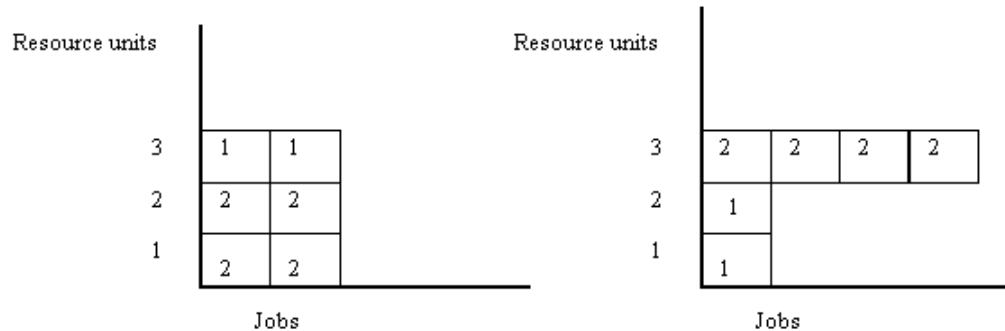
Since Oracle ASCP treats the capacity of multiple units of a single resource as a large bucket (instead of as independent buckets for each resource unit), certain detailed scheduling decisions will be approximate and may not be locally optimal. For example, in the situation below:

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 Oracle Advanced Supply Chain Planning 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 engine to use in the following source system forms:

- Oracle Inventory > Organization items form > Item attributes > Lead-time tabbed region
- Oracle Purchasing > Approved Supplier List form

The planning engine 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

### Organization Item window

Attribute	Value
Preprocessing	
Processing	2
Postprocessing	0
Fixed	.5
Variable	.00331
Cumulative Manufacturing	3
Cumulative Total	33.999
Lead Time Lot Size	

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.
- **Postprocessing:** The time required to receive a buy or transfer item from the receiving dock to inventory.
- **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:** For buy and transfer orders, the end of Processing and the beginning of Postprocessing; the date that the material should be on your receiving dock.  
For make orders, dock date is the same as due date.
- **Due date:** For buy and transfer orders, the end of Postprocessing and for make orders, the end of Processing; the date that the material should be in your inventory.

### Relationship of Lead Time Attributes to Calculated Dates

The screenshot shows the Oracle Organization Item (M1) form. The top section contains fields for Organization (M1), Item (AS72111), and Description (Envoy Deluxe Laptop). To the right is a 'Display Attributes' section with radio buttons for Master, Org (selected), and All. Below this is a tabbed interface with tabs for General Planning, MPS/MRP Planning, Lead Times (selected), Work In Process, Order Management, Invoicing, and Service. The Lead Times tab displays a list of attributes and their values:

Preprocessing	
Processing	2
Postprocessing	0
Fixed	.5
Variable	.003319
Cumulative Manufacturing	3
Cumulative Total	33.9998
Lead Time Lot Size	

#### 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  $\text{Fixed} + (\text{Variable} * \text{Lead Time Lot Size})$ ; 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 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 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 than 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*.

#### **Lead-time Item Attribute Notes**

You can also view Preprocessing, Processing, Postprocessing, Fixed, and Variable in the Collections Workbench Items window and the Planner Workbench Items window.

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.

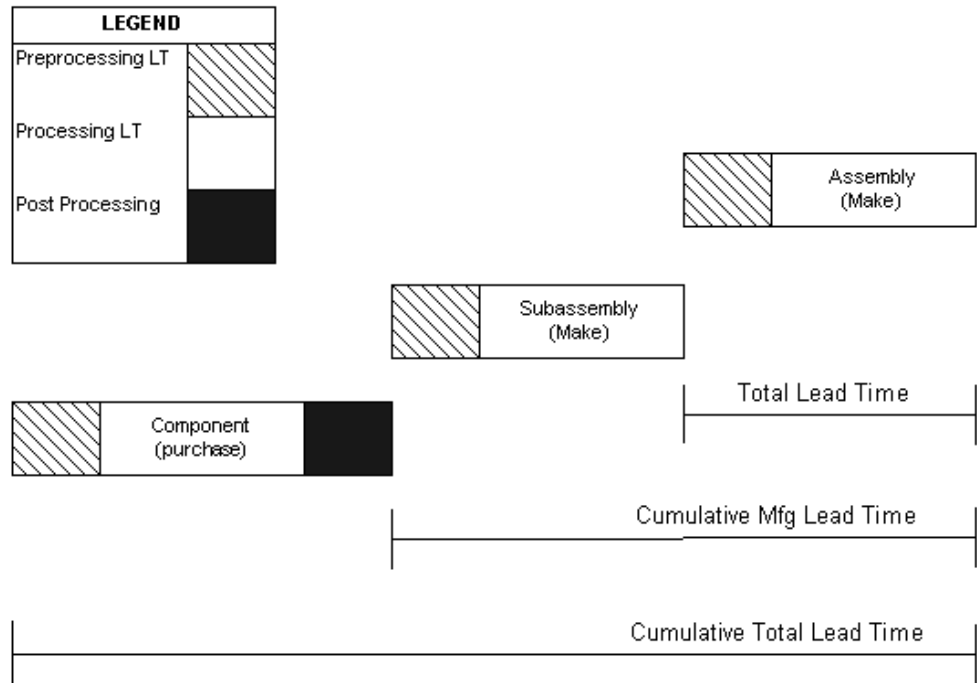
Total lead-time is not an item attribute. The planning engine calculates it in unconstrained plans to determine an order's Order Date. It:

- 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 engine 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 engine 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 engine schedules planned orders and scheduled receipts based on Demand Due Date of the demand that the supply is pegged to. It calculates these dates:

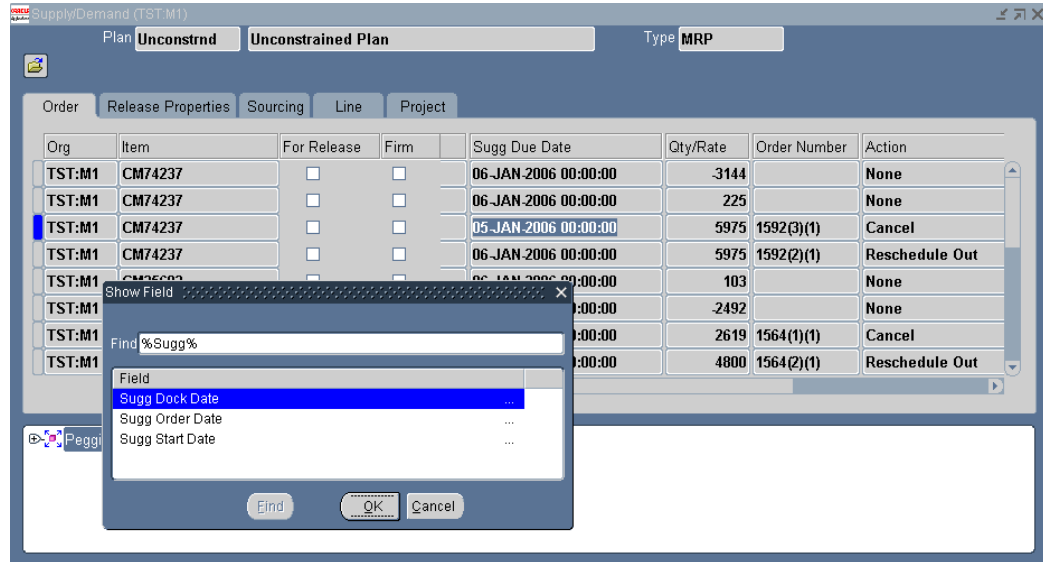
- **Need By Date:** The earliest demand due date of all demands pegged to a supply.
- **Suggested Due Date:** The date by which the supply is available for use by its demand. In an Unconstrained or Constrained - Enforce demand due dates plan this is the same as Need By Date. In a Constrained - Enforce 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 in the Planner Workbench from among the Supply/Demand, Supply, and Demand windows.

### Supply/Demand window



### Calculating Planned Order Demand Due Date

Oracle Advanced Supply Chain Planning 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.

The planning engine 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.

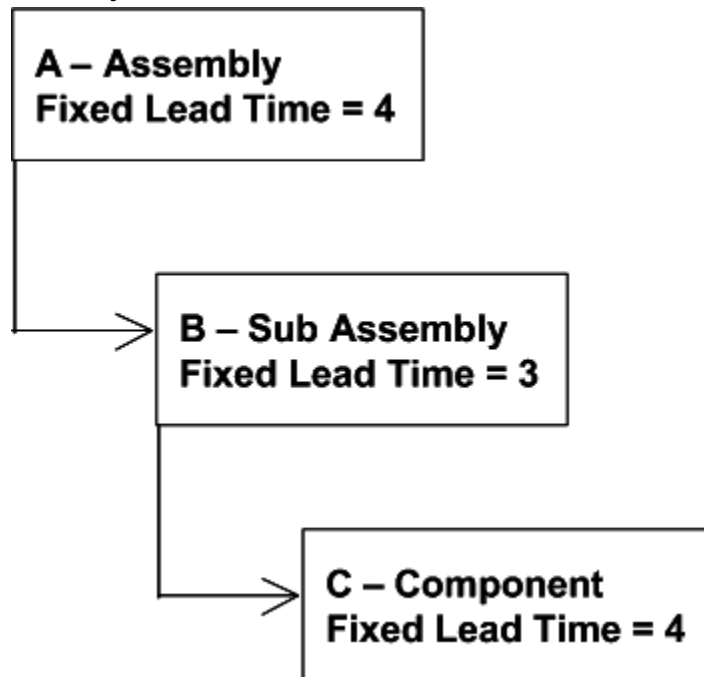
The planning engine's Memory Based Planner calculates the planned order demand due dates for dependent demands based on the actual requirement date with respect to lead-time. It saves the calculated requirement date based on the lead-time value for subsequent calculation.

The planning engine 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 engine generates the following planned order demands:

**Planned Order Demand Due Date Calculation**

<b>Item</b>	<b>Requirement Date</b>	<b>Demand Due Date (bucketed)</b>	<b>Quantity</b>
<b>A</b>		<b>February 28</b>	<b>1</b>
<b>B</b>	<b>February 24</b>	<b>February 28</b>	<b>1</b>
<b>C</b>	<b>February 18</b>	<b>February 21</b>	<b>1</b>

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 engine 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 engine forward schedules from the constraint.

**Suggested Dock Date:** Demand Due Date. Dock Date is the day by which all shop floor operations are complete. Manufactured supplies do not have a Postprocessing lead-time.

**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 engine 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 engine 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

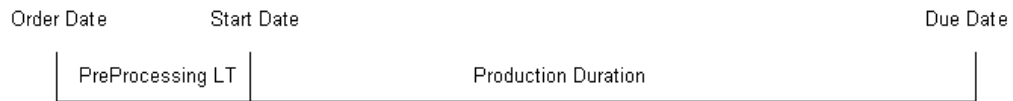
**Production Duration:**

- Unconstrained plans:  $\text{Fixed} + (\text{Variable} * \text{Order quantity})$
- Constrained plans: Calculated resource and material duration. If the item does not have a routing, the planning engine 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 engine calculates the component due dates of a manufacturing supply order according to your setting of the plan option Material Scheduling Method.

#### **Plan Options window, Main tab**

For value Order Start Date, the component due date is the supply Start Date.

For value Operation Start Date:

- Unconstrained plans: The planning engine 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 engine:

- 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 in the Collections Workbench and the Planner Workbench, Items window, Sources tabbed region, and select Supplier Capacity.

#### Supplier Capacity window

The screenshot shows the 'Supplier Capacity (TST.M1)' window. It has tabs for 'Plan RS-Test2', 'DRP Test 1', and 'Type DRP'. Below the tabs is a table with the following data:

Supplier	Supplier Site	Item	Org	Processing Lead Time
Advanced Network De	SANTA CLARA-ERS	RS-DRP1_Comp1	TST:M1	10

Below this table is a section for 'Supplier Capacity' and 'Supplier Flexfences'. It contains a table with the following data:

From	To	Capacity
01-FEB-2006 00:00:00	01-FEB-2006 00:00:00	5
02-FEB-2006 00:00:00	02-FEB-2006 00:00:00	5
03-FEB-2006 00:00:00	03-FEB-2006 00:00:00	5
06-FEB-2006 00:00:00	06-FEB-2006 00:00:00	15

### Date Calculations for Purchased Supplies

The planning engine 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 engine verifies that the Suggested Dock Date is a work day on the delivery calendar. If it is not, the planning engine changes Suggested Due Date to the next earliest working day of the delivery calendar.

Suggested Ship Date: Dock Date - Production duration

Production Duration:

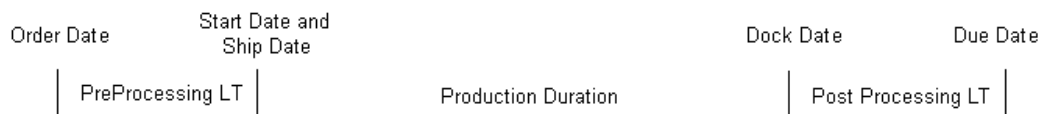
- If the purchased supply item has an Approved Supplier List Supplier Processing lead-time: Approved Supplier List Supplier Processing lead-time
- If the purchased supply item does not have an Approved Supplier List Supplier Processing lead-time: Item attribute Processing

Suggested Start Date: Ship Date

Suggested Order Date: Start Date - Preprocessing. For a scheduled receipt, this field displays the date the date that it was created. In Collections Workbench, purchase order create date. The planning engine 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 engine 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 engine 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 engine does not consider a build time because the supply may be on-hand.

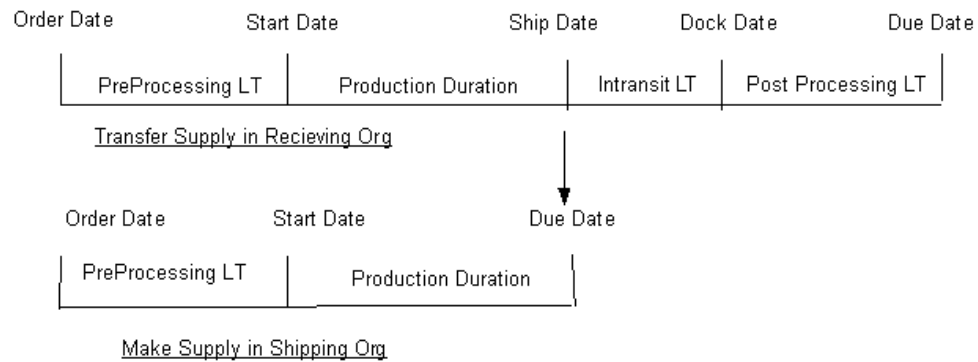
Suggested Order Date (receiving organization calendar):

- 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.

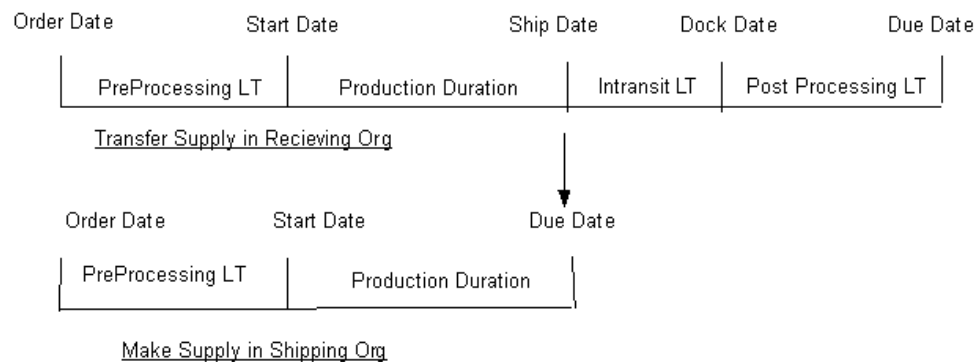
This diagram shows calculated dates for transfer supplies in an unconstrained plan. The planning engine calculates production duration differently for the source organization and the destination organizations; therefore, the dates in your plan may not line up as accurately as they appear in this diagram. 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**

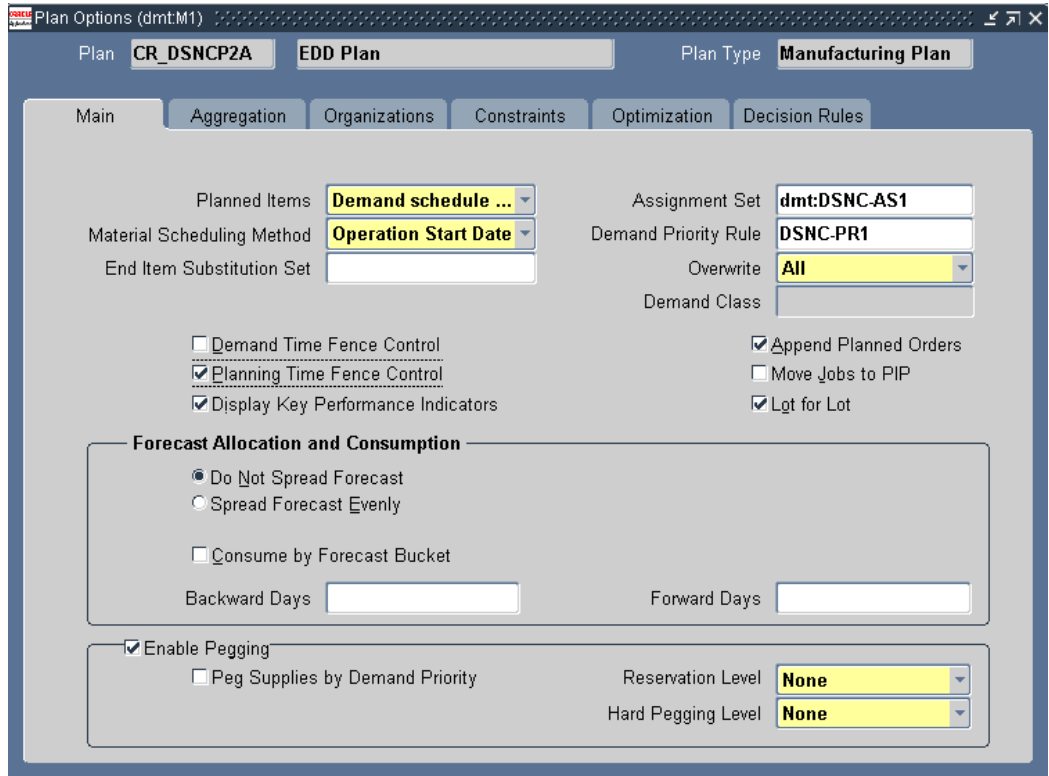
The planning time fence defines a time period within which the planning engine may not create planned orders. Use planning time fence control for schedule stability during the initial periods of a plan.

### **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.

### Plan Options window



Plan Options (dmtM1)

Plan: **CR\_DSNC2A** Plan Type: **Manufacturing Plan**

EDD Plan

Main | Aggregation | Organizations | Constraints | Optimization | Decision Rules

Planned Items: **Demand schedule ...**

Material Scheduling Method: **Operation Start Date**

End Item Substitution Set:

Assignment Set: **dmt:DSNC-AS1**

Demand Priority Rule: **DSNC-PR1**

Overwrite: **All**

Demand Class:

☐ Demand Time Fence Control

☒ Planning Time Fence Control

☒ Display Key Performance Indicators

☒ Append Planned Orders

☐ Move Jobs to PIP

☒ Lot for Lot

**Forecast Allocation and Consumption**

☒ Do Not Spread Forecast

☐ Spread Forecast Evenly

☐ Consume by Forecast Bucket

Backward Days:

Forward Days:

☒ Enable Pegging

☐ Peg Supplies by Demand Priority

Reservation Level: **None**

Hard Pegging Level: **None**

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.

### Items window

Item	Org	BOM Item Type	Planning Time Fence Date	Planning Time Fence Days	Peg
FG-35	dmt:M1	Standard		1	End
35T-B3	dmt:M1	Standard	13-FEB-2006	1	End
35T-AX-GR	dmt:M1	Standard	11-JAN-2006	1	End
35T-CI-RT	dmt:M1	Standard	27-MAR-2006	1	End
35T-AXL-AS	dmt:M1	Standard	13-MAR-2006	1	End
35T-E-ASY	dmt:M1	Standard		1	End
35T-RT-ASY	dmt:M1	Standard	16-MAR-2006	1	End

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 than 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 than 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: Firm Requisitions within 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: Firm Orders/Operations within Time Fence
- MSO: Net All Firm Supplies Before Creating Planned Orders

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.

- **MRP: Firm Requisitions within Time Fence:** Instructs the planning engine to net purchase orders before netting purchase requisitions. Therefore, it may cancel or reschedule out some purchase requisitions that have earlier dates than some of the purchase orders for the same item.
- **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.

### **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 profile option MSO: Firm Operations/Orders Within Time Fence is Yes, 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 profile option MSO: Firm Operations/Orders Within Time Fence is No, 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.

<b>Demand Date</b>	<b>Independent Demand Meaning</b>	<b>Dependent Demand Meaning</b>
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

<b>Demand Date</b>	<b>Independent Demand Meaning</b>	<b>Dependent Demand Meaning</b>
Promised Arrival Date	For sales order demand, see note after table. For other demand, blank.	Blank
Suggested Due Date	<p>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.</p> <p>Suggested due date may be for one of the following based on the Schedule By plan option:</p> <ul style="list-style-type: none"> <li>- Requested Ship Date</li> <li>- Scheduled Ship Date</li> <li>- Promise Ship Date</li> </ul> <p>The planning engine does not change the suggested due date.</p>	<p>The due date of the dependent demand.</p> <p>Determined by the final scheduling phase of the planning engine.</p>

Demand Date	Independent Demand Meaning	Dependent Demand Meaning
Material Available Date	<p data-bbox="797 333 1117 554">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.</p> <p data-bbox="797 583 1117 961">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:</p> <ul data-bbox="797 991 1117 1352" style="list-style-type: none"> <li data-bbox="797 991 1117 1087">• Suggested Due Date of Demand = Day 1 15:00 (Thursday)</li> <li data-bbox="797 1117 1117 1213">• Material Available Date for Demand = Day 3 12:00 (Saturday)</li> <li data-bbox="797 1243 1117 1352">• Suggested Ship Date of Demand = Day 5 8:00 (Monday)</li> </ul> <p data-bbox="797 1390 1117 1608">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.</p>	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:  - Ship Date  - Arrival Date	Blank
Days Late	For an end demand, the planning engine calculates the days late based on the difference between suggested due date and the demand satisfied date.  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.

<b>Supply Date</b>	<b>Pegged to Independent Demand Meaning</b>	<b>Pegged to Dependent Demand Meaning</b>
Need By Date	<p>For planned orders and open make orders, the date the supply is due, the Sugg Due Date of end item demand.</p> <p>For purchase orders, the need by date from the purchase order line. If the purchase order is rescheduled, the same as if the supply is a planned order.</p>	<p>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).</p> <p>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.</p> <p>For purchase orders, same as the pegged to independent demand meaning.</p>
Updated Need by Date	<p>The supply due date calculated and used by the optimization engine with material scheduling method order start date. This applies only to planned orders.</p> <p>The optimization process may schedule the supply either early or late.</p>	<p>Same as the pegged to independent demand meaning.</p>
Suggested Order Date	<p>Order Date for the supply. If different from the start date, the difference is Preprocessing lead-time.</p>	<p>Same as the pegged to independent demand meaning.</p>

<b>Supply Date</b>	<b>Pegged to Independent Demand Meaning</b>	<b>Pegged to Dependent Demand Meaning</b>
Suggested Start Date	<p>For make supplies, the job start date.</p> <p>For buy supplies, the date the vendor receives the order.</p> <p>Determined by the final scheduling phase of the planning engine.</p>	Same as the pegged to independent demand meaning.
Suggested Dock Date	<p>For make supplies, does not apply.</p> <p>For buy supplies, the arrival date on the receiving dock, offset from Sugg Due Date by the post processing lead-time.</p> <p>Determined by the final scheduling phase of the planning engine.</p>	Same as the pegged to independent demand meaning.
Suggested Due Date	<p>For make supplies, the date the supply is completed.</p> <p>For buy supplies, the date the supply is in stock and available.</p> <p>Determined by the final scheduling phase of the planning engine.</p>	Same as the pegged to independent demand meaning.
Old Due Date	<p>Only applies to rescheduled supplies.</p> <p>Sugg Due Date of the supply before the reschedule.</p>	<p>Only applies if the dependent supply itself is rescheduled.</p> <p>Sugg Due Date of the supply before the reschedule.</p>

<b>Supply Date</b>	<b>Pegged to Independent Demand Meaning</b>	<b>Pegged to Dependent Demand Meaning</b>
Old Dock Date	Only applies to buy items with rescheduled supplies.  Sugg Dock Date of the supply before the reschedule.	Only applies to buy items if the dependent supply itself is rescheduled.  Sugg Dock Date of the supply before the reschedule.
Sugg Ship Date	For suppliers, this is used only for transfer orders. It is determined by the final scheduling phase of the planning engine.  The Ship Date is offset from the Sugg Due Date by the intransit lead-time and respects the shipping calendars.  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.

## 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.

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>	<b>Saturday</b>	<b>Sunday</b>
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
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.

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>	<b>Saturday</b>	<b>Sunday</b>
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
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.

Organizati on	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
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
- $\text{Suggested Due Date} - ((\text{Fixed} + (\text{Variable} * \text{Supply quantity})) = \text{Day 19} - (3 \text{ days } (0.5 \text{ days} * 8) = \text{Day 19} - 7 \text{ days} = \text{Day 10}$
- 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.

Organizational	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 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
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.

Organiza tion	Item	Order Type	Suggest ed Due Date	Suggest ed Dock Date	Suggest ed Ship Date	Suggest ed Start Date	Suggest ed 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

Organiza tion	Item	Order Type	Suggest ed Due Date	Suggest ed Dock Date	Suggest ed Ship Date	Suggest ed Start Date	Suggest ed 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.

Organiza tion	Item	Order Type	Suggest ed Due Date	Suggest ed Dock Date	Suggest ed Ship Date	Suggest ed Start Date	Suggest ed Order Date
ORG1	A	Demand	Day 33	n/a	n/a	n/a	n/a

Organiza tion	Item	Order Type	Suggest ed Due Date	Suggest ed Dock Date	Suggest ed Ship Date	Suggest ed Start Date	Suggest ed 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:

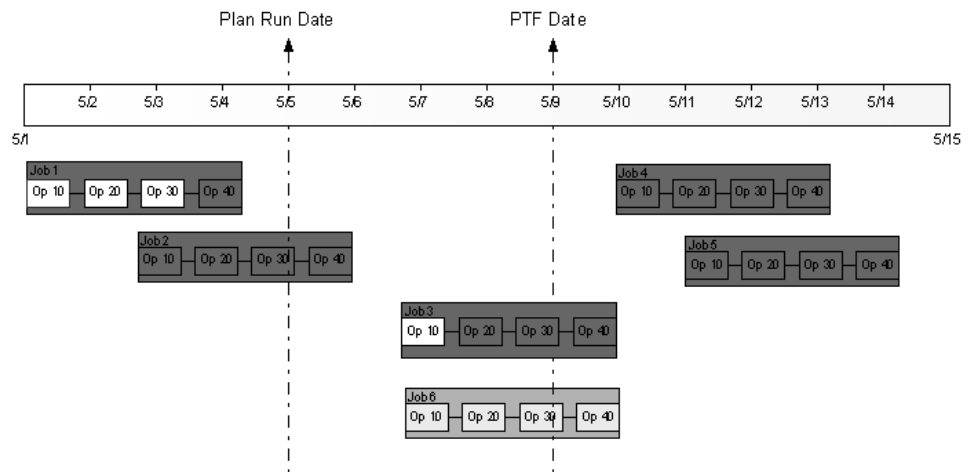
- Run on May 5
- Planning time fence control enabled
- The profile options that create a natural time fence based on existing firmed supplies are disabled.
- Planning Time Fence Date is based on the item attribute (User defined, 4 days) as May 9 and considers working days in the organization. The calendar 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.

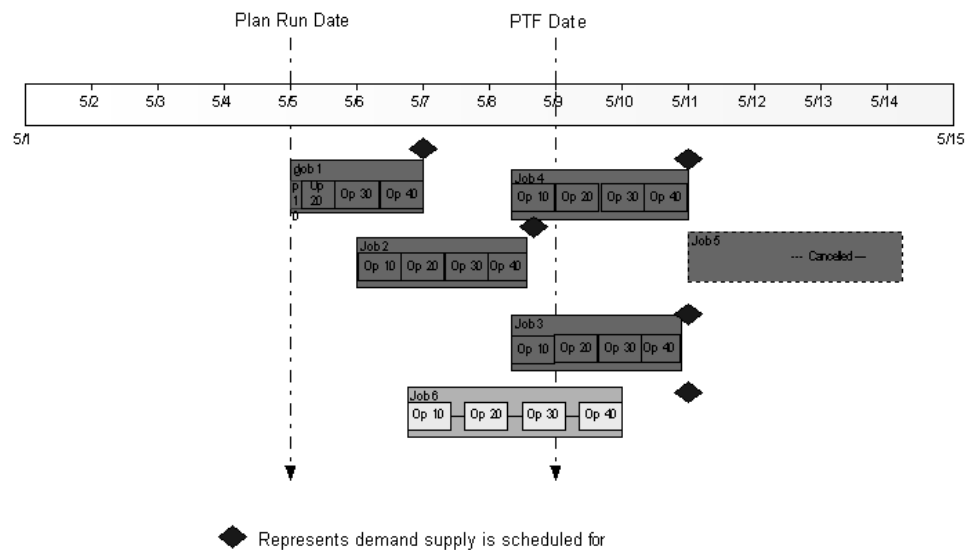
This diagram shows the same manufacturing work orders from topic Manufacturing Work Order Scheduling scheduled in an unconstrained plan. The planning engine

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 Time 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 reschedule 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

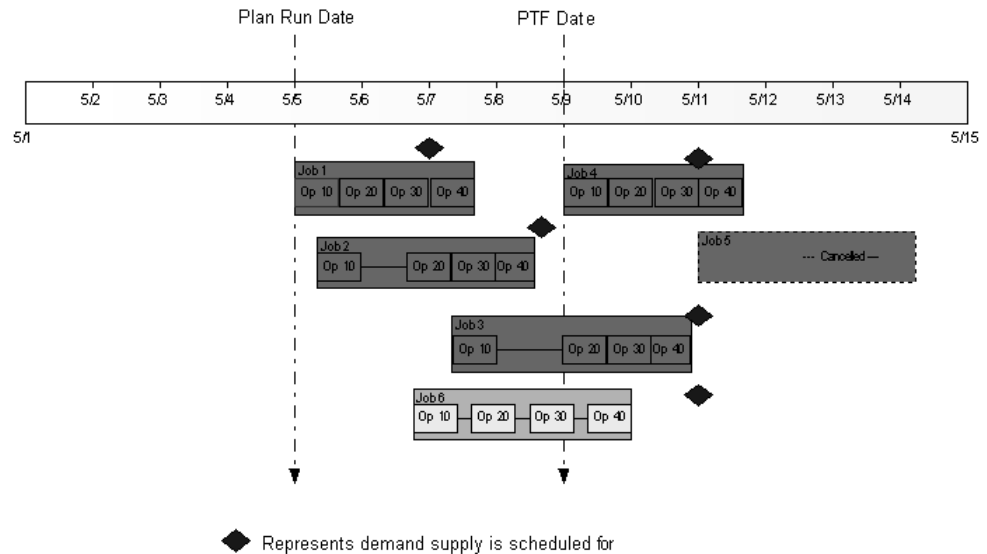
Start Date for each operation. This is never earlier than Planning Time Fence Date, but it may be later.

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.

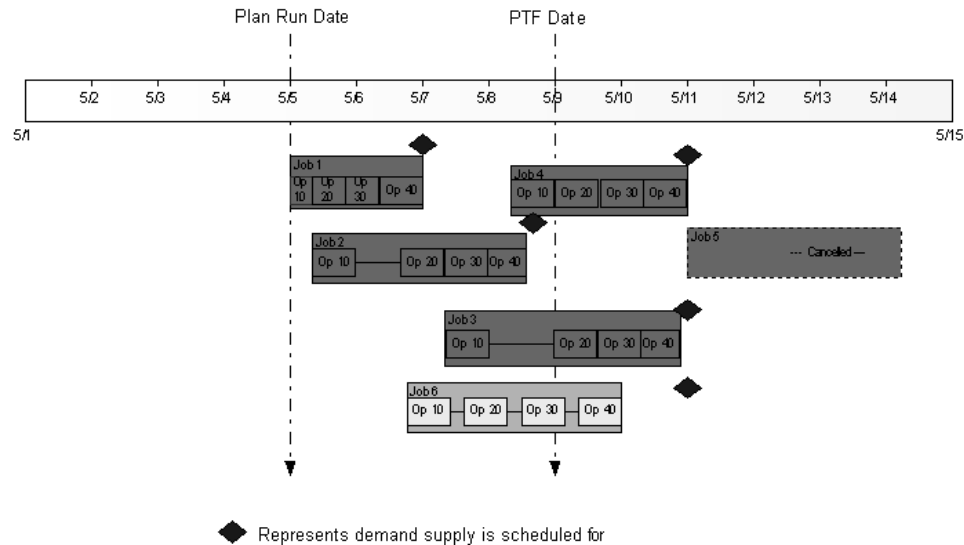
This diagram shows the same manufacturing work orders from topic Manufacturing Work Order Scheduling in Constrained - Enforce Capacity Constraints Plans scheduled in a Constrained - Enforce demand due dates plan. The planning engine schedules all the supplies to meet the due dates of their pegged demands 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 than 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 and the first three operations of Job 2 to occur on the plan run date because

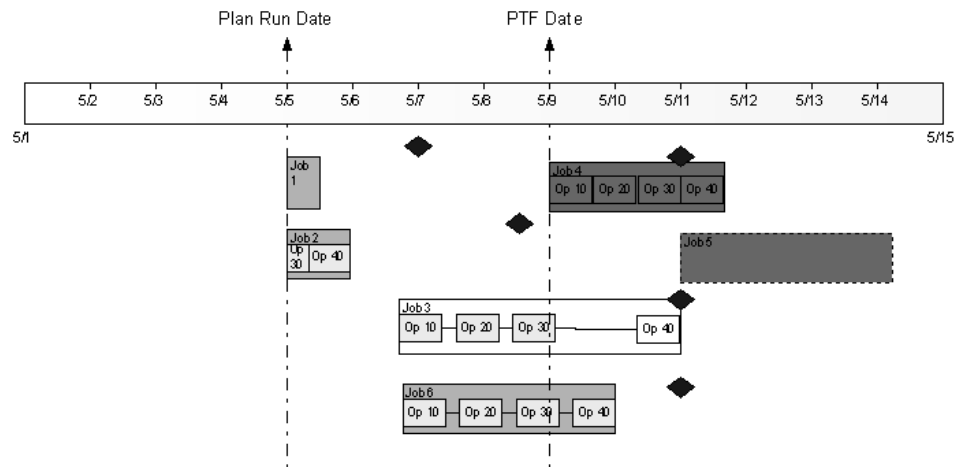


their schedule dates occurred prior to the plan run date.

- 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 overplanning or a market hedge.

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

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 (D1 0 < D1 2)	-	-	-	-	-	-	-	-	-	3	3	3	-	-	-
NT 1 (D7 > PH )	-	-	-	-	-	-	5	5	5	5	5	5	5	5	5

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15
NT	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
2															
(D1															
>															
PH															
)															

### 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 5-106.

#### 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

The screenshot shows a form titled "Safety Stock". It contains three fields: "Method", "Bucket Days", and "Percent". The "Method" dropdown menu is open, showing two options: "Non-MRP Planned" (highlighted in blue) and "MRP Planned %" (highlighted in yellow). The "Bucket Days" field is empty, and the "Percent" field is also empty.

Navigate to form Enter Item Safety Stocks (Inventory > Planning > Safety Stocks).

Enter Item, Quantity, and Effective Date.

Enter Item Safety Stocks (V1)

Default Item

Item	Description	Project	Task	Effective Date	UOM	Quantity
AS18947	Sentinel Deluxe Desktop			03-MAR-2006	Ea	100

Safety Stock Method

Forecast

Safety Stock %

Service Level %

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. However, if the levels are always increasing, the planning engine considers the safety stock levels as non-transient. If there is no safety stock level for an item, the planning engine considers the safety stock level as zero.

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  $\text{safety stock} = Z * 1.25 * \text{MAD}$ , 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 screenshot shows the 'Master Item (V1)' window with the 'General Planning' tab selected. The 'Inventory Planning Method' is set to 'Min-Max'. The 'Planner' is set to 'Buy'. The 'Min-Max Quantity' section has fields for Minimum and Maximum. The 'Order Quantity' section has fields for Minimum and Maximum. The 'Cost' section has fields for Order and Carrying. The 'Source' section has fields for Type, Organization, and Subinventory. The 'Safety Stock' section has a 'Method' dropdown set to 'MRP Planned %', and fields for 'Bucket Days' (5) and 'Percent' (10). The 'Order Modifiers' section has fields for Fixed Order Quantity, Fixed Days Supply, and Fixed Lot Multiplier.

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 calendar 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.
- 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 10-111.

### **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 planning 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



	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15
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  $[100 * (\text{Safety stock level in the next interval} - \text{Safety stock level in this interval})] / \text{Safety stock level in this interval}$ .

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.

	<b>D1-3</b>	<b>D4-6</b>	<b>D7-9</b>	<b>D10-12</b>	<b>D13-15</b>
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
Actual deviation	+46.6%	+400%	Base	-52%	-58%
	$[100*(16.13-11)/11]$	$[100*(25-5)/5]$		$[100*(12-25)/25]$	$[100*(5-12)/12]$

	<b>D1-3</b>	<b>D4-6</b>	<b>D7-9</b>	<b>D10-12</b>	<b>D13-15</b>
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 [25 / (1+0.55) = 16.13]	25	12	5 [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 10-111.

### **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-11
- MSO: Default Timestamp Safety Stock, see MSD Profile Options, page A-58

### **Viewing Safety Stock Results**

To see the results of safety stock planning, see Horizontal Plan, page 10-71, Supply/Demand Window, page 10-92, and Pegging, page 10-111.

## **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 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	-	-
Organization Manufacturing Calendar	Organization Manufacturing Calendar	-	-	-	-

Calendar Name	Option 1	Option 2	Option 3	Option 4	Option 5
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.

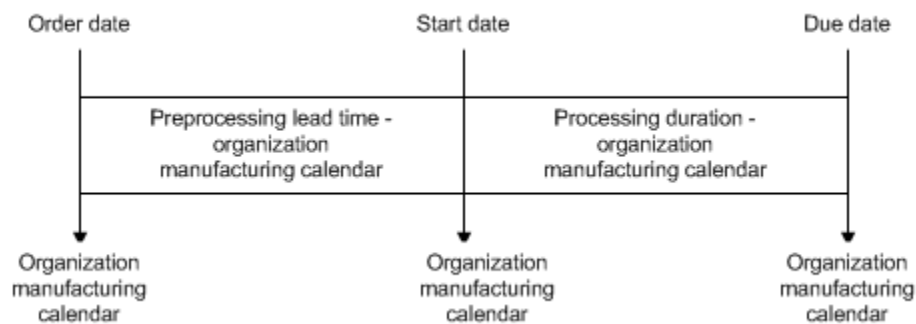
## Lead-time Calculation

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:

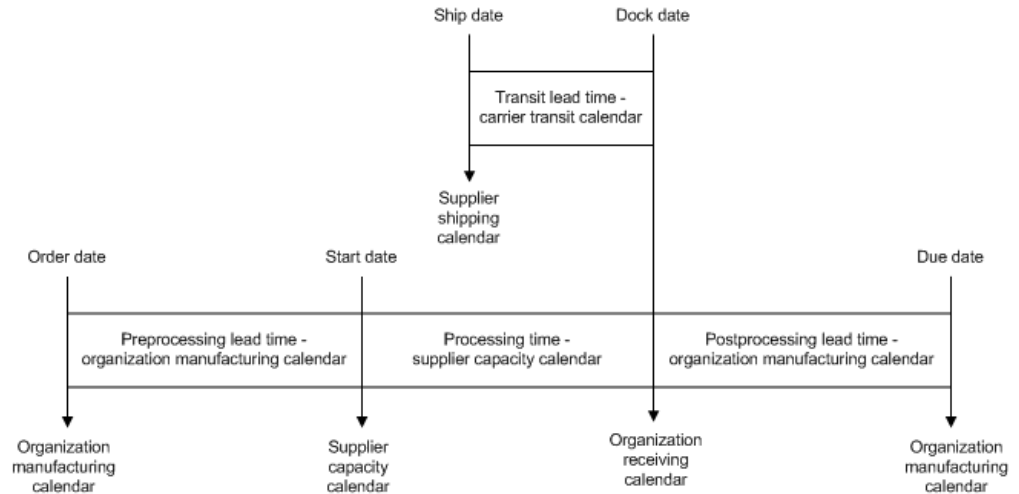
- Routing specified: Manufacturing duration based on resource usages in the routing
- Routings not specified: Fixed + variable lead-time

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:

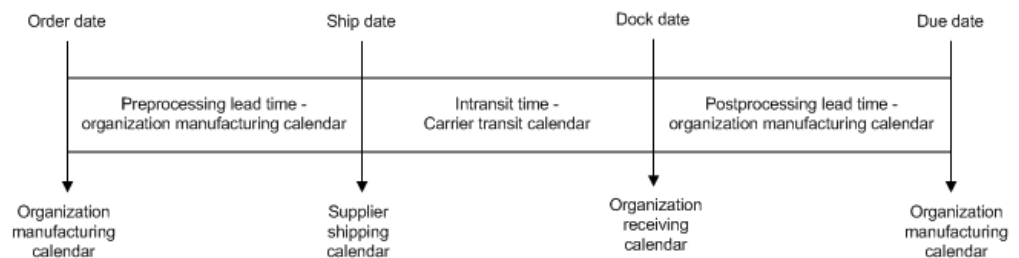
- Supplier defined: Supplier processing lead-time (assumed to include transit lead-time)
- Supplier not defined: Item processing lead-time

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.



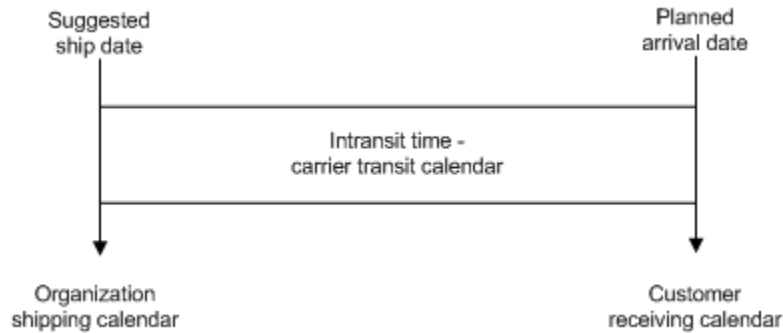
In case of transfer orders for constrained plans:

- 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.

### Workday Calendar window

Name

Description

Quarterly Type **4/4/5 Week Pattern**

**Calendar Date Range**

From **01-JAN-2006** **Sunday**

To **01-JAN-2010** **Friday** [ ☐ ]

**Workday Pattern** **Shifts** **Dates**

2. Select Order Management > Shipping > Setup > Calendars > Assign.

The Assign Calendars window appears.

### Assign Calendars window

**Trading Partner**

Type **Supplier**

Name **Allied Manufacturing**

Calendar Usage **Shipping**

Calendar Code

Used for Carrier ☐

**Site Calendars**

Site Name	Calendar Code	Enabled
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>

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.

#### Calendar window

The screenshot shows the 'Calendar' window with two main sections: 'Criteria' on the left and 'Calendar' on the right.

**Criteria Section:**

- Calendar Type: Manufacturing
- Calendar Code: TST:Vision01
- Scope: Organization
- Organization: TST:M1
- Supplier: (empty)
- Supplier Site: (empty)
- Customer: (empty)
- Customer Site: (empty)
- Ship Method: (empty)
- Item: (empty)
- Resource: (empty)
- Shift No.: (empty)
- Refresh button

**Calendar Section:**

- Month/Year: August 2004
- Calendar Grid (Days of the week: S, M, T, W, T, F, S):

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4
5	6	7	8	9	10	11
- Level: Organization
- Shift Number: (empty)
- Description: (empty)
- Start Time: (empty)
- End Time: (empty)

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.

## 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.

### Resources form

**Resources (M1) - RSBT-D1**

**Owned**

Main | **Planning**

Resource	Description	Available 24 Hours	Share	UOM	Units	Check CTP	Group	Schedule by Instance
RSBT A	Batchable Resource A	<input type="checkbox"/>	<input type="checkbox"/>	HR	2	<input type="checkbox"/>		<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>

**Borrowed**

Resource	Description	Owning Department	UOM	Units	Check CTP	Group
					<input type="checkbox"/>	
					<input type="checkbox"/>	
					<input type="checkbox"/>	
					<input type="checkbox"/>	

**Instances** **Tolerance Fences** **Shifts**

3. To specify a resource as a batch type resource at the department resource level, select Batchable.
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)

## Viewing the Supply Chain

There are several view options with Oracle ASCP including:

- Viewing Sourcing Rules
- Viewing BOD
- Viewing Sourcing Rule and BOD Assignment Set
- Viewing Sourcing Assignment Hierarchy

### Viewing Sourcing Rules

You can 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.

For more information, see 'Viewing Sourcing Rules, *Oracle Advanced Supply Chain Planning Implementation and Users Guide* in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.

### Viewing BODs

You can quickly and easily retrieve BODs 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.

For more information, see 'Viewing Bills of Distribution, *Oracle Advanced Supply Chain Planning Implementation and Users Guide* in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.

### Viewing Assignment Set

Once you have defined your sourcing rules and BODs, 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 view your assignment sets to review particular sourcing schemes, locate particular assignments of sourcing rules or BODs, or view the supply chain bill for a particular assignment set.

For more information, see 'Viewing Sourcing Rules, *Oracle Advanced Supply Chain Planning Implementation and Users Guide* and 'Viewing Bills of Distribution, *Oracle Advanced Supply Chain Planning Implementation and Users Guide* in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.

## Viewing Sourcing Assignment Hierarchy

You can display all the assignment levels and identify the active assignment level for an item.

For more information, see 'Viewing Assignment Hierarchy, *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning Users Guide* in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.

## 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

---

# 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. It allows evaluation of plans within seconds when minor changes are made in the plan.

### 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.

## 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. See [Using Undo to Reverse Actions or Changes](#), page 7-7

### 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

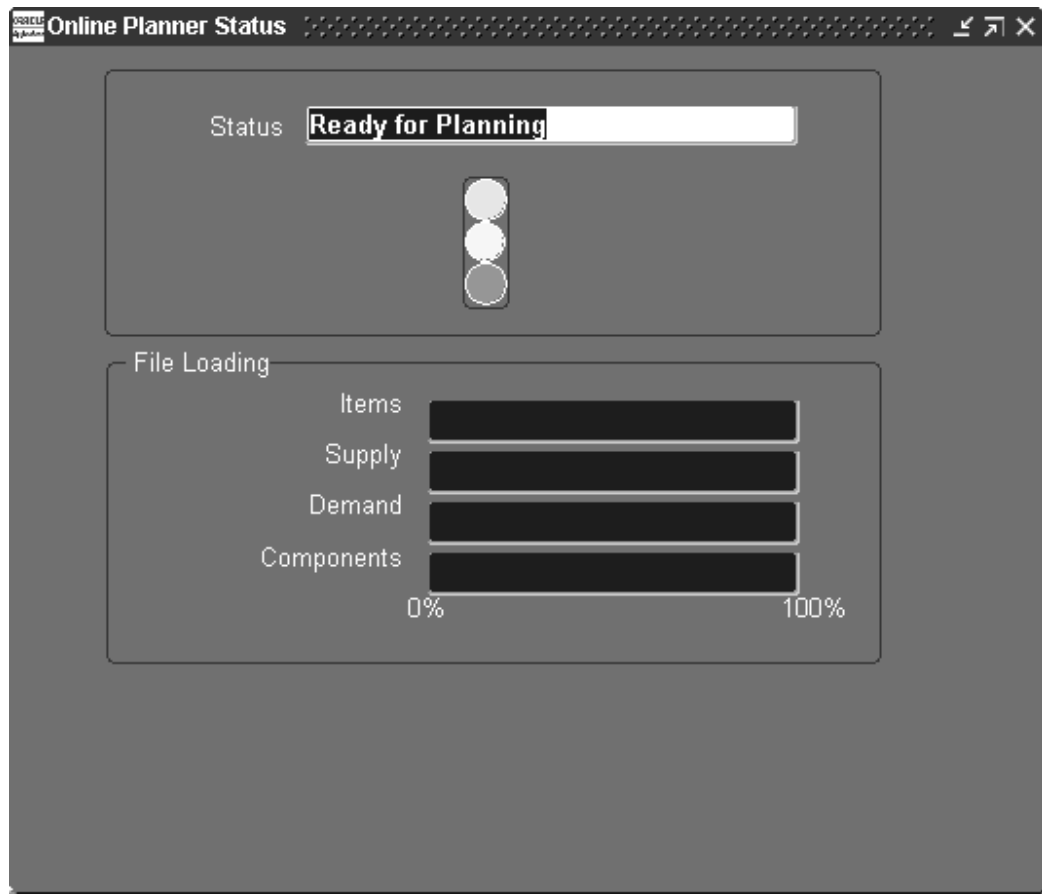
1. Select a plan in the Planner Workbench Window.
2. Choose Plan > Start Online Planner.
3. Make a note of the concurrent request ID and choose OK.  
While the online planner loads the data into memory, you will see the Online Planner Status window. This window displays the progress of the loading and 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.

**The Online Planner Status window**



**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.

### Actions tab

Action Type	Version	Count
+ Late Sales Orders and Forecasts	1	48
+ Material and Resource Capacity	1	17
+ Substitutes and Alternates Used	1	18
+ Item Exceptions	1	4
+ Late Sales Orders and Forecasts	current	48
+ Material and Resource Capacity	current	8
+ Substitutes and Alternates Used	current	18
+ Item Exceptions	current	4

## 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.

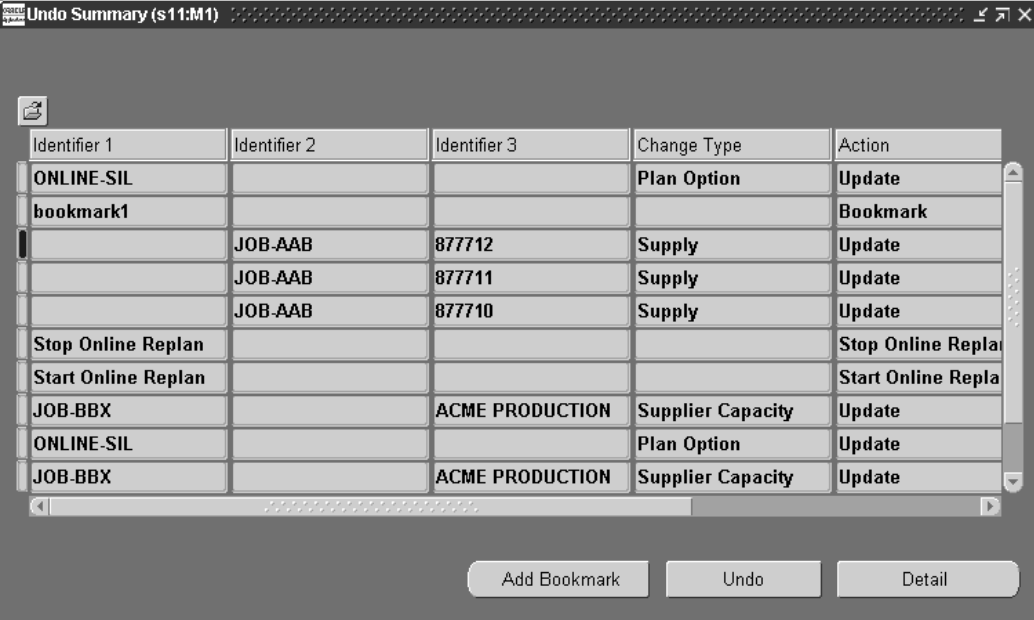
- You can undo changes until the plan is rerun in batch mode.
- You can view online planning changes using Undo Summary.
- You can view all of the changes that have been made since the last batch rerun of the plan. You can see the user and timestamp of all changes.
- You can tell immediately upon entering 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.

### The Undo Summary Window



The screenshot shows a window titled "Undo Summary (s11:M1)". Inside is a table with five columns: Identifier 1, Identifier 2, Identifier 3, Change Type, and Action. The table lists various undo actions such as "ONLINE-SIL", "bookmark1", "JOB-AAB", "Stop Online Replan", "Start Online Replan", "JOB-BBX", and "ACME PRODUCTION". At the bottom of the window are three buttons: "Add Bookmark", "Undo", and "Detail".

Identifier 1	Identifier 2	Identifier 3	Change Type	Action
ONLINE-SIL			Plan Option	Update
bookmark1				Bookmark
	JOB-AAB	877712	Supply	Update
	JOB-AAB	877711	Supply	Update
	JOB-AAB	877710	Supply	Update
Stop Online Replan				Stop Online Replan
Start Online Replan				Start Online Replan
JOB-BBX		ACME PRODUCTION	Supplier Capacity	Update
ONLINE-SIL			Plan Option	Update
JOB-BBX		ACME PRODUCTION	Supplier Capacity	Update

### To view details on an action

1. Select an action in the Undo Summary window.
2. Click Detail.

The Undo Detail window appears.

**The Undo Detail Window**

The screenshot shows a window titled "Undo Detail (s11:M1)". At the top right is a checkmark icon. Below it are three input fields: "Item" with the value "JOB-BBX", "Supplier" (empty), and "Supplier Site" with the value "ACME PRODUCTION". Below these fields is a small icon of a document with a magnifying glass. Underneath is a table with three columns: "Column Changed", "Old Value", and "New Value". The first row of the table shows "Capacity" in the first column, "7" in the second, and "5" in the third. There are 10 rows in total. To the right of the table is a vertical scrollbar. At the bottom of the window is a horizontal scrollbar.

Column Changed	Old Value	New Value
Capacity	7	5

## 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 (See Figure The Undo Summary window).

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

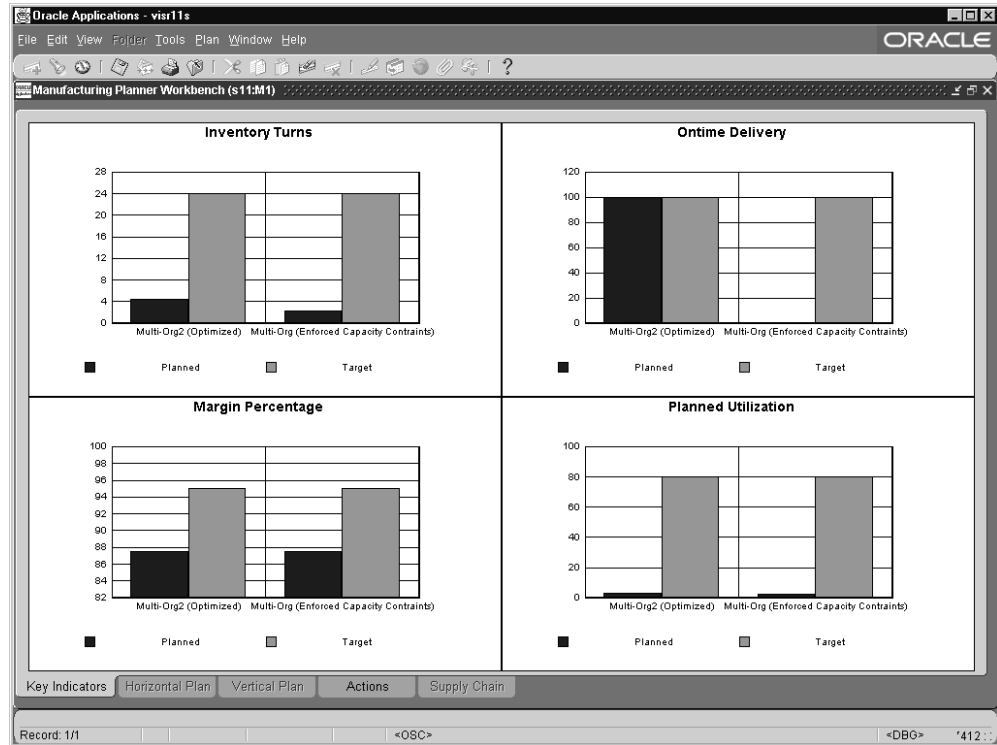
You can quantify the results of simulation scenarios and graphically compare the results of multiple scenarios to help you choose the plan that best meets your performance objectives.

You can also compare the differences in exception messages between two plans in the Plan Comparison Report; see 'Identifying Differences Between Plans, page 9-134.

## 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.

## The Multiple Plans Comparison





---

# 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.

Optimized plans do not select an alternate bill of material unless it has an alternate routing specified and do not select an alternate routing unless it has an alternate bill of material specified.

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 5-1

The screenshot shows the 'Plan Options (M1)' window with the 'Optimization' tab selected. The window has a title bar with standard OS controls. Below the title bar, there are tabs for 'Main', 'Aggregation', 'Organizations', 'Constraints', 'Optimization', and 'Decision Rules'. The 'Optimization' tab is active. Inside the tab, there is a section titled 'Optimize' with a checked checkbox. Below this is a checkbox for 'Enforce Sourcing Constraints'. The main area is divided into two sections: 'Objectives' and 'Plan Level Penalty Factors'. The 'Objectives' section has three rows: 'Maximize inventory turns' with a value of '1', 'Maximize plan profit' with a value of '.1', and 'Maximize on-time delivery' with a value of '1'. The 'Plan Level Penalty Factors' section has four rows: 'Exceeding material capacity %' with an empty input field, 'Exceeding resource capacity %' with an empty input field, 'Exceeding transportation capacity %' with an empty input field, and 'Demand lateness %' with an empty input field.

Plan	leg-4	Optimized with Forecast	Plan Type	Manufacturing Plan
Main   Aggregation   Organizations   Constraints   <b>Optimization</b>   Decision Rules				
<input checked="" type="checkbox"/> Optimize				
<input checked="" type="checkbox"/> Enforce Sourcing Constraints				
<b>Objectives</b>				
Maximize inventory turns		1		
Maximize plan profit		.1		
Maximize on-time delivery		1		
<b>Plan Level Penalty Factors</b>				
Exceeding material capacity %		Exceeding resource capacity %		
Exceeding transportation capacity %		Demand lateness %		

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.

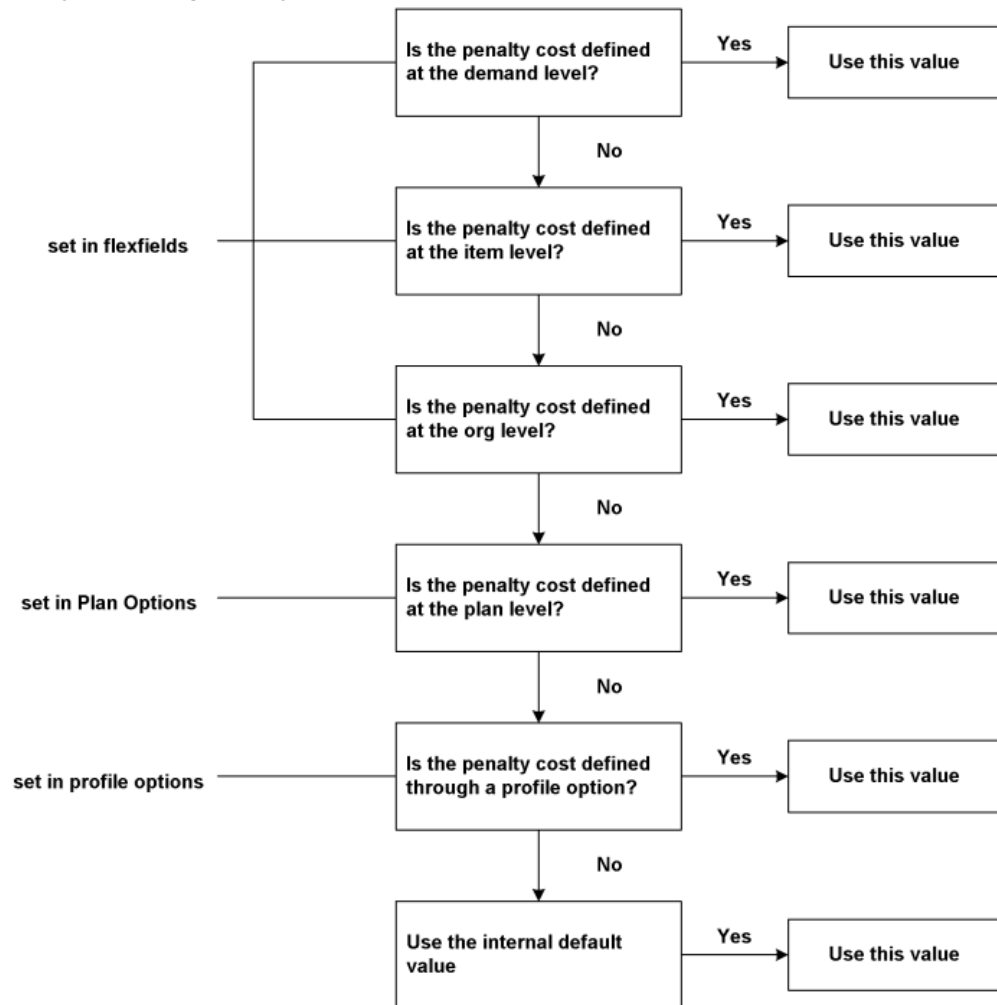
For more information on setting penalty factors, see 'Profile Options, page A-1 and 'Oracle ASCP Flexfields., page B-1

## **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.

### Item Forecast Entries

Item	Bucket	Date	End Date	Number of Buckets	Quantity	
					Current	Forecast
A701.4	Weeks	21-AUG-2000		1	10	.
A701.4	Weeks	11-SEP-2000		1	5	.
A701.4	Weeks	25-SEP-2000		1	10	.
A701.4	Weeks	02-OCT-2000		1	5	.
A701.4	Weeks	09-OCT-2000		1	5	.
A701.4	Weeks	16-OCT-2000		1	10	.
A701.4	Weeks	23-OCT-2000		1	5	.
A701.4	Weeks	30-OCT-2000		1	5	.
A701.4	Weeks	06-NOV-2000		1	5	.

Source Information

Origination: Copied forecast      Org: M1      Forecast: FNAME3

End Item:      End Usage:

Buttons: Bucketed, Consumptions

2. Select a forecast.

3. Select the flexfield.

The MRP Forecast Dates window appears.

### MRP Forecast Dates window

Late Forecasts Penalty: 10

Context Value:

Buttons: OK, Cancel, Clear, Help

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.

### Plan Options, Optimization tab

Plan Options (M1)

Plan **leg-4** Optimized with Forecast Plan Type **Manufacturing Plan**

Main Aggregation Organizations Constraints Optimization Decision Rules

☒ Optimize

☒ Enforce Sourcing Constraints

**Objectives**

Maximize inventory turns	1
Maximize plan profit	.1
Maximize on-time delivery	1

**Plan Level Penalty Factors**

Exceeding material capacity %		Exceeding resource capacity %	
Exceeding transportation capacity %		Demand lateness %	

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.

### System Profile Values

Profile	Site	Application	Responsibility	User
MSO: Penalty Cost Factor for L	10			

4. Enter the penalty factor in the Site column.

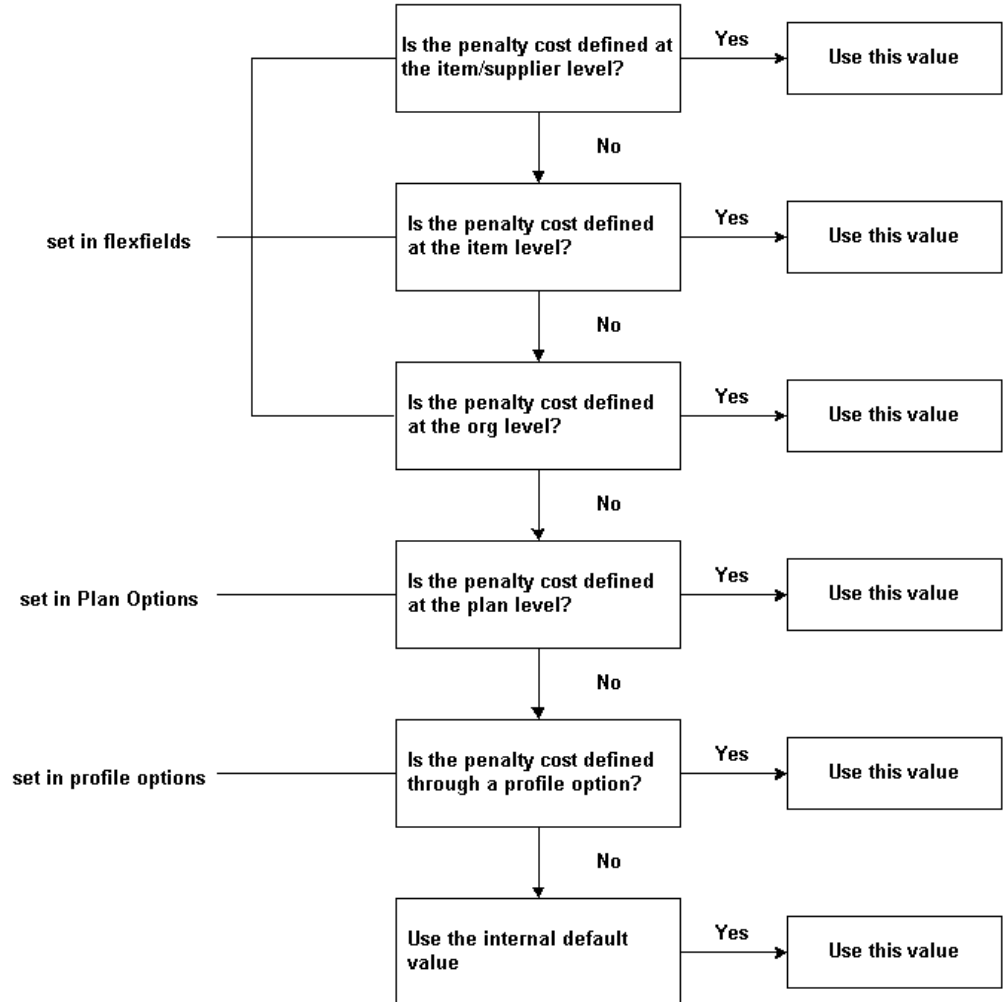
### Setting Penalty Factors for Exceeding Material Capacity

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.

### Plan Options, Optimization tab

Plan Options (M1)

Plan **leg-4** Optimized with Forecast Plan Type **Manufacturing Plan**

Main Aggregation Organizations Constraints Optimization Decision Rules

☒ Optimize

☒ Enforce Sourcing Constraints

**Objectives**

Maximize inventory turns	<input type="text" value="1"/>
Maximize plan profit	<input type="text" value=".1"/>
Maximize on-time delivery	<input type="text" value="1"/>

**Plan Level Penalty Factors**

Exceeding material capacity %	<input type="text"/>	Exceeding resource capacity %	<input type="text"/>
Exceeding transportation capacity %	<input type="text"/>	Demand lateness %	<input type="text"/>

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.

### System Profile Values

Profile	Site	Application	Responsibility	User
Factor for Exceeding Material C				

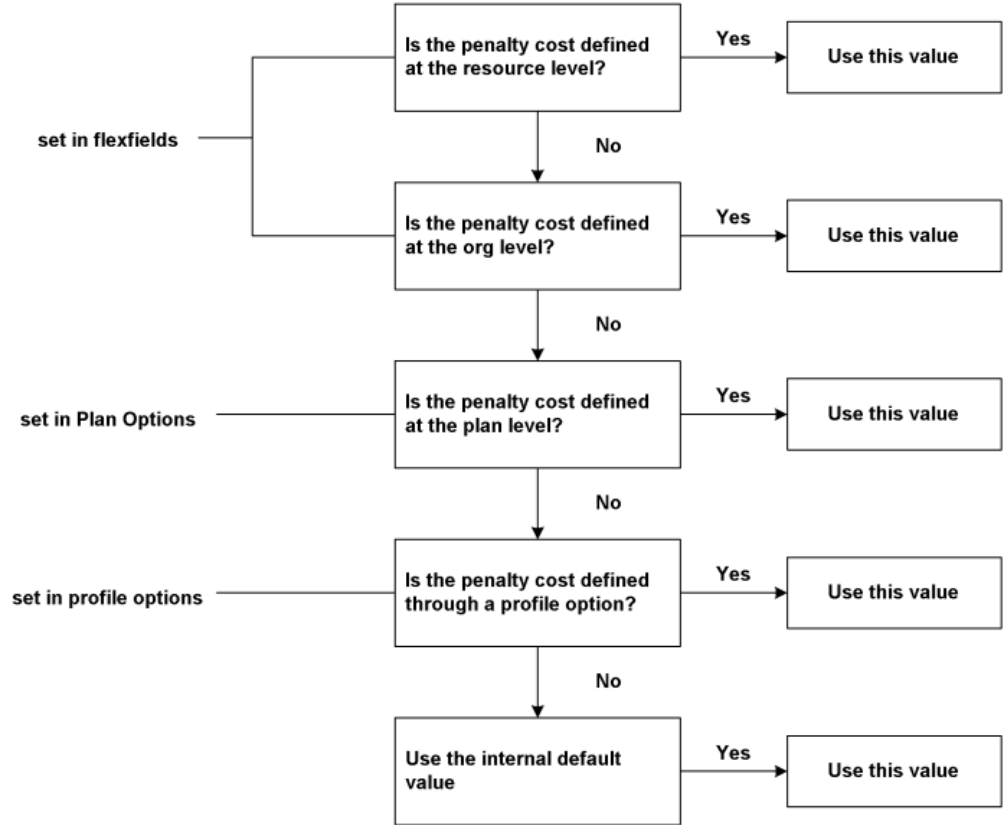
4. Enter the penalty factor in the Site column.

### 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.

### Plan Options, Optimization tab

Plan Options (M1)

Plan **leg-4** Optimized with Forecast Plan Type **Manufacturing Plan**

Main Aggregation Organizations Constraints Optimization Decision Rules

☒ Optimize

☒ Enforce Sourcing Constraints

**Objectives**

Maximize inventory turns	<input type="text" value="1"/>
Maximize plan profit	<input type="text" value=".1"/>
Maximize on-time delivery	<input type="text" value="1"/>

**Plan Level Penalty Factors**

Exceeding material capacity %	<input type="text"/>	Exceeding resource capacity %	<input type="text"/>
Exceeding transportation capacity %	<input type="text"/>	Demand lateness %	<input type="text"/>

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.

### System Profile Values

Profile	Site	Application	Responsibility	User
Factor for Exceeding Resource				

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 5-1

- 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) × (Transportation cost)

#### **Penalty Cost for Exceeding Resource Capacity**

The penalty cost for exceeding resource capacity is equal to:

- (Penalty factor for exceeding resource capacity) × (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 7-1. For more information on evaluating plan performance and comparing multiple plans, see 'Exception Messages , page 9-134.

---

# Supply Chain Plan Exception Messages

This chapter covers the following topics:

- Overview of 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.

#### **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

## **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.

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.

### Planning Exception Sets

Name	
ASCP	
Sensitivity Controls	
Excess Quantity	1
Repetitive Variance	0 %
Under-utilization	15 %
Over-utilization	5 %
User-Defined Time Fence (Days)	30
Exception Time Periods	
Shortage Exceptions	Total lead time
Excess Exceptions	Do not report
Resource Under-utilized Exceptions	User-defined time fence
Resource Over-utilized Exceptions	User-defined time fence
Overpromised Exceptions	User-defined time fence
Repetitive Variance Exceptions	Do not report

## 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

## **Viewing Exceptions**

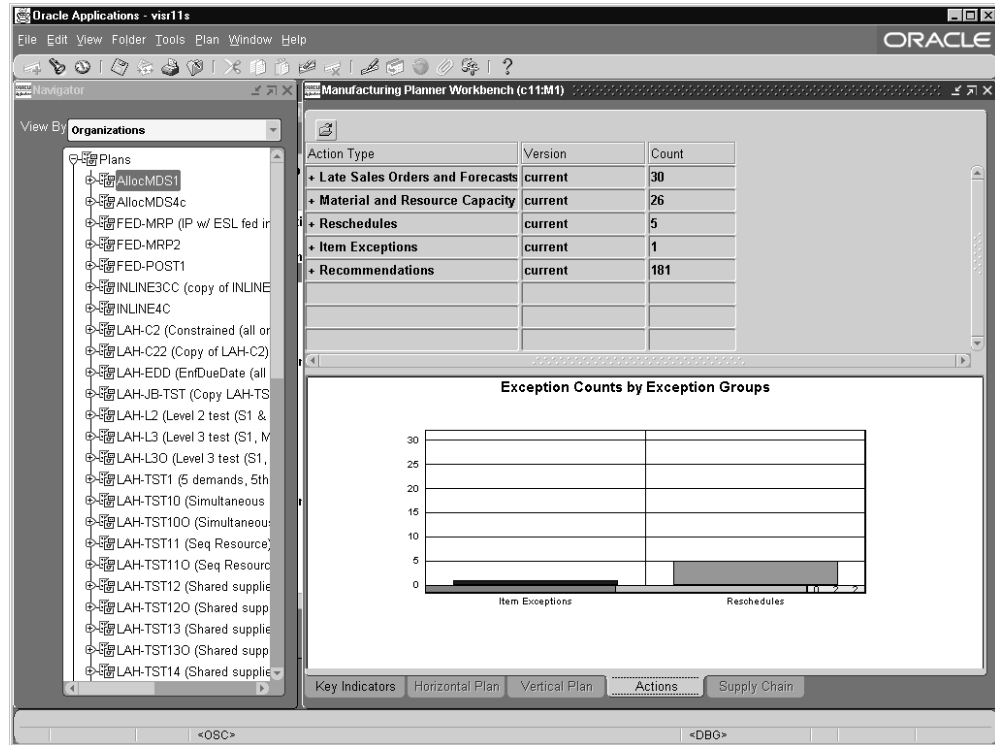
### **Overview**

View exception messages in the Planner Workbench. For more information, see 'Overview of Planner Workbench, page 10-1.

### **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



### 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:

- 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. 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.

[illegible]

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.

Quantity Satisfied By Due Date is the portion of a demand that can be satisfied by the due date.

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.

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

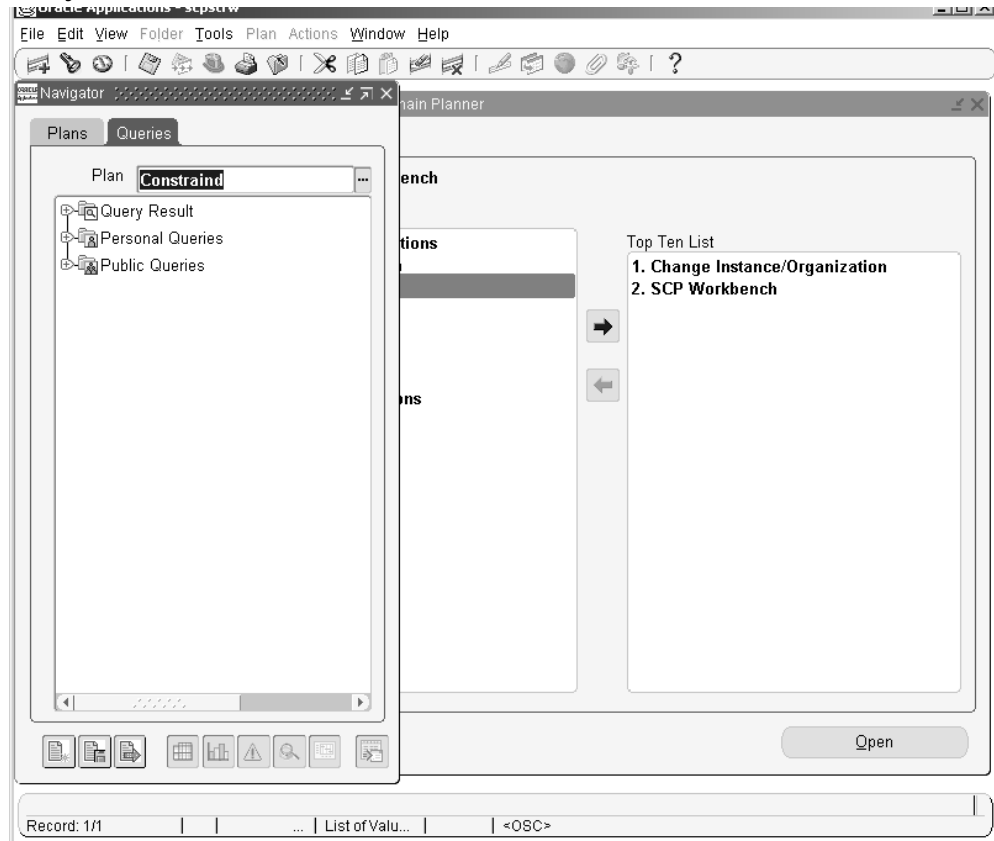
organization M1 is delayed by more than two days.

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.

#### Query tab



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.

### Create Query window

Oracle Applications - scpstrw

File Edit View Folder Tools Plan Actions Window Help

Navigator Main Planner

Create Query

Query Name

Query Type **Item** Owner **MFG** Public **No**

Criteria

Active ☒ Match All ☐ Match Any

Criteria	Condition	From	To
<input checked="" type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			

Save Save As Delete Clear Execute

Open

Record: 1/1 | ... | <OSC>

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.

### Create Query window

Oracle Applications - scpstrw

File Edit View Folder Tools Plan Actions Window Help

Navigator

Main Planner

Create Query

Query Name:  This is a test query

Query Type:  Owner:  Public:

Exceptions

Exception

Criteria

☐ Match All ☐ Match Any

Active ☐ ☒ ☐ ☐ ☐ ☐ ☐

Criteria	Condition	From	To	Group By
<input checked="" type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				

Save Save As Delete Clear Execute

Record: 1/1 <OSC>

7. To save the query, click Save or Save as.

To delete existing saved query criteria, click Delete.

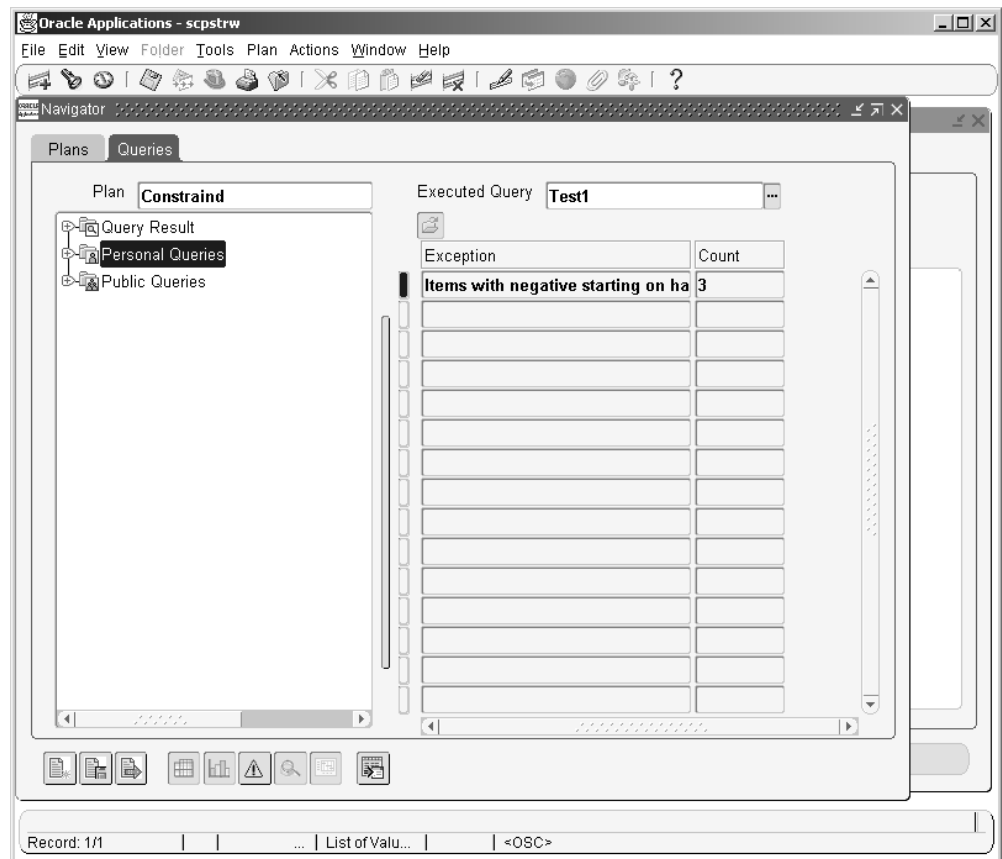
8. Click Execute. The query results appear in the right pane.

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.



### Queries tab



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
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

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
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 9-118 for 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:

- Supplier delivery 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.

<b>Exception Message</b>	<b>Available In Unconstrained Plans</b>	<b>Available In Constrained Plans with Enforce Demand Dates</b>	<b>Available In Constrained Plans with Enforce Capacity Constraints</b>	<b>Available In Optimized Plans</b>	<b>Available In Inventory Optimization</b>
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

<b>Exception Message</b>	<b>Available In Unconstrained Plans</b>	<b>Available In Constrained Plans with Enforce Demand Dates</b>	<b>Available In Constrained Plans with Enforce Capacity Constraints</b>	<b>Available In Optimized Plans</b>	<b>Available In Inventory Optimization</b>
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

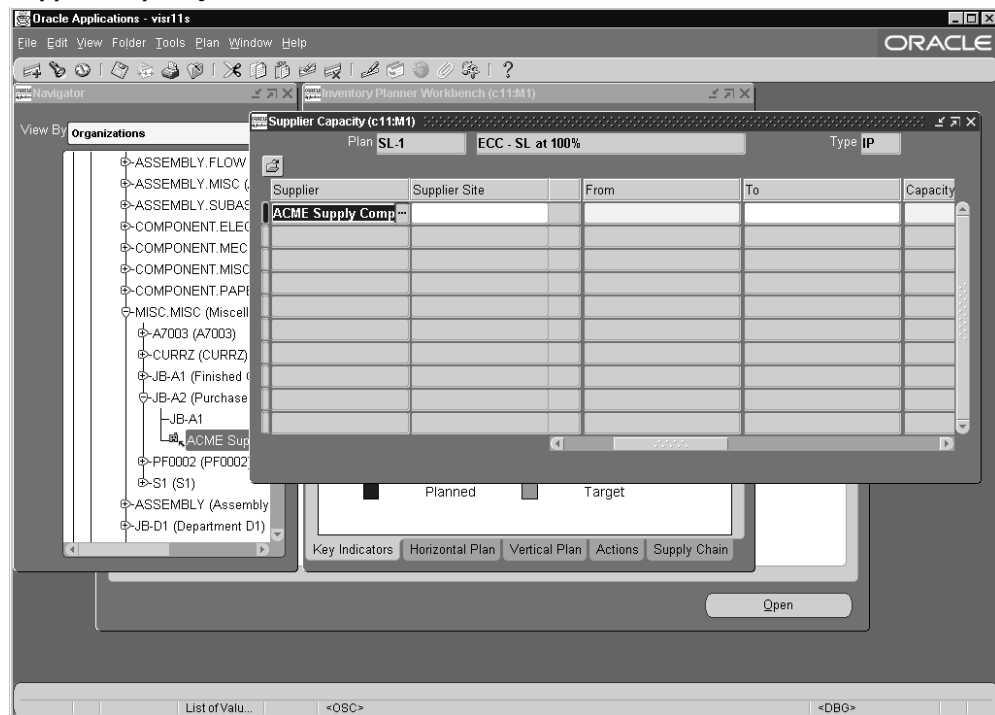
Some of the information fields for this exception message could be blank; this is normal behavior.

### Resolution Suggestions

Consider:

- Adjusting the sales order schedule date
- Adjusting the supplier capacity: In the Planner Workbench left pane, right-click Supplier and select Supplier Capacity.

### 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



## **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.

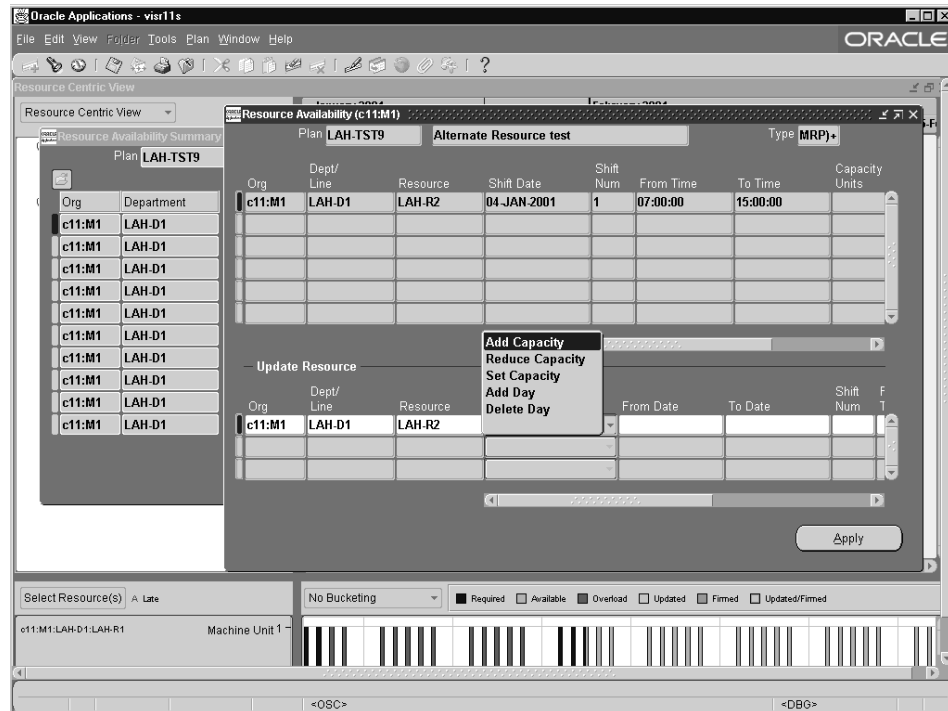
### **Resolution Suggestions**

Consider:

- Adjusting the top level independent demand date
- Increasing resource availability:
  - Hours available

- Resource units assigned to the operation
- Work and non-work days

### Resource Availability



- 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

### 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-64.

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  $i * \text{base} (i-1) * \text{offset}$  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 minutes  
a = 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.

#### **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)

<b>Schedule Entity</b>	<b>1</b>	<b>...</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>
Org D1: Forecasts	-	-	-	-	-	-	50	-	-	-	-	30	-
Org M1: Dependent demand	-	-	-	-	50	-	-	-	-	30	-	-	-
Org M1: Sales orders	-	-	-	-	50	-	-	-	-	30	-	-	-

Schedule Entity	1	...	5	6	7	8	9	10	11	12	13	14	15
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.

<b>Exception Message</b>	<b>Available In Unconstrained Plans</b>	<b>Available In Constrained Plans with Enforce Demand Dates</b>	<b>Available In Constrained Plans with Enforce Capacity Constraints</b>	<b>Available In Optimized Plans</b>	<b>Available In Inventory Optimization</b>
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 than 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

## 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.

### 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.

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  $(\text{Required Capacity} / \text{Available Capacity}) * 100$ .

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  $(\text{Required Quantity} / \text{Cumulative Available Quantity}) * 100$ .

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. If profile option MSC: Enable Enhanced Sourcing is Yes, unconstrained plans first exhaust supplier capacity from rank 1 suppliers and then use supplier capacity from rank 2 suppliers.

- **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 supplier 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 supplier 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 than the exception set Over-utilization.

Load ratio is a percent and its calculation is  $(\text{Required Quantity} / \text{Cumulative Available Quantity}) * 100$ .

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.

## 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  $(\text{Required Capacity} / \text{Available Capacity}) * 100$

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  $(\text{Required Capacity} / \text{Available Capacity}) * 100$

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

### 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 6-167.

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: 0
- 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
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



<b>Exception Message</b>	<b>Available In Unconstrained Plans</b>	<b>Available In Constrained Plans with Enforce Demand Dates</b>	<b>Available In Constrained Plans with Enforce Capacity Constraints</b>	<b>Available In Optimized Plans</b>	<b>Available In Inventory Optimization</b>
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
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 schedule 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.

### **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.

<b>Schedule Entity</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
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 than 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 compression days represents all of the following:

- 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 start date is the planning horizon start date.

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)
- Finds the number of days between the order (start) date and the planning horizon start date.

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. The planning engine calculates the lower level compression days as follows:

- For unconstrained plans: It 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 constrained plans: 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.

In an unconstrained plan, 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.

In a constrained plan, the supply order for B has 4 (day -1 - 3 days lead-time) compression days and the supply order for C has 7 (day -4 - 3 days lead-time) compression days.

There are differences among the plan types:

- Unconstrained: The planning engine may compress existing 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 - Enforce capacity constraints and Optimized - Enforce capacity constraints: The planning engine moves out demands (other than those from firm supplies) to avoid compression the supplies pegged to the demands. It creates Late replenishment for sales orders and Late replenishment for forecast exception messages.



- **Constrained - Enforce due dates and Optimized - Enforce due dates:** The planning engine may compress existing supplies 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
- 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 50 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.

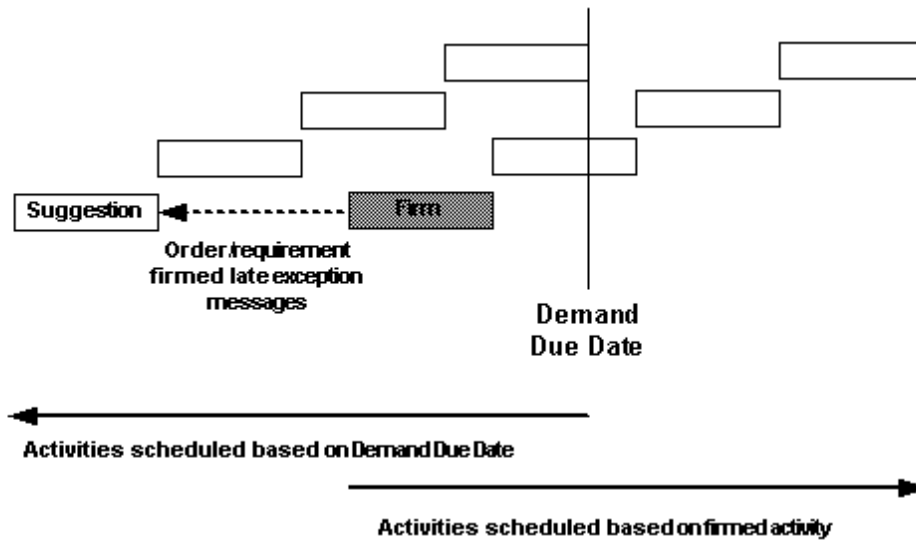
### **7: Order is firmed late**

#### **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.

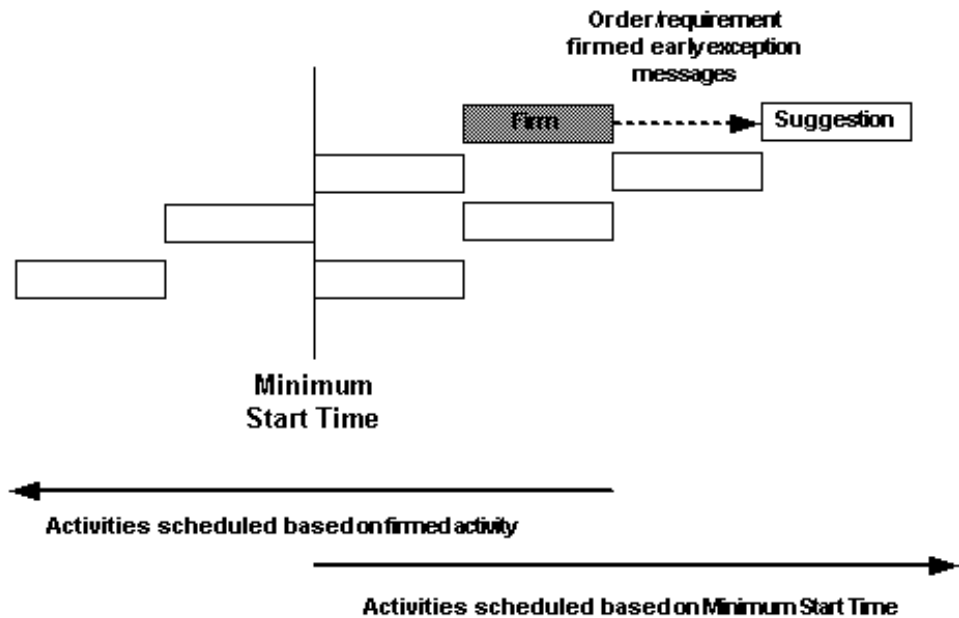
### **9: Order is firmed early**

#### **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 0

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 11-45.

**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

#### 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 an unconstrained plan where profile option MSC: Enable Enhanced Sourcing is Yes, plans orders using supply capacity from rank 2 suppliers
- 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 21-1.

The planning engine calculates the quantity of the substitute using the information in the 'Item Relationships form. , *Oracle Inventory Users Guide* See *Oracle Inventory User's Guide*.

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

Monitor the volume and frequency of occurrences. Many occurrences bear investigation as alternates and substitutes are often more expensive or more difficult to obtain.

## 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
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 managers.

**2: Items allocated across projects/tasks****Explanation**

This exception appears when the planning engine detects a supply 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
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

#### 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 lost****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.

<b>Schedule Entity</b>	<b>3 January</b>	<b>4 January</b>	<b>5 January</b>	<b>6 January</b>	<b>7 January</b>
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 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 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.

The system uses this formula: (Material Available Date + Shelf Life Days - Planned Arrival Date) < Minimum Remaining Shelf Life.

**Example**

Consider a prescription that must be stocked on drugstore shelves with at least three months (90 days) of remaining shelf life until expiration. The shelf life of this product is 120 days. Based on a plan run the Material Available Date for a supply of this product is February 1, 2007 and the Planned Arrival Date is March 6, 2007.

Therefore, Material Available Date + Shelf Life Days - Planned Arrival Date is: February 1, 2007 + 120 - March 6, 2006 = 120 - 33 = 87.

Because  $87 < 90$  the exception is generated.

**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.

## 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

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
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 10-195 Planning 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 3-7.

## Exception Information

The section 'Understanding Exceptions, page 9-15 describes the circumstances under which the planning engine issues the exceptions and the information that it displays.

The section 'Viewing Exceptions, page 9-7 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 firming early
- Order is firming late
- Requirement is firming early
- Requirement is firming late

The planning engine issues these exceptions against firming resource requirements and supply orders when it thinks they are firming 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 firming late
- Order is firming 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.

## **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.

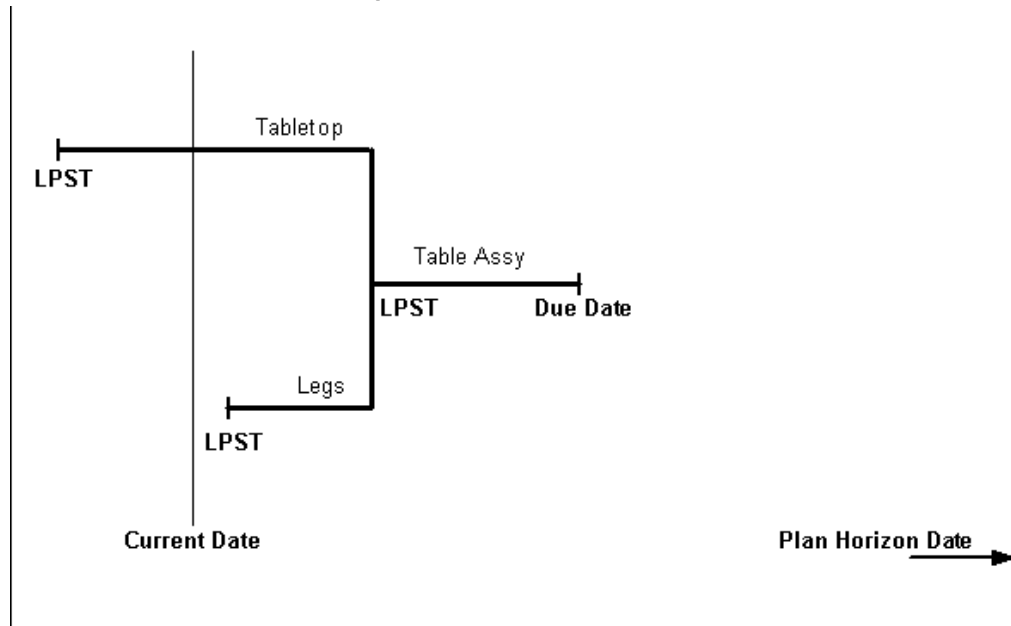
The descriptions in this section use a manufactured table as an example. The table consists of four legs and a top, each of which have operations.

## 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



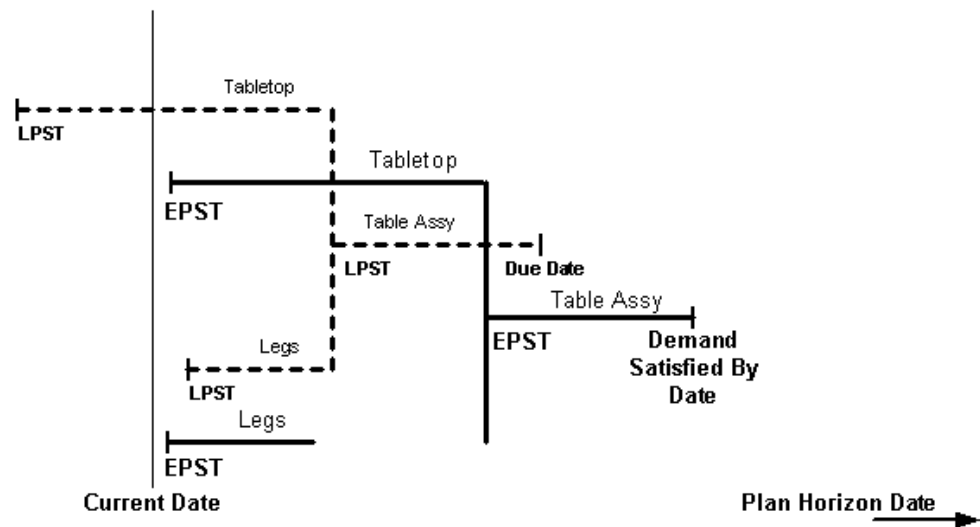
## Earliest Dates

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 than 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:

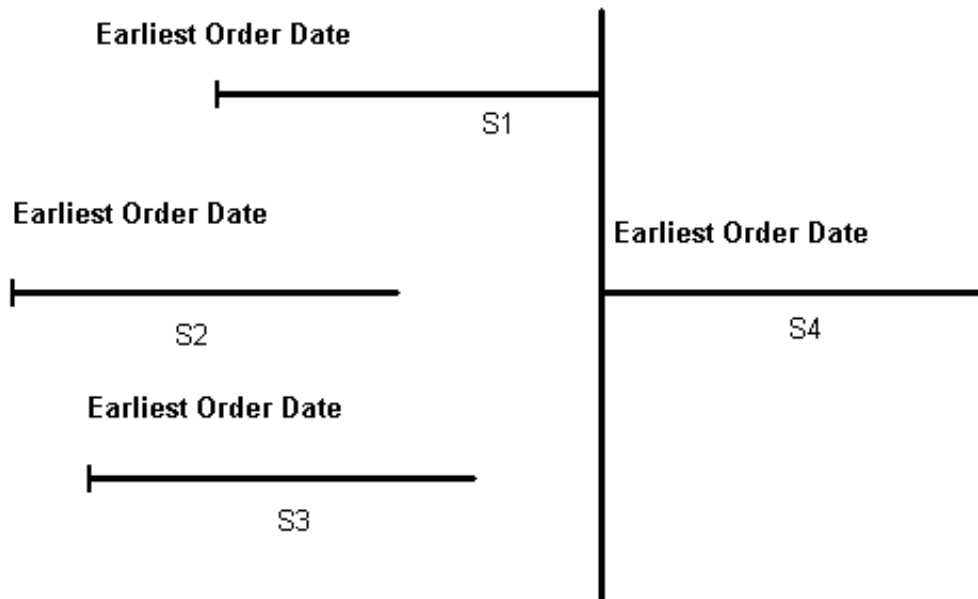
- Make order: Suggested start date
- Buy order: Suggested dock date
- Transfer order: Suggested ship date

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.

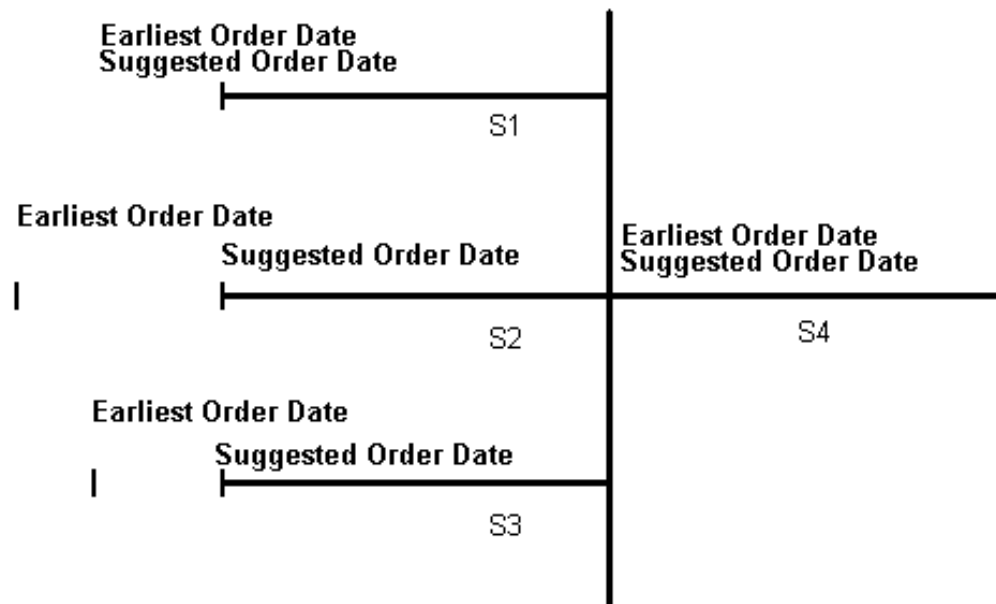
This diagram shows three supplies (S1, S2, and S3) pegged to supply S4. The planning engine forward scheduled the supplies and set the suggested order date for each one to be the same as the earliest order date

### ***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**

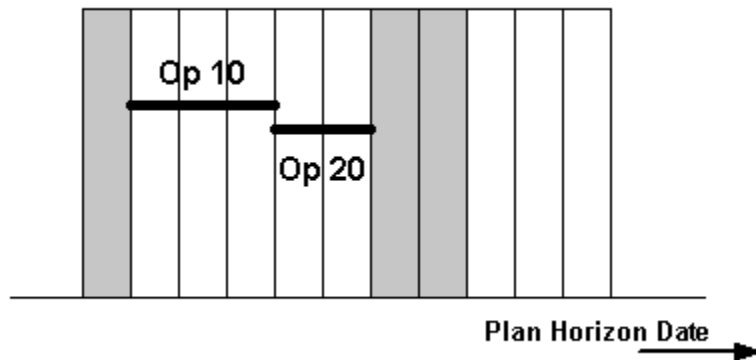
The earliest completion date is the date that the order can finish if you start it on earliest order date. It is the earliest possible date that can appear as the suggested due date.

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.

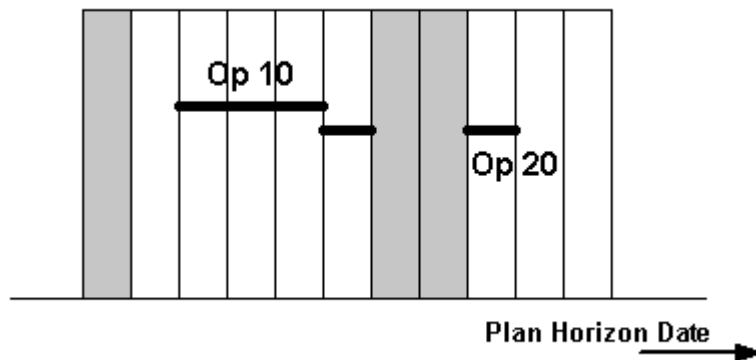
### ***Earliest Possible Times Example***



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***



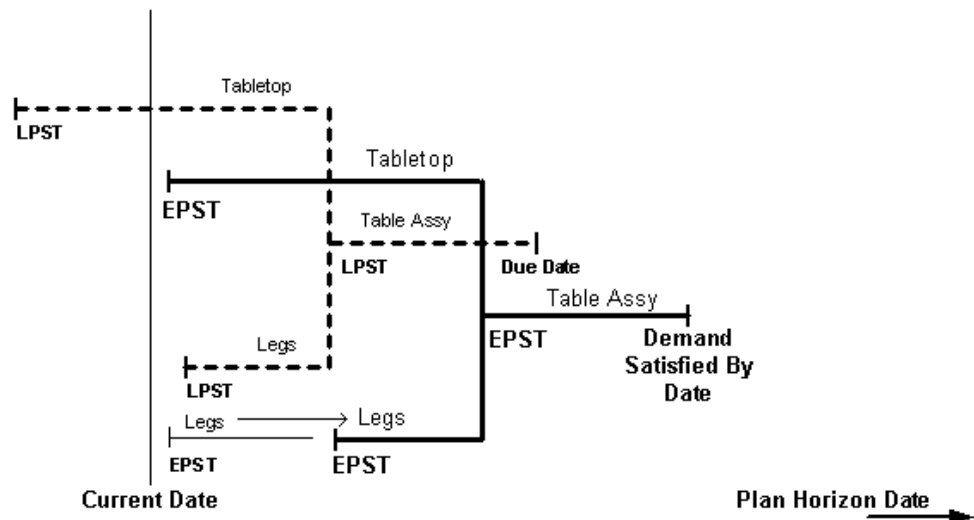
### **Earliest Possible Demand Satisfied Date**

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.

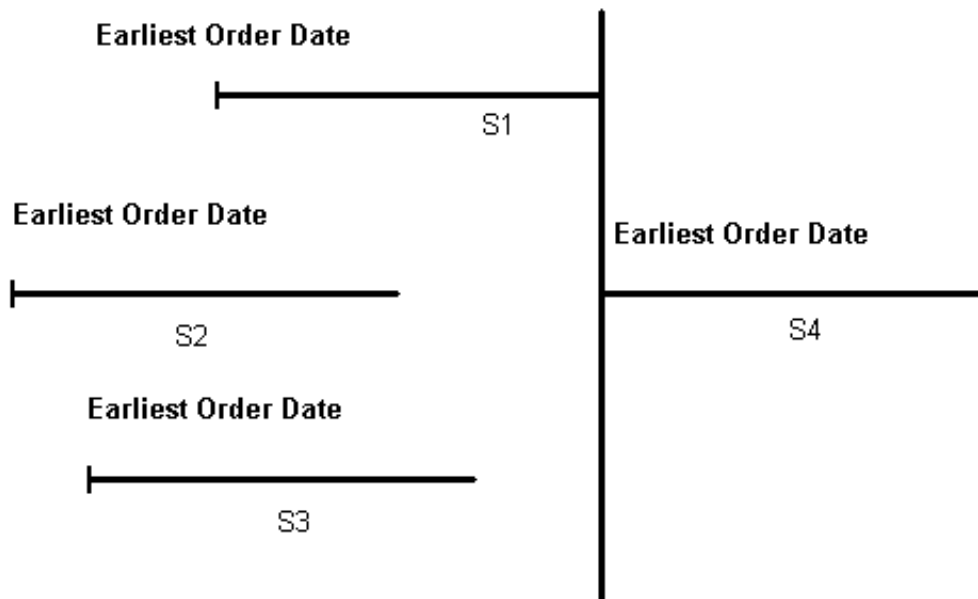
- One of several activities which are at the same bill of material or pegging level.
- The most constraining at its level. The most constraining activity is the one that most restricts the lower (earliest) bound of the earliest order date of the next highest level supply.

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).

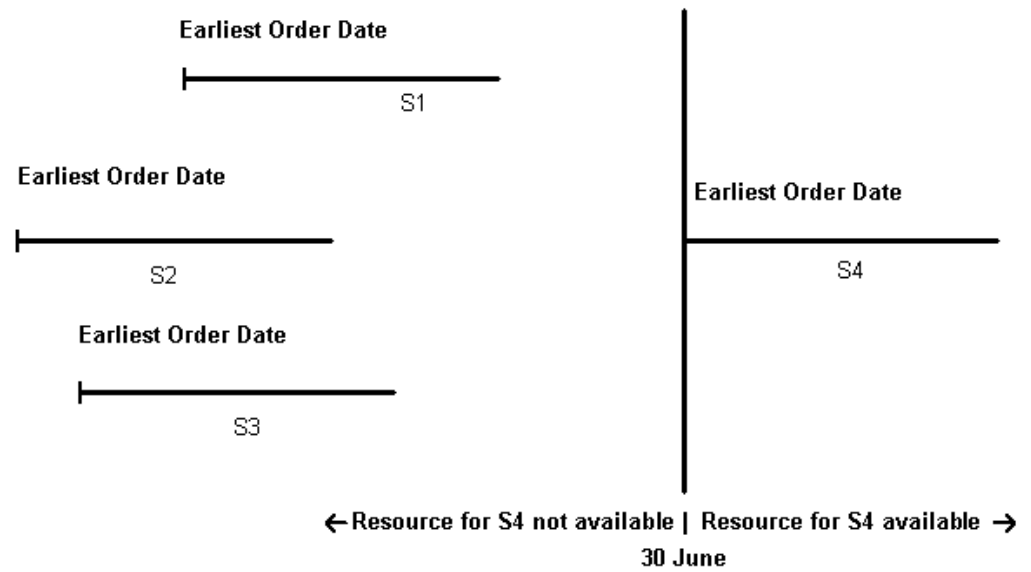
***Critical Activity Example***



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.

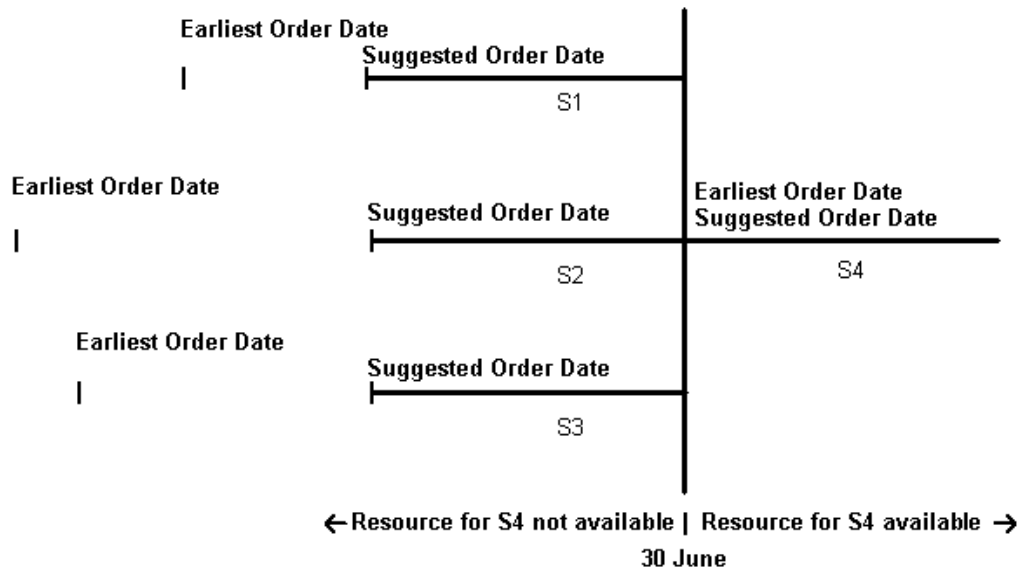


### ***Resource Constraint on Assembly Example***



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.

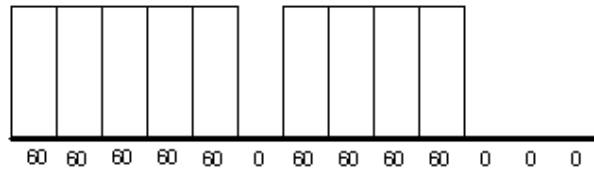
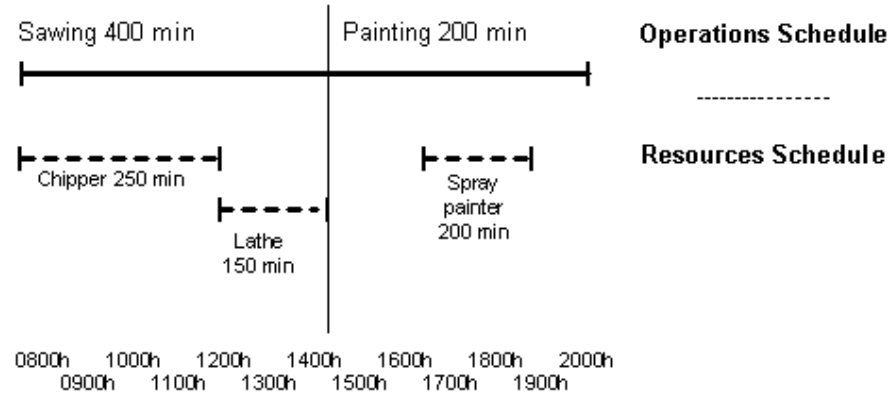
Demands constrained by resources also receive a Resource constraint exception message and you use that exception message to find additional information about the resources.

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:

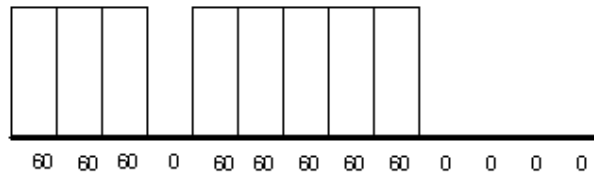
- Schedule for this supply is delayed while waiting for the resource Spray painter
- Due date of the supply is later than it would be if the resource was available when the tabletop assembly was ready for it

## Precedence Constraints and Resource Availability

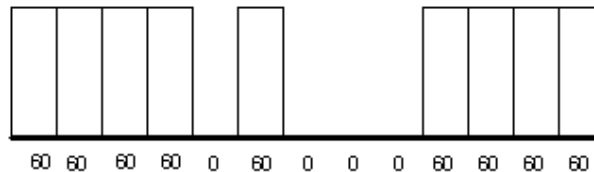
### Tabletop Planned Order



**Resource Profile  
Chipper**



**Resource Profile  
Lathe**



**Resource Profile  
Spray painter**

### 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 Date. 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.

## **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.

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 10-197

## 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 22-4.

## **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.



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## 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.

### 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 22-14.

## General Navigation

### *The Planner Workbench*



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.

#### *Planner Workbench: Icons*



You can use these icons to:

#### *Planner Workbench: Query icons*



- 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.

#### *Planner Workbench: Horizontal Plan icon*



- View the horizontal plan.

***Planner Workbench: Supply/Demand icon***



- View the supply and demand details.

***Planner Workbench: Exceptions icon***



- View the exception messages related to the plan or the element.

***Planner Workbench: Items icon***



- View the items related to the plan or the element.

***Planner Workbench: Gantt Chart icon***



- View the Gantt chart.

***Planner Workbench: More icon***



- View additional details such as key indicators, process effectivity, and resources.

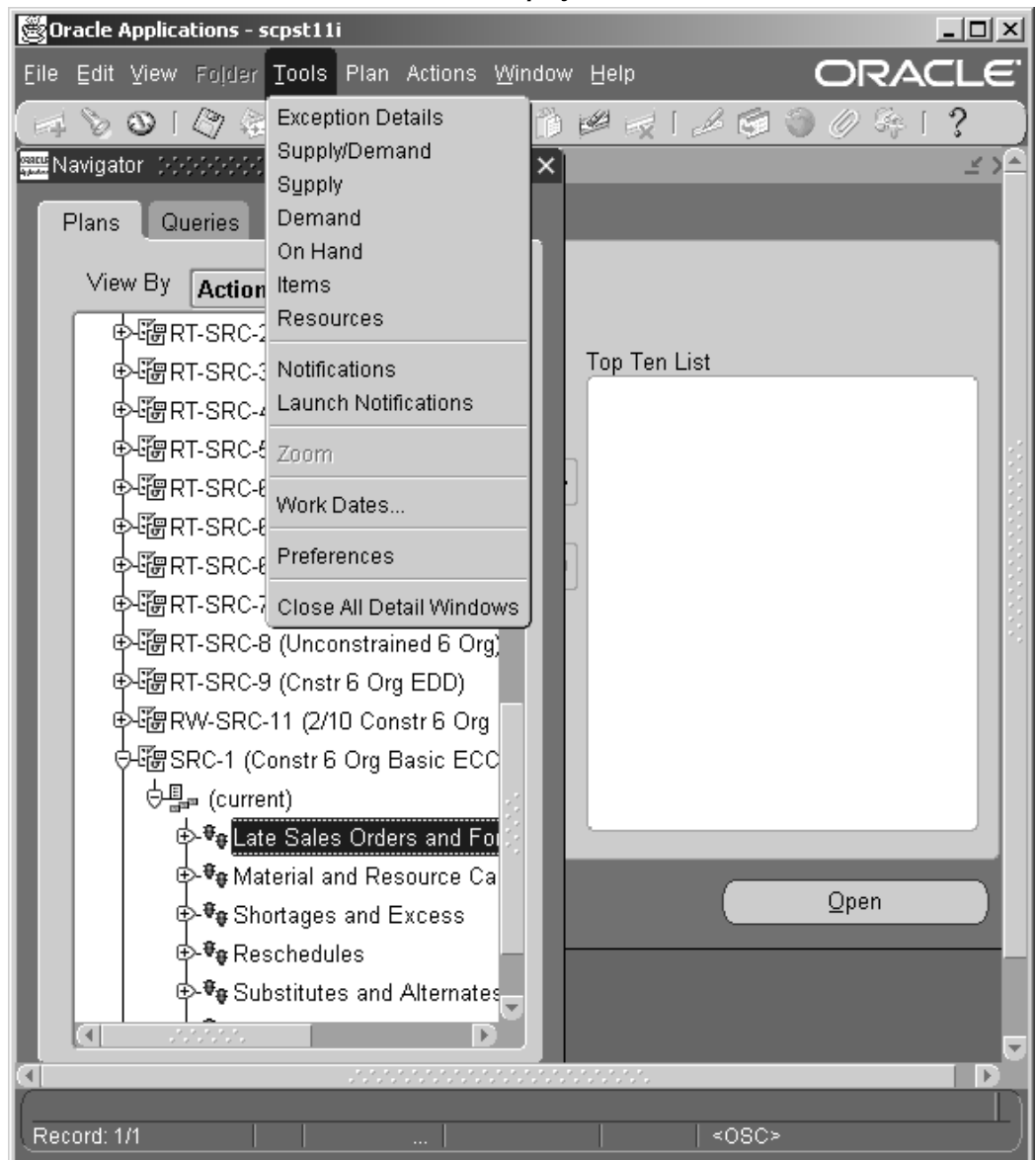
Based on your selection of plans or elements, icons that are not relevant may get disabled. You can select multiple items using Control-Click.

## **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.



### The Planner Workbench with Tools Menus Displayed



#### 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	<p>Exceptions &gt; submenu:</p> <p>Summary</p> <p>Details</p> <p>Supply/Demand &gt; submenu:</p> <p>Supply</p> <p>Demand</p> <p>Supply/Demand</p> <p>Onhand</p> <p>Items &gt; submenu:</p> <p>Items</p> <p>Resources &gt; submenu:</p> <p>Resources</p> <p>Key Indicators</p> <p>Options</p> <p>Refresh &gt; submenu:</p> <p>All</p> <p>Only Selected</p> <p>Properties</p> <p>Delete</p> <p>Help</p>

Node Type	Right-click Menu Options
Versions / Exceptions Group / Exceptions	<p>Exceptions &gt; submenu:</p> <p>Summary</p> <p>Details</p> <p>Supply/Demand &gt; submenu:</p> <p>Supply</p> <p>Demand</p> <p>Supply/Demand</p> <p>Onhand</p> <p>Items &gt; submenu:</p> <p>Items</p> <p>Resources &gt; submenu:</p> <p>Resources</p> <p>Refresh &gt; submenu:</p> <p>All</p> <p>Only Selected</p> <p>Properties</p> <p>Delete</p> <p>Help</p>
Organization	<p>Exceptions &gt; submenu:</p> <p>Summary</p>

Node Type	Right-click Menu Options
	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
	Exceptions > submenu:
	Summary
	Details
Items	

Node Type	Right-click Menu Options
	Horizontal Plan > submenu:
	Default
	Vertical Plan
	Supply/Demand > submenu:
	Supply
	- Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Substitutes
	Resources > submenu:
	Resources
	Supply Chain > submenu:
	Sources
	Supply Chain Bill
	Destinations
	BOM/Routings > submenu:
	Components
	Routing Operations

Node Type	Right-click Menu Options
	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:

Node Type	Right-click Menu Options
	Items
	Resources > submenu:
	Resources
	Key Indicators
	Options
	Refresh > submenu:
	All
	Only Selected
	Properties
	Delete
	Help
	Exceptions > submenu:
	Summary
	Details
Categories	Supply/Demand > submenu:
	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:

Node Type	Right-click Menu Options
	Items
	Resources > submenu:
	Resources
	Key Indicators
	Expand Partial
	Refresh > submenu:
	All
	Only Selected
	Properties
	Delete
	Help
	Exceptions > submenu:
	Summary
Items / Organizations / Components / Where Used	Details
	Horizontal Plan > submenu:
	Default
	Supply/Demand > submenu:
	Supply
	Demand
	Supply/Demand



Node Type	Right-click Menu Options
	Onhand
	Items > submenu:
	Items
	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:
	All
	Only Selected
	Properties

Node Type	Right-click Menu Options
	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	<p>Exceptions &gt; submenu:</p> <p>Summary</p> <p>Details</p> <p>Supply/Demand &gt; submenu:</p> <p>Supply</p> <p>Demand</p> <p>Supply/Demand</p> <p>Onhand</p> <p>Items &gt; submenu:</p> <p>Items</p> <p>Resources &gt; submenu:</p> <p>Resources</p> <p>Key Indicators</p> <p>Options</p> <p>Refresh &gt; submenu:</p>

Node Type	Right-click Menu Options
Organizations	All
	Only Selected
	Properties
	Delete
	Help
	Exceptions > submenu:
	Summary
	Details
	Supply/Demand > submenu:
	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Resources > submenu:
	Resources
	Key Indicators
	Refresh > submenu:
	All

Node Type	Right-click Menu Options
Categories	Only Selected
	Properties
	Delete
	Help
	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

Node Type	Right-click Menu Options
Items	Only Selected
	Properties
	Delete
	Help
	Exceptions > submenu:
	Summary
	Details
	Horizontal Plan > submenu:
	Default
	Vertical Plan
	Supply/Demand > submenu:
	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Substitutes
	Resources > submenu includes Resources
	Supply Chain > submenu:

Node Type	Right-click Menu Options
	<p>Sources</p> <p>Supply Chain Bill</p> <p>Destinations</p> <p>BOM/Routings &gt; submenu:</p> <p>Components</p> <p>Routing Operations</p> <p>Where Used</p> <p>Process Effectivity</p> <p>Co-Products</p> <p>Key Indicators</p> <p>Refresh &gt; submenu includes All and Only Selected</p> <p>Properties</p> <p>Delete</p> <p>Help</p>
Departments / Resources / Transportation Resources	<p>Exceptions &gt; submenu:</p> <p>Summary</p> <p>Details</p> <p>Supply/Demand &gt; submenu:</p> <p>Supply</p>

Node Type	Right-click Menu Options
	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
	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	<p>Exceptions &gt; submenu:</p> <p>Summary</p> <p>Details</p> <p>Supply/Demand &gt; submenu:</p> <p>Supply</p> <p>Demand</p> <p>Supply/Demand</p> <p>Onhand</p> <p>Items &gt; submenu:</p> <p>Items</p> <p>Resources &gt; submenu:</p> <p>Resources</p> <p>Key Indicators</p> <p>Options</p> <p>Refresh &gt; submenu:</p> <p>All</p> <p>Only Selected</p> <p>Properties</p> <p>Delete</p> <p>Help</p>



Node Type	Right-click Menu Options
Organizations	<p>Exceptions &gt; submenu:</p> <p>Summary</p> <p>Details</p> <p>Supply/Demand &gt; submenu:</p> <p>Supply</p> <p>Demand</p> <p>Supply/Demand</p> <p>Onhand</p> <p>Items &gt; submenu:</p> <p>Items</p> <p>Resources &gt; submenu:</p> <p>Resources</p> <p>Key Indicators</p> <p>Refresh &gt; submenu:</p> <p>All</p> <p>Only Selected</p> <p>Properties</p> <p>Delete</p> <p>Help</p>
Planning Groups / Projects / Tasks	<p>Exceptions &gt; submenu:</p>

Node Type	Right-click Menu Options
	Summary
	Details
	Supply/Demand > submenu:
	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Key Indicators
	Refresh > submenu:
	All
	Only Selected
	Properties
	Delete
	Help
Items	Exceptions > submenu:
	Summary
	Details
	Horizontal Plan > submenu:

Node Type	Right-click Menu Options
	Default
	Vertical Plan
	Supply/Demand > submenu:
	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Substitutes
	Supply Chain > submenu:
	Sources
	Supply Chain Bill
	Destinations
	BOM/Routings > submenu:
	Components
	Routing Operations
	Where Used
	Process Effectivity
	Co-Products

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 Resources.

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
Organizations	Resources > submenu:
	Resources
	Key Indicators
	Options
	Refresh > submenu:
	All
	Only Selected
	Properties
	Delete
	Help
	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
	Exceptions > submenu:
	Summary
	Details
	Supply/Demand > submenu:
Department Classes / Departments	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Resources > submenu:

Node Type	Right-click Menu Options
	Resources  Resource Availability  Resource Requirements  Gantt Chart  Key Indicators  Refresh > submenu:  All  Only Selected  Properties  Delete  Help
	Exceptions > submenu:  Summary  Details  Supply/Demand > submenu:  Supply  Demand  Supply/Demand  Onhand  Items > submenu:

Node Type	Right-click Menu Options
Items	Items
	Resources > submenu:
	Resources
	Resource Availability
	Resource Requirements
	Gantt Chart
	Key Indicators
	Refresh > submenu:
	All
	Only Selected
	Properties
	Delete
	Help
	Exceptions > submenu:
	Summary
	Details
	Horizontal Plan > submenu:
	Default
	Vertical Plan
	Supply/Demand > submenu:



Node Type	Right-click Menu Options
	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Substitutes
	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

Node Type	Right-click Menu Options
	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
	Supply/Demand > submenu:
	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Resources > submenu:
	Resources
	Key Indicators

Node Type	Right-click Menu Options
Approved Suppliers	Options
	Refresh > submenu:
	All
	Only Selected
	Properties
	Delete
	Help
	Exceptions > submenu:
	Summary
	Details
	Supply/Demand > submenu:
	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Key Indicators
	Refresh > submenu:
	Only Selected

Node Type	Right-click Menu Options
Categories	Properties
	Delete
	Help
	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

Node Type	Right-click Menu Options
Items	Properties
	Delete
	Help
	Exceptions > submenu:
	Summary
	Details
	Horizontal Plan > submenu:
	Default
	Supply/Demand > submenu:
	Supply
	Demand
	Supply/Demand
	Onhand
	Items > submenu:
	Items
	Resources > submenu:
	Resources
	Key Indicators
	Supplier Information
	Refresh > submenu:

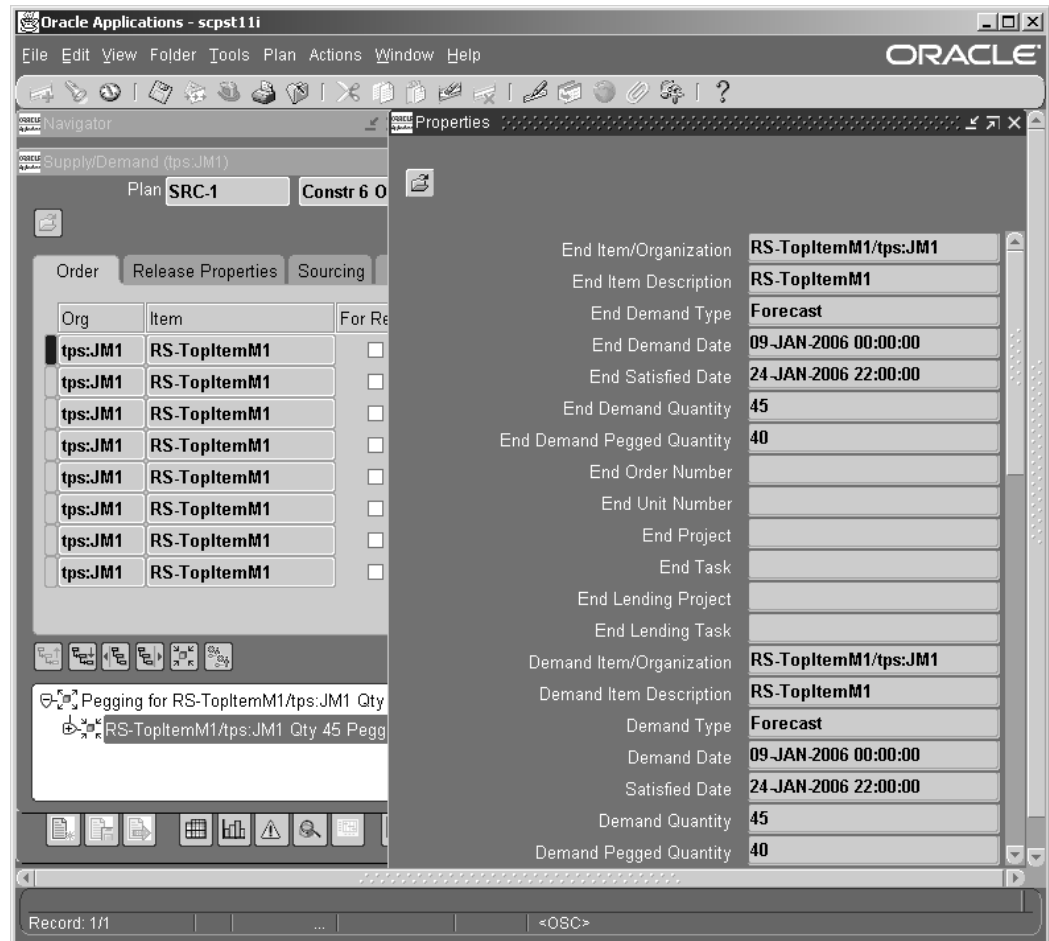
Node Type	Right-click Menu Options
	All
	Only Selected
	Properties
	Delete
	Help

### Properties Window

You can view properties for any node in the Navigator or pegging tree by selecting the node, then choosing [right-click] > Properties.

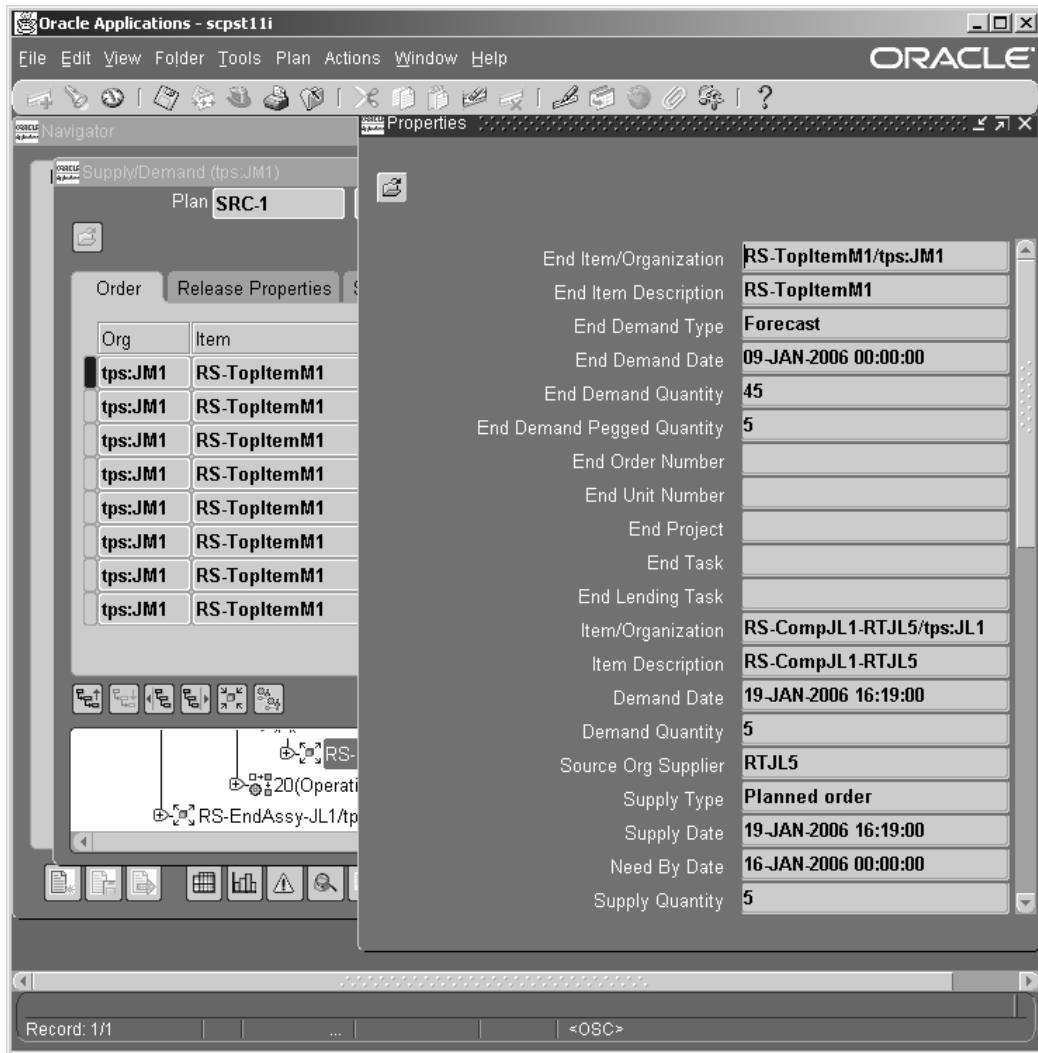
For an MRP plan with an MPS plan as a demand schedule, the MRP item may peg to a demand in the MPS plan. In this case, the Properties window displays pegging information about the end demand from the MPS.

### Displaying Properties for a Planned Order Demand in the Pegging Tree



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.

### Displaying Properties for a Supply in the Pegging Tree

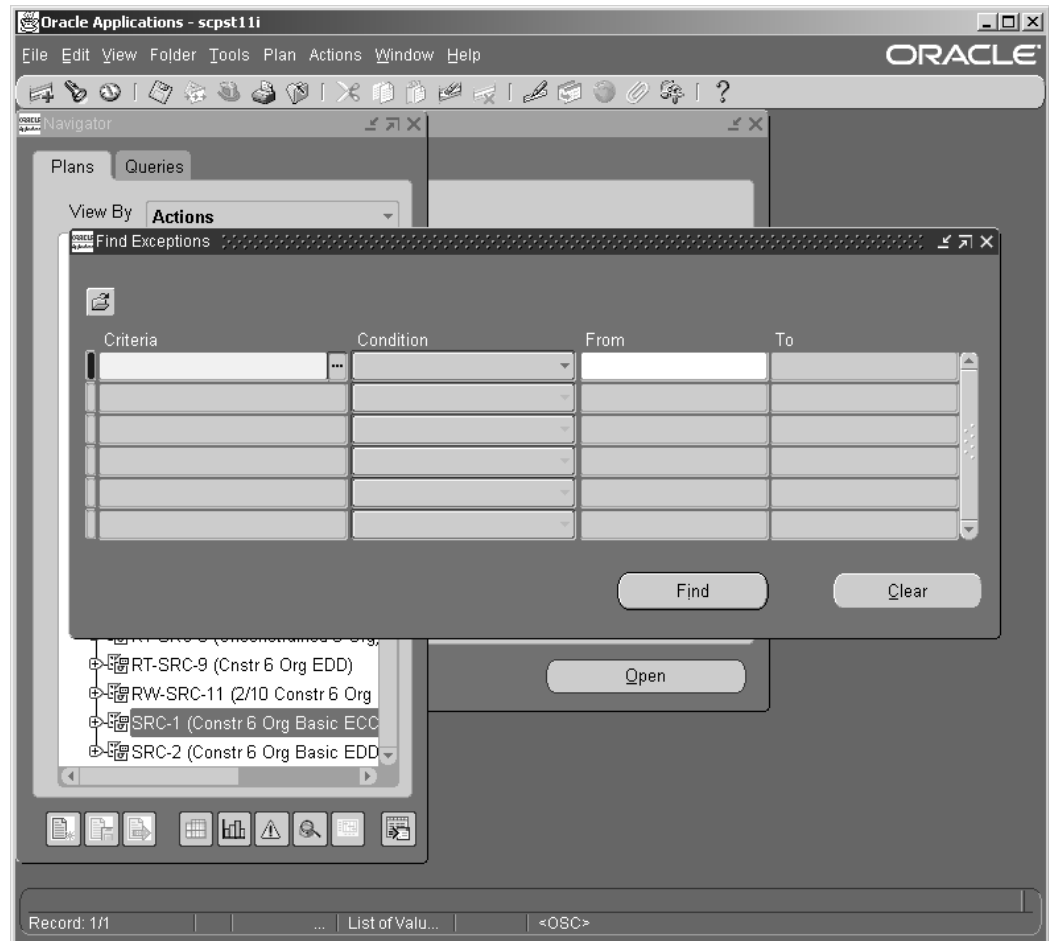


### Navigating Through a Find Window

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



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**

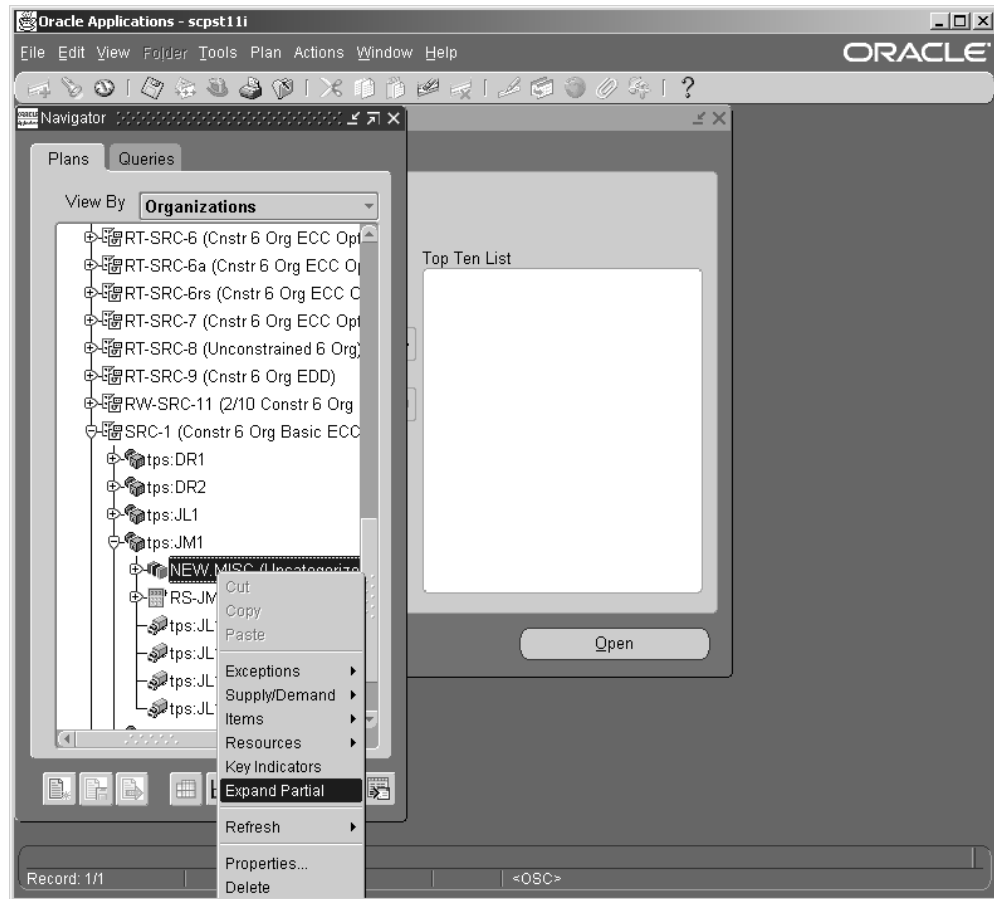
Use Expand Partial to search for item(s) in the tree in the Planner Workbench and Collection Workbench. You can enter either the complete item name or a partial name with a wildcard.

#### **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.

### Right-Click menu



4. Select Expand Partial.

The Enter Reduction Criteria for Long List form appears.

### Enter Reduction Criteria

The screenshot shows the 'Enter Reduction Criteria for Long List' dialog box. It has a title bar with the Oracle logo and the text 'Enter Reduction Criteria for Long List'. Inside the dialog, there is a label 'Item' followed by a text input field. At the bottom of the dialog, there are two buttons: 'OK' and 'Cancel'.

5. Enter either a complete item name or a partial item name with a wildcard and select

OK. This search is not case sensitive.

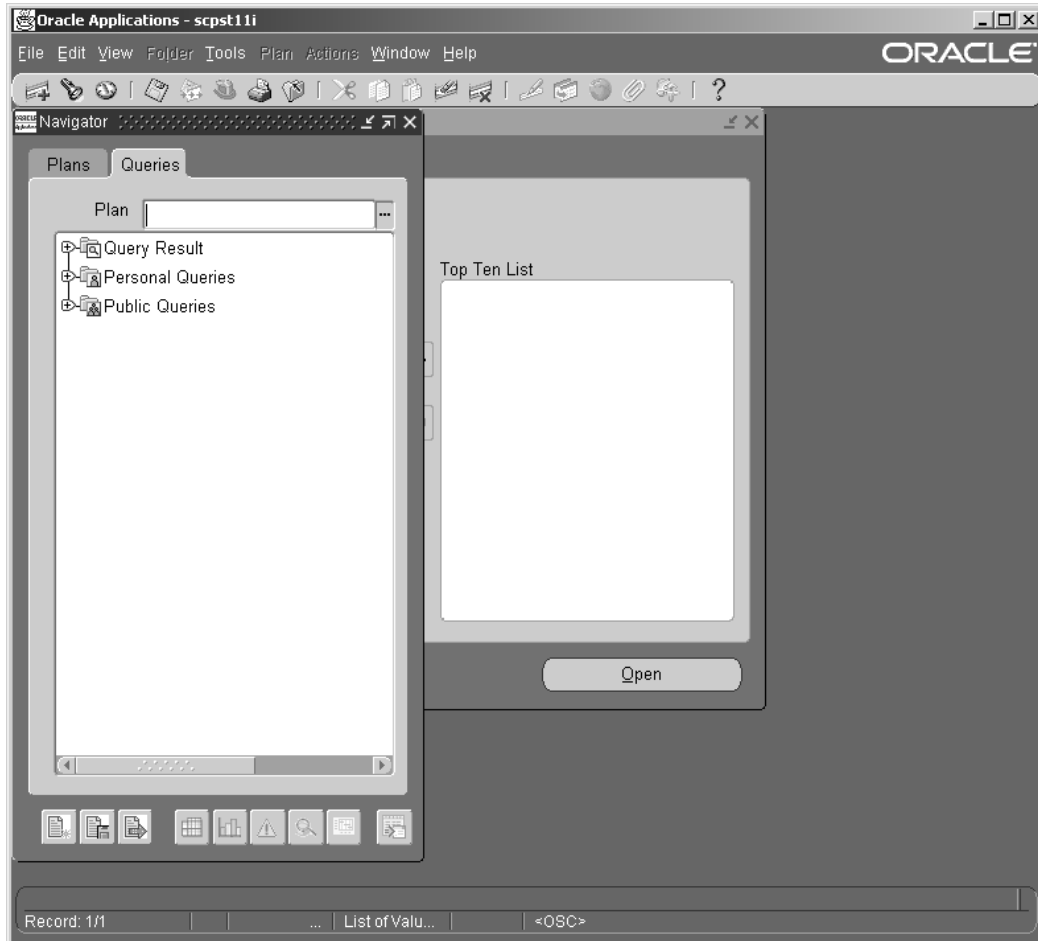
Matching results (up to 500 in number at a time) are displayed in the left pane. If there are no matching items, a message appears in the status bar.

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.

### Planner Workbench: Queries tabbed pane



### Navigating the Queries Tabbed Pane

#### Icons

You can click the icons provided in the bottom of the Navigator to create, save and execute queries.

#### Query Icons in the Navigator



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.

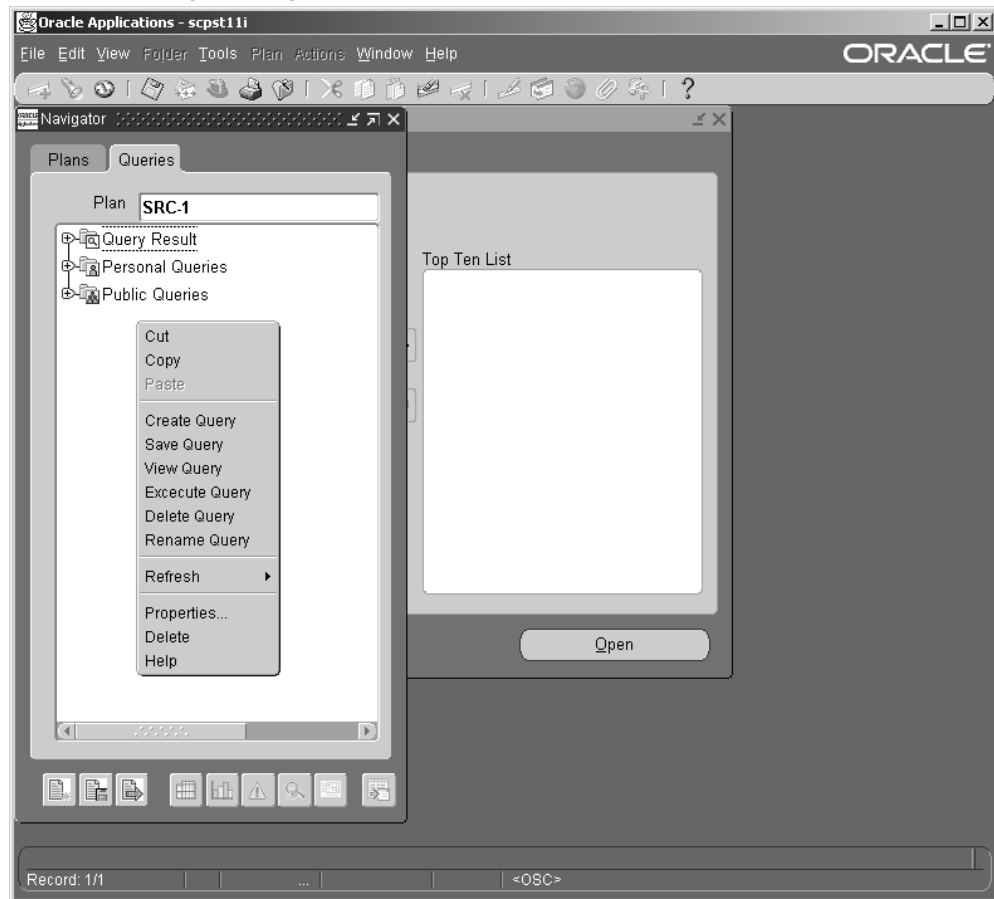
## Create a Query

### 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.

### Queries tabbed pane: Right-click 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.



### Create Query window

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 9-1.
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

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

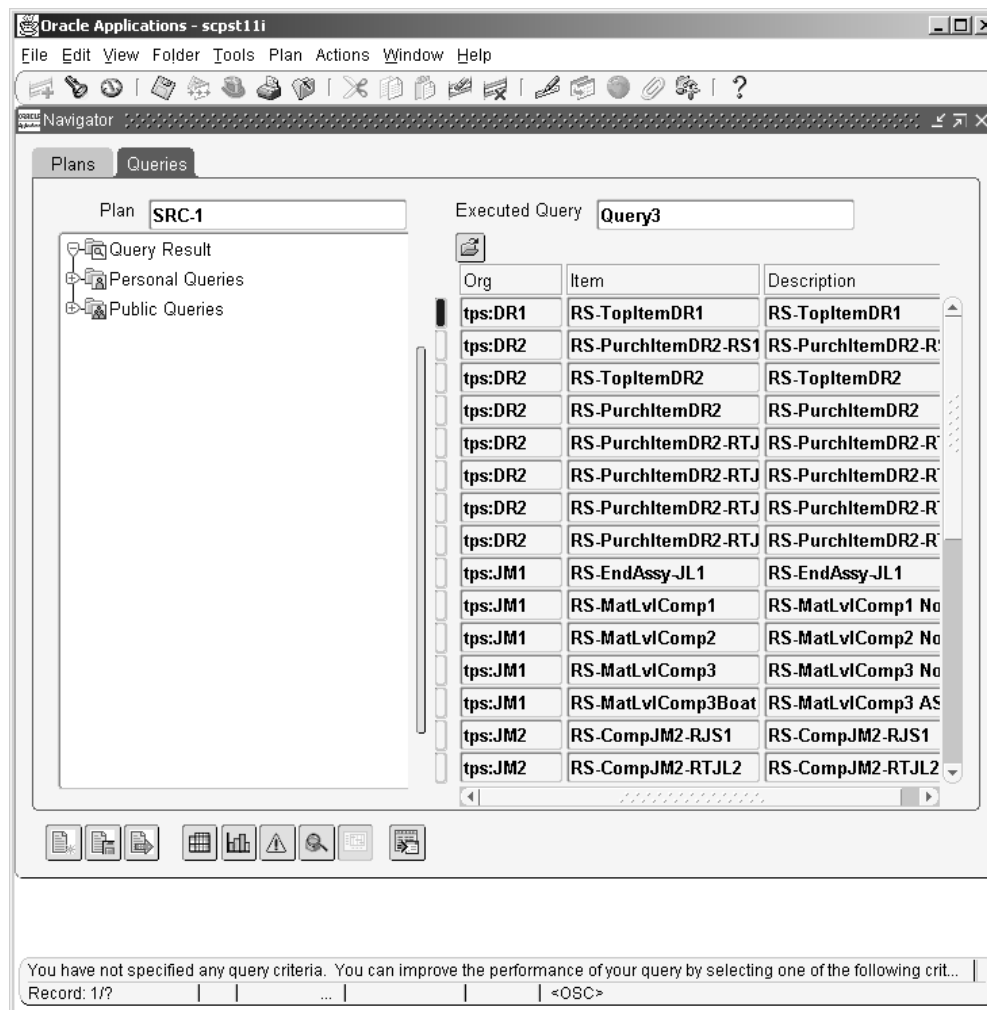
9. To retrieve all the records that meet any one of the criteria that you specify, select Match Any. However, if you want to retrieve only those records that meet all criteria, select Match All.
10. Select the check box preceding the criteria specifications for those criteria specifications that you 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.

### Queries Result window



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 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.

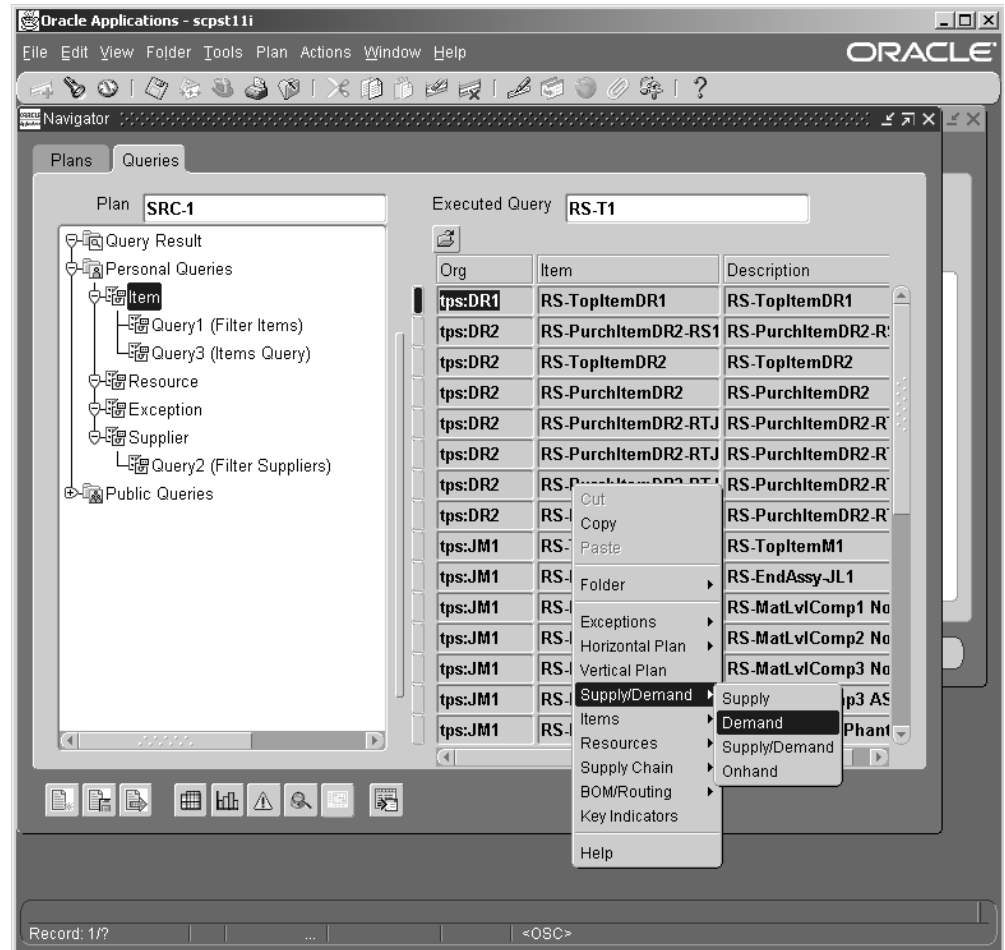
**Note:** To execute a query for a particular plan, you can specify the name of the plan in the Plan field.

### 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.

### Multi-select in Query Results window



## 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.

<b>Menu</b>	<b>Menu Option</b>	<b>Description</b>
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.
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.

<b>Menu</b>	<b>Menu Option</b>	<b>Description</b>
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 10-56.
Tools	Close All Detail Windows	Close all context windows that are open in the Planner Workbench.
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.

Menu	Menu Option	Description
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.

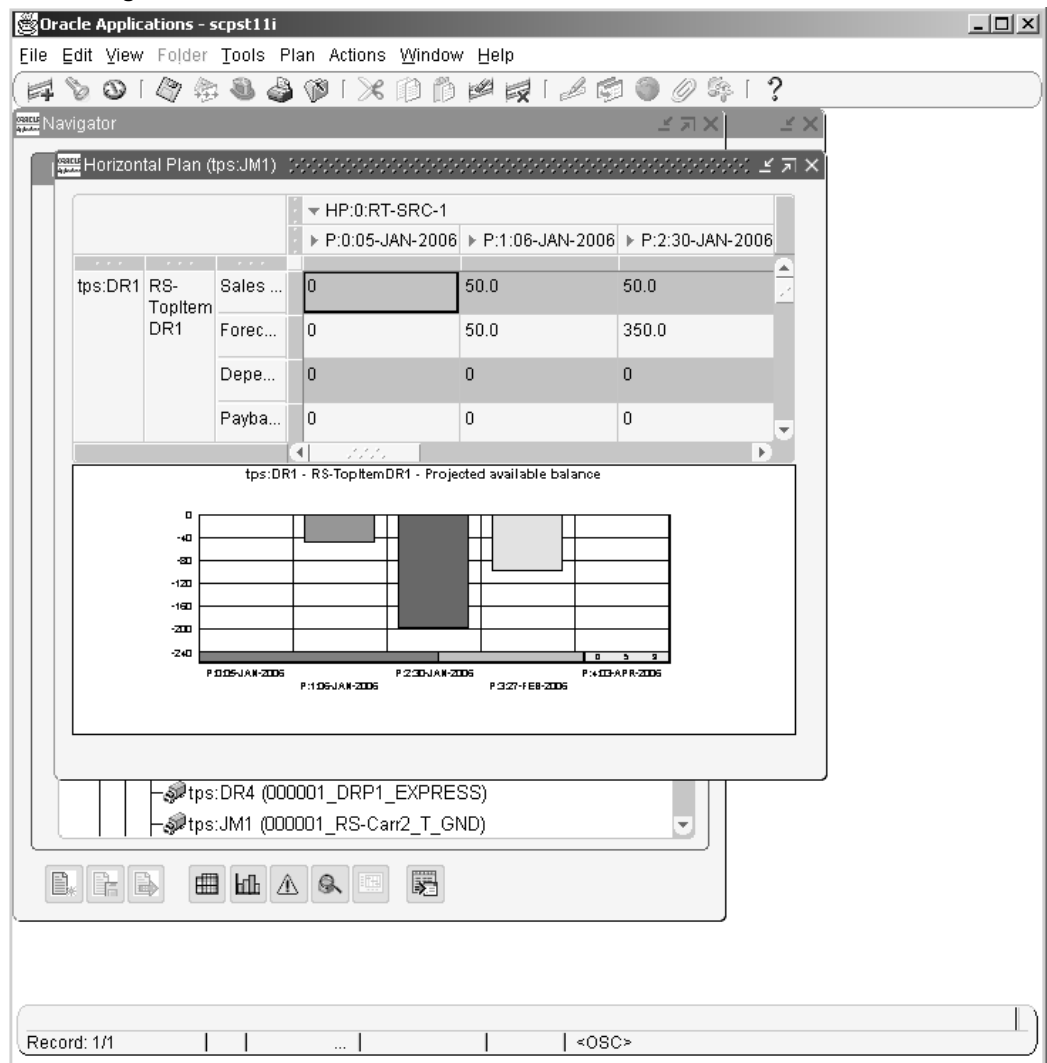
You can tailor the user interface in the following ways:

## 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.



## Maximizing the Context Windows



## Customize Columns

You can add, hide columns, resize, and move columns 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.

### Material Plan Tab

Oracle Applications - scpst11i

File Edit View Folder Tools Plan Actions Window Help

ORACLE

Preferences

Preference Set: **Default** Default Preference ☒ Default

Material Plan Capacity Plan Supplier Plan Transportation Plan Allocated ATP Other

**Display Buckets**

Days:  Display Factor:   
 Weeks:  Decimal Places:   
 Periods:  Show Graph:

☒ Display Product Family Details

Supplies Demands

☒ WIP ☒ Projected Available Balance  
☒ Purchase orders ☒ Current Scheduled Receipts  
☒ Requisitions ☒ Projected On Hand (G)  
☒ In transit  
☒ Payback Supply  
☒ In receiving  
☒ Planned Orders  
☒ Total Supply  
☒ Beginning On Hand

Save Reset

Record: 1/1 ... <OSC>

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.

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.

17. 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.

18. Choose Save to use your preference selections.

19. 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

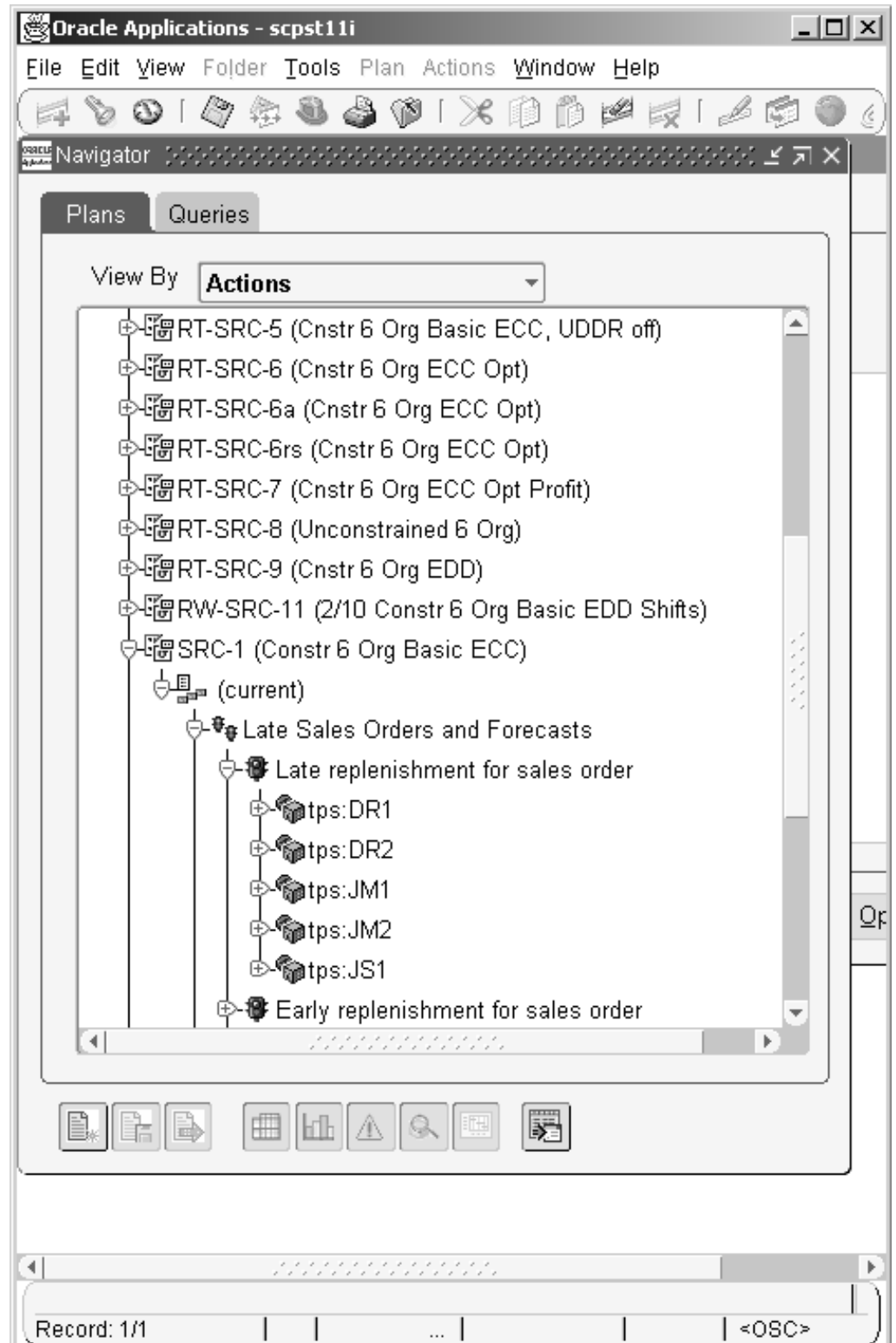
## Exception Summary Window

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.

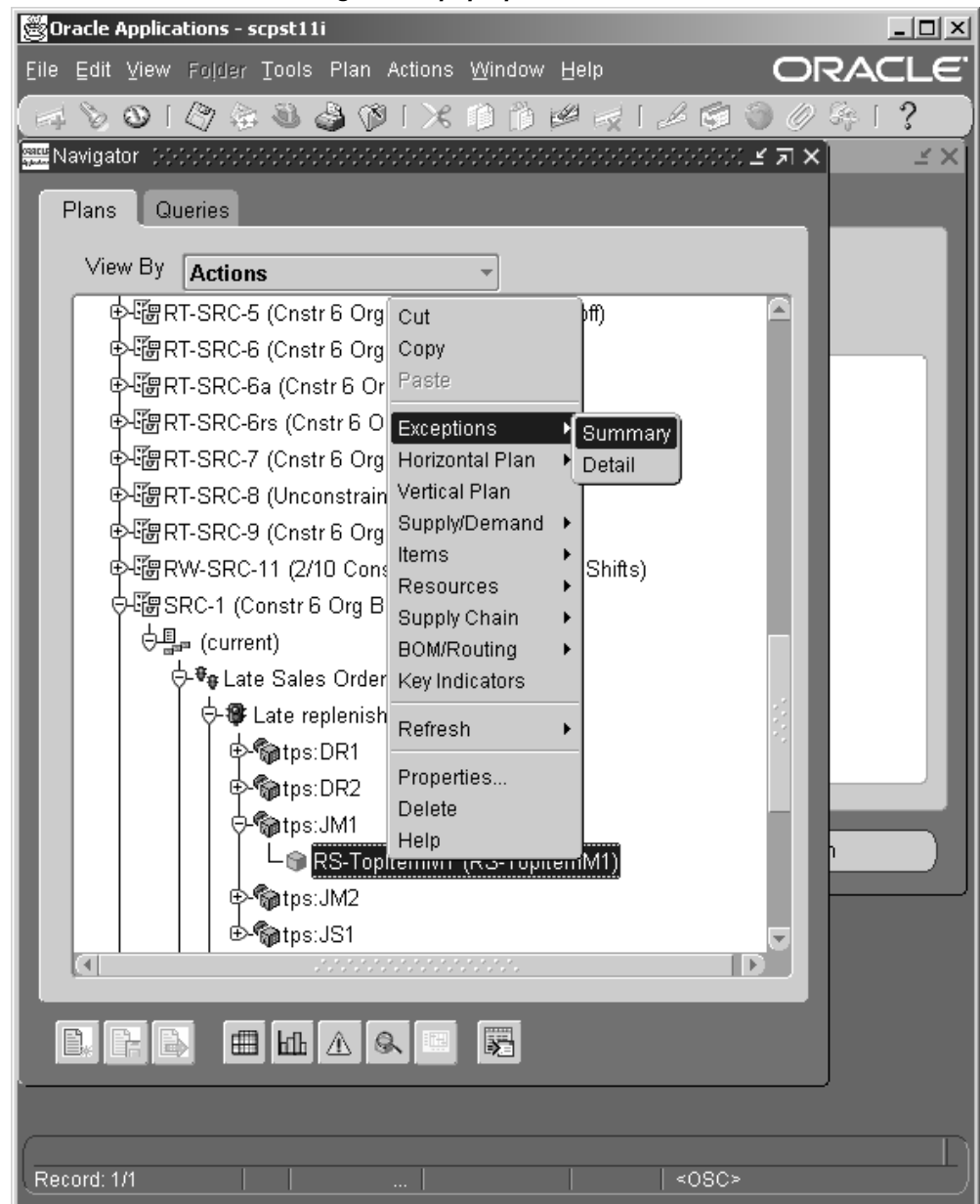
### Planner Workbench: Exceptions



2. Drill-down to the item level and right-click the item.

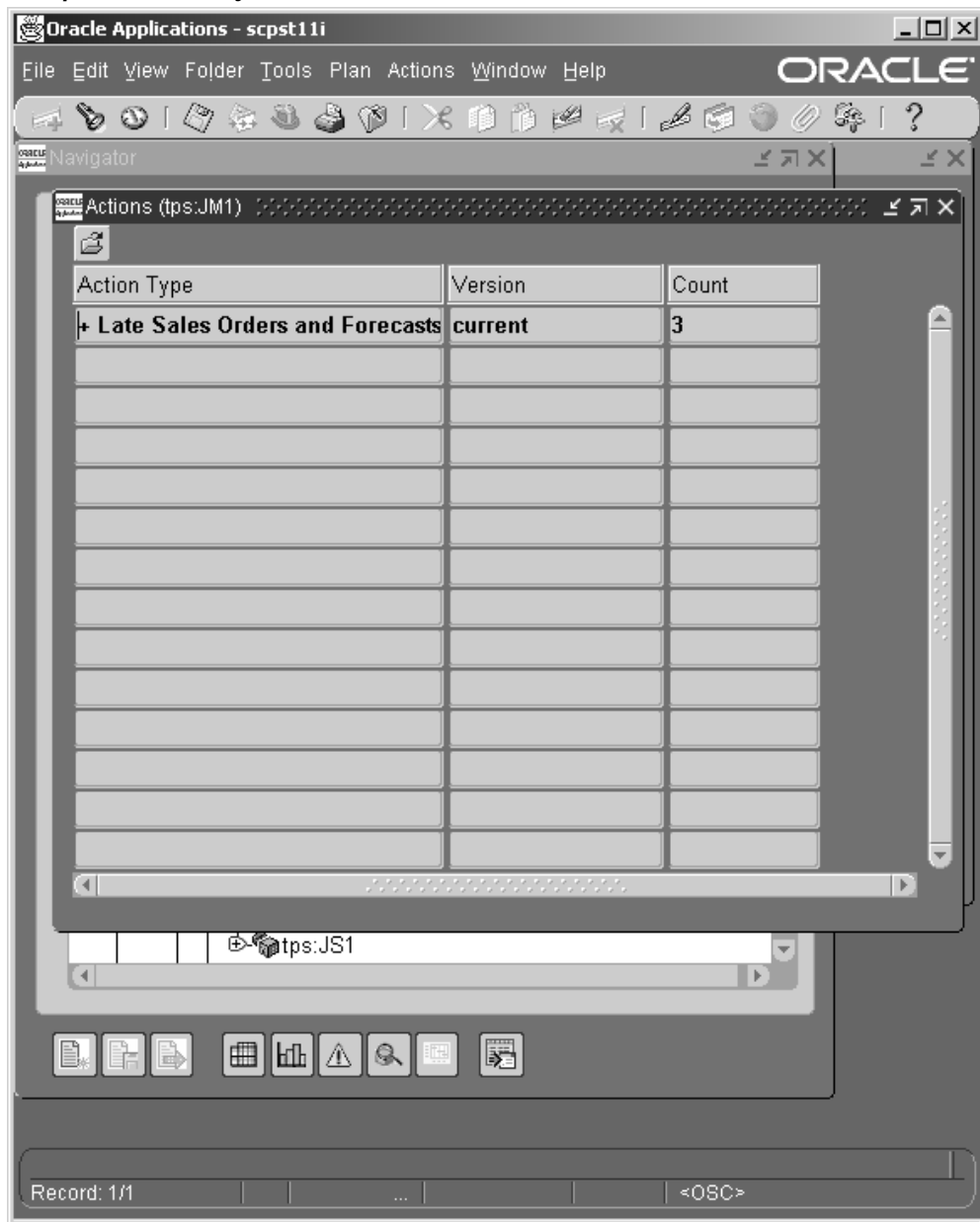


**Planner Workbench: Items Right-click pop-up menu**



3. To view the Exceptions Summary window, click Exceptions > Summary.  
The Exceptions Summary window appears.

### Exceptions Summary window



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**

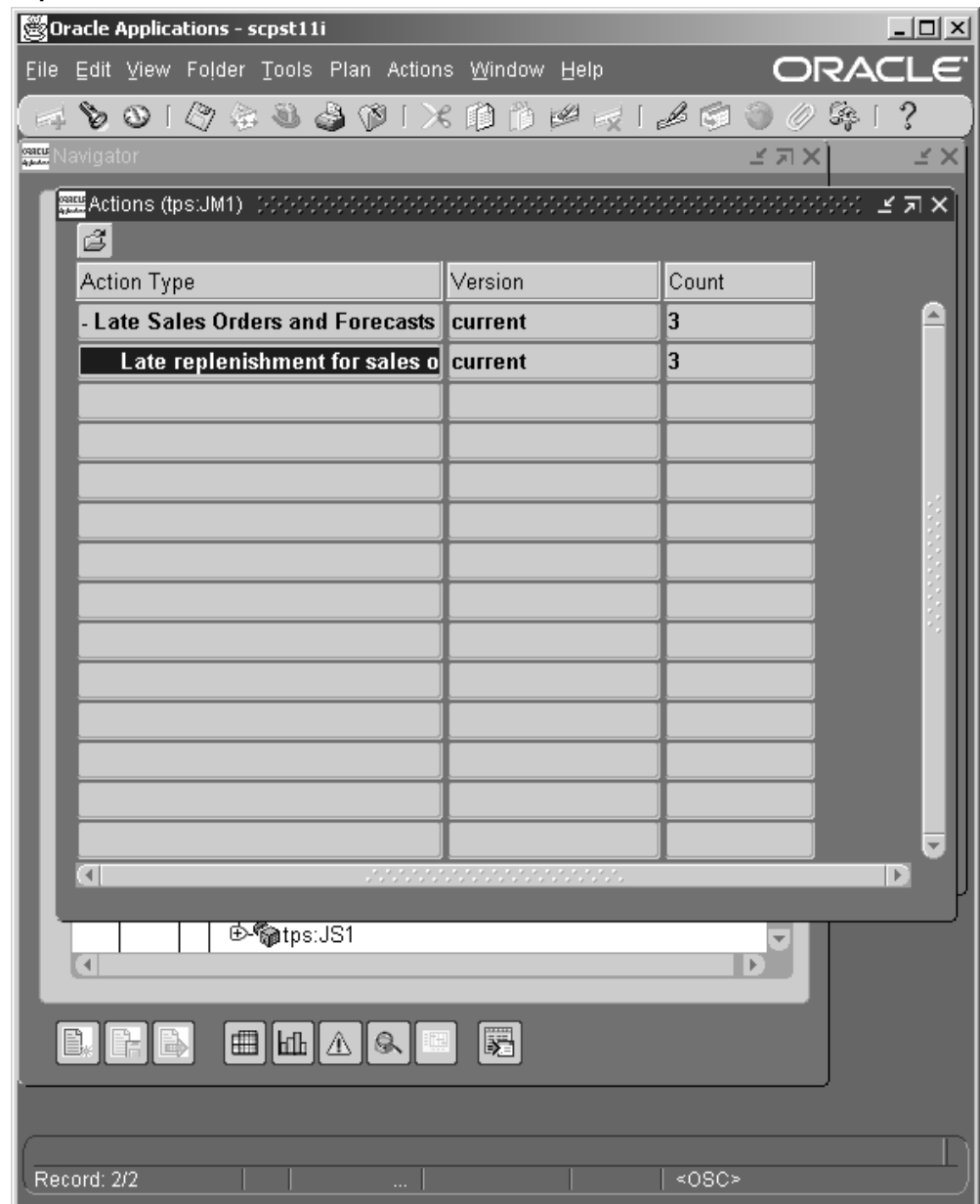
If you want to expand all actions in the Exceptions Summary window, perform the following steps within the Exception Summary window:

1. In the Exceptions Summary window, click in any row that has data.

## The screenshot shows the Oracle Applications interface. At the top, there's a title bar "Oracle Applications - scpst11i". Below it are menu bars: "File Edit View Folder Tools Plan Actions Window Help" and the "ORACLE" logo. A toolbar contains various icons like folders, documents, and editing tools. The main area has a "Navigator" pane on the left and a larger central pane titled "Actions (tps:JM1)". This central pane displays a table with three columns: "Action Type", "Version", and "Count". The first row shows "+ Late Sales Order and Forecasts" under Action Type, "current" under Version, and "3" under Count. A right-click context menu is open over the first row, listing options: Cut, Copy, Paste, Folder (with a submenu arrow), Save Actions, Expand All (highlighted), and Help. At the bottom of the application window, there's another toolbar with icons for reports and analysis, and a status bar at the very bottom indicating "Record: 1/1" and "&lt;OSC&gt;".

- The expanded actions appear.

### Expanded Actions list



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.

**Preferences window: Other tabbed pane**

Preference Set: **Default** | Default Preference | ☒ Default

Material Plan | Capacity Plan | Supplier Plan | Transportation Plan | Allocated ATP | Gantt | **Other**

**Supply/Demand**

- ☐ Release Phantoms
- ☒ Release Configurations
- ☒ Firm Work Orders
- ☒ Include Sales Orders
- ☒ Release VMI Items

Work Order Status: **Unreleased**

Work Order Class:

Req Group By: **All**

**Pegging Defaults**

- ☐ Show Operations and Resources
- ☐ Show Dependant Demands
- ☐ Show Item Description in Pegging

**General**

Category Set: **Inv.Items**

Snapshot Start:

Plan Start:

View Recommendations for (Days from Today):

Default Plan:

Auto Execute Query:

Default Tab: **Plans**

Default View By: **Organizations**

- ☐ Retain find criteria
- ☐ Block Zero Res. Requirements
- ☐ Expand All Actions

**Save**

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 Window

Action	Exception	Demand :	Demand : Item	Demand : Quan	Order Number
<input type="checkbox"/>	Late replenishment for sales order	tps:JM1	RS-TopItemM1	.50	55194.Mixed.0
<input type="checkbox"/>	Late replenishment for sales order	tps:JM1	RS-TopItemM1	.5	55194.Mixed.0
<input type="checkbox"/>	Late replenishment for sales order	tps:JM1	RS-TopItemM1	.5	56896.Mixed.0
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					

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 10-154.



- Resources: For details on the Resources window, see 'Resources Window, page 10-161.
- Items: For details on the Items window, see 'Items Window, page 10-142.
- More Details
- Supply/Demand: For details on the Supply/Demand window, see 'Supply/Demand , page 10-92.

### **Right-click Menu Options**

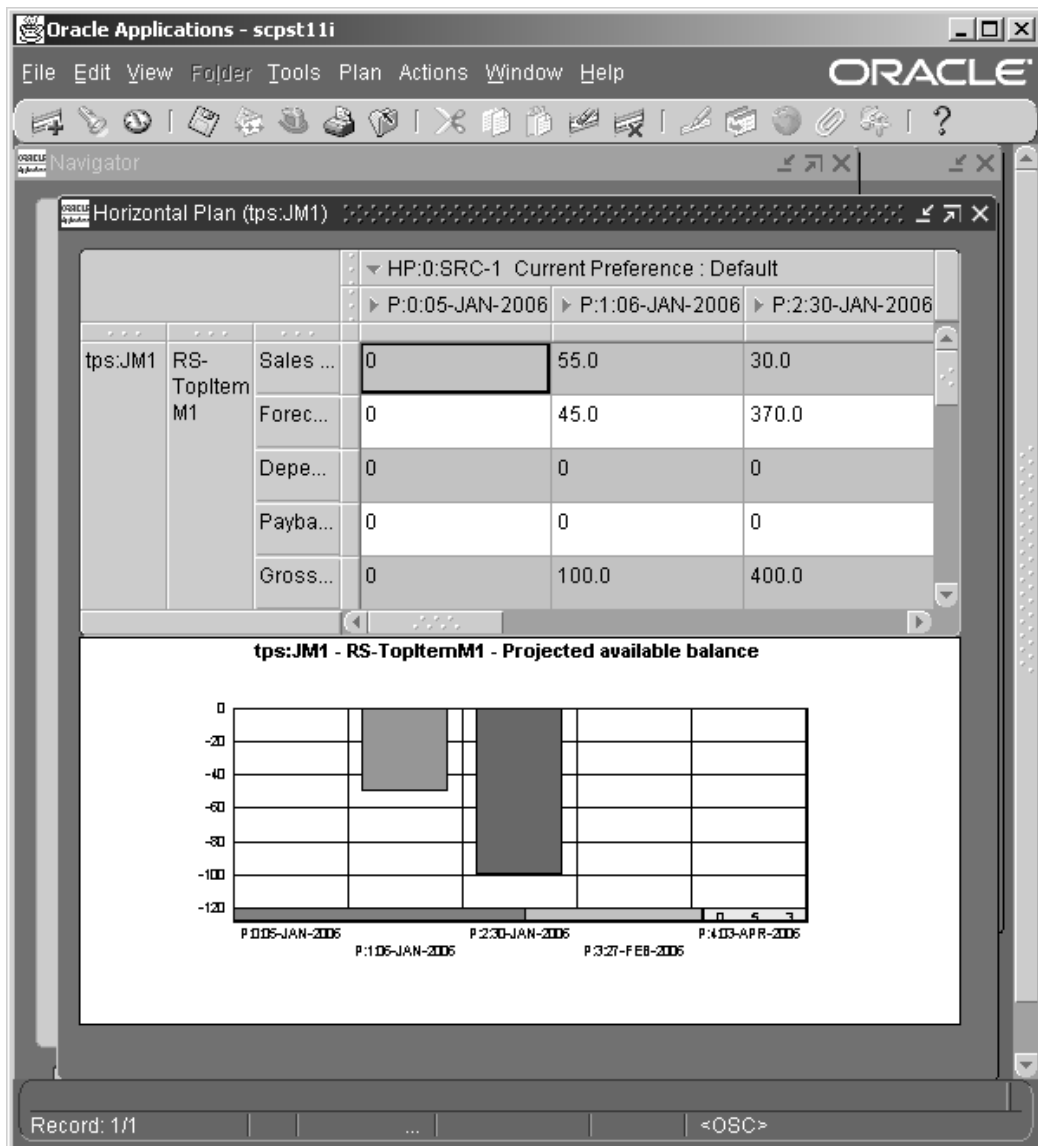
From the Exception Details window, planners can obtain more information through a right mouse click on the exception. The type of right mouse options users have is determined by the exception that is selected. Options included are:

- 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.

### Horizontal Plan window



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

Plan Type	Default Display
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 10-82.

#### 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

The following table provides a description of the fields displayed in the Horizontal Plan window (for items):

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.
Payback demand	Demand resulting from a borrow or a payback transaction in Oracle Project Manufacturing.
Other independent demand	<p>This includes the following:</p> <ul style="list-style-type: none"><li>- Hard reservation (against sales order in Oracle Order Management)</li><li>- Copied Schedule Demand</li><li>- Demand Class Consumption (used by allocated ATP)</li><li>- Expired Lots</li><li>- Non-standard Demand</li></ul>

Field	Description
Gross requirements	<p>The planning engine calculates the total demand in the following way:</p> <p>Sales Orders + Forecasts + Production Forecast + Dependent Demand + Expected Scrap + Payback Demand + Independent Demand</p> <p>The total demand from sales orders, forecasts, dependent demands, payback demand, scrap demands, expired lots, and other demands.</p>
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.
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.

Field	Description
Projected available balance	The planning engine calculates this as:  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:  On hand + Beginning Total Supply - Total Demand  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.
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.

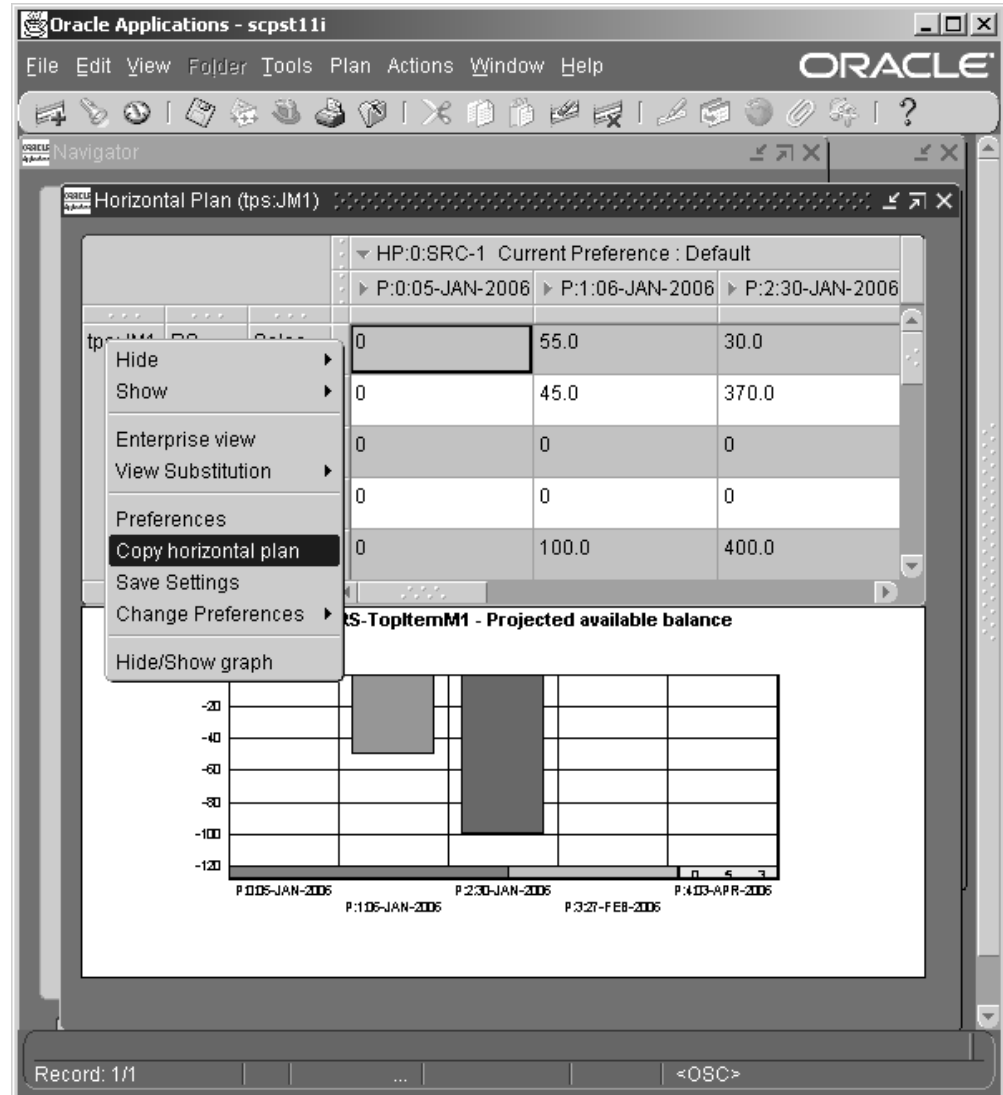
### Exporting the Horizontal Plan

#### 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.

### Horizontal Plan: Copy Horizontal Plan



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.

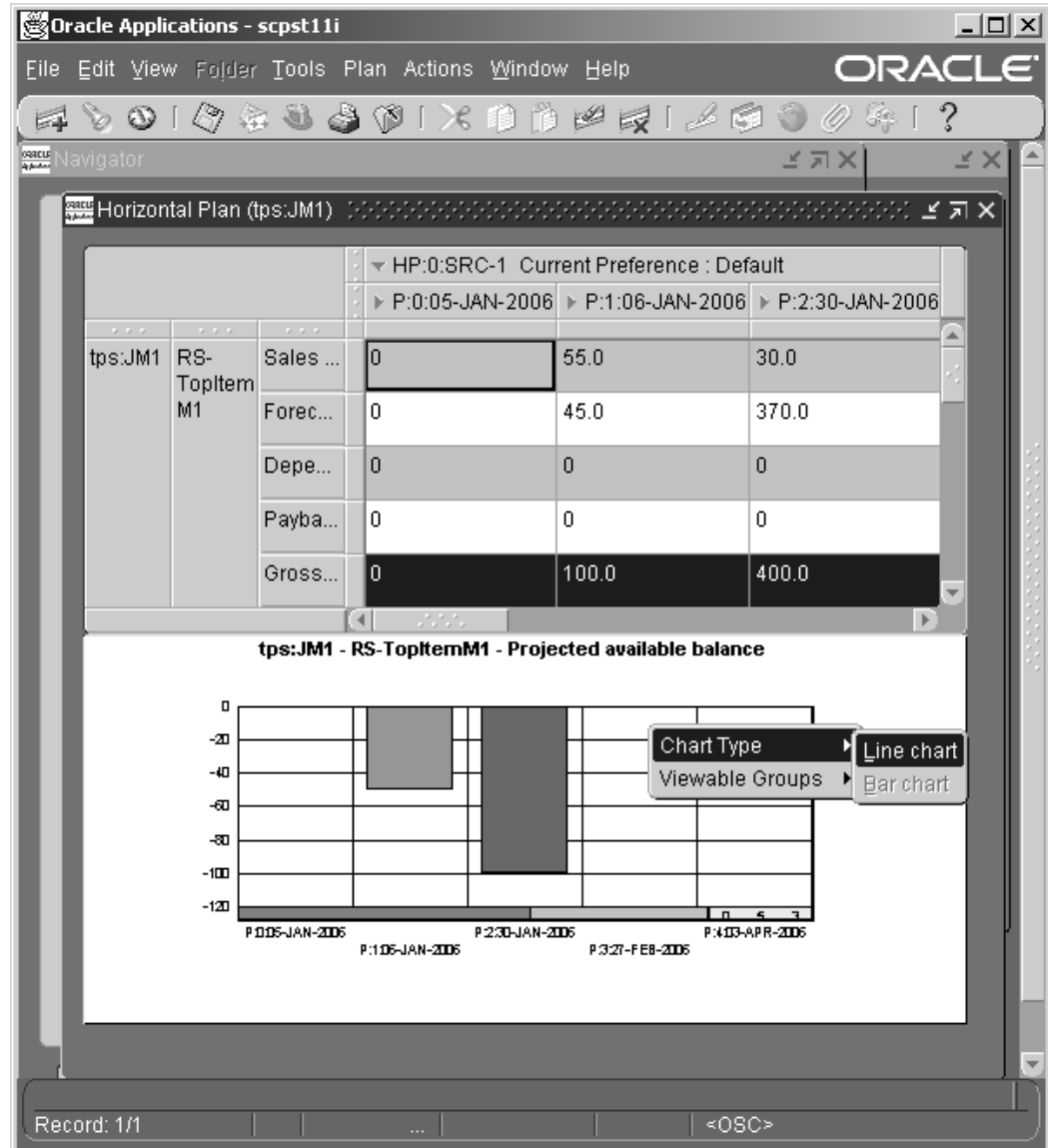
2. Select the plan parameters you want to graph.  
To graph two or more parameters together, hold the shift key as you select additional parameters. For example, you can graph either planned orders, gross requirements, or both. You can also choose to graph multiple items.
3. [Right-click] to show and 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.



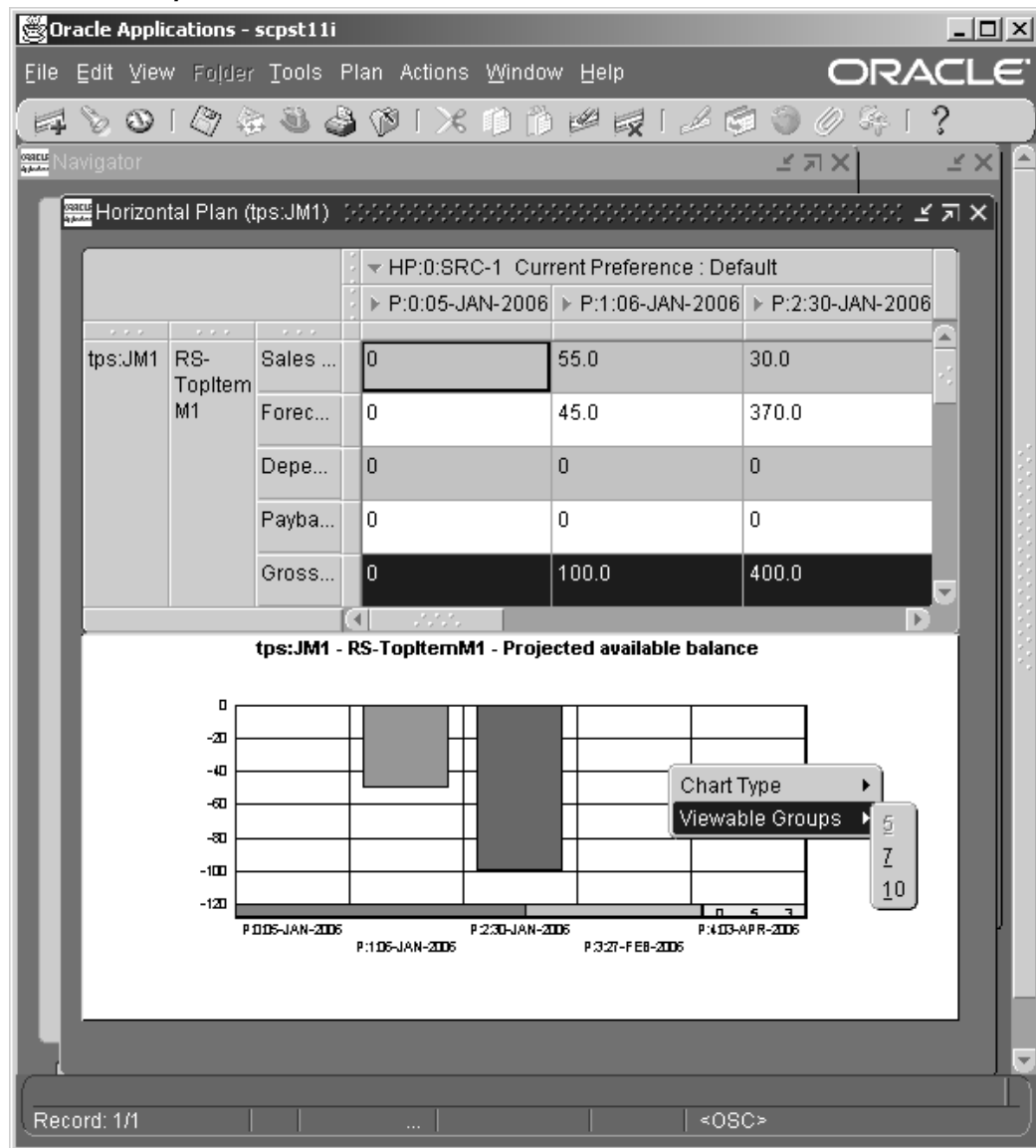
### Dynamically Choose Types of Graphs



### 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.

## Viewable Groups



## 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:

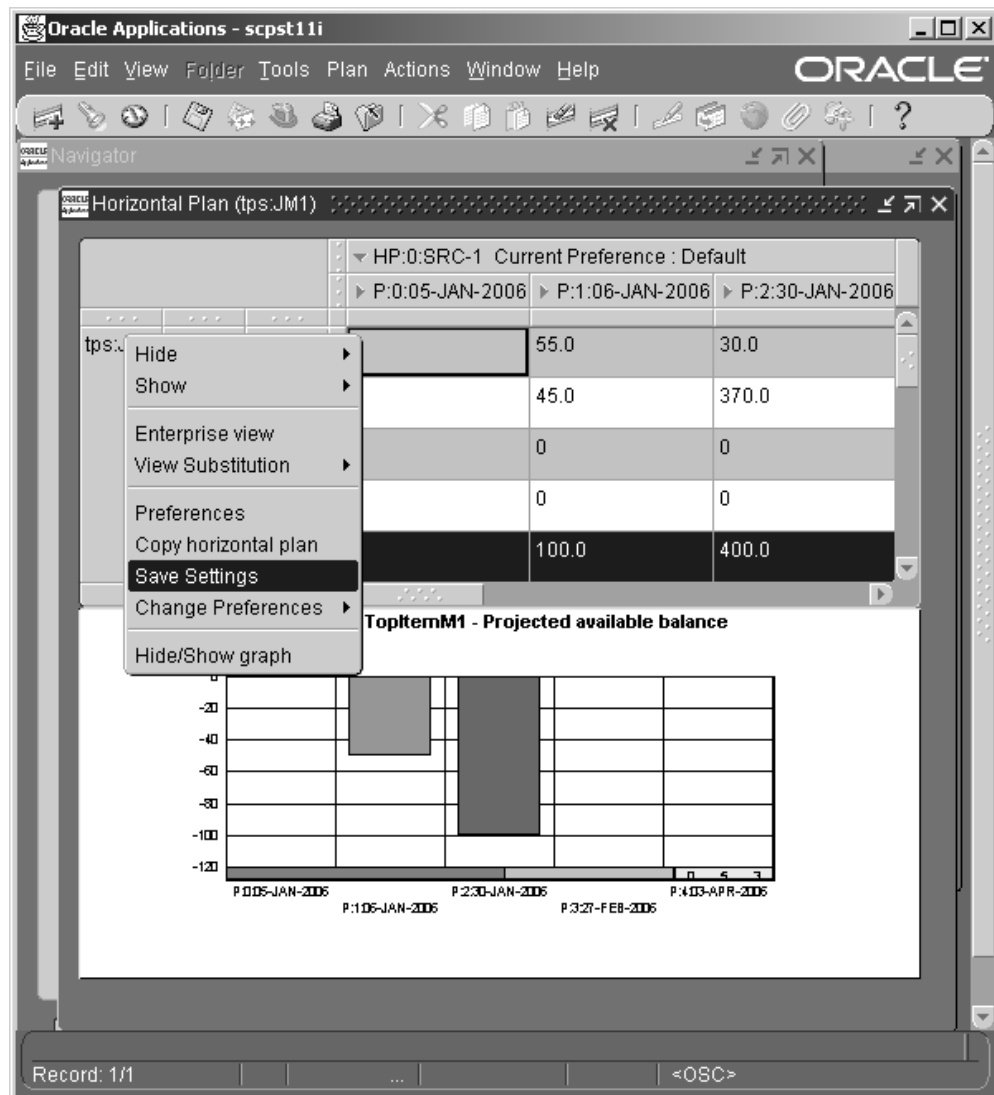
Setting	Description
Hide or Show options for a row	You can specify the options that should be hidden or shown for a row. These settings are updated in the Preferences window.
Hide/Show graph	You can specify whether or not you want the graph to be shown. These settings are updated in the Preferences window.
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.

## Save Preferences



### 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 10-56.

### 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.

#### General Preferences

**General Preferences** ? ORACLE Applications

**General Preferences**  
Modify your preferences and then click on the Apply button

Known As

Language

Timezone

Client Character Encoding

Date Format

Number Format

Territory

Send me electronic mail notifications

Document Home Node

Old Password

Password

Repeat Password

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 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.



### Supply/Demand window: Right-click Menu Options for Forecast



If you want to view consumption details, you can select [right-click] > Consumption Details option.

### Consumption Details window

Oracle Applications - scpst11i

File Edit View Folder Tools Plan Actions Window Help

Navigator

Consumption Details

Forecast Set  Forecast  Item

DP Scenario  Original Qty

Sales Order	Sales Order Sched Date	Consumed Qty	Consumption Date	Promise Date	Request Date
55194.Mixed.ORDER EN	19-JAN-2006	50	09-JAN-2006	06-JAN-2006	20-JAN-2006
55194.Mixed.ORDER EN	20-JAN-2006	5	09-JAN-2006	06-JAN-2006	20-JAN-2006

Demand Class  Zone  Customer

Ship Address  Bill Address

Record: 1/2 | | ... | | <OSC>

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 , page 6-110.
Request Date	For more information, see 'Lead Time and the Planning , page 6-110.

Field	Description
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:

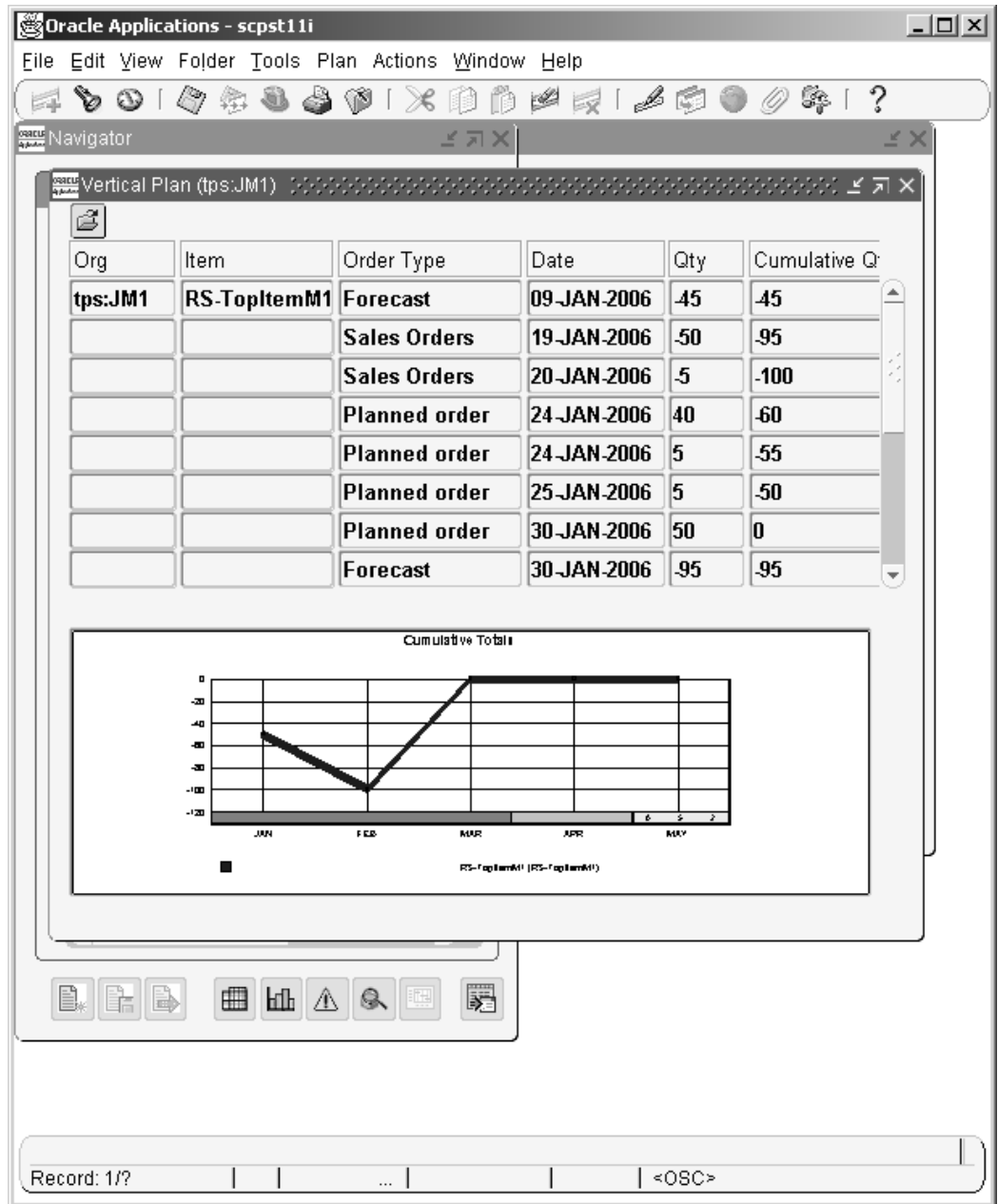
- The planning engine could not schedule all supplies on time because of resource, material, and transportation constraints
- The reasons in Other Safety Stock Planning Principles in Safety Stock, page 6-167.

Horizontal Plan (TST.M1)			HP:0:DG-aps-mps Current Preference : Default					
			P:0:13-FEB-2006	P:1:14-FEB-2006	P:2:20-MAR-20...	P:3:17-APR-20...	P:4:15-MAY-2006	P:5:19-JUN-20...
TST.M1	JC-MPS Item	Sales orders	0	0	0	0	0	0
		Forecast	0	30000.0	30000.0	0	0	0
		Gross requirements	0	30300.0	30000.0	0	0	0
		WIP+	0	0	0	0	0	0
		Purchase orders	0	0	0	0	0	0
		Requisitions	0	0	0	0	0	0
		In Transit	0	0	0	0	0	0
		In Receiving	0	0	0	0	0	0
		Planned orders	0	32300.0	30000.0	0	0	0
		Total supply	0	32300.0	30000.0	0	0	0
		Beginning on hand	0	0	0	0	0	0
		Projected available balance	0.0	2000.0	2000.0	2000.0	2000.0	2000.0
		Safety stock	0.0	2000.0	2000.0	2000.0	2000.0	2000.0

## 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).

## Vertical Plan



## 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

Oracle Applications - scpst11i

File Edit View Folder Tools Plan Actions Window Help

Supply/Demand (tps:JM1)

Plan **SRC-1** Constr 6 Org Basic ECC Type **Manufacturing**

Order Release Properties Sourcing Line Project

Org	Item	For Release	Firm	Order Type	Sugg Due Date
tps:JM1	RS-TopItemM1	<input type="checkbox"/>	<input type="checkbox"/>	Forecast	09-JAN-2006 00:00:00
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		

Pegging for RS-TopItemM1/tps:JM1 Qty 45 on 09-JAN-2006 00:00:00 (Forecast RS-SRC1/RS-SRC-FC1)

- RS-TopItemM1/tps:JM1 Qty 40 Pegged Qty 40 on 24-JAN-2006 20:00:00 (Planned order)
  - 10 (Operation)
    - RS-JM1-D1/RS-JM1-R1 (Department/Resource)
      - RS-EndAssy-JL1/tps:JM1 Qty 40 Pegged Qty 40 on 24-JAN-2006 00:00:00 (Planned order demand)
        - RS-TopItemM1/tps:JM1 Qty 5 Pegged Qty 5 on 24-JAN-2006 22:00:00 (Planned order)

Record: 1/1 | | | | | <OSC>

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 10-111.

### 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.



<b>Fields</b>	<b>Description</b>
Sugg Due Date	The planning engine populates this for demands and supplies. For more information, see 'Lead Time and the Planning Time Fence, page 6-110.
Qty/Rate	Supply, demand quantity, or rate.
Order Number	Identifies the supply or the demand record. For purchase orders, displays purchase order number, line number, release number, shipment number.
Action	This refers to the action recommended by the planning engine. The possible values are: <ul style="list-style-type: none"> <li>- None</li> <li>- Release</li> <li>- Cancel</li> </ul>
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

<b>Fields</b>	<b>Description</b>
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
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 9-1.
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

<b>Fields</b>	<b>Description</b>
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, see 'Lead Time and the Planning Time Fence, page 6-110.
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.

<b>Fields</b>	<b>Description</b>
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.
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

<b>Fields</b>	<b>Description</b>
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)
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

<b>Fields</b>	<b>Description</b>
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.
MRP Planning Method	Planning method defined for the item
Material Available Date	For more information, see 'Lead Time and the Planning Time Fence, page 6-110.
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, see 'Lead Time and the Planning Time Fence, page 6-110.
Old Dock Date	For more information, see 'Lead Time and the Planning Time Fence, page 6-110.

<b>Fields</b>	<b>Description</b>
Old Due Date	For more information, see 'Lead Time and the Planning Time Fence, page 6-110.
Order Date Type	For more information, see 'Lead Time and the Planning Time Fence, page 6-110.
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 6-110.
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 6-110.
Planner	Planner code

<b>Fields</b>	<b>Description</b>
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 16-1.
Promise Arrival Date	The date when you promise that the customer can receive the products.
Promised Ship Date	<p>The date when you promise to ship the products to the customer.</p> <p>For more information, see 'Lead Time and the Planning Time Fence, page 6-110.</p>
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



<b>Fields</b>	<b>Description</b>
Requested Arrival Date	<p>The date when the customer wants to receive the products.</p> <p>For more information, see 'Lead Time and the Planning Time Fence, page 6-110.</p>
Requested Ship Date	<p>The date when the customer wants the products to be shipped.</p> <p>For more information, see 'Lead Time and the Planning Time Fence, page 6-110.</p>
Reschedule Days	<p>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.</p>
Rescheduled	<p>This flag indicates that the order is rescheduled.</p>
Schedule Designator	<p>This is the supply schedule name for those supplies that you feed to a plan by using a supply schedule.</p>
Schedule Group	<p>This refers to work in process schedule group.</p>
Schedule Arrival Date	<p>The date on which the customer can receive the product.</p> <p>For more information, see 'Lead Time and the Planning Time Fence, page 6-110.</p>
Schedule Ship Date	<p>The date when the product needs to be shipped to the customer.</p> <p>For more information, see 'Lead Time and the Planning Time Fence, page 6-110.</p>
Service Level	<p>Not used in Oracle Advanced Supply Chain Planning.</p>
Shared Supply	<p>A flag to indicate that this supply is shared among multiple demands.</p>

<b>Fields</b>	<b>Description</b>
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.
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 6-110.

Fields	Description
Suggested Due Date	<p>The timestamp for the suggested due date in case of:</p> <ul style="list-style-type: none"> <li>• Past demand lines is 23:59:00 on a day before the plan date</li> <li>• On hand supply due date is 00:00:00 on the plan date</li> </ul>
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 6-110.
Sugg Ship Date	For more information, see 'Lead Time and the Planning Time Fence, page 6-110.
Sugg Start Date	For more information, see 'Lead Time and the Planning Time Fence, page 6-110.
Source Supplier	The supplier company name.
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.

Fields	Description
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 6-110.
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.
WIP Status	Status of the work in process. Some of the values are: <ul style="list-style-type: none"> <li>- Onhold</li> <li>- Released</li> <li>- Unreleased</li> </ul>
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:

<b>Fields</b>	<b>Description</b>
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)
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)

<b>Fields</b>	<b>Description</b>
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)
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 6-110.

### Sourcing Tabbed Pane

The following table provides a description of the fields displayed in the Source tabbed pane:

<b>Fields</b>	<b>Description</b>
Source Org	Name of the source organization
Source Supplier	Name of the supplier
Source Supplier Site	Name of the supplier's site

<b>Fields</b>	<b>Description</b>
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 6-110.

#### Line Tabbed Pane

The following table provides a description of the fields displayed in the Line tabbed pane:

<b>Fields</b>	<b>Description</b>
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.

<b>Fields</b>	<b>Description</b>
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 6-110.
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:

<b>Fields</b>	<b>Description</b>
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 6-110.
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.

## 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. 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

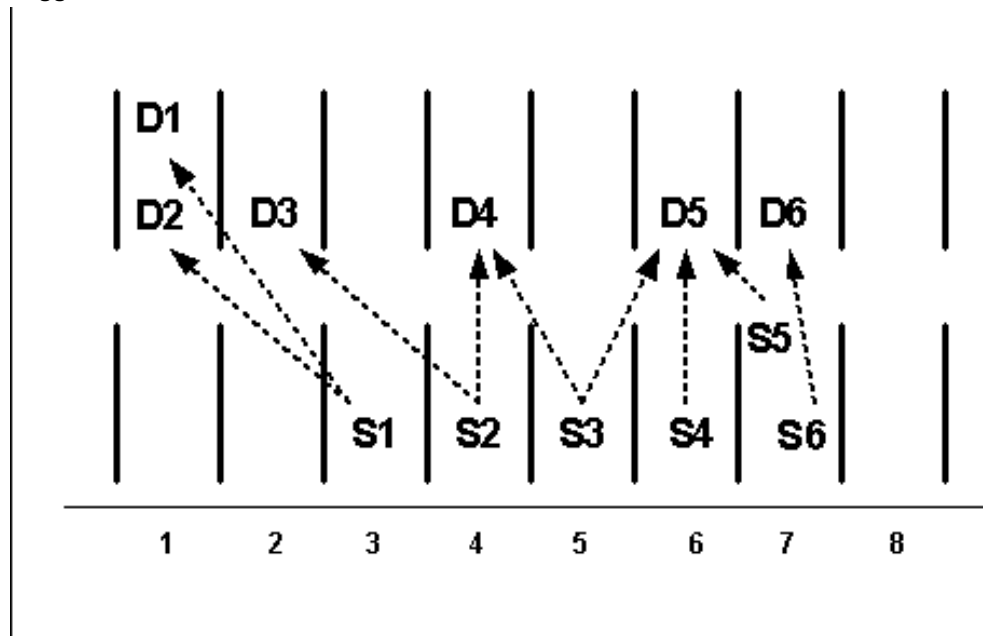
The planning engine begins from the first demand window and pegs demands by demand priority to supplies of the first supply window. If necessary, it continues the pegging process with the next supply window.

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

Entity	1	2	3	4
Sales order 1				100 (1)
Sales order 2			100 (2)	
On-hand	25			
Planned order (firm)	10	5 [10]	[25]	
Planned order (non-firm)	50	35	75	

### 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

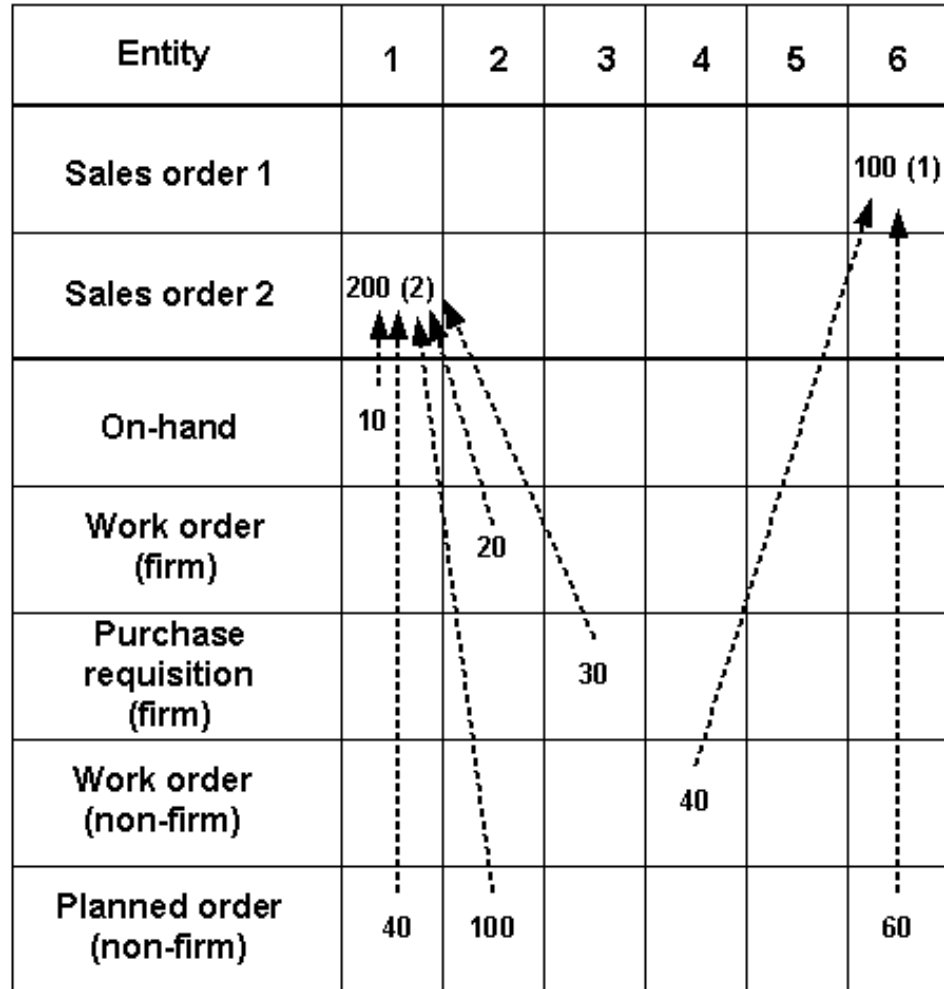
Supply in the third supply window [day 3] is pegged as firm purchase requisition of quantity 30 on day 3 and demand of quantity 200 on day 1

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.

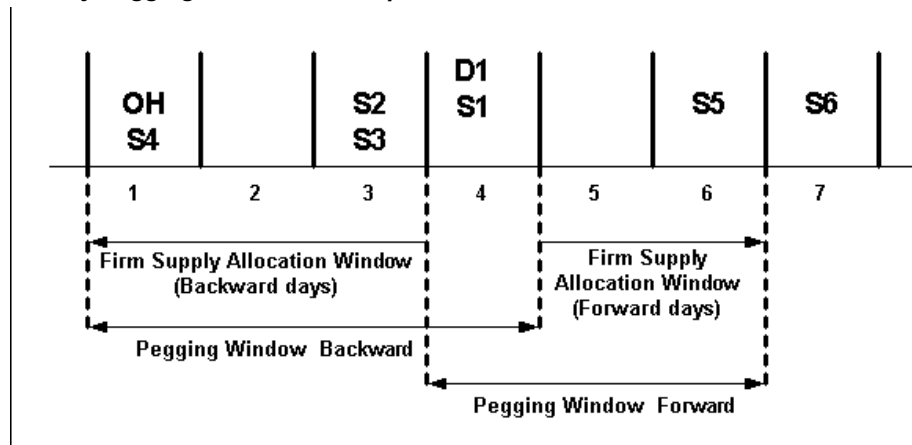
If it cannot find enough firm supply quantity to satisfy the entire demand quantity, it scans forwards the number of days in the site or item-specific firm supply allocation window (profile option MSO: Firm Supply Allocation Window (Forward days)) to find supplies to peg the demand to.

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:

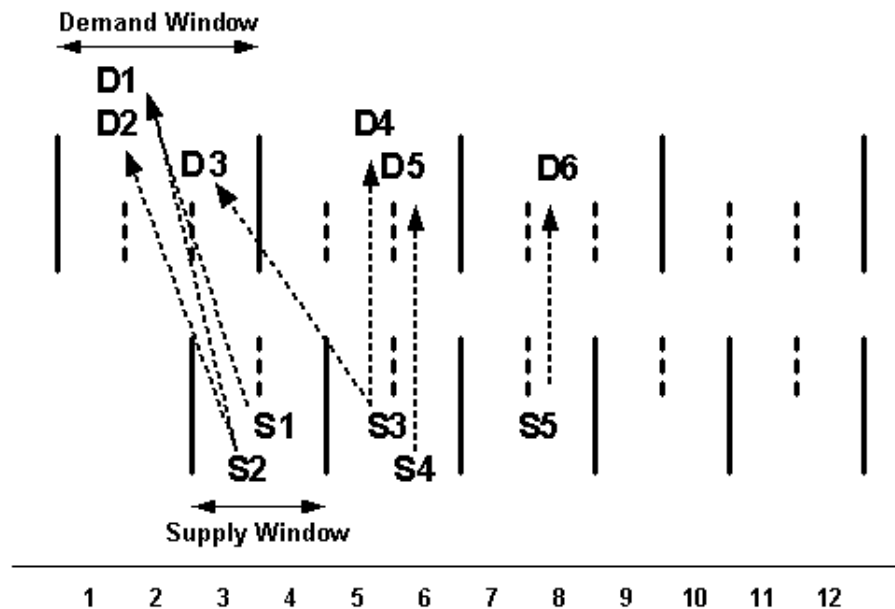
- MSO: Demand Window Size = 3

- 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:**

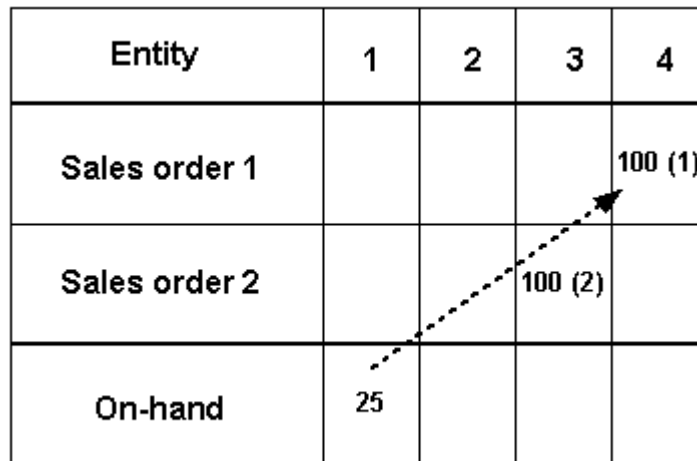
**First Pass**

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***

Entity	1	2	3	4
Sales order 1				100 (1)
Sales order 2			100 (2)	
On-hand	25			



The diagram illustrates the pegging process for item A101 during the first pass. It features a table with four columns representing days (1, 2, 3, 4) and three rows representing entities: Sales order 1, Sales order 2, and On-hand. Sales order 1 has a demand of 100 on day 4 with a priority of (1). Sales order 2 has a demand of 100 on day 3 with a priority of (2). On-hand has a supply of 25 on day 1. A dashed arrow points from the On-hand supply on day 1 to the Sales order 2 demand on day 3. Another dashed arrow points from the Sales order 2 demand on day 3 to the Sales order 1 demand on day 4.

**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***

Entity	1	2	3	4
<b>Sales order 1</b> (100 - 25)				75 (1)
<b>Sales order 2</b> (100 - 0)			100 (2)	
<b>Planned order (firm)</b>	10 [25]	5 [25]		
<b>Planned order (non-firm)</b>	50	35	75	

**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.



### ***Pegging Entities***

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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**

Entity	1	2	3	4	5	6
Sales order 1 (100 - 40)						60 (1)
Sales order 2 (200 - 30)	170 (2)					
Work order (firm)			30			
Planned order (non-firm)	40	100				60

**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***

Entity	1	3	7	10	20	30
Demand		300	300	500	100	300
Supply	500		100	400	200	300

### **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.

Entity	1	2	3	4	5	6
Sales order 1	100 (1)					
Sales order 2						100 (1)
Sales order 3	100 (2)					
Sales order 4						50 (2)
On-hand	10					
Work order (firm)	5	15	30	40		

### 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

Entity	1	2	3	4	5	6
Sales order 1	70 (1)					
Sales order 2					[40+20]	60 (1)
Sales order 3	100 (2)	[20+50+30]				
Sales order 4						50 (2)
Work order (firm)			30			[50]
Purchase requisition (non-firm)		20		40		[20]
Planned order (non-firm)	70	50				70

### 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

Entity	1	2	3	4	5	6
Sales order 1	70 (1)	$[20+50]$				
Sales order 2					$[40+20]$	60 (1)
Sales order 3	$[70+50]$					
Sales order 4						50 (2)
Work order (firm)			30			$[50]$
Purchase requisition (non-firm)		20		40	$[20]$	
Planned order (non-firm)	70	50				70

### 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-11

## Safety Stock Pegging

To set up safety stock planning and to understand the safety stock planning process, see *Safety Stock*, page 6-167.

### 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.
- 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 6-167.

To view the results of safety stock pegging, use the *Supply/Demand Window*, page 10-92.

### 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:

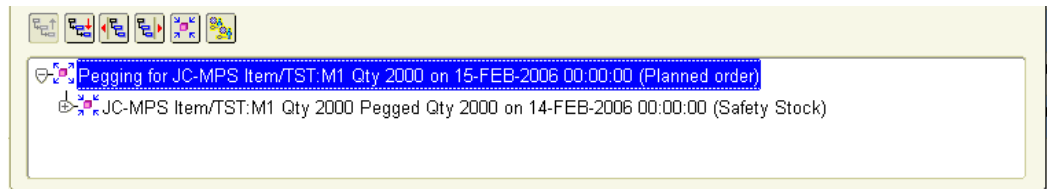
- Profile option MSO: Demand Window Size is 1
- Profile option MSO: Supply Window Size is 1
- Demand dates are unconstrained demand dates. Unconstrained demand dates are demand dates calculated before scheduling. Scheduling of supplies occurs after pegging.

### 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 peg s 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 5 10				15	90 10				65		77	[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.

**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

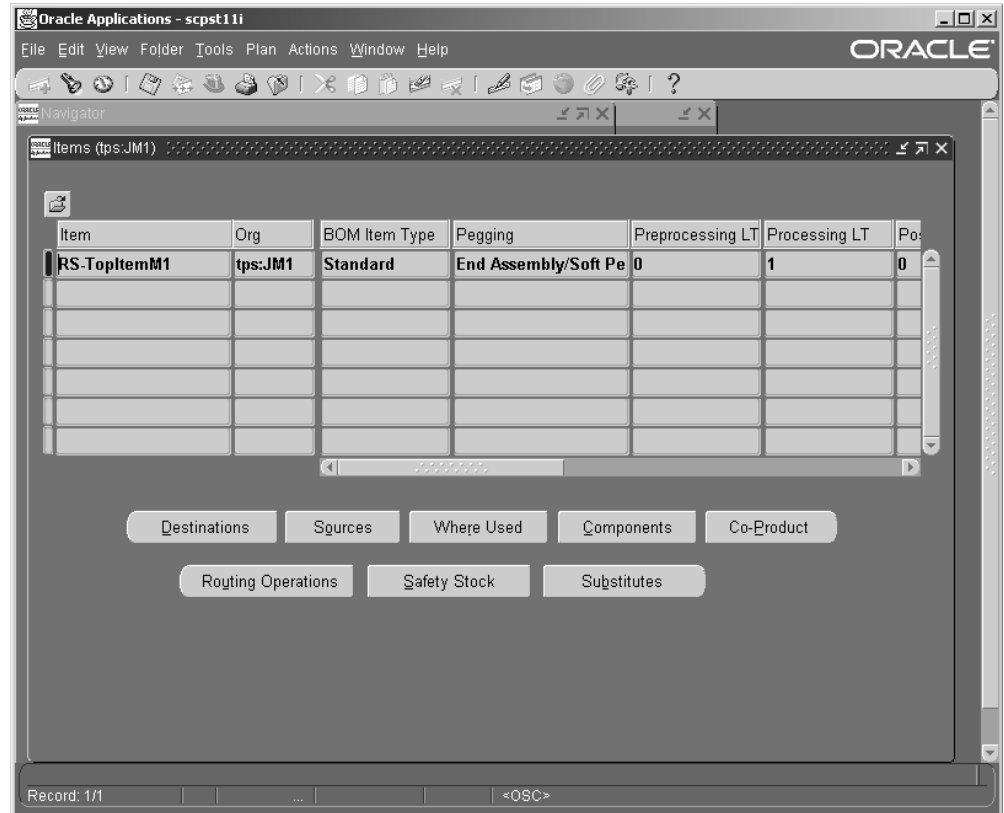
You can navigate to the Items window from various node types such as items and plans in the Navigator. In addition to the Navigator, you can also drill down to the Items window from other windows such as Vertical Plan.

#### To display the Items window

1. Select one or more nodes (using Ctrl- click) in the Navigator.
2. Select [right-click] > Items > Items.



### Items window



### 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.

<b>Fields</b>	<b>Description</b>
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

<b>Fields</b>	<b>Description</b>
Critical Component	<p>MPS/MRP planning item attribute</p> <p>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:</p> <ul style="list-style-type: none"> <li>- Null</li> <li>- Item attribute</li> <li>- Inferred</li> </ul> <p>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.</p>
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

<b>Fields</b>	<b>Description</b>
Inventory Use Up Date	The planning engine calculates this based on the engineering change order for the item.
Make/Buy	General planning item attribute
Margin	<p>The planning engine uses the following formula to calculate this:</p> $(1 - \text{Standard Cost} / \text{Net Selling Price}) * 100$
Net Selling Price	<p>The planning engine uses the following formula to calculate this:</p> $\text{Selling Price} * (1 - \text{Discount})$
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	<p>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.</p> <p>If plan option Planning Time Fence is clear and the item has no firm discrete jobs, this field is blank.</p> <p>For more information, see 'Lead Time and the Planning Time Fence, page 6-110 .</p>
Planning Time Fence Days	MPS/MRP planning item attribute
Product Family Item	Product family item name (applicable to member items only)

<b>Fields</b>	<b>Description</b>
Product Family Item Desc	Product family item description (applicable to member items only)
Repetitive	MPS/MRP planning item attribute
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:

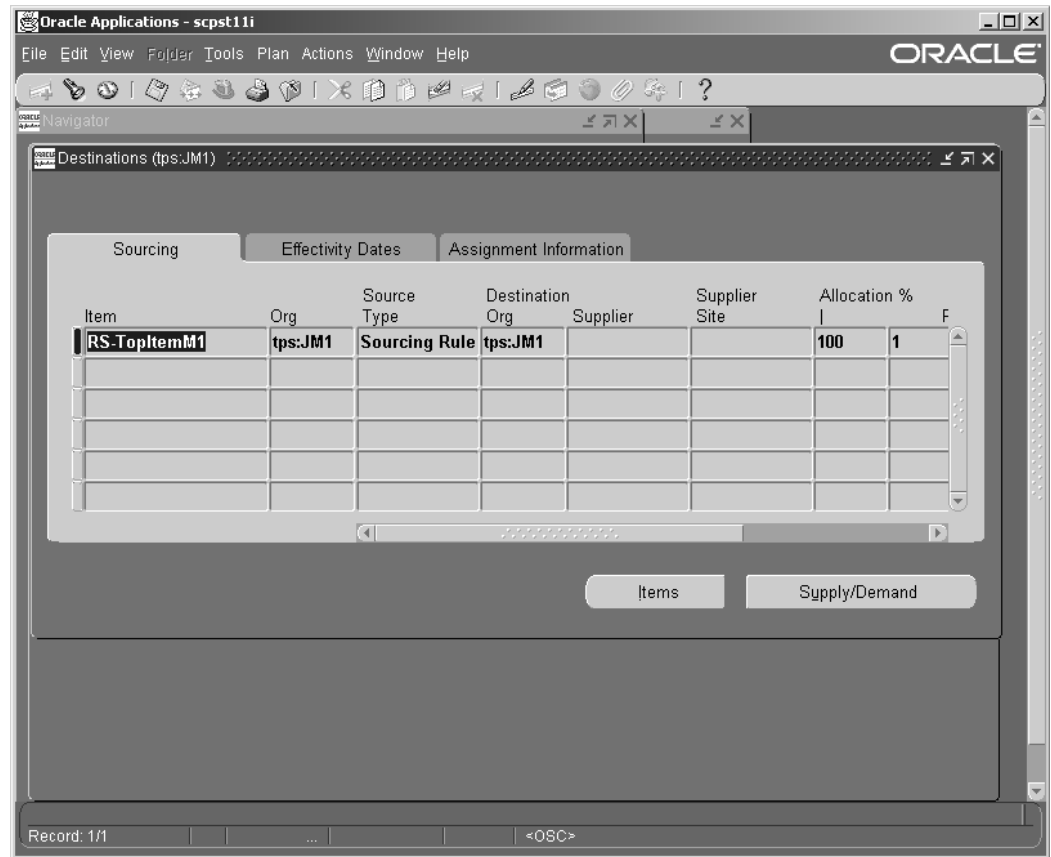
- Supply/Demand
- Supply
- Supplier Information
- Process Effectivity
- Exception Details
- Gantt Chart
- Horizontal Plan
- Vertical Plan

### **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.

### Destinations window



### 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)

Field	Description
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

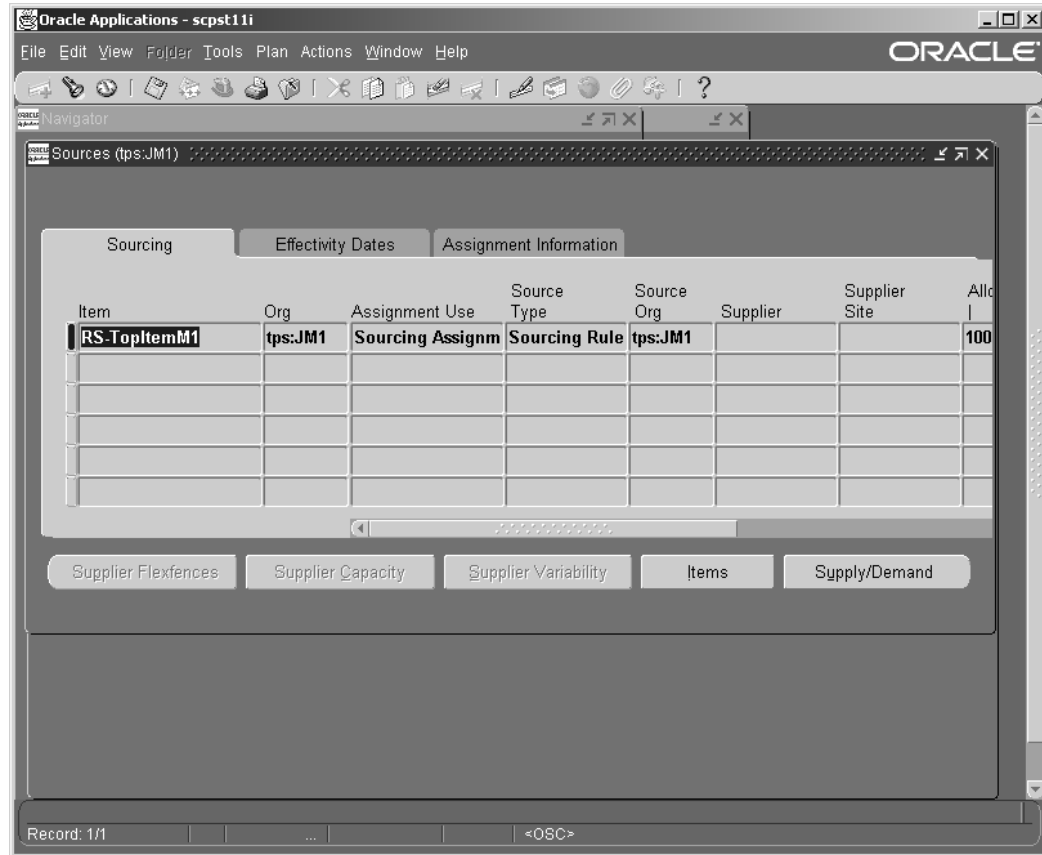
## Sources Window

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.

### Sources window



### 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	<p>The planning engine calculates the allocated quantity in the following manner</p> <p>For each rank, the planning engine aggregates all historical allocations for the sources in that rank to calculate the total historical allocation.</p> <p>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.</p> <p>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.</p> <p>The quantity that is to be allocated to the source = ((allocation percent /100) * (total historical allocation + rank quantity)) - quantity allocated from this source.</p> <p>If the calculated quantity exceed the quantity required for this rank, the planning engine sets this value to the ceiling.</p>

#### 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 10-148.

### **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 10-148.

### **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.

### Supplier Capacity Window

Supplier	Item	Buyer	Planner	Standard Cost
RTJL1	MISC		J. Smith	200

From	To	Capacity

Record: 1/1    <OSC>

### Information Displayed in the Supplier Capacity Window

The Supplier Capacity window displays the following information:

<b>Fields</b>	<b>Description</b>
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 6-1 .
Category	Planning item category
Buyer	Purchasing item category
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 planning 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 6-1.

### 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

### Supplier Flexfences tabbed pane

Supplier	Item	Buyer	Planner	Standard Cost
RTJL1	MISC		J. Smith	200

Days	Tolerance (%)

For more information on setting supplier flexfences, see 'Supply Chain Modeling, page 6-1.

## 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 10-71

To see more detailed results of safety stock planning, see Supply/Demand Window, page 10-92, and Pegging, page 10-111.

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.
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.

### Right-click Menu Options

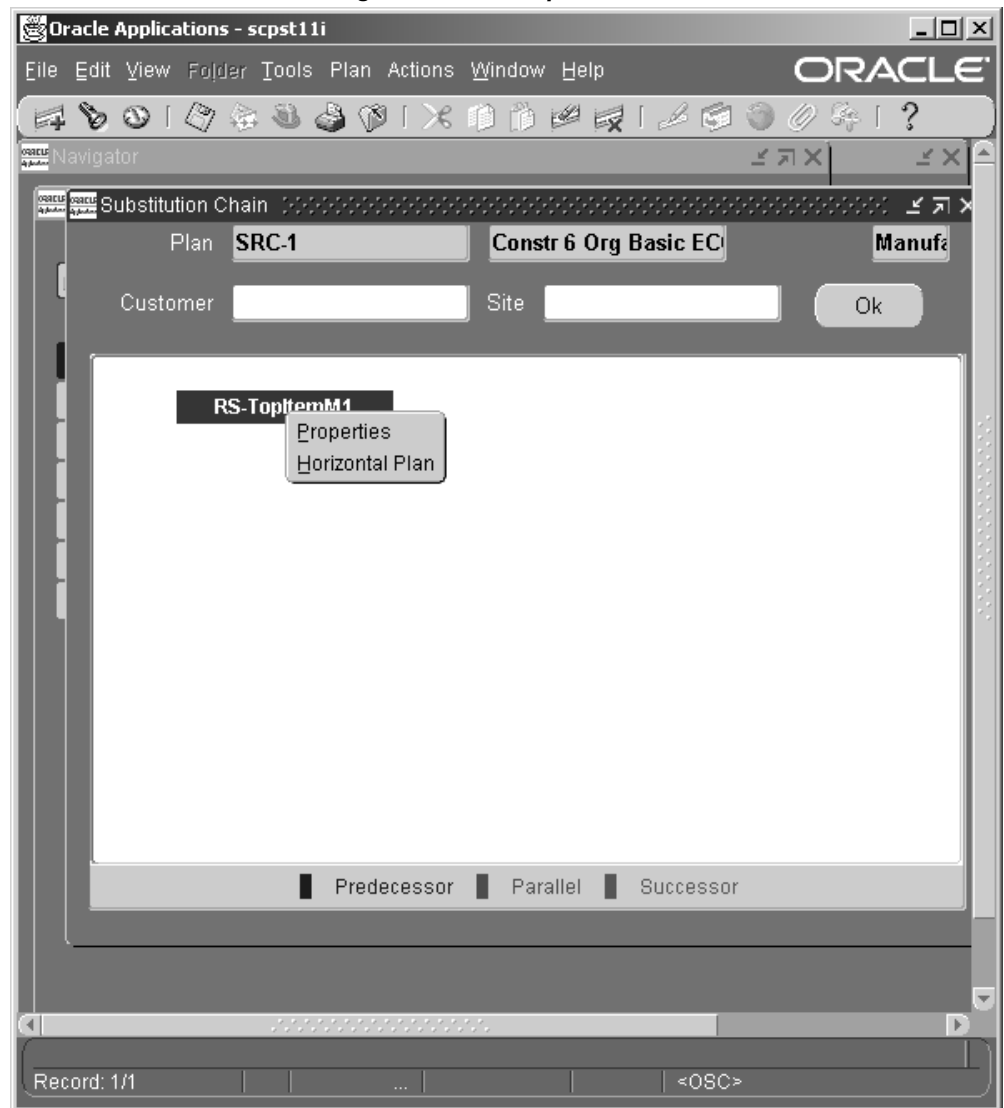
When you right-click an item in the Substitution Chain window, the following options appear:

- Properties
- Horizontal Plan

The Properties window does not display the following information for the default substitution chain:

- Highest revision item
- Implied predecessor

### ***Substitution Chain window: Right-click menu options***



For more information about the Substitution Chain window, see 'Business Topics, page 21-1.

## **Resources Window**

The Resources window displays resource-related information such as ship method, location, and resource cost.

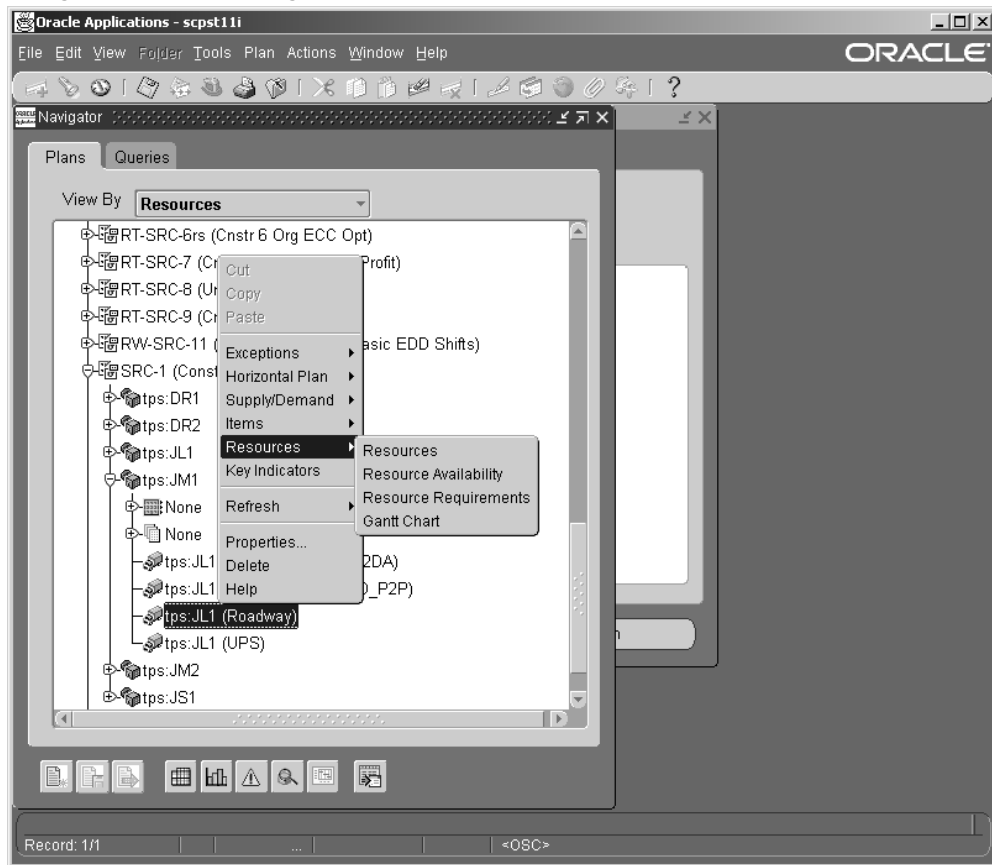
### **Viewing the Resources Window**

#### **To navigate to the Resources window**

1. Select a resource in the Navigator.

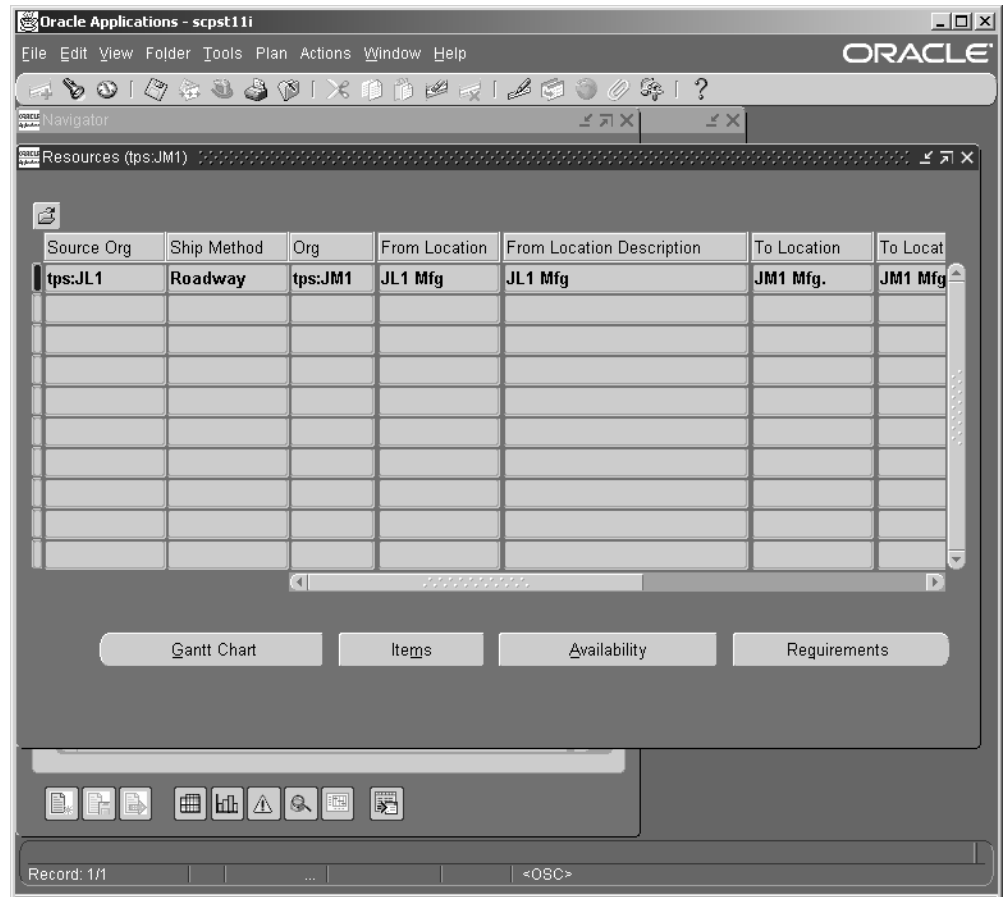
2. Choose [right-click] > Resources.

**Navigator: Resources Right-click menu**



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.

### Resources window



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

<b>Fields</b>	<b>Description</b>
Resource Type	Person, machine or miscellaneous
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

Fields	Description
Offset (%)	Resource offset percent
Resource Desc	Resource description
Schedule	The valid values for this schedule flag are: - Yes - No - Prior - 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.

### Resource Availability Summary window

Org	Dept/Line	Resource	From Date	To Date	Total Available	UOM
tps:JM1	RS-JM1-D1	RS-JM1-R1	08-JAN-2006	08-JAN-2006	16	HR
tps:JM1	RS-JM1-D1	RS-JM1-R1	09-JAN-2006	09-JAN-2006	20	HR
tps:JM1	RS-JM1-D1	RS-JM1-R1	10-JAN-2006	10-JAN-2006	20	HR
tps:JM1	RS-JM1-D1	RS-JM1-R1	11-JAN-2006	11-JAN-2006	20	HR
tps:JM1	RS-JM1-D1	RS-JM1-R1	12-JAN-2006	12-JAN-2006	20	HR
tps:JM1	RS-JM1-D1	RS-JM1-R1	13-JAN-2006	13-JAN-2006	4	HR
tps:JM1	RS-JM1-D1	RS-JM1-R1	15-JAN-2006	15-JAN-2006	16	HR
tps:JM1	RS-JM1-D1	RS-JM1-R1	16-JAN-2006	16-JAN-2006	20	HR
tps:JM1	RS-JM1-D1	RS-JM1-R1	17-JAN-2006	17-JAN-2006	20	HR
tps:JM1	RS-JM1-D1	RS-JM1-R1	18-JAN-2006	18-JAN-2006	20	HR

### Information in the Resource Availability Summary Window

The following table lists the information displayed in the Resource Availability Summary window.

Field	Description
Org	Organization



Field	Description
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.

### Resource Availability (Details) window

Org	Dept/ Line	Resource	Shift Date	Shift Num	From Time	To Time	Capacity Units
tps:JM1	RS-JM1-D1	RS-JM1-R1	08-JAN-2006	1	08:00:00	20:00:00	
tps:JM1	RS-JM1-D1	RS-JM1-R1	08-JAN-2006	2	20:00:00	00:00:00	

Org	Dept/ Line	Resource	Update Mode	From Date	To Date	Shift Num	F
tps:JM1	RS-JM1-D1	RS-JM1-R1					

Apply

Record: 1/2    ...    <OSC>

### 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

Field	Description
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.

### Resource Requirements window

Source Org	Ship Method	Org	Start Date	End Date	Weight Capacity
tps:JL1	UPS	tps:JM1	22-JAN-2006 00:00:00	24-JAN-2006 00:00:00	250
tps:JL1	UPS	tps:JM1	22-JAN-2006 00:00:00	24-JAN-2006 00:00:00	1750
tps:JL1	UPS	tps:JM1	22-JAN-2006 20:00:00	24-JAN-2006 20:00:00	250
tps:JL1	UPS	tps:JM1	22-JAN-2006 22:00:00	24-JAN-2006 22:00:00	250
tps:JL1	UPS	tps:JM1	27-JAN-2006 08:00:00	29-JAN-2006 08:00:00	2500
tps:JL1	UPS	tps:JM1	04-FEB-2006 08:00:00	06-FEB-2006 08:00:00	250
tps:JL1	UPS	tps:JM1	06-FEB-2006 20:00:00	08-FEB-2006 20:00:00	250
tps:JL1	UPS	tps:JM1	06-FEB-2006 22:00:00	08-FEB-2006 22:00:00	250
tps:JL1	UPS	tps:JM1	06-FEB-2006 23:59:00	08-FEB-2006 23:59:00	250
tps:JL1	UPS	tps:JM1	06-FEB-2006 23:59:00	08-FEB-2006 23:59:00	250

### 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

<b>Field</b>	<b>Description</b>
Start Date	Requirement start date
End Date	Requirement end date
Resource Hours	Required resource hours based on the routing requirement
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:  Resource Hours / Resource Efficiency %
Adjustable Resource Hours	The planning engine calculates this as follows:  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.

Field	Description
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.
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 10-183.
Recommended	Yes or No

Field	Description
Required Capacity	The planning engine calculates this as follows:  Resource hours * Order quantity in weight/volume)
Schedule	The valid values for this schedule flag are:  - Yes  - No  - Prior  - 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.



Field	Description
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 10-151.
- **Supply Chain Bill:** View the Supply Chain Bill for an item. For more information, see 'Supply Chain Bill, page 10-175.
- **Destinations:** Navigate to the Destinations window. For more information, see 'Destinations Window, page 10-148.

## Supply Chain Bill

You can view contextual supply chain and where used information for an item graphically.

### 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.

### An Item's Supply Chain Bill



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

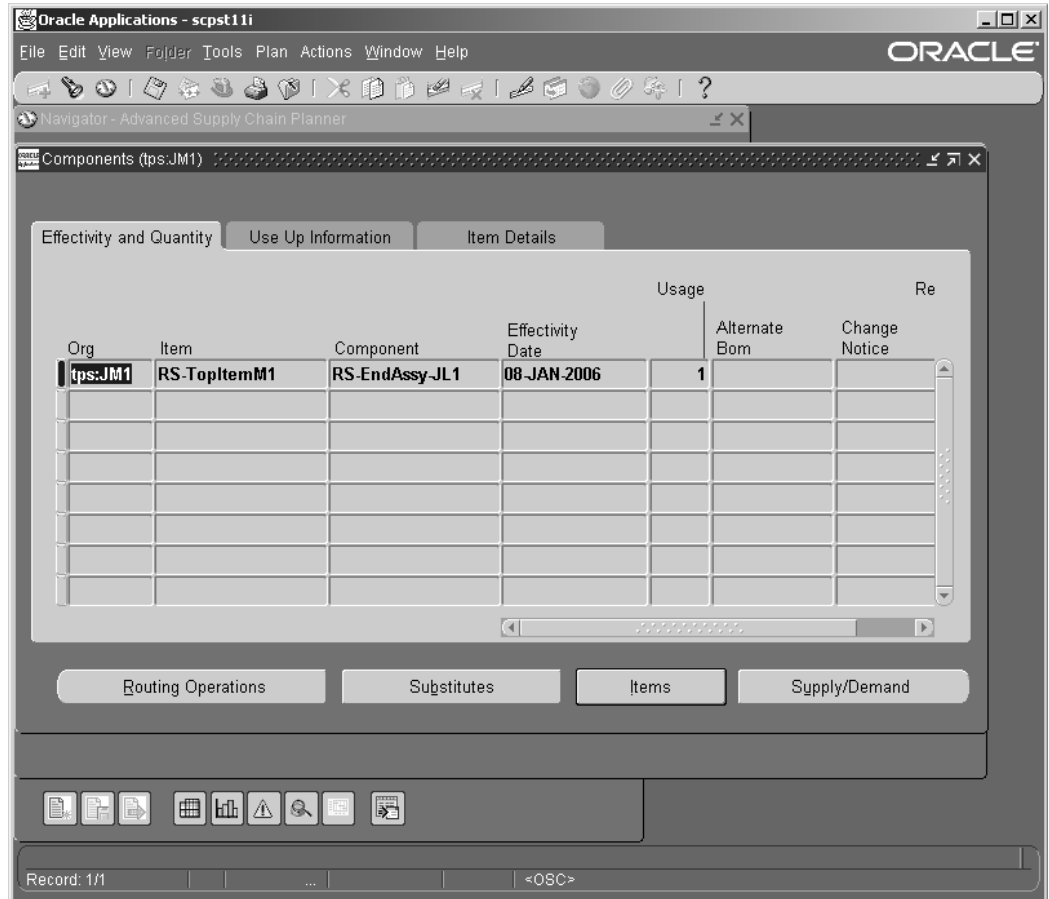
pop-up menu displays the following options to navigate to windows that display specific information:

- 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.

### Components window



### 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
Component	Component name
Effectivity Date	BOM effectivity date

Field	Description
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

Field	Description
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:

<b>Field</b>	<b>Description</b>
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
Reverse Cumulative Yield	Routing reverse cumulative yield



Field	Description
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
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 10-178 (for Components window).

### Item Details Tabbed Pane

For more information, see 'Item Details Tabbed Pane, page 10-178 (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 (%)

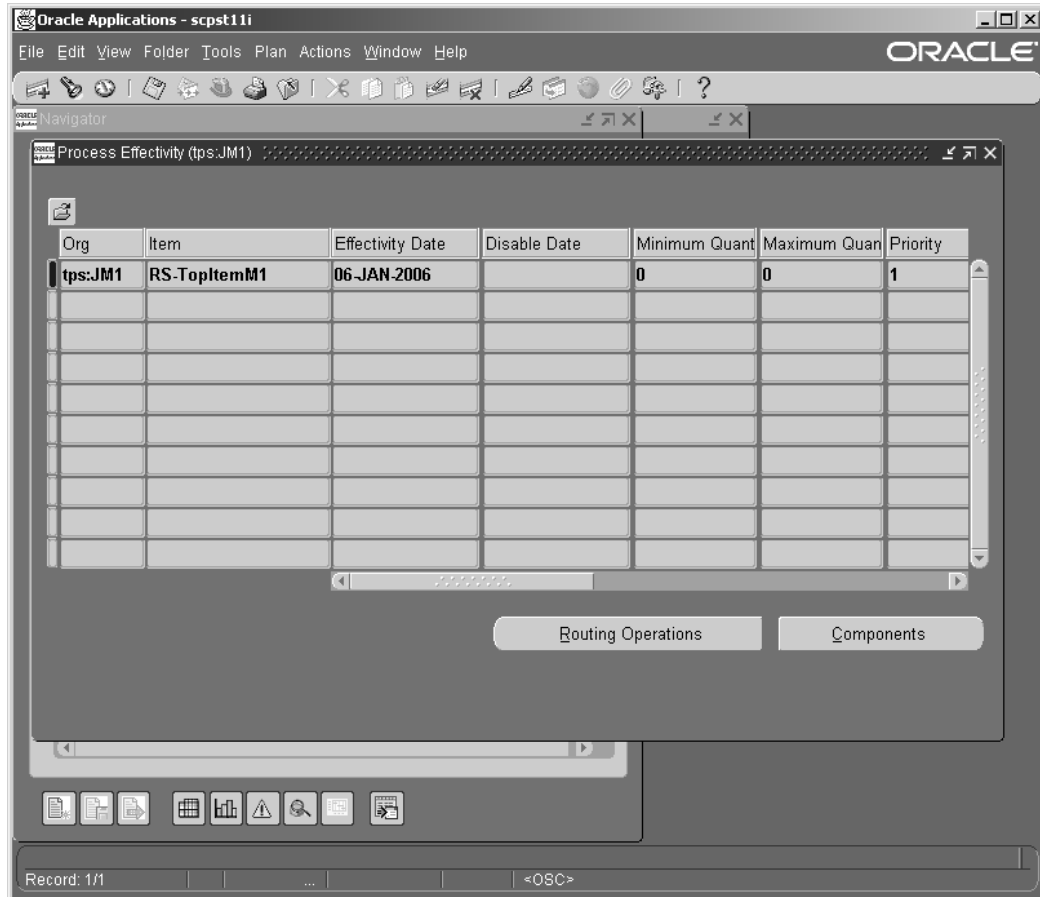
### Process Effectivity

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.

### Process Effectivity window



### Information Displayed in the Process Effectivity Window

The Process Effectivity window displays the following information:

Field	Description
Org	Organization
Item	Item name
Effectivity Date	Routing effectivity date
Disable Date	Routing disable date

Field	Description
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

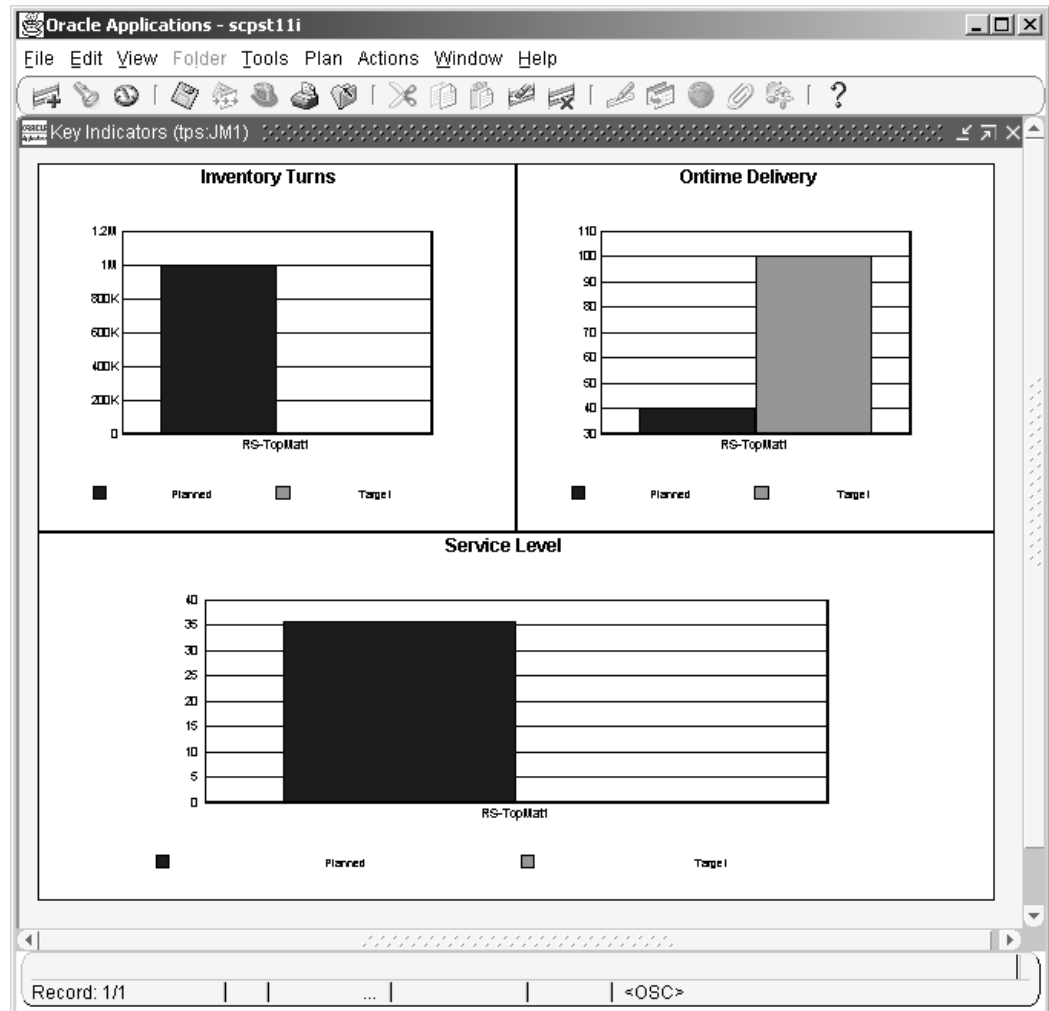
The Key Indicators window is a summary chart that provides a graphical display of a plan's Key Performance Indicators (KPIs). At a glance, you can see how the plan performs relative to the following measures:

- 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 21-80

### The KPIs Summary Chart in the Planner Workbench



### Viewing KPIs

To view key performance indicators, select plan option, Main tab, Display Key Performance Indicators.

#### To view KPIs

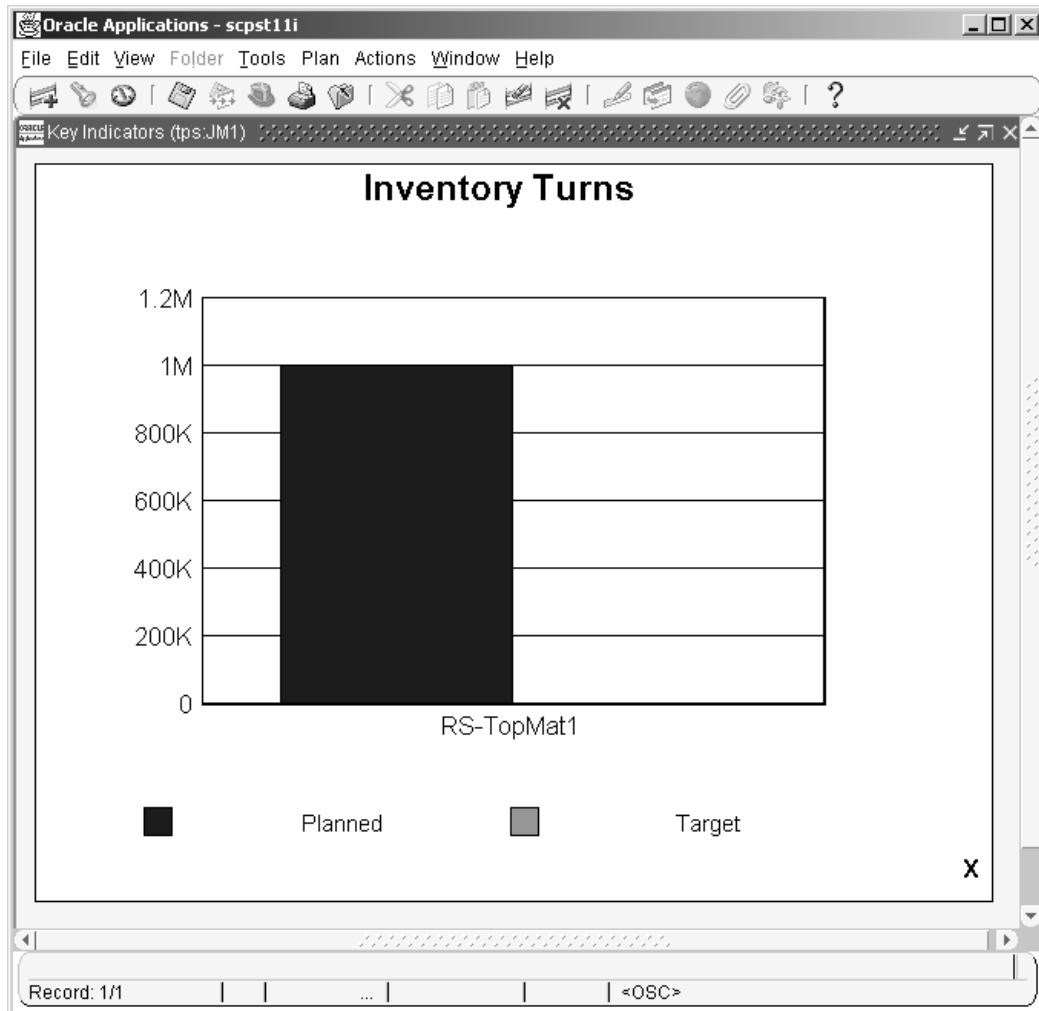
1. Select a Plan, an Item, an Org, or a Product Family from the Navigator.
2. Select Key Indicators in the pop-up menu.

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.

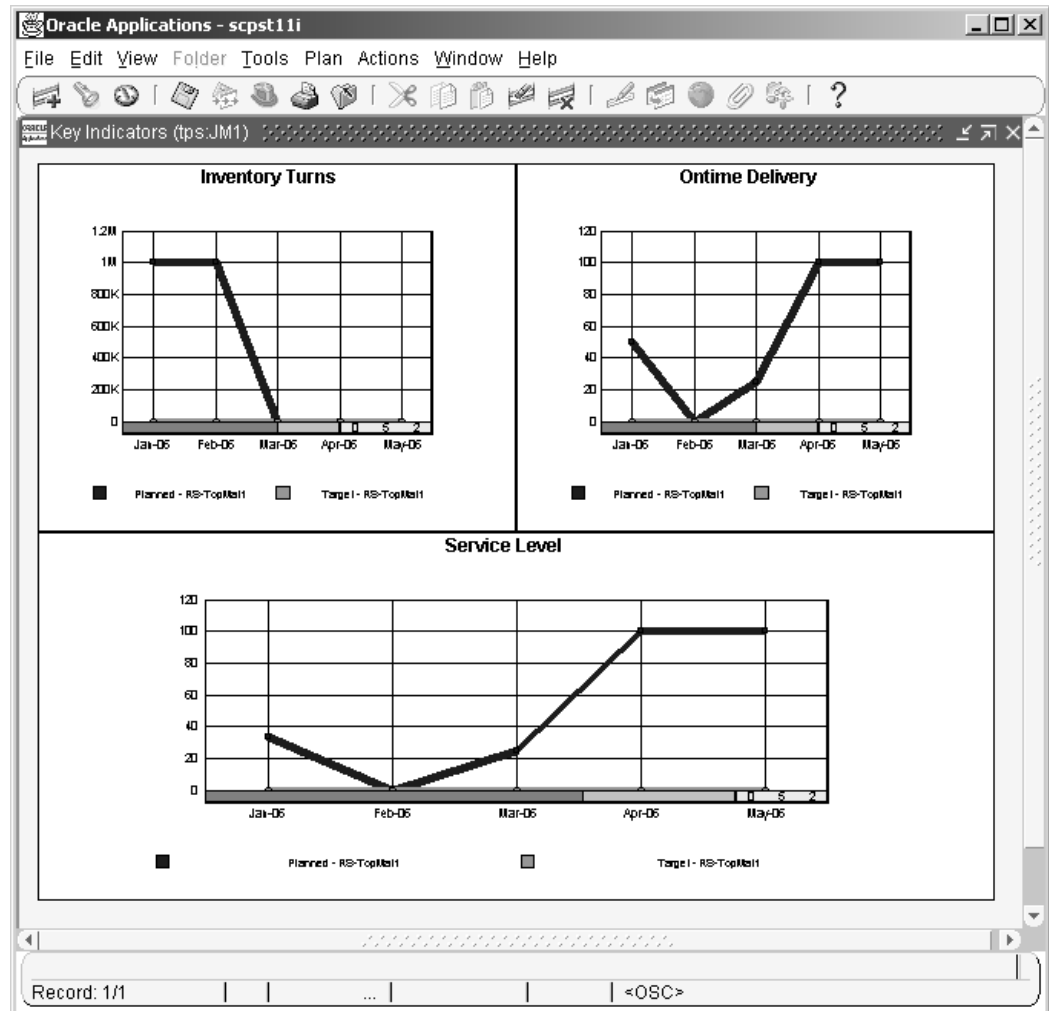
### An Enlarged View of the On-time Delivery KPI Bar Chart



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.



### The KPIs 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.

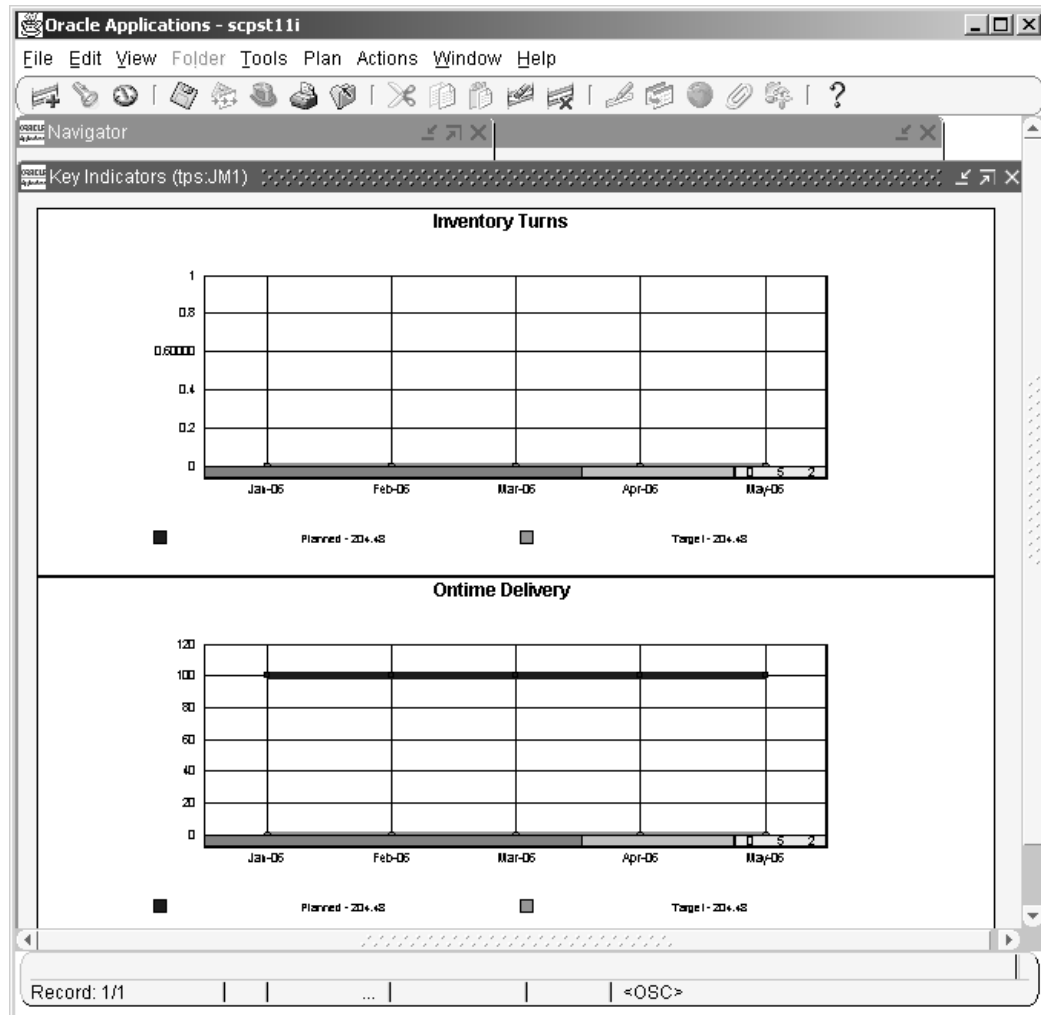
Margin percentage is available at the following nodes:

- 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.

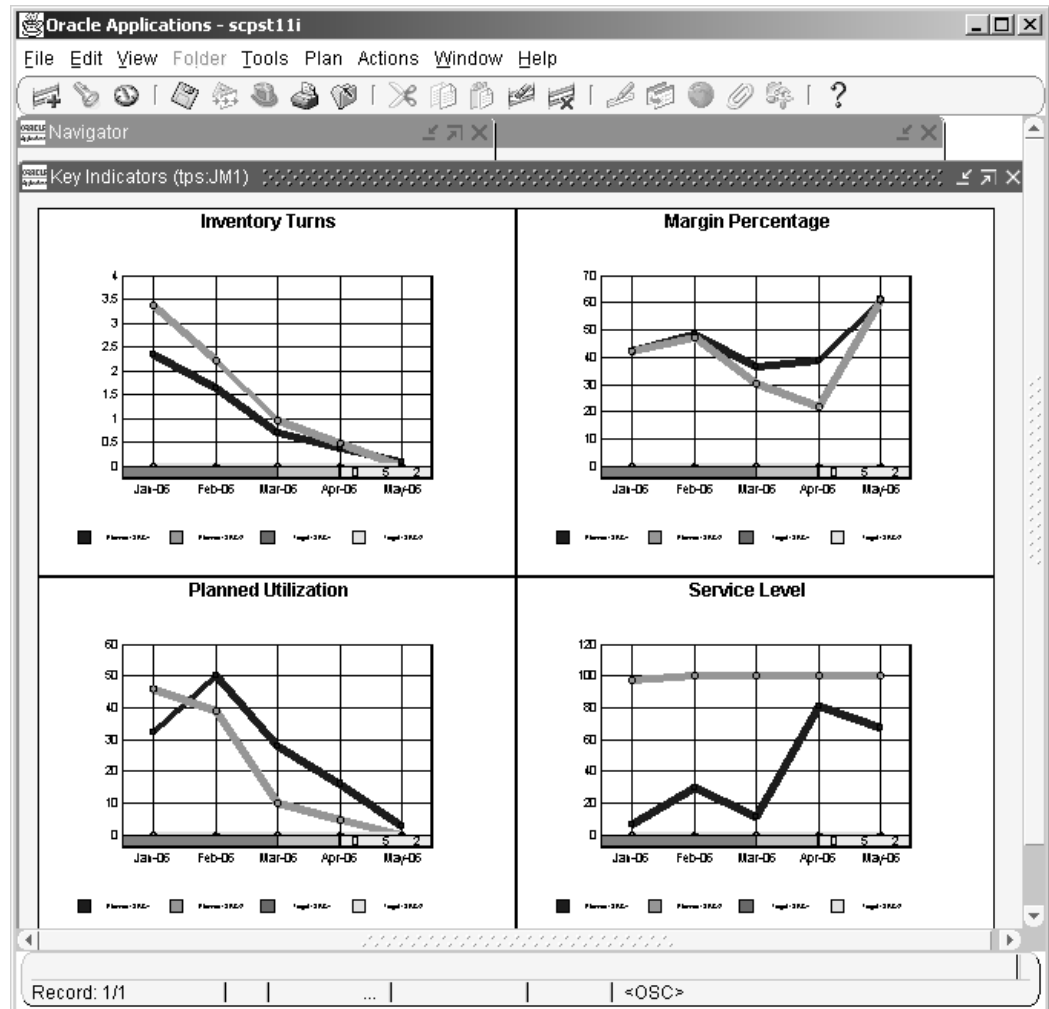
### Viewing KPIs at the Item Level



### 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).

## Comparing KPIs for Multiple Plans



## 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 and Executing Planned Orders Directly

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 and execute 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 10-92.

### **Releasing Recommendations**

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

#### **To release recommendations**

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. If you want to change the supply Suggested Due Date or Qty/Rate, navigate to the Release Properties tabbed region:

- To change the supply Suggested Due, select a new date in Implement Date. You can select a non-workday. If you select a date in the past, the scheduled receipt will have today's date.
  - To change the supply Qty/Rate, enter a new quantity or rate in Imp Qty/Rate.
5. To mark a supply for conversion into a purchase requisition or a discrete job , select For Release. If you selected For Release on the Orders tabbed region before you changed Implement Date or Imp Qty/Rate on the Release Properties tabbed region, clear For Release, make your changes and then select For Release again.
  6. Right-click in any field in the Orders tabbed region or the Release Properties tabbed region and select Release.

## Releasing All Recommendations

### To release all recommendations

1. From the Recommendations node, drill down to Purchase Requisitions or Discrete Jobs.
2. Navigate to Supply/Demand from items in Purchase Requisitions or Discrete Jobs.
3. Select Edit > Select All
4. Press [right-click] > Release to release all.  
Make necessary changes and save.

## 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.

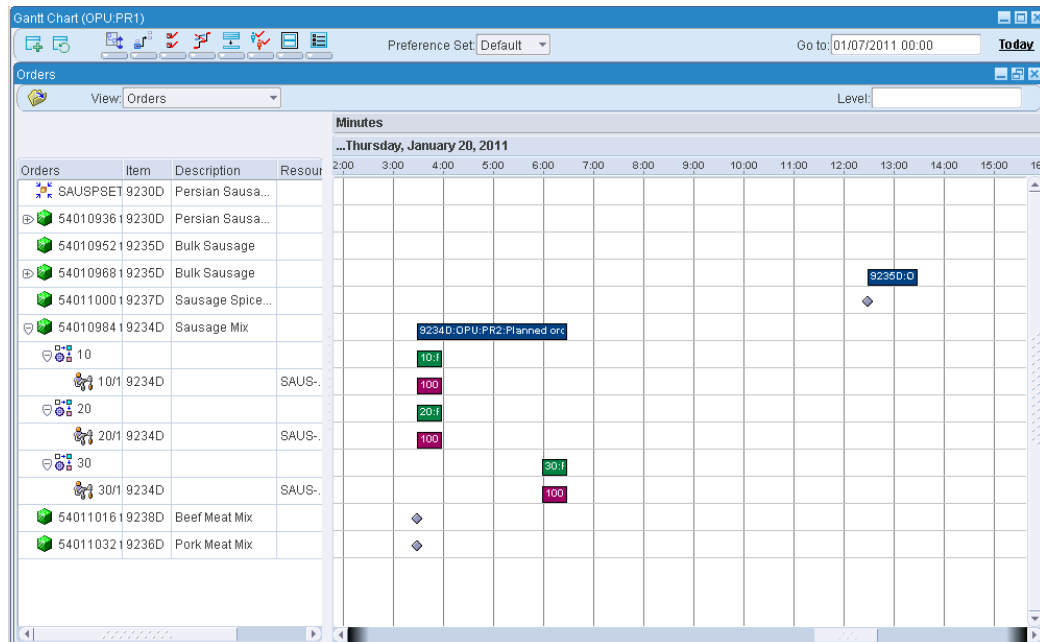
### To access the Gantt Chart

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  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.

### The Gantt Chart



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 build 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 enabled 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.

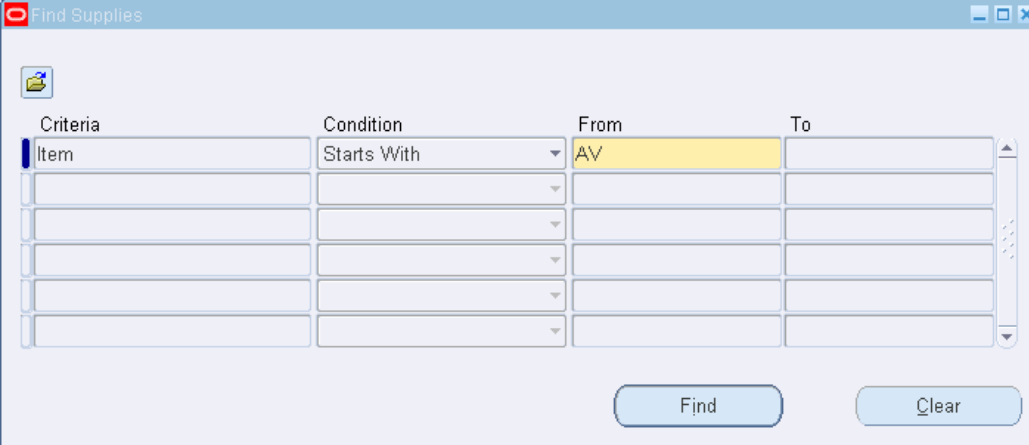
## Find Window

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.

### Find Window

The image shows a 'Find Window' dialog box with a title bar that says 'Find Supplies'. Inside the window, there is a search criteria table with four columns: 'Criteria', 'Condition', 'From', and 'To'. The first row is populated with 'Item' in the Criteria column, 'Starts With' in the Condition column, and 'AV' in the From column. Below this table are five empty rows. At the bottom right of the window, there are two buttons: 'Find' and 'Clear'.

Criteria	Condition	From	To
Item	Starts With	AV	

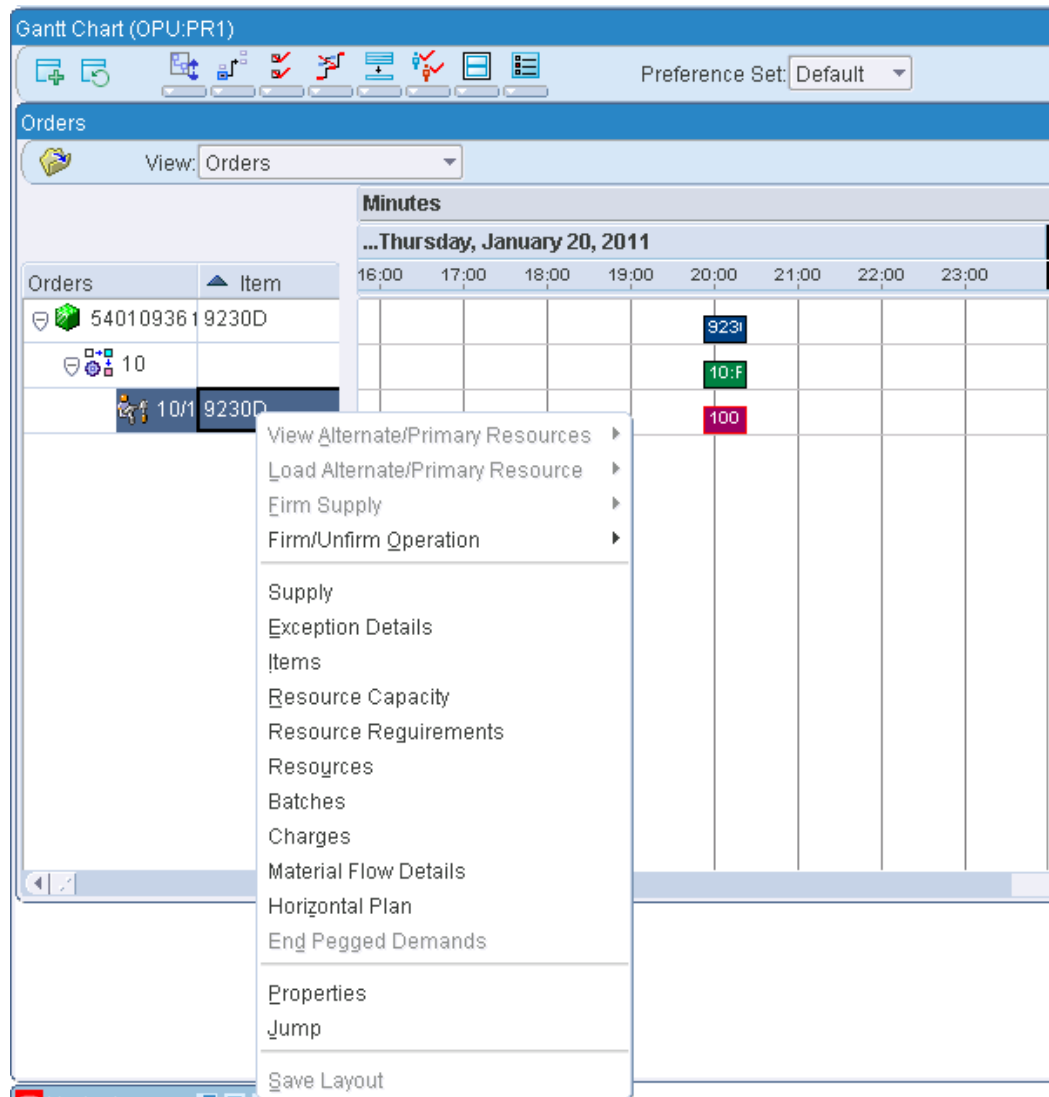
## Right-Click Menu Options

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
Reschedule	Reschedule
Supply/Demand	Open the Supply/Demand window
Exception Details	Open the Exception Details window

<b>[Right-Click] Menu Options</b>	<b>Description</b>
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.

### Gantt Chart: Right-click menu options



## 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 Properties window**

The screenshot shows a window titled "Properties" with three tabs: "Resource", "Job", and "End Demand". The "Resource" tab is selected. The window displays a list of properties for a resource, including:

- Dept/Line: PR1
- Resource: SAUS-PBPAC
- Org/Instance: OPU:PR1
- Operation Seq: 10
- Resource Seq: 100
- Alternate Number: 0
- Start Date: 01/20/2011 19:51
- End Date: 01/20/2011 20:22
- Firm Type: Un Firm
- Assigned Units: 1
- Total Hours Required: .516667
- Batchable: No
- Batch Number:
- UOM: LB
- Basis: Item
- Schedule: Yes
- Unconstrained Earliest Possible Start Time: 01/10/2011 16:01
- Unconstrained Earliest Possible Completion Time: 01/10/2011 16:32
- Unconstrained Latest Possible Start Time: 01/20/2011 23:28
- Unconstrained Latest Possible Completion Time: 01/20/2011 23:59
- Constrained Earliest Possible Start Time: 01/10/2011 04:00
- Constrained Earliest Possible Completion Time: 01/10/2011 04:31
- Actual Start Time: 01/20/2011 19:51
- Actual Completion Time: 01/20/2011 20:22

An "OK" button is located at the bottom right of the window.

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.

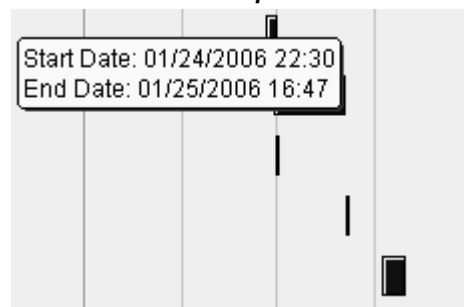
The properties for the Resource tab (only for the activity node) are: department/line, resource name, org/instance, operation sequence, resource sequence, alternate number, firm type, start time, end time, assigned units, and total hours required.

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.

#### ***The Resource Tool Tip***



## **Specify Resources to Plot in the Lower Pane**

To select resources to plot

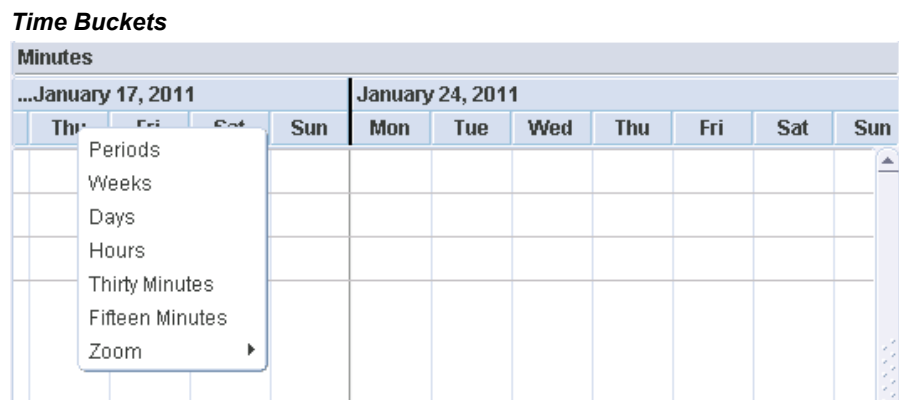
- From the Resource view, select resources using the Find window.
- From the Orders view, select an order and then select **Show Resources**.

## **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



## 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.

**The Reschedule window**

Resize?	Job Number	Start Date
<input type="checkbox"/>	5217843	01/24/2006 20:32

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

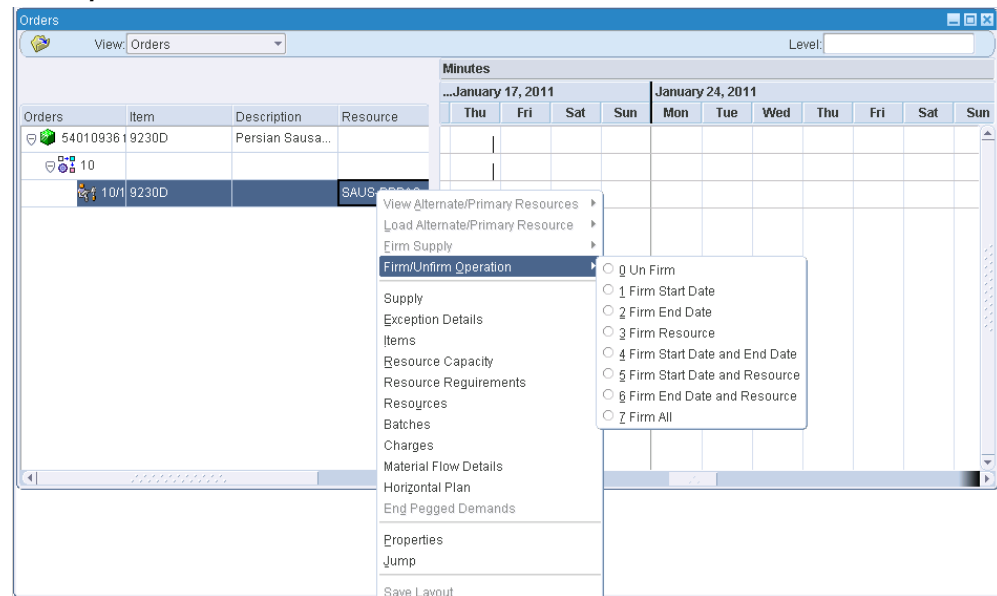
activity can be firmed.

## 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].

### 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.

### The Resource Capacity window

Resource Capacity (OPU:PR1)

Org: OPU:PR1 Dept/Line: PR1 Resource: SAUS-PBPAC ☐ 24 Hour Resource

Simulation Set: Resource Instance: Refresh

Current Capacity

← → January 2011 ← →

S M T W T F S

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

Date: 07-JAN-11 Hours Available: 24

Shift	Start Time	End Time	Capacity Units	Max Rate
3	00:00:00	00:00:00	1	

☐ Working Time  
☐ Non Working Time ☒ Selected Day

Update Capacity

Update Mode	Start Date	End Date	Shift	Start Time	End Time	Capacity Units	Max Rate

Apply

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	<p>Selects all rows in the Orders view.</p> <p><b>Note:</b> 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.</p>
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.

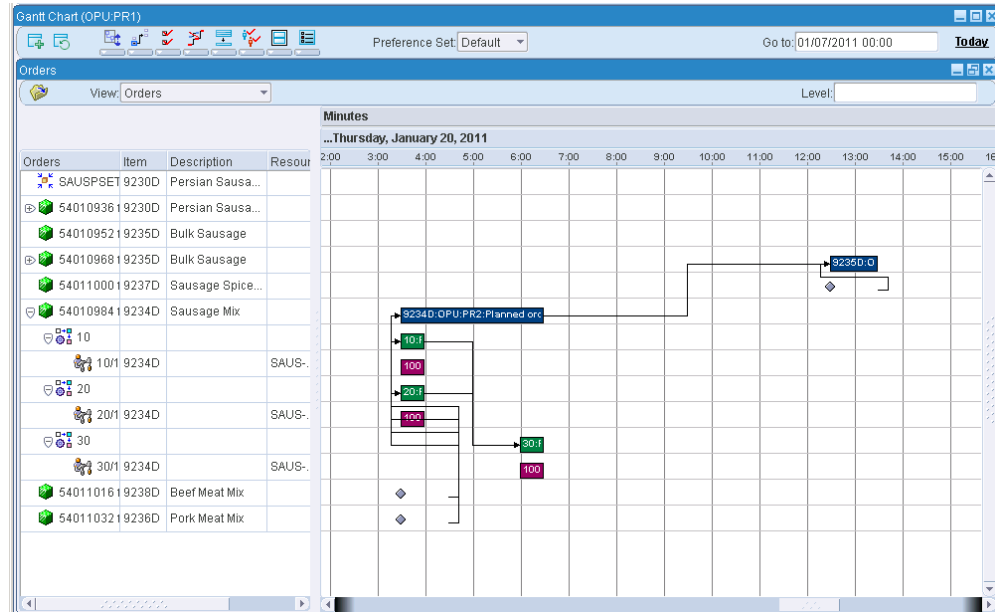
3. Select a demand.

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.

### Pegging information



## Gantt Chart Two Views

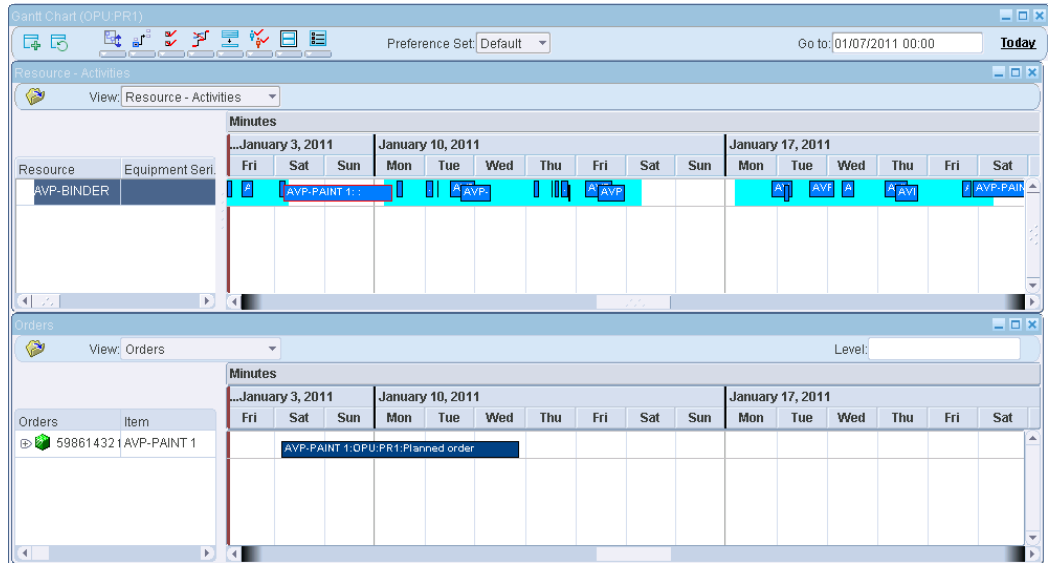
It is possible to pass information between two open views of the Gantt chart. For example, when viewing the Resource Activities view, you can add the Orders view along the horizontal plain.

### 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 displays the order that you selected in the Resource Activities view..

## Two Views



## 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
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

Function Name	Menu Options
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
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:

<b>Nodes</b>	<b>Tabs</b>
Supplier	Key Indicators, Actions
Category	Key Indicators, Actions
Item	Key Indicators, Horizontal Plan, Actions

The following table lists the right-click menu options available in Planner Workbench that your suppliers can use:

<b>Function Name</b>	<b>Menu Options</b>
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

Function Name	Menu Options
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.

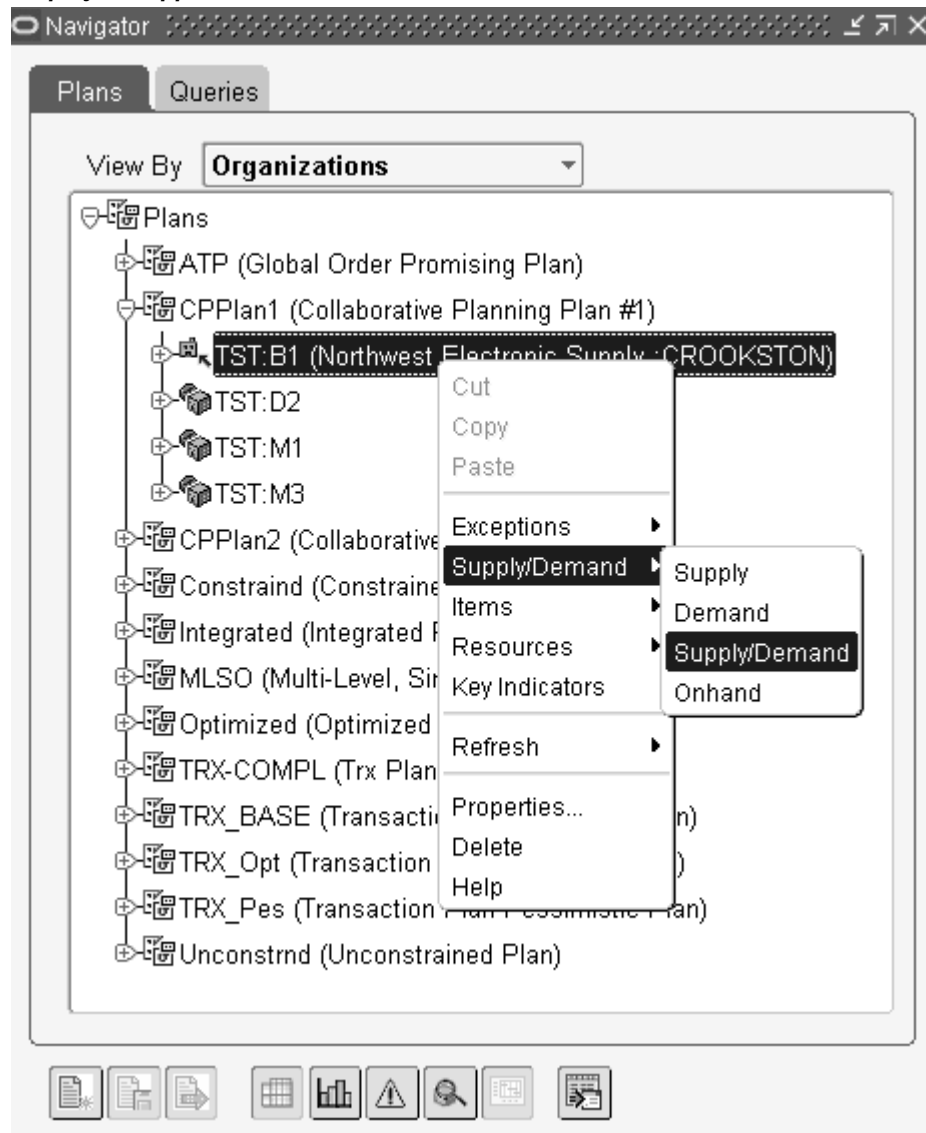
For more details on setting up a supplier site as an inventory organization, see *Oracle Inventory User's Guide*.

#### **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.



### Display of supplier sites in Planner Workbench



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.

### Display of supplier site in Supply/Demand window

Supply/Demand (TST.M1)

Plan **CPPlan1** Collaborative Planning Plan #1 Type **Manufacturing**

Supply/Demand Folder

Order Release Properties **Sourcing** Line Project

Org	Item	For Release	Firm	Source Org	Source Supplier	Source Supplier Site
<b>TST:B1</b>	CM66248	<input type="checkbox"/>	<input type="checkbox"/>		<b>Prouty Industrial Supply</b>	<b>RED WING</b>
TST:B1	SB66231	<input type="checkbox"/>	<input type="checkbox"/>	TST:B1	<b>Northwest Electronic Supply</b>	<b>CROOKSTON</b>
TST:B1	CM66236	<input type="checkbox"/>	<input type="checkbox"/>		<b>Prouty Industrial Supply</b>	<b>RED WING</b>
TST:B1	CM66299	<input type="checkbox"/>	<input type="checkbox"/>	TST:B1		
TST:B1	SB66231	<input type="checkbox"/>	<input type="checkbox"/>	TST:M1		
TST:B1	CM66237	<input type="checkbox"/>	<input type="checkbox"/>	TST:B1		
TST:B1	CM66248	<input type="checkbox"/>	<input type="checkbox"/>	TST:B1		
TST:B1	CM66236	<input type="checkbox"/>	<input type="checkbox"/>	TST:B1		

Pegging for CM66248/TST:B1 Qty 1297 on 23-SEP-2003 00:00:00 (Planned order)

- The Supply/Demand window displays the Source Supplier and Source Supplier Sites in addition to the organization code for the modeled organization.

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# 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 8-1.

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 5-1 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
Sourcing 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.

### 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 Bills of Materials Users Guide* in the *Oracle Bills of Materials User's Guide*.

For more information, see 'Primary and Alternate Bills of Material, *Oracle Bills of Materials Users 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 , page 11-59Effectivity.

## 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, see 'Assigning Substitute Components, *Oracle Bills of Material Users Guide* in the *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.

**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.

## 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 'Oracle Master Scheduling MRP and Oracle Supply Chain Planning User's Guide, *Oracle Advanced Supply Chain Planning Implementation and Users Guide*.

## Safety Stock

See Safety Stock, page 6-167.

## 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.

**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.

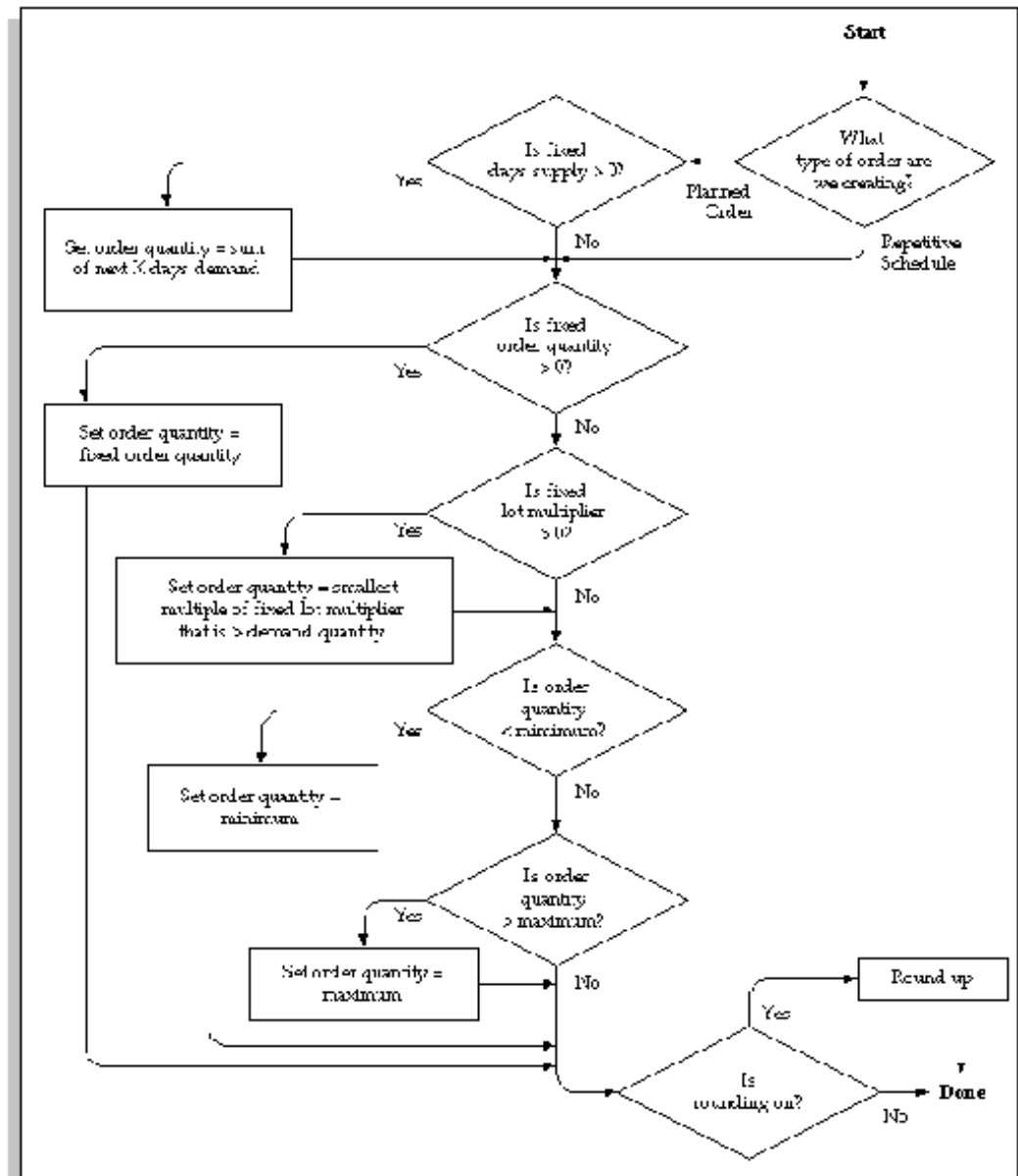
### **Rounding Order Quantities**

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.

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.

### Bills of Material window

Item: CM22678 Sentinel Upgrade Board Assembly UOM: Ea

Alternate:

Revision: A Date: 06-JAN-2006 00:02:31

Display: Future and Current ☒ Implemented Only

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

Item Seq	Operation Seq	Component	Planning %	Yield	Enforce Integer Req.	Type	Status
10	1	CM33132	100	1	Up	Purchased item	Active
20	1	CM33243	100	1	Down	Purchased item	Active

Buttons: Substitutes | Designators | Operations | Bill Details | Revision

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:

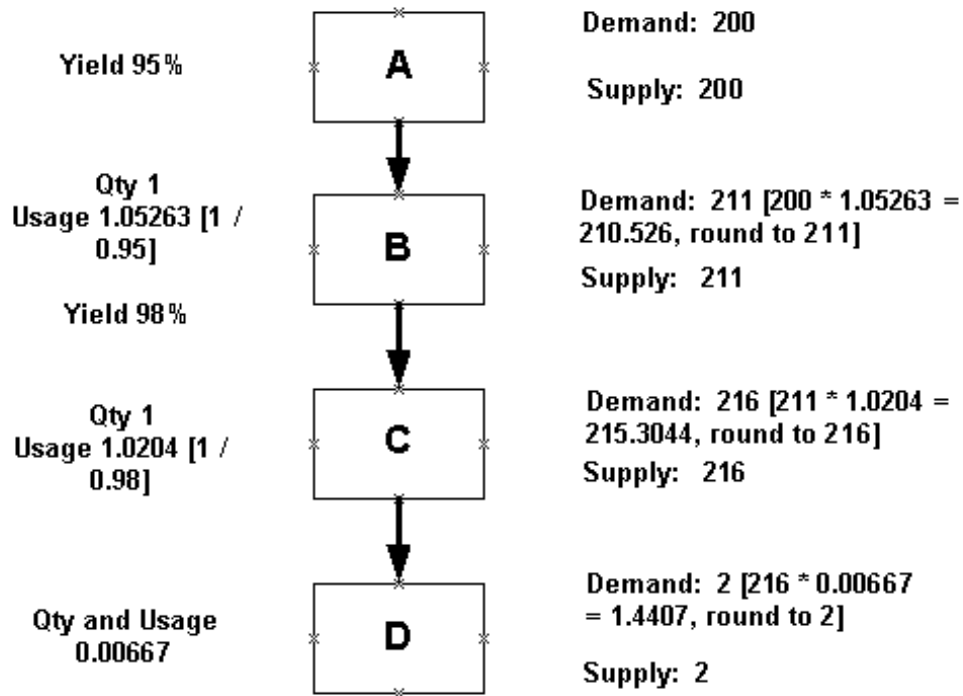
- Material requirement plan, master production schedule, and distribution requirement plan
- Unconstrained, constrained, and optimized plan
- Netting with reservation levels of Projects/Seiban and Planning Groups

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-64.

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

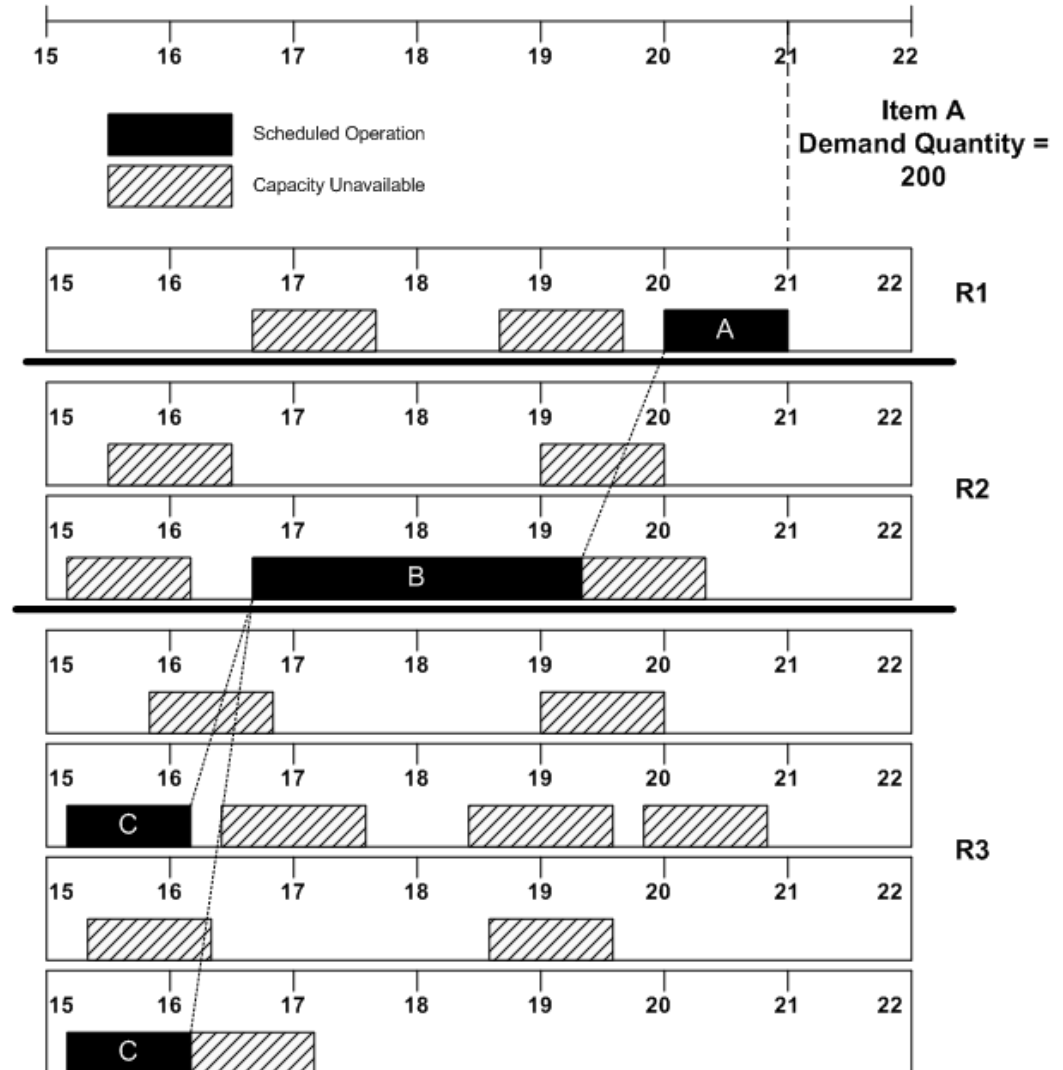
- Operation Sequence 10
- Resource R3
- Assigned Units = 4
- 100 units/day
- Maximum Availability of Resource = 4

#### **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**

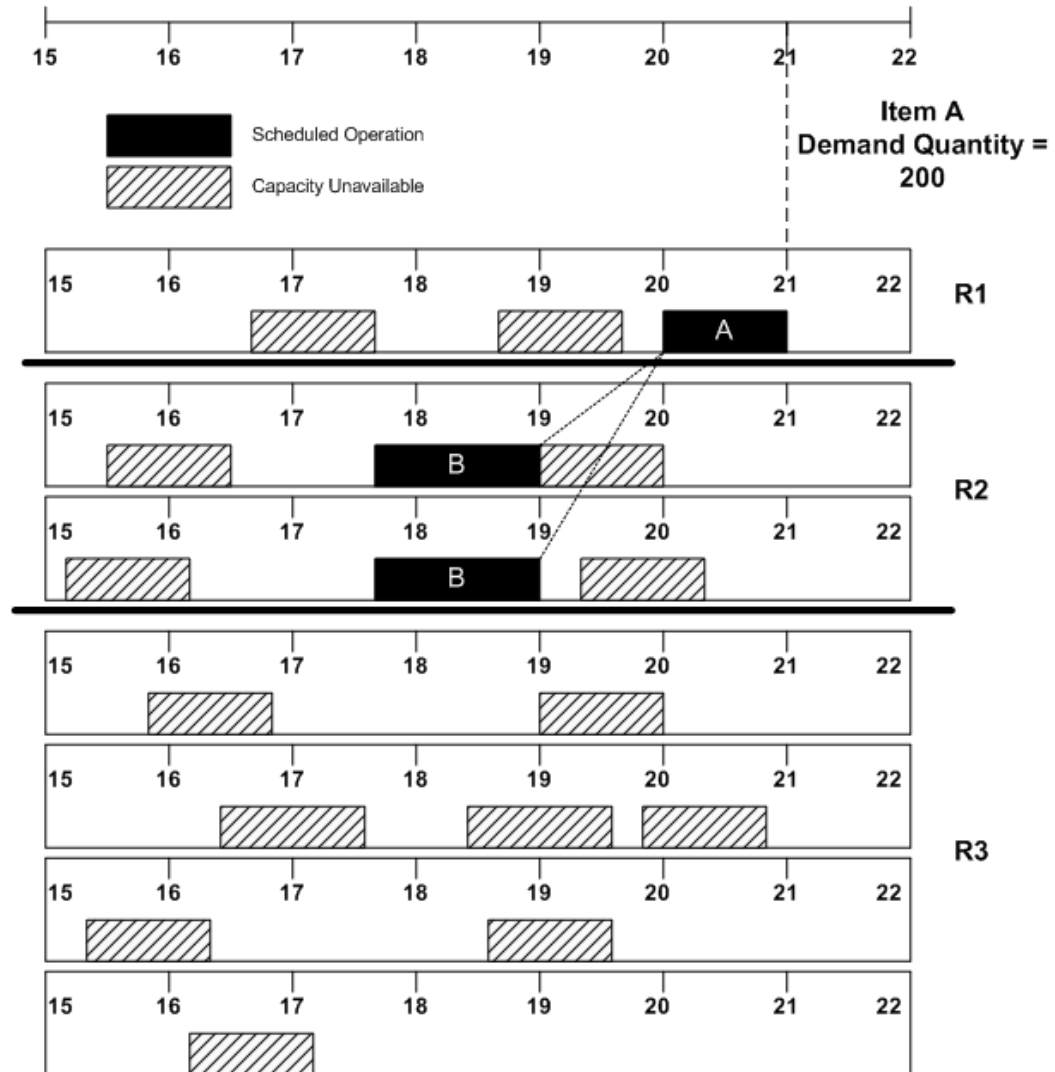


Backward schedule succeeds as the item C is scheduled in the available planning horizon.

**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



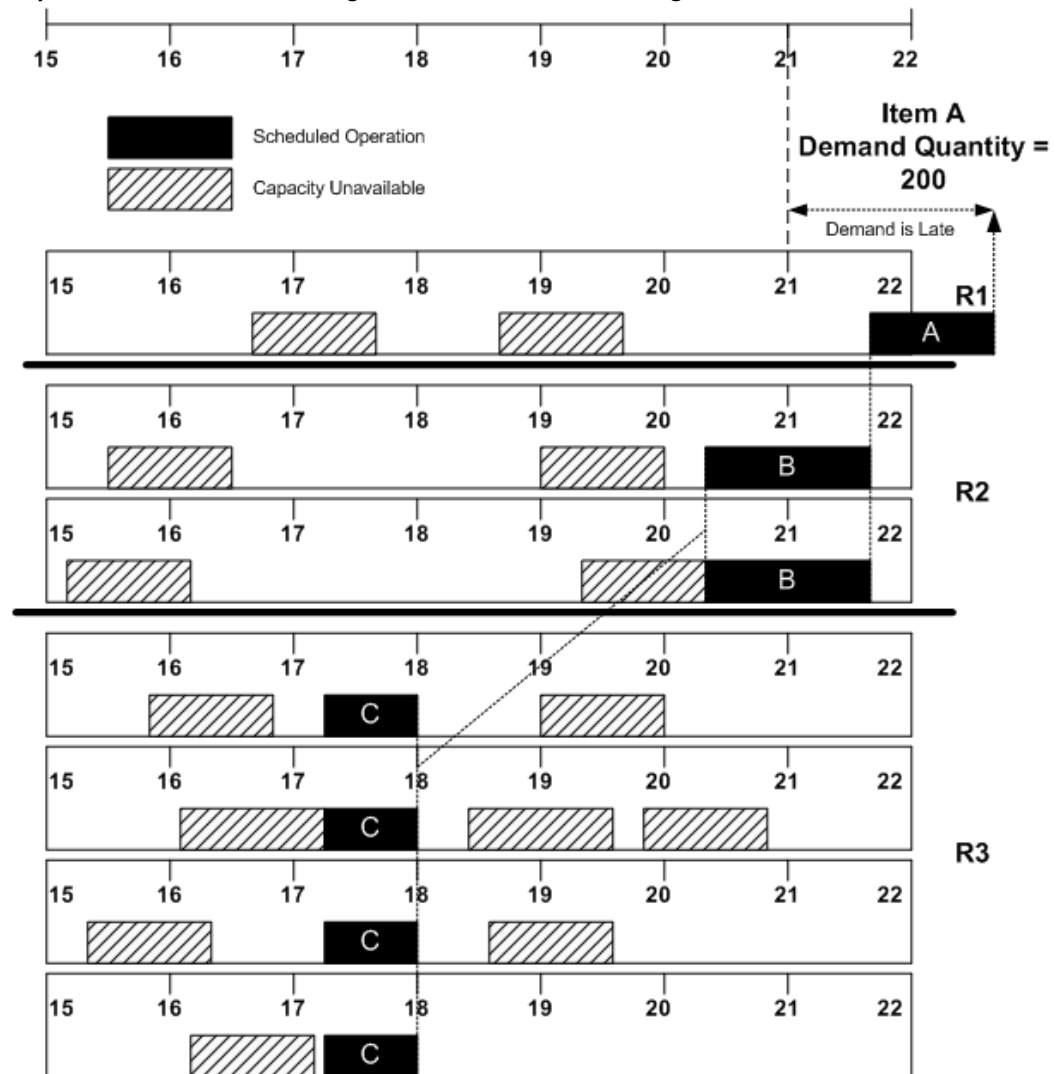
Backward scheduling fails when the profile option MSO: Use of Assigned Units in Scheduling is set to Fixed at Routing Value. There is no date available in the planning horizon to schedule 4 units for resource 3.

### 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) Work in Process usage: 1	1	0900 hours	1130 hours
-	20	R2	2 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 than 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) Work in Process usage: 1	1	0900 hours	1000 hours
-	20	R2	2 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)  Work in Process usage: 1	1	0900 hours	1000 hours
-	20	R2	2  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 6-1 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 6-1 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.

### The Constraints Tab in the Plan Options window

Plan Options (tps.JM1)

Plan: **ProdPlan1**    **Production Plan**    Plan Type: **Distribution Plan**

Main    Aggregation    Organizations    **Constraints**    Optimization    Decision Rules

☒ **Constrained Plan**

☐ Enforce Demand Due Dates    ☒ Enforce Capacity Constraints

	Days	Weeks	Periods
Start Date	06-JAN-2006	10-JUL-2006	10-JUL-2006
Buckets	180	0	0
Resource Constraints	Yes	Yes	Yes
Supplier Capacity Constraints	Yes	Yes	Yes

☒ Enforce Purchasing Lead-time Constraints

**Scheduling**

Minutes Bucket Size (in Days): 180

Hours Bucket Size (in Days): 0

Days Bucket Size (in Days): 0

☒ Calculate Resource Requirements

Planned Resources: All Resources

Bottleneck Resource Group:

- 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 5-1.

**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.

#### The Constraints Tab in the Plan Options window

Plan Options (tps.JM1)

Plan: **ProdPlan1**    **Production Plan**    Plan Type: **Distribution Plan**

Main    Aggregation    Organizations    **Constraints**    Optimization    Decision Rules

☒ **Constrained Plan**

☐ Enforce Demand Due Dates      ☒ Enforce Capacity Constraints

	Days	Weeks	Periods
Start Date	06-JAN-2006	10-JUL-2006	10-JUL-2006
Buckets	180	0	0
Resource Constraints	Yes	Yes	Yes
Supplier Capacity Constraints	Yes	Yes	Yes

☒ Enforce Purchasing Lead-time Constraints

**Scheduling**

Minutes Bucket Size (in Days): 180

Hours Bucket Size (in Days): 0

Days Bucket Size (in Days): 0

☒ Calculate Resource Requirements

Planned Resources: All Resources

Bottleneck Resource Group:

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 5-1 and 'Supply Chain Modeling., page 6-1

## 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 Pan 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. However, the MSO: Lead Time Control profile option governs the lead-times for make, buy and transfer items as shown in the table below:

<b>Enforce Purchasing Lead-time Constraints Plan Option =</b>	<b>Profile MSO: Lead Time Control =</b>	<b>The planning engine:</b>
Yes	Do not violate min processing times	Enforces purchasing lead-times.
No	Do not violate min processing times	Enforces purchasing lead-times.
Yes	Violate min processing times to meet demand due date	Enforces 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.

## 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 21-43.

## 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 than 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.

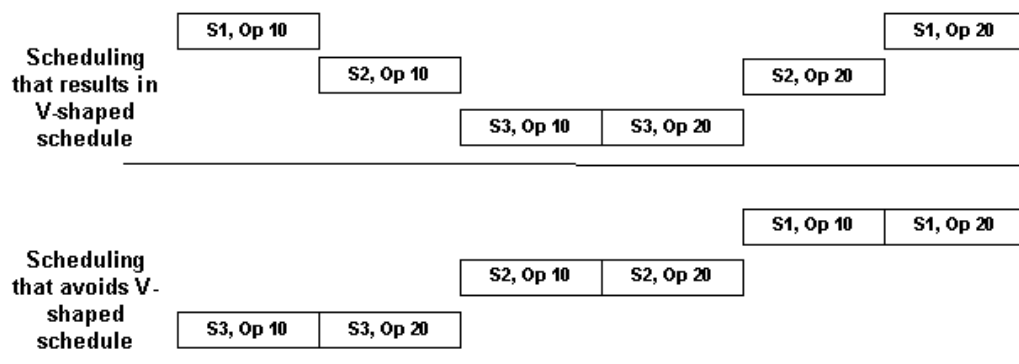
If it schedules a demand complete earlier than its actual due date, the planning engine right justifies it if possible.

## 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:

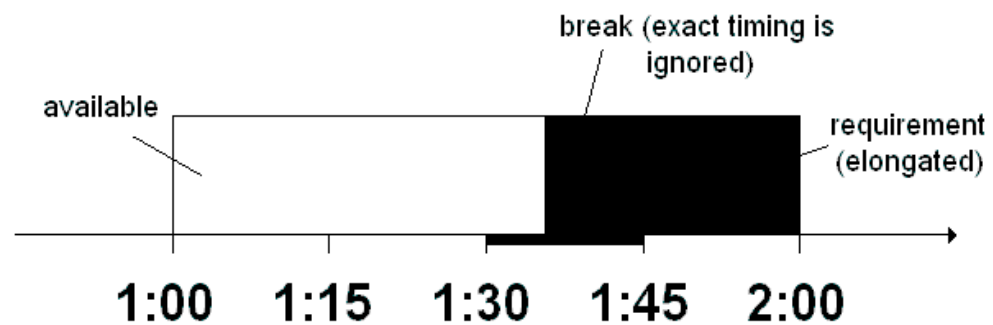
- Requirement duration =  $18 / 0.75 = 24$  minutes

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.

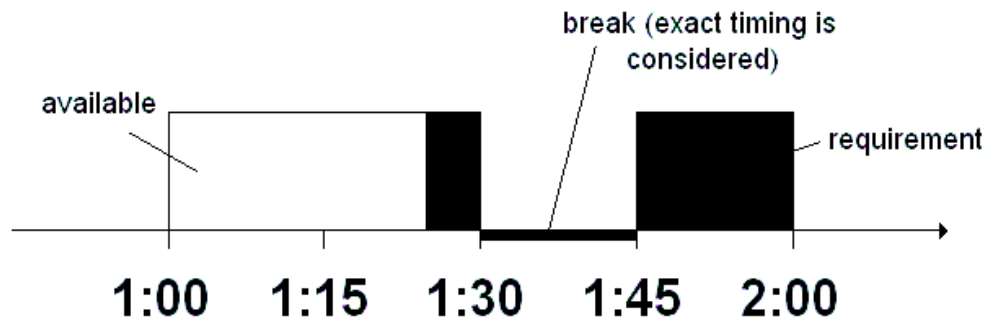
Since this is the minute-by-minute detailed scheduling portion of the plan horizon, break start and end times are accounted for down to the nearest minute. An elongation factor is not used.

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-64.

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.

### System Profile Values

Profile	Site	Application	Responsibility	User
MSO: Allow Partial Demand Co	All End Demands			

Set the MSO: Allow Partial Demand Completion profile option to any of the following values:

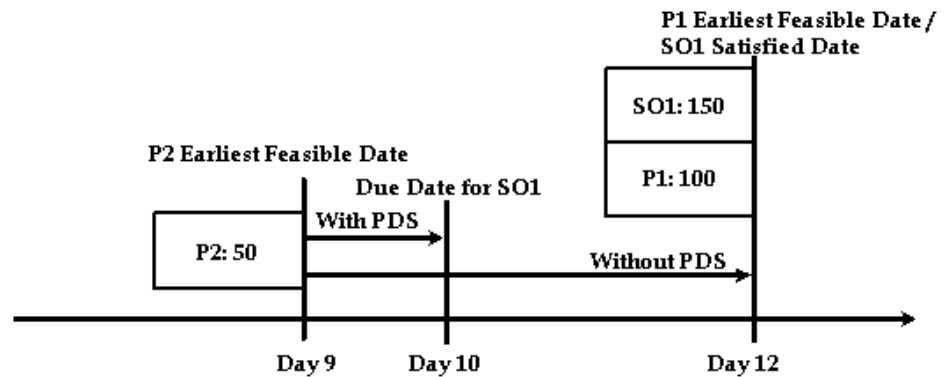
- All End Demands
- Sales Orders Only
- None

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.

### Exception Details form

Exception Details (c11:M1)

Plan: PDS-MRP1    PDS Testing Optimized - All end Demands    Type: MRP

Exception	Org	End Item	Quantity	Quantity Satisfied By Due Date	Order Number
Late replenishment for forecast	c11:M1	JB-PDS-TOP6	-150	0	PDSFCA

Suppliers    Resources    Items    Supply/Demand

## 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  $(\text{Planned order quantity} - \text{Demand quantity}) / \text{Demand quantity} > \text{MSO: Demands Size Tolerance PCT before Splitting Planned Orders}$ .

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

In such plans, the planning engine arrives at the final plan output after performing three sequential steps. The planning engine:

1. Selects alternate resources and bills of materials (or routings)
2. Applies order modifiers, netting and pegging
3. Performs detailed scheduling

Each of these steps is a phase in which the sizing and timing of planned orders is influenced.

#### **Selection of Alternate Sources and Alternate Bills of Materials (or Routings)**

The first phase is the optimization phase. The planning engine creates planned orders to meet outstanding demands. The planning engine considers the following to schedule specific planning time buckets for planned orders:

- Item processing lead times
- Resource and material capacities

Planned orders that load resources in multiple buckets are broken into multiple planned orders. A planned order is created for each bucket. The number of buckets is determined by the days, weeks and period that you specify in the plan option. For example, x days, y weeks, z period =  $x+y+z$  buckets.

At the end of the first phase, the planning engine considers the profile option MSC: Split Planned Orders for Scheduling Flexibility. If you set the value for the profile option to No, the planned orders in adjacent planning buckets with the same item, organization, BOM or routing are combined. If you set the profile option value to Yes, the planning engine does not perform any action in this phase.

#### **Order Modifier Application, Netting and Pegging**

In Phase 2, the planning engine considers order modifiers and modifies the planned order sizes accordingly. The planning engine also nets and pegs demand to supplies.

#### **Detailed Scheduling**

In Phase 3, the planning engine considers the detailed resource usages in routings to determine the final timing of the planned orders. The granularity of decision-making is as fine as one minute. During this process, alternate resources may be selected if they

are required to fulfill demands on time. If the profile option MSC: Split Planned Orders for Scheduling Flexibility is Yes, the planning engine creates multiple planned orders that might not be aligned to daily planning buckets owing to detailed scheduling. As a result of considering alternate resources in this phase, the planned orders may no longer be of daily capacity sizes.

In the case of simple bills of materials or routings, the planning engine applies the time-slotting estimates to create planned orders that might not differ across the three different phases. However, in the case of complex bills of materials or routings, the time-slotting and planned order sizing estimates done in the first phase are refined in the subsequent phases. As a result, the planned orders that the planning engine creates at the end of each phase might be different.

## **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:

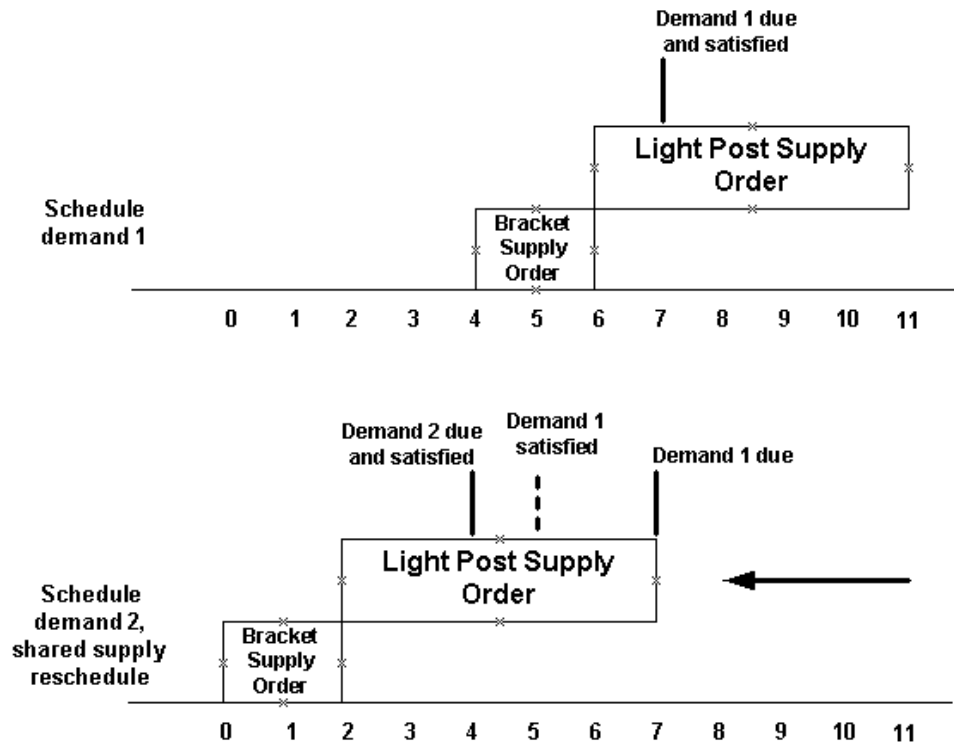
- Demand 1: End Item: Light post, Quantity: 100, Demand Due Date: Day 7, Priority: 1
- Demand 2: End Item: Light post, Quantity: 200, Demand Due Date: Day 4, Priority: 200

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:

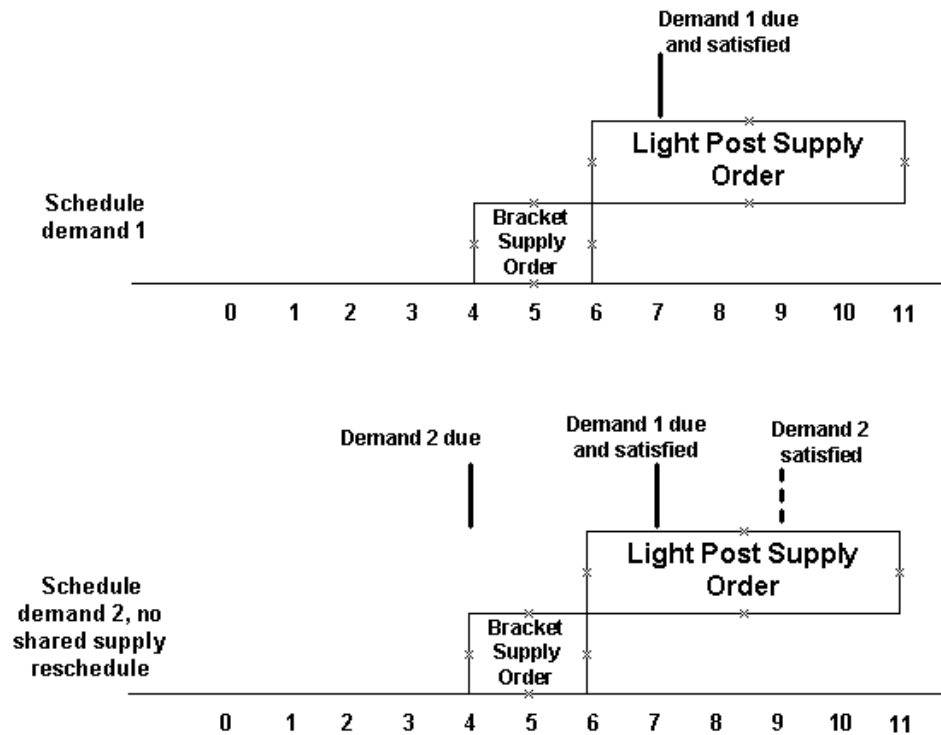
- Demand 1: End Item: Light post, Quantity: 100, Demand Due Date: Day 7, Priority: 1
- Demand 2: End Item: Light post, Quantity: 200, Demand Due Date: Day 4, Priority: 200

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.

## 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 9-118.

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 though they are not necessarily the most constraining activities.

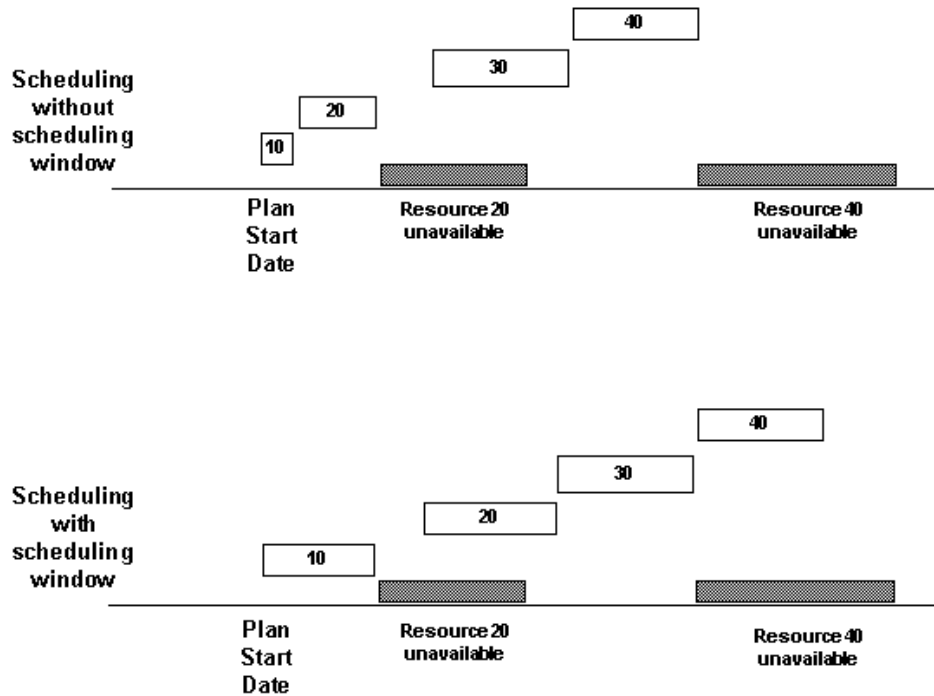
When faced with a need to overload, the planning engine:

- 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 than 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.

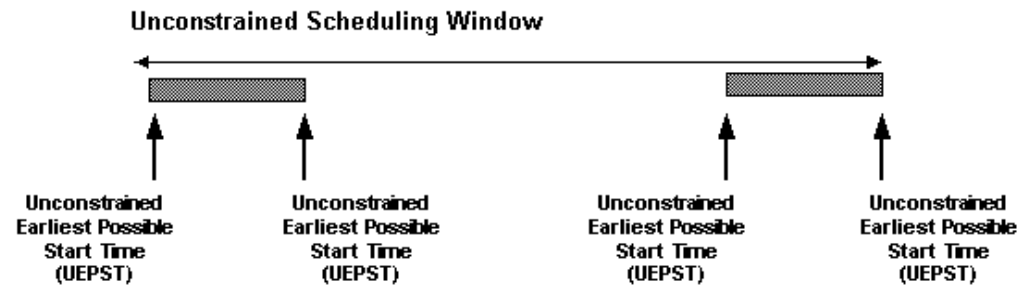
The Unconstrained Earliest Possible Completion Time (UEPCT) = UEPST + Minimum duration of operation

- 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.

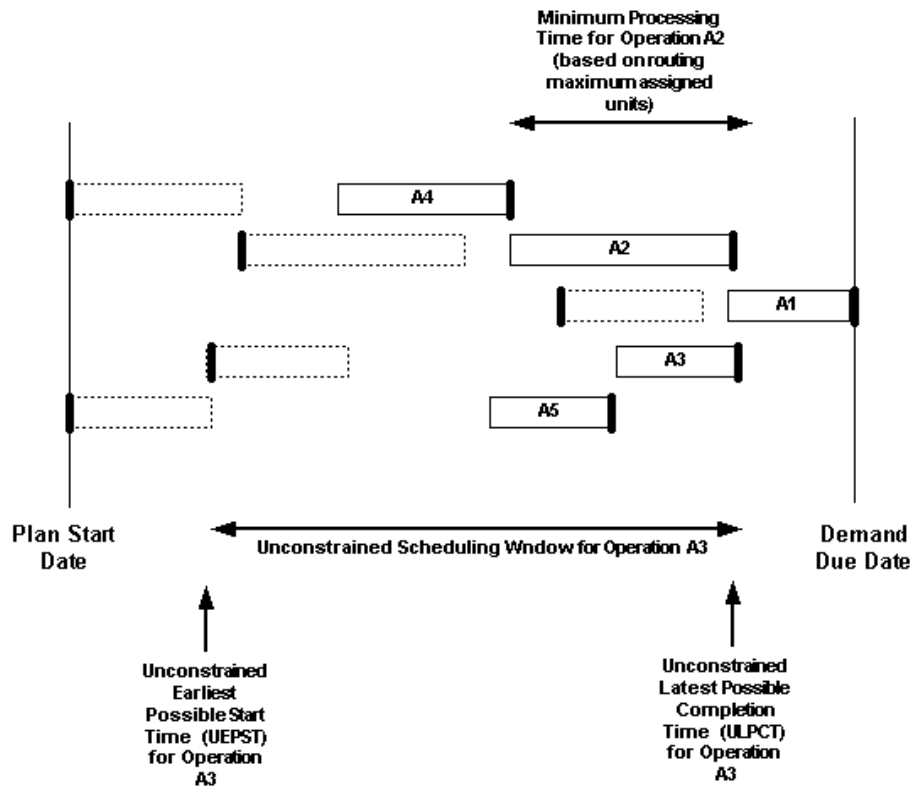
#### ***Unconstrained Operation Scheduling Window***



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 supplier delivery 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 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 to 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.

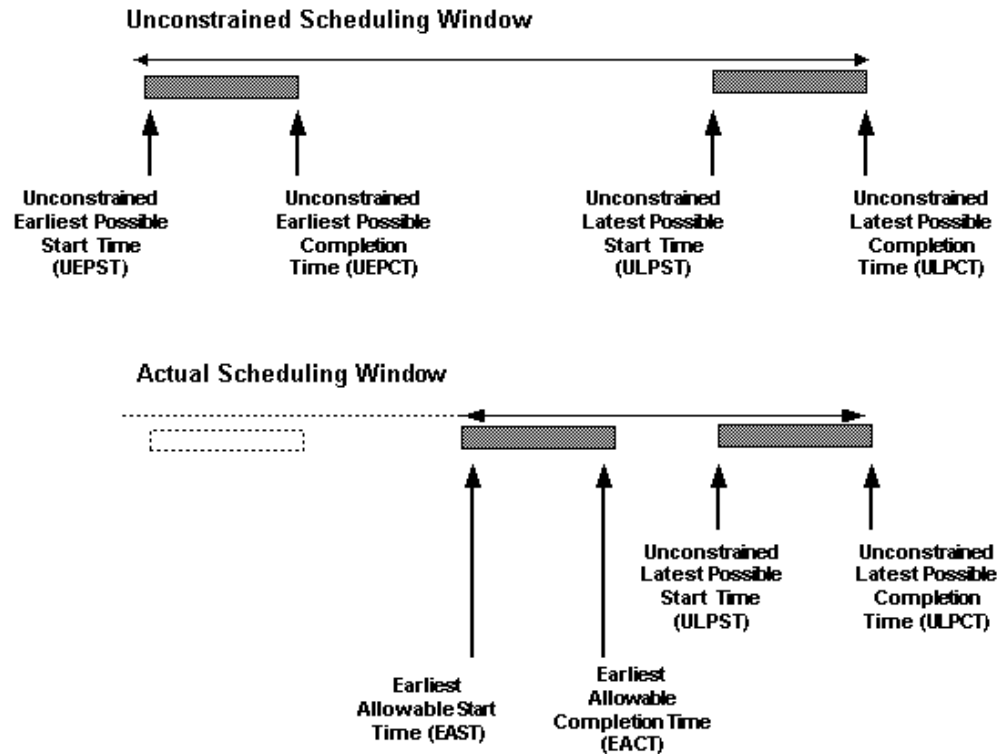
The planning engine calculates it from information gathered while performing unconstrained scheduling. It is the ratio of the minimum processing time needed by the operation to the total minimum processing time along the path of minimum slack upstream from the operation. This ratio indicates how much 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 than 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.

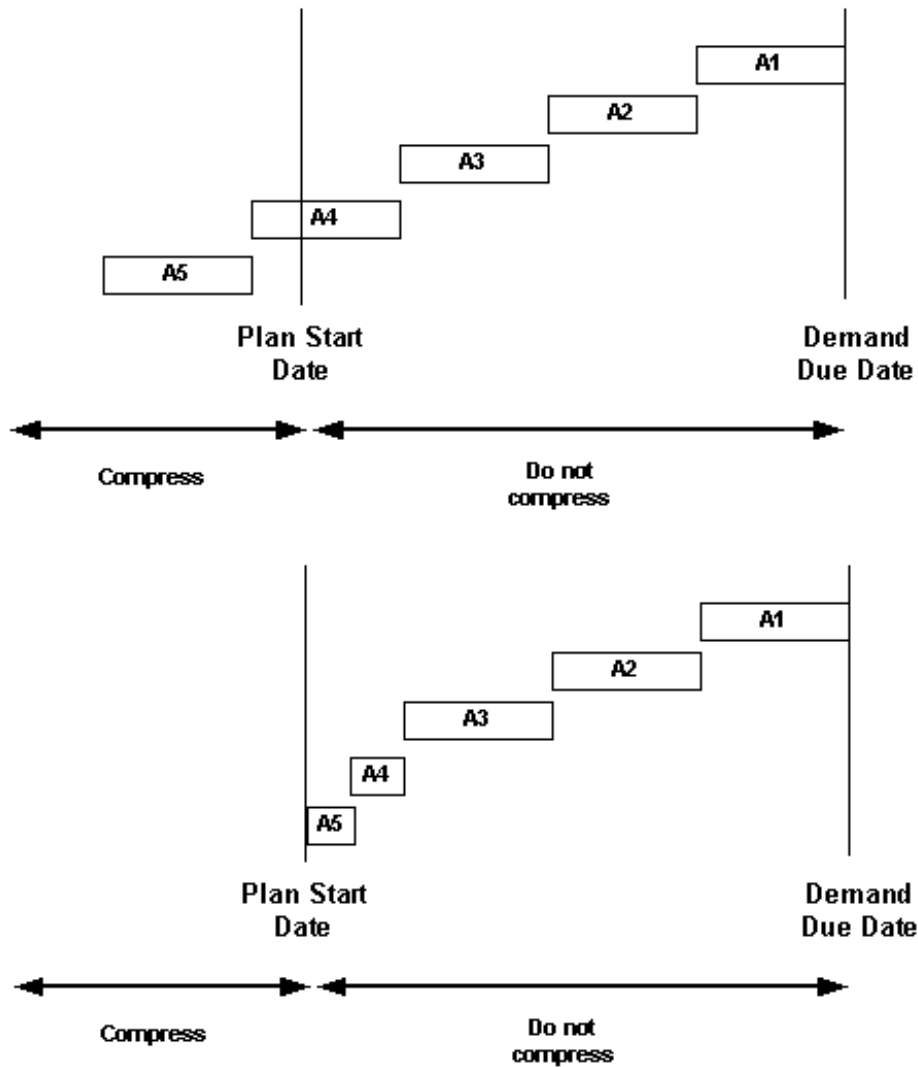
## Operation Compression

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.

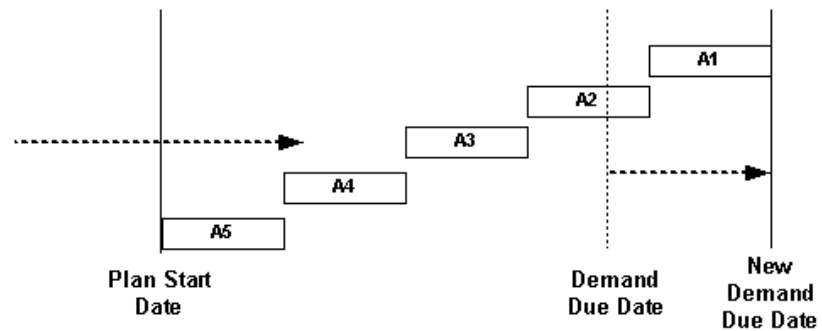
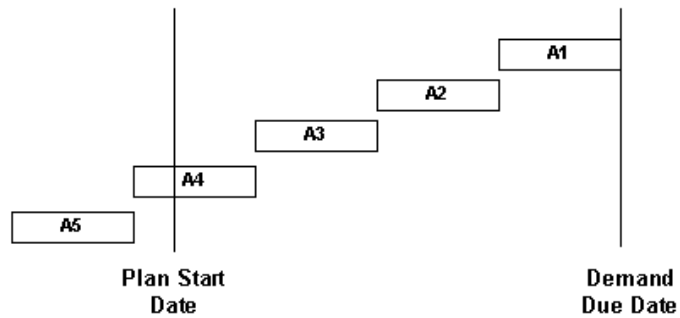
### *Violate Minimum Processing Times Example*



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.

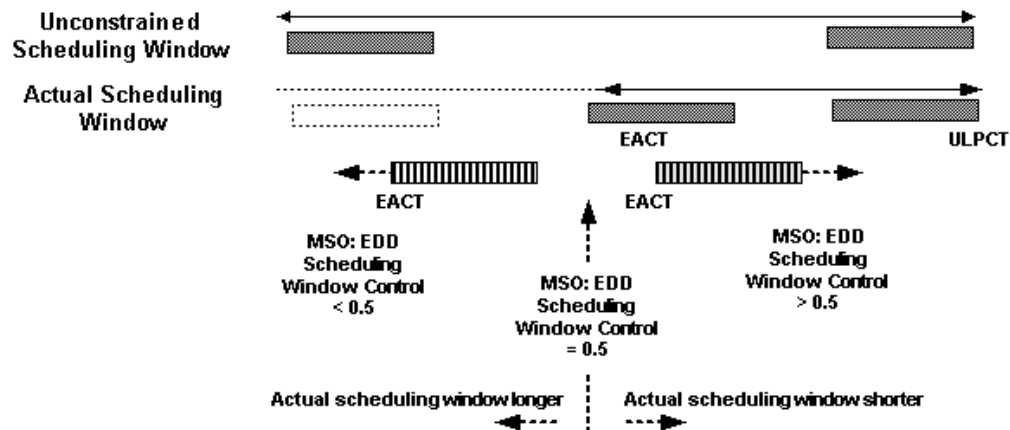
If you enter 0.5 (the default), the planning engine sets the actual scheduling window duration to the optimal size.

If you enter a 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 a 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.

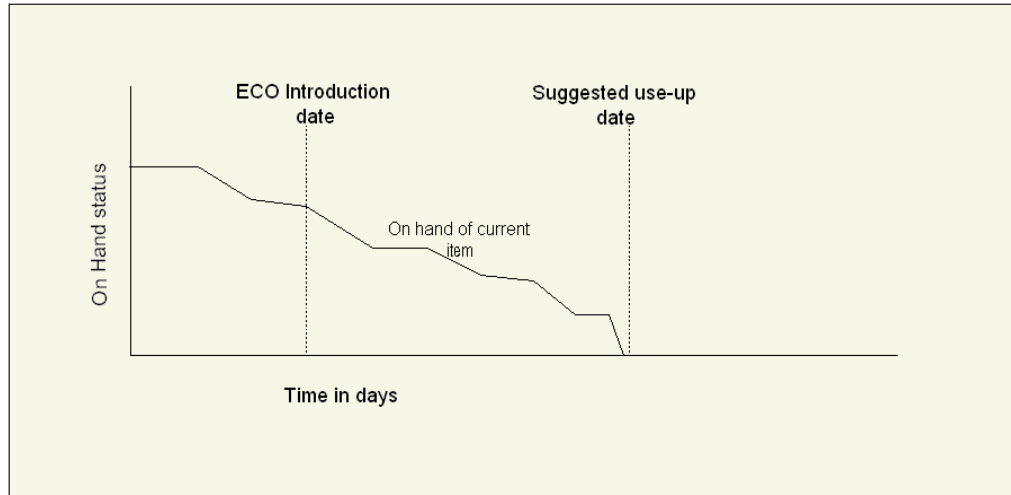
## Engineering Change Orders Use-Up Effectivity

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.

#### **Components window**

Org	Item	Component	Effectivity Date	Usage	Alternate Bom	Change Notice
dmt:M2	PC-AT0-0C1	0C99944	24-APR-2002	1		

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.

### Revised Items

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

Entity	Due Date	Days Late	Original Forecast	Expired Demand	Qty/Rate
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 relaunched 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 longer 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 data 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's Bills of Material*

### **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's Bills of Material*

### **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.
UOM	The unit of measure for the duration.



Field	Description
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 may 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, Inventory Management*.

### 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.

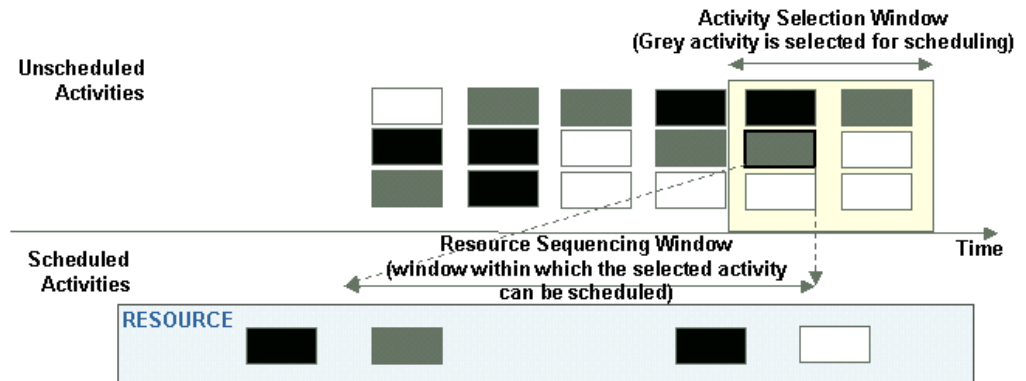
There are two values that you must specify:

- 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:  $\text{Changeover (A to B)} < \text{Changeover (A to X)} + \text{Changeover (X to B)}$  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**.

For more information on the Gantt chart, see Interactive Scheduling Using the Gantt Chart, page 10-197

### 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 losing 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



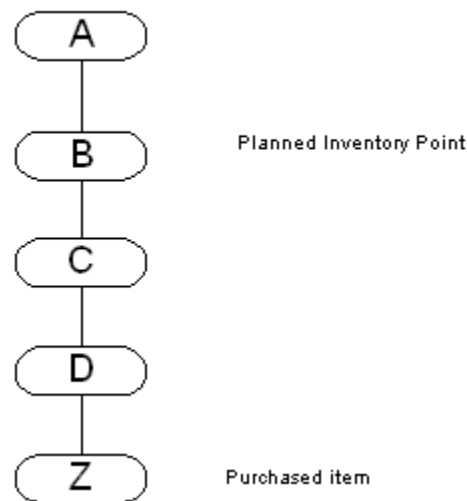
stored at this item level without the fear of losing the materials or losing quality characteristics of the materials. PIPs generally point to major stocking phases in manufacturing cycle.

### 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 11-79 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.

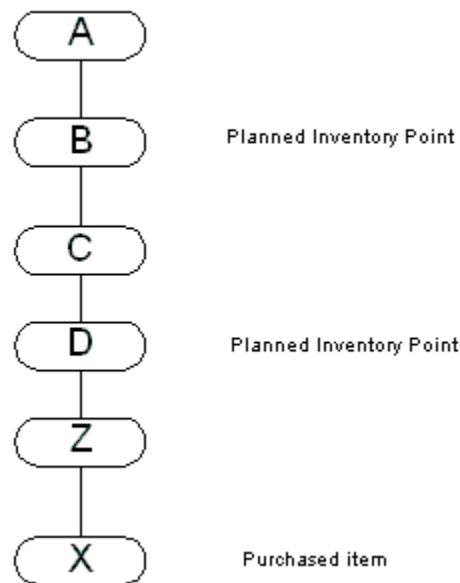
#### **On-Hand Quantities**

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 an 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.

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## 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
- Defining Trip Limits for Ship Methods by Lane
- Defining Sourcing Rules
- Multiple Inventory Policies
- Inventory Rebalancing
- Setting Up Supply Allocation Rules

### 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 6-178 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.



<b>Planned Item</b>	<b>Description</b>
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.

## 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.

**Define Priority Rules**

Name

Description

☐ Enabled ☐ Default

Priority Specified For	Demand Type	Demand Class	Priority

**Calculated Demand Priorities**

Demand Type-Demand Class	Calculated Priority

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.

## 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 14-2 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 6-167

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.

### Items form

**Distribution Planning**

☐ Distribution Planned

Maximum Inventory  Days Of Supply  Window

Target Inventory

**Enter Inventory Levels (TST:M1)**

Item	Quantity	Target Days of Supply	Minimum Days of Supply	Maximum Days of Supply

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 way 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 planning 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
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

Entity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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 if 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

Entity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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 planning 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.

## 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.

Shipping Organization		Inventory Rebalance	Inventory Rebalance	Supplier	Allocation %	Shipping	Intransit	
Type	Org		Rank	Supplier	Site	Rank	Method	Time
Transfer From	TST:M2	<input checked="" type="checkbox"/>	1				Airborne-Air-Air	2
Transfer From	TST:M3	<input checked="" type="checkbox"/>	2				Rail Road	3
		<input type="checkbox"/>						
		<input type="checkbox"/>						

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	-	-	Selectend	-	<blank>	0	Acme	2
Transfer from	R3	-	-	Selectend	-	<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.

**Supply Allocation Rule**

Name

Description

Effective Date

From Date  To Date

**Organizations**

Org	Fixed Lot Multiplier
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

**Demand Priority Override**

Priority

**Fair Share Allocation**

Percent

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 15-18 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.

## Setting Up Assignment Sets

### To set up assignment sets:

1. From the Navigator, select Distribution Planning > Sourcing > Assign Sourcing Rules

Sourcing Rule / Bill of Distribution/Supply Allocation Rule Assignments

Assignment Set [Yellow Highlighted Box]

Description [ ]

Assignments

Sourcing Supply Allocation

Assigned To	Instance/Org	Customer	Customer Site	Item / Category	D
[Dropdown]	[Icon]				[Icon]
[Dropdown]	[Icon]				[Icon]
[Dropdown]	[Icon]				[Icon]
[Dropdown]	[Icon]				[Icon]
[Dropdown]	[Icon]				[Icon]
[Dropdown]	[Icon]				[Icon]
[Dropdown]	[Icon]				[Icon]
[Dropdown]	[Icon]				[Icon]
[Dropdown]	[Icon]				[Icon]
[Dropdown]	[Icon]				[Icon]

Purge Copy from... View Sourcing Rule/BOD View Supply Chain Bill

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.



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## 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, navigate to Distribution Planner Workbench: Tools > Preferences.

### The Main Tabbed Region

This table describes the fields and options of the Main tabbed region:

Object	Description
Demand Priority Rule Set	<p>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.</p> <p>End demand priorities are passed down the supply chain network on the dependent demands.</p> <p>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.</p>
Assignment Set	<p>Use this option to select assignment set for the distribution plan. Assignment sets include the Supply Allocation rule assignment tab.</p> <ul style="list-style-type: none"> <li>• MRP/MPS/MPP plans can use the same assignment sets but these plans will ignore the supply allocation rules.</li> <li>• The Supply Allocation tab is only available on assignment sets on the planning server.</li> </ul>



Object	Description
Use Organization Priority Overrides	<p data-bbox="891 306 1458 432">The Use Organization Priority Overrides check box is optional. However, if Use Organization Priority Overrides is checked, a demand priority rule cannot be used.</p> <p data-bbox="891 459 1419 648">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.</p> <ul data-bbox="891 674 1446 936" style="list-style-type: none"> <li>• If no priorities are assigned for an organization-item, allocations are performed on an equal priority basis.</li> <li>• Priorities assigned to end demands (forecasts and sales orders), safety stock and target are the same priority as the assigned organization priority.</li> </ul> <p data-bbox="891 974 1458 1100">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.</p> <p data-bbox="891 1125 1386 1184">On demand priority override region, in supply allocation rules, you can select:</p> <ul data-bbox="891 1209 1463 1472" style="list-style-type: none"> <li>• 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.</li> <li>• None or Null: Demand priorities are not over-written.</li> </ul> <p data-bbox="891 1509 1463 1761">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.</p>

Object	Description
Fair Share Allocation Method: Default	<p data-bbox="797 310 1365 464">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.</p> <p data-bbox="797 495 1357 583">If no organization priority override rule is specified, then all destinations and source are treated as having the same priority.</p> <p data-bbox="797 615 1357 768">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.</p> <p data-bbox="797 814 1365 936">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:</p> <ul data-bbox="797 961 1089 1129" style="list-style-type: none"> <li data-bbox="797 961 1089 989">• Current Demand Ratio</li> <li data-bbox="797 1031 1032 1058">• Safety Stock Ratio</li> <li data-bbox="797 1100 902 1127">• None</li> </ul> <p data-bbox="797 1171 1365 1325">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.</p> <p data-bbox="797 1356 1308 1478">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.</p>

Object	Description
Fair Share Allocation Method: Supplier	<p data-bbox="891 306 1425 401">For each plan, set the supplier fair share allocation method used for all suppliers to organizations allocation. The three plan option choices are:</p> <ul data-bbox="891 426 1463 722" style="list-style-type: none"> <li data-bbox="891 426 1438 520">• Current Demand Ratio: Fair share based on the ratio of the demands from each destination organization for the bucket.</li> <li data-bbox="891 560 1463 655">• Safety Stock Ratio: Fair share based on the ratio of the destination organization safety stock levels at the end of the allocation bucket</li> <li data-bbox="891 695 1297 722">• None: First-come first-serve basis.</li> </ul> <p data-bbox="891 762 1382 825">Fair share allocation methods are not assigned directly to individual suppliers.</p> <p data-bbox="891 850 1455 940">The fair share allocation logic is called when supplier capacity is defined and demand exceeds available supplier capacity in an allocation bucket.</p> <p data-bbox="891 966 1438 1056">Supplier capacity is fair shared to multiple organizations based on the net capacity available at the end of an allocation bucket.</p> <p data-bbox="891 1081 1442 1272">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:</p> <ul data-bbox="891 1297 1458 1766" style="list-style-type: none"> <li data-bbox="891 1297 1354 1360">• Approved Supply List (ASL) Fixed Lot Multiplier on the plan run date if defined</li> <li data-bbox="891 1400 1458 1528">• 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.</li> <li data-bbox="891 1568 1438 1696">• 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.</li> <li data-bbox="891 1736 1414 1766">• Otherwise, use fractional quantities up to six</li> </ul>

Object	Description
Fair Share Allocation Method: Customer	<p data-bbox="846 310 1003 338">decimal places.</p> <p data-bbox="797 401 1300 457">For each plan, set customer fair share allocation method. The four plan option choices are:</p> <ul data-bbox="797 485 1365 919" style="list-style-type: none"> <li data-bbox="797 485 1365 583">• Demand Class: Fair share allocation is performed by demand class. Below demand class, supplies allocated on a first come first serve basis.</li> <li data-bbox="797 621 1365 720">• Customer: Fair share allocation is performed by customer. At the customer site level, supplies are allocated on a first come first serve basis.</li> <li data-bbox="797 758 1365 814">• Customer Site: Fair share allocation is performed by customer site.</li> <li data-bbox="797 852 1365 919">• None: Supplies are allocated on first-come first-serve basis.</li> </ul> <p data-bbox="797 957 1365 1079">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.</p>

Object	Description
Enable Sales Order Split	<p data-bbox="891 306 1430 401">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:</p> <ul data-bbox="891 426 1419 590" style="list-style-type: none"> <li data-bbox="891 426 1419 489">• 1st line: Sales order quantity reduced to the quantity available on the suggested due date.</li> <li data-bbox="891 527 1370 590">• 2nd line: New suggested ship date when remaining quantity is available.</li> </ul> <p data-bbox="891 627 1463 785">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.</p> <ul data-bbox="891 810 1463 1604" style="list-style-type: none"> <li data-bbox="891 810 1403 873">• Distribution Planning issues sales order line allocation split exception messages.</li> <li data-bbox="891 911 1446 974">• Ship line complete sales order lines and internal sales order lines are not split.</li> <li data-bbox="891 1012 1463 1304">• 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.</li> <li data-bbox="891 1341 1463 1436">• Firm sales order lines can still be split, as the firm flag only indicates that the source organization is firm.</li> <li data-bbox="891 1474 1463 1604">• 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.</li> </ul>

Object	Description
Enforce Supplier Capacity Constraints	<p>If Enforce Supplier Capacity Constraints is checked, supplier capacity constraints are respected and Material Shortage exceptions are issued when supplier capacity constrains planned orders.</p> <p>If Enforce Supplier Capacity Constraints is not checked, supplier capacity constraints can be violated and supplier capacity overload exception messages are reported.</p>
Minimum Trip Utilization % and Maximum Trip Utilization %	<p>Use this option to set Minimum Trip Utilization % and Maximum Trip Utilization %. This option only applies to truckload ship methods.</p> <p>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.</p> <p>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.</p> <ul style="list-style-type: none"> <li>Both weight and cube trip limits are considered by distribution planning.</li> <li>Trips are not loaded in excess of the maximum trip utilization %.</li> </ul> <p>Under-utilized trip exceptions reported for trips below the minimum trip utilization %:</p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>

Other fields on the main tab are similar to MRP and MPS plan options. Please see the section The Main Tabbed Region, page 5-38 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

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	<p>Trip consolidation days are days from the plan start date that trips are created, scheduled and consolidated.</p> <ul style="list-style-type: none"> <li>• Days are measured in working days based on the plan calendar as defined by owning organization or calendar profile.</li> <li>• Must be less than or equal to daily buckets.</li> <li>• 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.</li> </ul>
Trip Consolidation End Date	<p>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.</p>
Period Allocation Bucket	<p>Check to enable period allocation based on the plan calendar. When checked, Daily Allocation Buckets and Weeks per Aggregate Allocation Bucket are grayed out.</p>
Daily Allocation Bucket	<p>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.</p>
Weekly Allocation Bucket Start Date	<p>This field is display only and shows the start date for a weekly allocation bucket.</p>



Object	Description
Weeks per Weekly Allocation Bucket	The number of weeks contained in each aggregate allocation bucket.
Inventory Rebalancing Days	<p>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.</p> <p>Inventory rebalancing relationships are defined in the sourcing rules.</p> <p>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.</p>

Object	Description
Infinite Time Fence Horizon Days	<p data-bbox="873 306 1365 590">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.</p> <p data-bbox="873 621 1365 705">After the infinite time fence start date, the distribution planning engine behaves as follows:</p> <ul data-bbox="878 737 1365 1766" style="list-style-type: none"> <li data-bbox="878 737 1365 831">• The infinite time fence applies to the lowest level organization in the supply chain where there is a supply schedule.</li> <li data-bbox="878 863 1365 936">• Internal transfers are generated even if supply is not available.</li> <li data-bbox="878 968 1365 1167">• 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.</li> <li data-bbox="878 1199 1365 1272">• Ship Method selection is still done after the infinite time fence.</li> <li data-bbox="878 1304 1365 1398">• Fair share allocation of supplies does not occur after the infinite time fence in the lowest-level organization.</li> <li data-bbox="878 1430 1365 1503">• The infinite time fence does not apply to supplier capacity.</li> <li data-bbox="878 1535 1365 1608">• Load consolidation is not performed after the infinite time fence.</li> <li data-bbox="878 1640 1365 1766">• Pegging is not calculated for supplies outside the infinite time fence. There is a placeholder in the pegging tree for the lowest level organization.</li> </ul>

Object	Description
Infinite Time Fence Start Date	The first date of the Infinite Time Fence.

Please see the section Inventory Rebalancing, page 12-21 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.

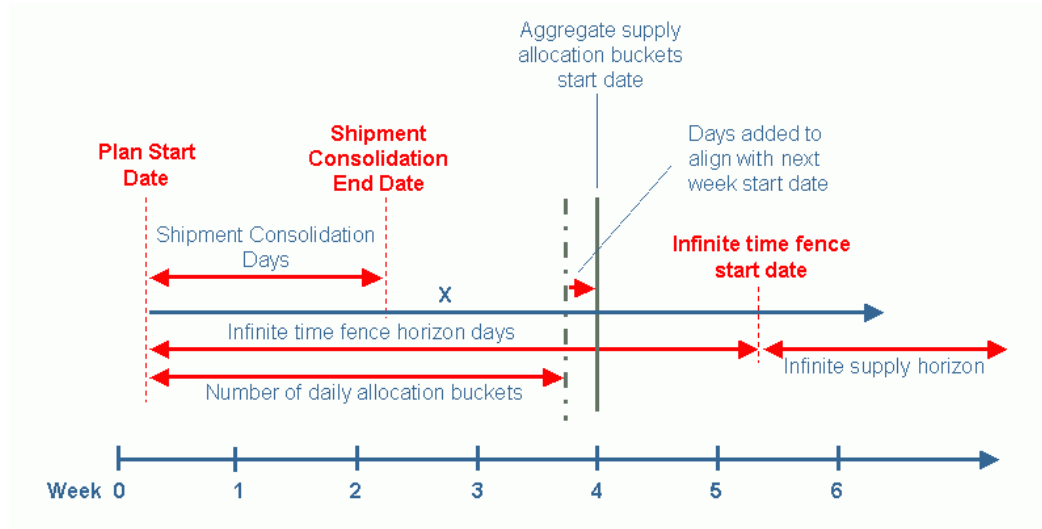
Other fields shown include trip weight and cube, available weight and cube, and maximum weight and cube. Also included for each trip are the in transit lead-time, the ship method, mode, service level and carrier name. Statuses for each trip are provided to show if it is an existing trip and if there 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  $\text{Trip Upper Weight Limit} * (\text{cost/weight unit}) - \text{Actual Trip Weight} * (\text{cost/weight unit})$ . 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





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## 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 6-2. 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 be 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 level, 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.

### **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:  $[(\text{Total number of orders} - \text{Number of late orders}) * 100] / \text{Total number of orders}$ . We do not show service level which is computed in Oracle Advanced Supply Chain Planning as  $(\text{Demand quantity satisfied by due date} / \text{Demand quantity}) * 100$ . 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.

## Distribution Plan Exception Messages

### Overview

For general information about exception messages, see Overview of Exception Messages, page 9-1. 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 9-7.

### 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 Order lead time constraint Order is firm late Demand quantity is not satisfied
Late Sales Orders and Forecasts	Sales order / forecast at risk	Order causes supplier capacity overload Order with insufficient lead time
Material Capacity	Material constraint	Allocation constraint Order lead time constraint 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 Allocation constraint
Shortage and Excess	Items below safety stock	Material constraint Allocation constraint
Shortage and Excess	Items below target	Material constraint Allocation constraint 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 9-16.

### **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 9-16.

### **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 9-16.

## **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 9-16.

## 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.

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:  $\text{Allocated quantity} / \text{total supply quantity} * 100\%$ .
- 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 window**

Item Name	Demand Priority	Source Org	Destination	Supplier	Allocation Bucket S	Allocation Bucket E	C
DC-Chanel-X19	3	APS:D1	APS:M1		31-JAN-2007 00:00	31-JAN-2007 23:59	C

### **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 15-1.

## **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 9-26.

### 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 9-26.

**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 9-26.

### 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 9-26.

**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 9-48.

**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:

$$\text{Maximum of (Actual Weight / Maximum Capacity Weight) * 100}$$

- Cube Over Load %: This percentage is calculated by the following formula for the date range between the start date and end date:

$$\text{Maximum of (Actual Cube / Maximum Capacity Cube) * 100}$$

#### **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 as constrained by material availability based on the selected you while defining the plan options such as 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:  
$$(1 - \text{Actual Weight} / \text{Minimum Weight}) * 100$$
- 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:

$$(1 - \text{Actual Cube}/\text{Minimum Cube}) * 100$$

- 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 shipment limits.

The planning engine generates an exception message for each trip with weight and cube below 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:  

$$(1 - \text{Actual Weight} / \text{Maximum Weight}) * 100$$
- 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:  

$$(1 - \text{Actual Cube} / \text{Maximum Cube}) * 100$$
- 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 9-73.

### 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 9-73.

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 9-73.

**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.

**Note:** 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 9-78.

### **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 9-78

**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 9-78.

**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 9-78.

**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 9-78

## 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 9-78.

## 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 9-78.

## **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 9-97.

### **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 9-97.

### **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 9-97.

### **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 9-97.

### **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 9-97.

## **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 9-105.

### 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" in Item Exceptions Exception Group, page 9-105.

## **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 9-105.

## **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 9-105.

## 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 9-112.

- 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.

Option	Description
Ship From / To Orgs	<p>The Horizontal Plan is displayed for several organizations based on the organization-item context of the right-click.</p> <p>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.</p>
All Orgs	<p>The Horizontal Plan is displayed for all organizations, based on the item context of the right-click.</p> <p>Each individual organization is also displayed if you select Display Each Org in All Orgs View on the plan preferences setting for material plan.</p> <p>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.</p>
All Orgs (internal shipments not included)	<p>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.</p> <p>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.</p>

Option	Description
OrgList1, OrgList2, OrgList3	<p data-bbox="873 306 1357 432">OrgList1, OrgList2, OrgList3 refers to user-defined names for various organization selection lists, as defined on the Org Selection List form.</p> <p data-bbox="873 457 1357 583">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.</p>

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.



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## Managing Distribution Plans

This chapter covers the following topics:

- Manage Distribution Plan Overview
- 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:  $100\% * \text{Cum unconstrained demand} / \text{Cum suggested allocated quantity}$ . 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 work in process, purchase orders, purchase requisitions, in-transits, in receiving, planned orders, and returns.
- Current Scheduled Receipts: Includes work in process, purchase orders, purchase requisitions, in-transits, in receiving, and returns
- Projected On Hand: Same as Projected Available Balance except does not include any planned orders.
- Projected Available Balance: Includes beginning on-hand, 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.

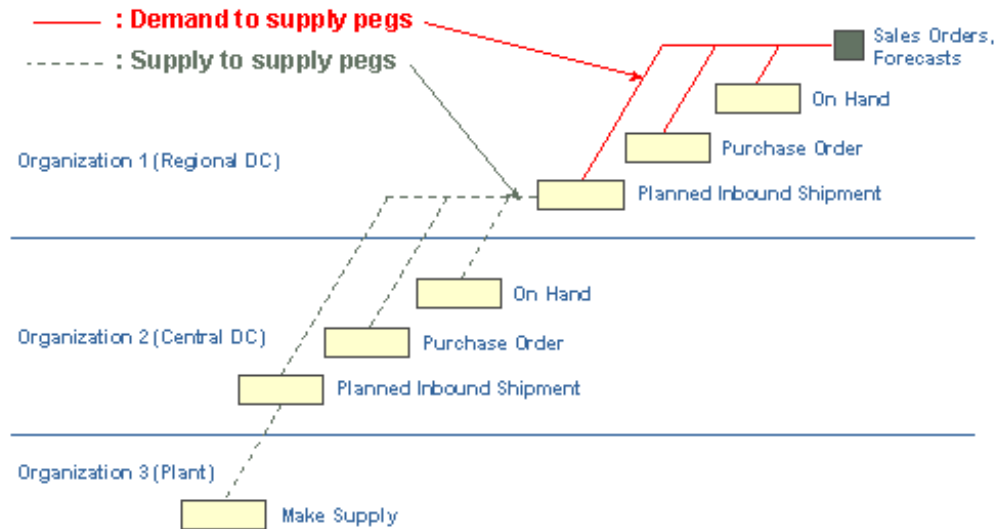
### **Allocation Pegging**

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



Distribution planning does not use any of the Oracle Advanced Supply Chain Planning pegging profile options.

### 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 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

## 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 firm 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.

<b>DC1 Demands</b>	<b>Priority</b>	<b>Demand Quantity</b>	<b>Allocation If Supply Is 100</b>	<b>Allocation If Supply Is 300</b>	<b>Allocation If Supply Is 700</b>
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.

<b>Demand Type: Order Number</b>	<b>Priority</b>	<b>Demand Class</b>	<b>Demand Source</b>	<b>Qty</b>
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
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.

<b>Demand Type: Order Number</b>	<b>Priority</b>	<b>Demand Class</b>	<b>Demand Source</b>	<b>Qty</b>	<b>Allocated Qty (Qty Satisfied by Due Date)</b>
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
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.

<b>Demand Type: Order Number</b>	<b>Priority</b>	<b>Demand Class</b>	<b>Demand Source</b>	<b>Qty</b>	<b>Allocated Qty (Qty Satisfied by Due Date)</b>
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	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.

<b>Demand Type: Order Number</b>	<b>Priority</b>	<b>Demand Class</b>	<b>Demand Source</b>	<b>Qty</b>	<b>Allocated Qty (Qty Satisfied by Due Date)</b>
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.

<b>Demand Type: Order Number</b>	<b>Priority</b>	<b>Demand Class</b>	<b>Demand Source</b>	<b>Qty</b>	<b>Allocated Qty (Qty Satisfied by Due Date)</b>
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.



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## 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

### 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 unconstrained 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**

**Item A**

**Item B**

R1  
Offset = 80%  
(Phantom Subassembly  
Op Seq 10

**Item C**

R2  
Op Seq 20

**Item E**

(Op Seq 30)  
R3  
Offset = 40%

**Item F**

(Op Seq 40)  
R4  
Offset = 20%

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, see 'Defining Bills of Material Parameters, *Oracle Bills of Material Users Guide* and 'Phantoms, *Oracle Bills of Material Users 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 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. The range of values for utilization is 0.0 to 1.0.

The range of values for efficiency is zero to infinity. 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 calculated as follows:

Adjusted resource hours = 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 Bill of Material Users Guide*, *Oracle Bills of Materials 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 Bill of Material Users 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**

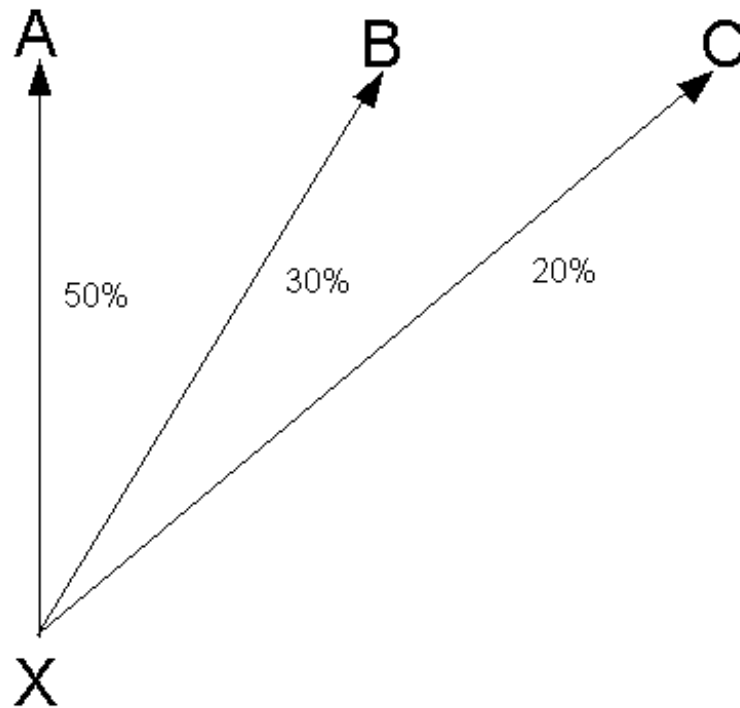
In some production environments, an item may turn into one or more parent items depending on factors such as process control, test results, and raw material quality. The parent items are called co-products.

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, assemblies 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

<b>Demand or Supply</b>	<b>Day 10</b>	<b>Day 25</b>	<b>Day 35</b>
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.

<b>Demand or Supply</b>	<b>Day 10</b>	<b>Day 25</b>	<b>Day 35</b>
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.

<b>Demand or Supply</b>	<b>Day 10</b>	<b>Day 25</b>	<b>Day 35</b>
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 6-167.

## **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.

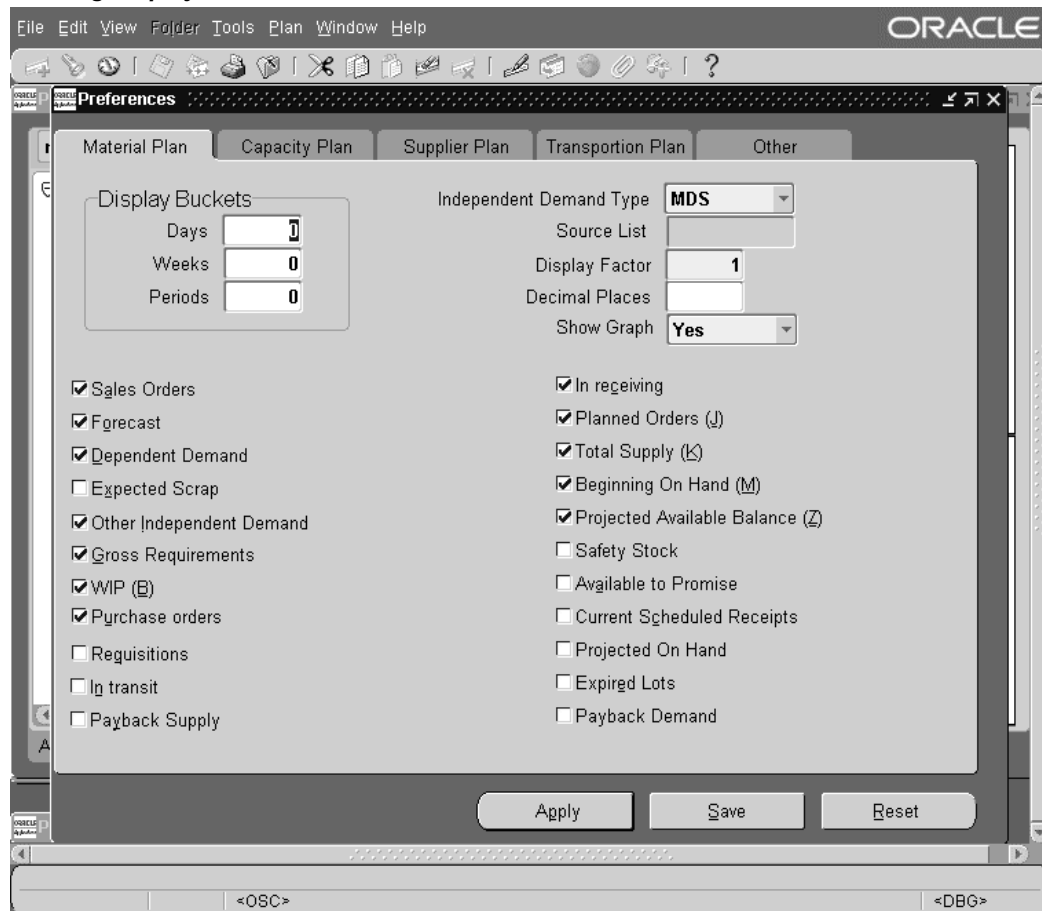
### **Planner Workbench**

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.

### Defining Display Preferences



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.

### Personal Profile Values form

Profile Name	Default Value	User Value
MSC : Default Project for Suppl		

#### 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).

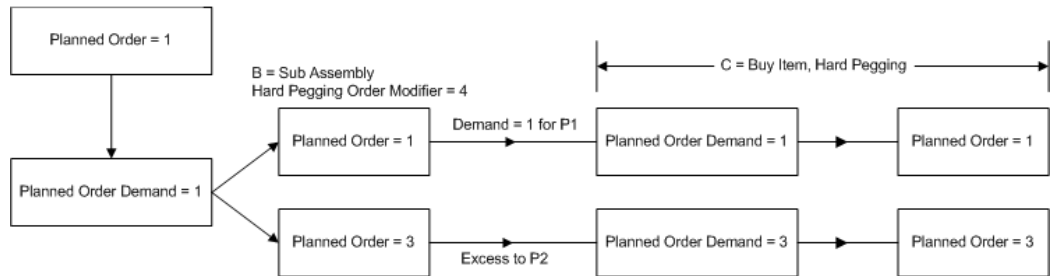
#### Scenario 1:

Project with demand = P1

Default project code = P2

### Scenario 1

A = Assembly  
Hard Pegging Demand = 1  
Project = P1



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.

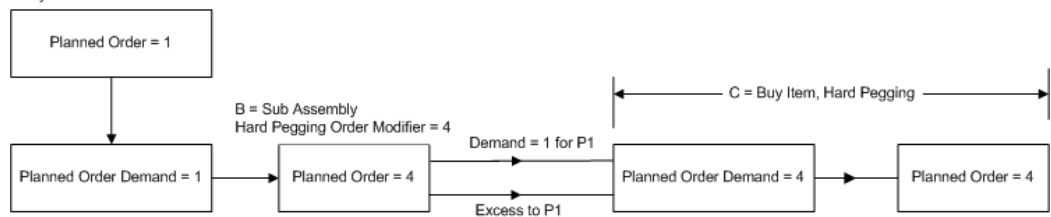
### Scenario 2:

Project with demand = P1

Default Project = P1

### Scenario 2

A = Assembly  
Hard Pegging Demand = 1  
Project = P1



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.

### Supply/Demand for Unit Effective Items

Org	Item	For Release	Firm	Planning Group	Project Number	Unit Number
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>	SEIGRP	SEIBAN1	APS01
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>		Asean Pumps	APS01
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>			APS05
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>	SEIGRP	SEIBAN2	APS04
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>		Asean Pumps	APS01
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>		Pacific Pumps	APS04
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>	SEIGRP	SEIBAN1	APS01
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>	SEIGRP	SEIBAN1	APS01
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>		Pacific Pumps	APS04
11I:P1	P943	<input type="checkbox"/>	<input type="checkbox"/>			APS05

Buttons: Pegging, Release, Select All For Release

### 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:

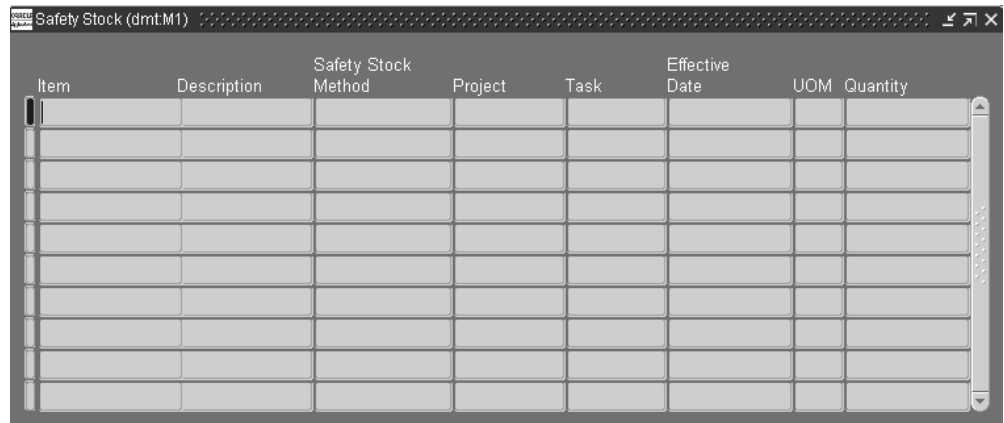
- Project/Task: The planning engine follows non-project netting and pegging logic. See Safety Stock, page 6-167.
- Higher than Project/Task: The planning engine meets safety stock levels of the combined requirements at that Reservation Level. For example, if Reservation Level is Project, the planning 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 10-71: 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 10-111: 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 10-158.



### Safety Stock window



Item	Description	Safety Stock Method	Project	Task	Effective Date	UOM	Quantity

### 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) 150 (P2)	10 (P2)
Projected available balance	50 (P1)	50 (P1)	50 (P1) 150 (P2)	50 (P1) 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) 150 (P2)	10 (P2)
Projected available balance	50 (P1)	50 (P1)	50 (P1) 150 (P2)	50 (P1) 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)
Safety stock demand	50 (P1,T1)	-	150 (P2,T2)	-

Schedule Entity	20 October	30 October	1 November	1 December
Scheduled receipts	25 (P2,T1)	5 (P1,T1)	-	-
Planned orders	50 (P1,T2) 35 (P1,T1)	15 (P2,T1)	20 (P1,T2) 145 (P2,T2)	10 (P2,T1)
Projected available balance	50 (P1,T1)	50 (P1,T1)	50 (P1,T1) 150 (P2,T2)	50 (P1,T1) 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)	-	-
Planned orders	85	10	170	10

Schedule Entity	20 October	30 October	1 November	1 December
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:  $2 (18 * 0.1) = 1.8$

<b>Schedule Entity</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
Demand	50 (P1)	40 (P2)	20 (P1)	10 (P2)	85 (P1) 10 (P2)	40 (P1) 100 (P2)
Scheduled receipts	25 (P2)	5 (P1)	-	-	-	-
Planned orders	37 (P1)	1 (P1) 12 (P2)	21 (P1)	11 (P2)	80 (P1) 10 (P2)	40 (P1) 100 (P2)
Projected available balance	2 (P1)	3 (P1) 2 (P2)	4 (P1) 2 (P2)	4 (P1) 3 (P2)	4 (P1) 3 (P2)	4 (P1) 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.

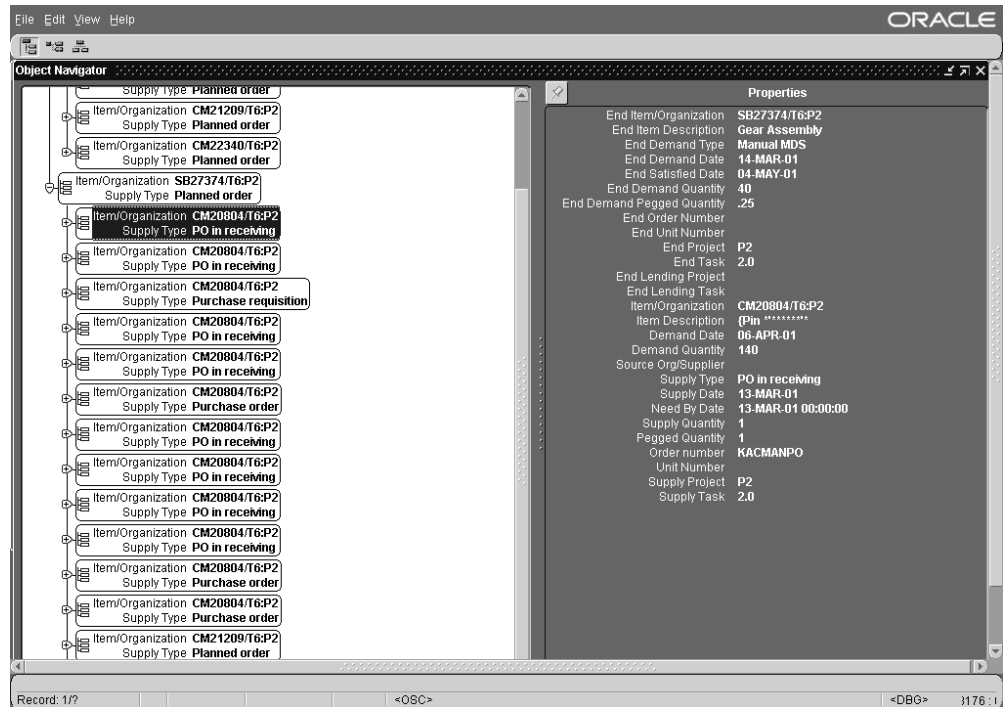
### Oracle ASCP Setup

1. Define Plan Options by choosing Tools > Pegging.
2. Complete the following options in the Pegging window.

Option	Description
Reservation Level	<p data-bbox="898 306 1365 432">This option determines the method of pre-allocation of project supply to project demand. You can choose to reserve based on:</p> <ul data-bbox="898 457 1365 1360" style="list-style-type: none"> <li data-bbox="898 457 1365 768"> <p data-bbox="943 457 1117 489">Planning Group</p> <p data-bbox="943 514 1365 768">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.</p> </li> <li data-bbox="898 804 1365 989"> <p data-bbox="943 804 1019 835">Project</p> <p data-bbox="943 861 1365 989">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.</p> </li> <li data-bbox="898 1024 1365 1241"> <p data-bbox="943 1024 997 1056">Task</p> <p data-bbox="943 1081 1365 1241">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.</p> </li> <li data-bbox="898 1276 1365 1360"> <p data-bbox="943 1276 1003 1308">None</p> <p data-bbox="943 1333 1211 1360">This is a nonproject plan.</p> </li> </ul>
Hard pegging level	<p data-bbox="898 1423 1354 1707">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.</p>



### The Pegging window



### 3. Launch a plan.

Refer to 'Defining Plans, page 5-1 for more information on defining plan options and launching plans.

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.

## 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

## 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.

## 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
- Kanban Planning and Execution
- Product Families
- Release Flow Schedules

Planning plays an important part in the design phase of an Oracle Flow Manufacturing implementation. The forecast, MDS, and/or MPS that are established are only used for planning purposes for line design and Kanban sizing as described below. 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 Flow Manufacturing Users Guide*, 'Defining Flow Manufacturing Standard Processes, *Oracle Flow Manufacturing Users Guide*, 'Defining Flow Manufacturing Standard Events, *Oracle Flow Manufacturing Users Guide*, and 'Defining Flow Manufacturing Standard Line Operations, *Oracle Flow Manufacturing Users Guide*.

## Kanban Planning and Execution

Generally the same forecast, MDS, or MPS that is used to design a mixed model production line is also used for Kanban planning. The derived demand of components is used to establish size requirements. Oracle ASCP uses the snapshot of inventory for on-hand quantity and safety stock.

Graphical Line Designer Workbench, *Oracle Flow Manufacturing User's Guide*, and 'Using the Kanban Calculation Program, *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning Users 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, *Oracle 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 than 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:

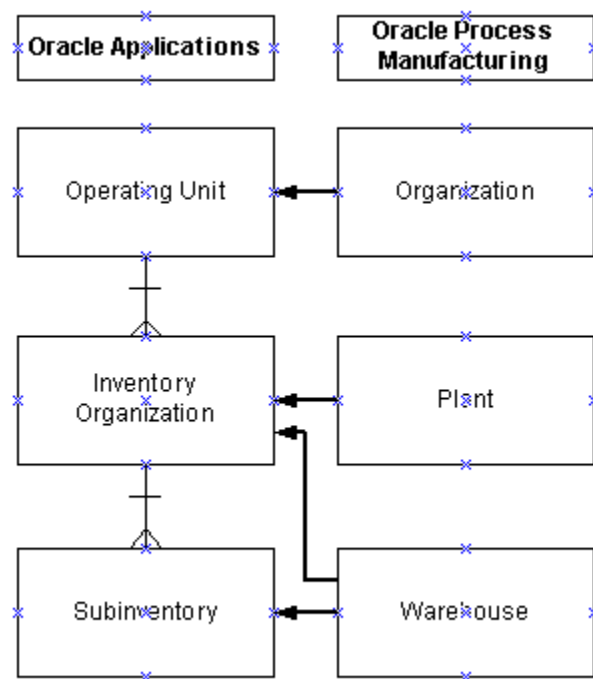
Upgrade Path	Type of Customer		
	OPM-MRP	OPM-ASCP	Non-OPM
<b>Upgrade/Install R12 OPM (and not R12 ASCP)</b>	Single-instance Multi-org ASCP	Multi-instance Multi-org ASCP	Single-instance Single-Org ASCP
<b>Upgrade/Install R12 ASCP</b>	Multi-instance Multi-org ASCP		

### 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.

### **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, please refer to Editing Units of Measure, *OPM System Administration User's Guide* in OPM 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

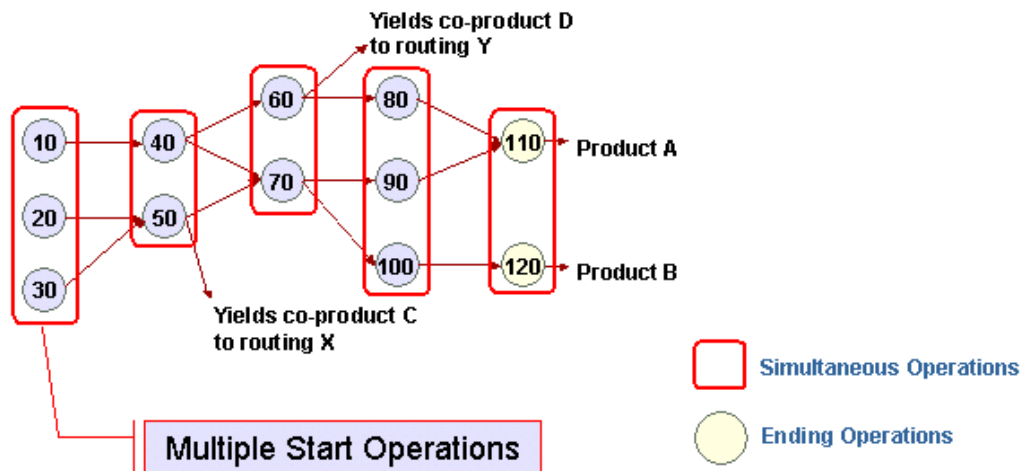
routing has these characteristics:

- 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.

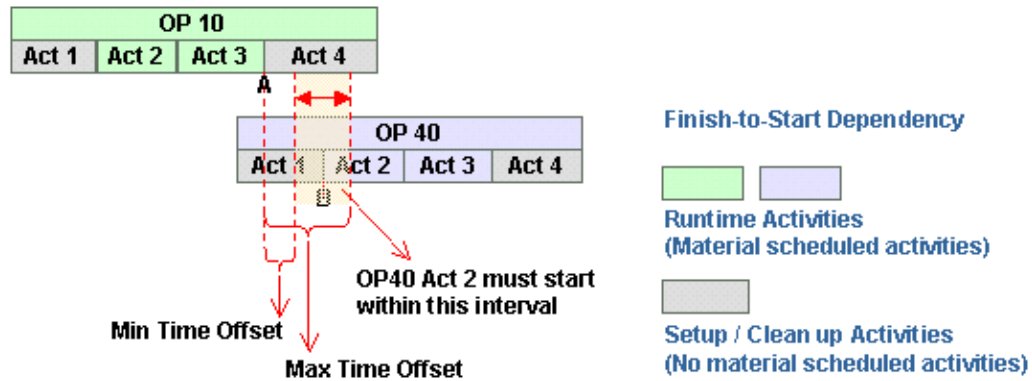
Operation dependency constraints are applied to the activities of upstream and downstream operations with two dependency types:

- **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, but 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 can become a costly problem where the materials are wasted and the machine has to be taken down for maintenance.

In order to support planning according to common practices of contiguous processing from raw materials to finished products, Advanced Supply Chain Planning (ASCP) allows you to enforce minimum and maximum time offsets between operations within the same routing. The time-offset constraint can be imposed between the finish of the first operation and the start of the second operation, or it can be imposed between the start of the first operation and the start of the second operation.

Oracle applications enable you to model slack time constraints between operations. In addition ASCP generates an End Item Supply Shelf Life Violation exception if the remaining shelf life of a product is less than the minimum remaining shelf life, when it arrives at the customer site. For more information on setting the shelf life for an item, see MPS/MRP Planning Attribute Group, *Inventory*

### 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	<p>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.</p>
>0	<p>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.</p> <p>This time offset might be used if the material must rest, but another ingredient needs to be added before it gets too hard.</p>
<0	<p>The downstream operation begins at the specified period of time before the completion of its preceding step.</p> <p><b>Note:</b> 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.</p> <p>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.</p>

This table illustrates the minimum and maximum time values for the start-to-start dependency type:

### ***Start-to-Start Dependency Type***

<b>Minimum and Maximum Time Values</b>	<b>Description</b>
0	<p>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.</p> <p>This time offset might be used if ingredients must be added at the same time without interruption.</p>
>0	<p>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.</p>

### **Setting Up Contiguous Operations**

The primary setup steps are:

1. Set key profile options.
2. Define step dependencies and time offsets.
3. Define other data elements required for ASCP plans, such as items, formulas, routings, recipes, validity rules, and sourcing rules.

#### **To set key profile options**

Oracle ASCP enables users to model minimum and maximum time offsets as hard or soft constraints using the MSC: Enforce Hard Links profile option. For additional information about MSC profile options, see *MSC Profile Options*, page A-11

To enable ASCP to treat an item shelf life days as a maximum time offset between operations that produce and consume the item, users can use the MSO: Use Item Shelf Life Days in Scheduling Buy or Make Orders profile option. For additional information about MSO profile options, see *MSO Profile Options*, page A-64

## **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.

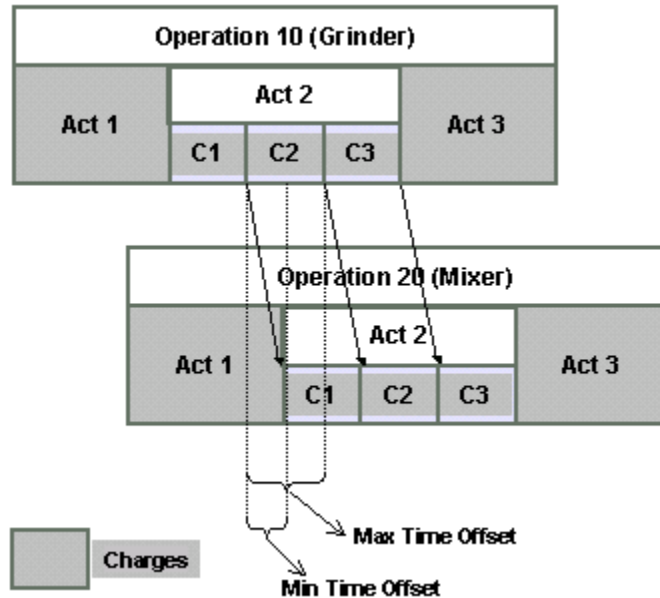
To determine the number of charges required for a batch, Oracle Advanced Supply Chain Planning divides the batch quantity by the maximum resource capacity and rounds up to the nearest integer. For example, if a resource has a maximum capacity of 1000 gallons, and a batch requires 4500 gallons, the operation 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 or 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-64

**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 10-197
- 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 9-1



**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**

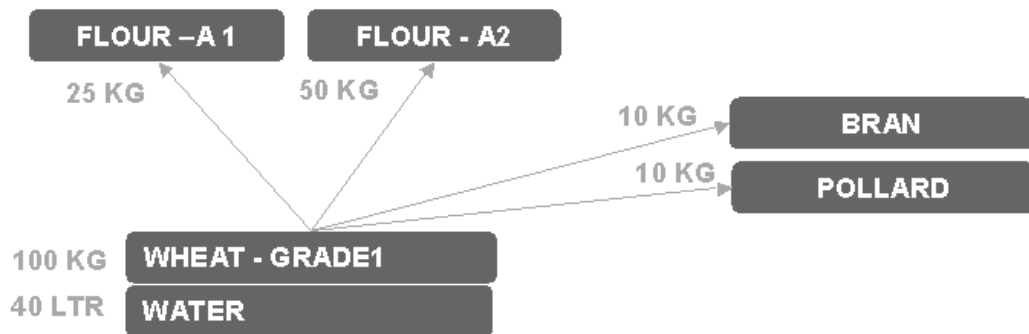
See Common Features in Hybrid Manufacturing Environments, page 16-2, Co-products section for basic co-product information. For more details, see the Oracle Process Manufacturing documentation.

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.

## 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 10-195 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, not the setting for this parameter as of the plan run time.

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

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.

**Note:** Lot-based Jobs are referred to as Discrete Jobs in the Planner's Work Bench

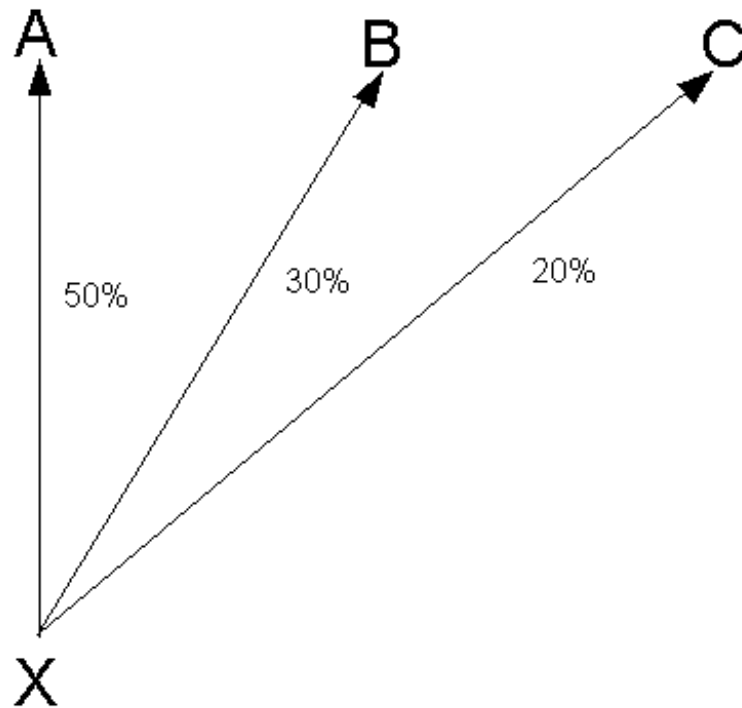
## Coproducts

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**

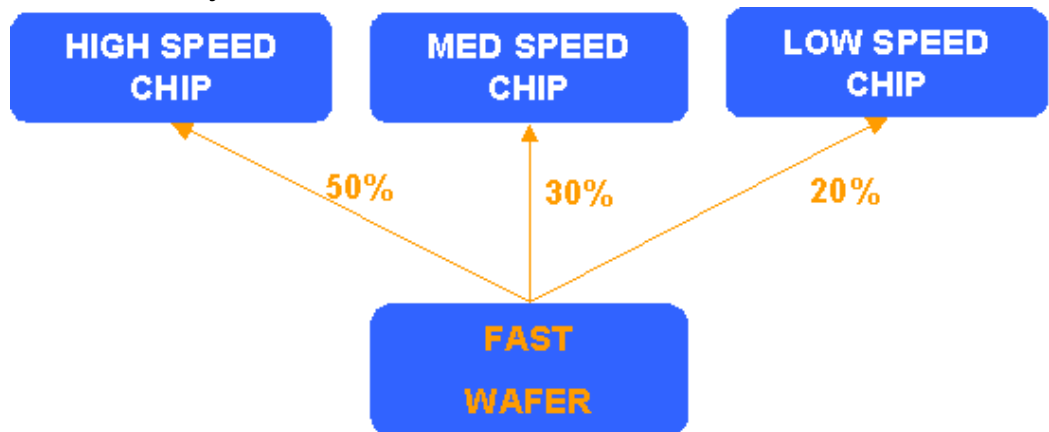
#### **Co-products Support in Planning**

See Common Features in Hybrid Manufacturing Environments, page 16-2, 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***



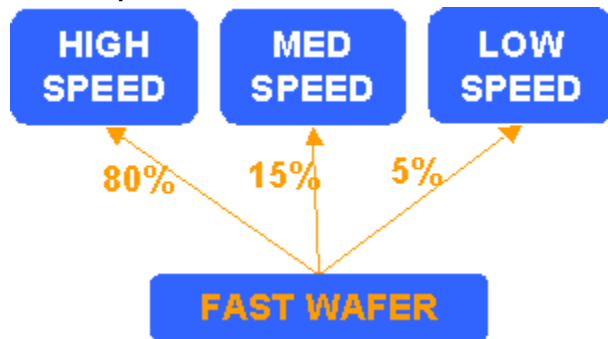
Use the Define Co-products form to specify co-products made from the primary component. Then, click Split Percentages and enter the percentage distribution for each co-product on the Define Time Phased Split Percentages form. You can specify effectivity date ranges for percentage distributions; the planning 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%

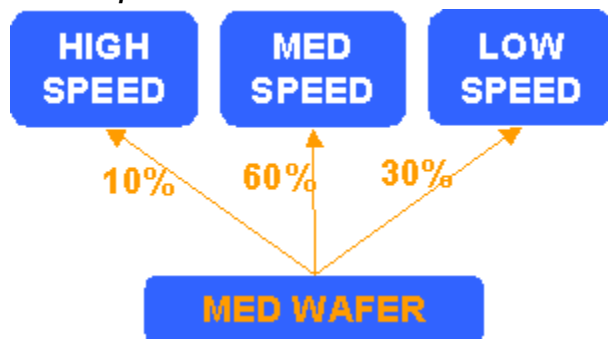
This diagram shows alternate bill of material 1. The process uses the same Fast Wafer as the primary bill of material. However, the process is tuned to produce different percentages of co-products from those the primary bill of material.

**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**

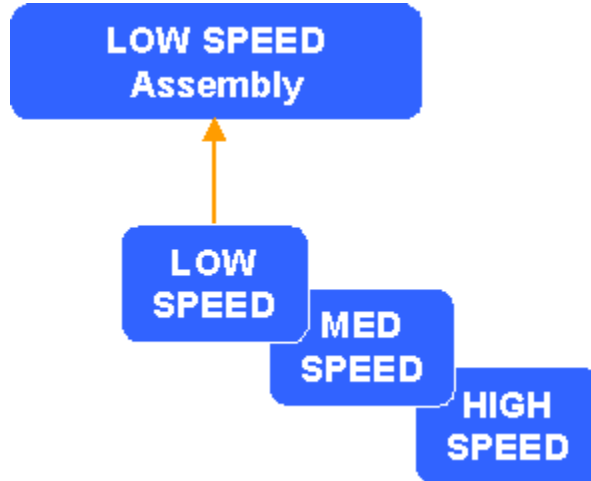


You can specify end-item substitutes for end item co-products and component substitutes for co-products used as components.

**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

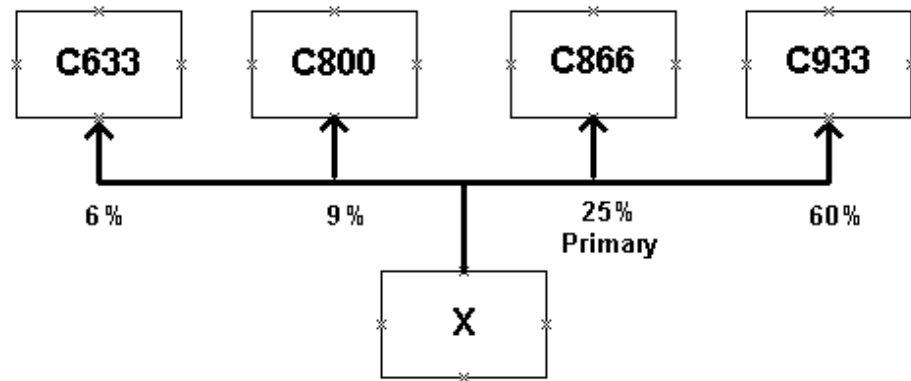
You can instruct the planning engine to round dependent demand quantities for components; see Requirement Integer Quantities in Items on page 1-1.

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  $[25 * 0.6 = 41.666, \text{round to } 42]$ .

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

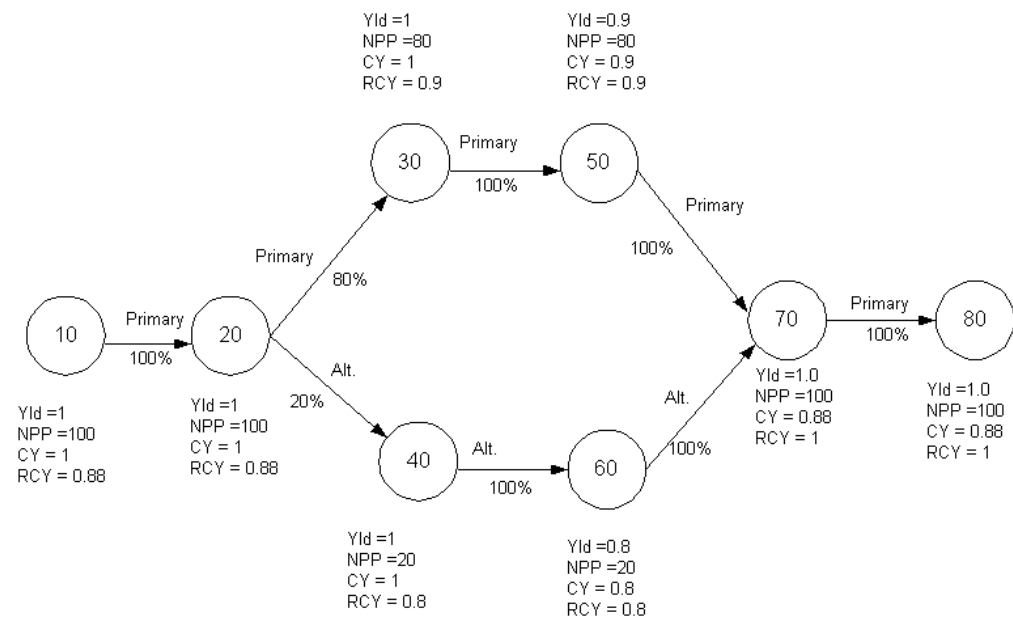
If the demand is for the primary co-product, the planning engine rounds down all of the other co-products and randomly selects one of them to increase to balance supply and demand. It does not increase the primary co-product.

## 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  $100/.88 \times 100\%$ , 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  $\text{MRP Net Quantity} - \text{Completed Quantity} - \text{Scrapped Quantity}$ .

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,

$$\text{Scheduled quantity} = \text{Sum (quantity at Queue, Run, and previous operation To Move)} + (\text{Scheduled quantity from previous operation} \times \text{operation yield from previous operation})$$

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 Cumulative 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

Operati on Number	Schedu led Quantit y	Quantit y Comple ted	Resour ce	Usage	Basis	Applies Hours	Hours Require d	Open Hours Require d
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.

### ***Routings window***

The screenshot shows the 'Routings (M1)' window. At the top, there are fields for 'Item' (OPY-ITEM2), 'OP YIELD EXAMPLE', and 'UOM' (Ea). Below these are 'Alternate' and 'Capable To Promise' checkboxes. The 'Revision' is set to 'A' and the 'Date' is '20-MAR-2004 10:05:29'. The 'Display' dropdown is set to 'Future and Current', and the 'Implemented Only' checkbox is checked. A section titled 'Operations' contains a tabbed interface with 'Main', 'Date Effectivity', 'WIP', 'Operation Yield', 'ECO', and 'Description'. The 'Operation Yield' tab is active, showing a table with columns 'Seq', 'Code', 'Yield', and 'CUM Yield'. The table has four rows with sequence numbers 10, 20, 30, and 40. The 'Yield' column contains values 1, .85, .9, and .9 respectively. The 'CUM Yield' column is empty. At the bottom of the window are three buttons: 'Routing Details', 'Routing Revisions', and 'Operation Resources'.

Seq	Code	Yield	CUM Yield
10		1	
20		.85	
30		.9	
40		.9	

2. Enter yield for specific operations.
3. Navigate to Workbench > Items.
4. Click the Routing Operations button.

### Routing Operations window

Org	Item	Assembly	Operation Seq	Yield	Effectivity Date	Disable Date
dmf:M2	OPY-ITEM6	OPY-ITEM2	10		06-OCT-2003 02:25	17-OCT-2006 0
dmf:M2		OPY-ITEM2	20	.85	06-OCT-2003 02:27	17-OCT-2006 0
dmf:M2	OPY-ITEM8	OPY-ITEM2	30	.9	06-OCT-2003 02:32	17-OCT-2006 0
dmf:M2	OPY-ITEM7	OPY-ITEM2	40	.9	06-OCT-2003 02:33	17-OCT-2006 0

Network Routing Resources

5. View the operation yield for the routing.
6. Click the Resources button.
7. In the Resources window, click the Requirements button.

### Resource Requirements window

Dept/Line	Op Seq	Resource	Quantity In Que	Quantity Runnir	Quantity Waiting To Move	Usage Rate	Schedule Quant	Resource Hours
OPY-D1	20	OPY-R3	0	10	10	1	10	10
OPY-D1	30	OPY-R5	0	0	40	1	18.5	18.5
OPY-D1	40	OPY-R6	0	0	0	1.00048	56.65	56.75

Supply

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 10-169

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 in three ways:

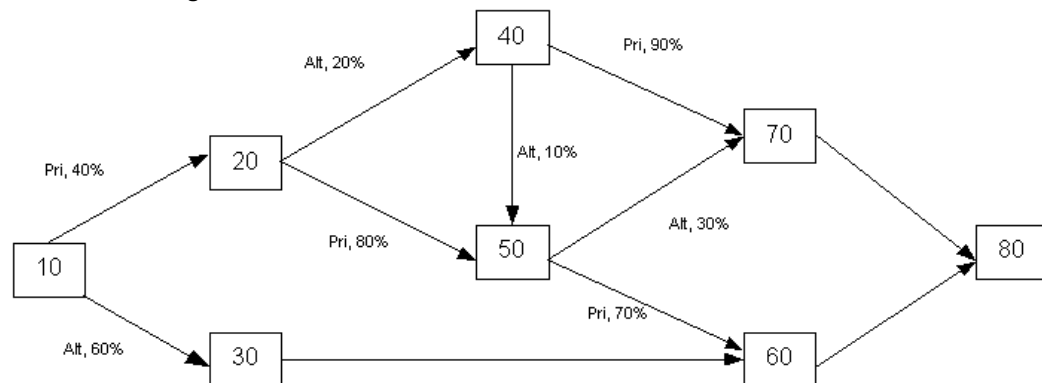
- Primary Path (default)
- Planned Percent
- Optimize

To make your selection, navigate to Setup and use Parameters form at ASCP. You can choose the scheduling method at the organization level by setting OSFM Network Scheduling Method parameter for your organization.

If you select Planned Percent or Optimize, run concurrent process Calculate operation yields on the source against the Oracle Shop Floor Management (OSFM) routings on the source.

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.

### Planned Percent

This method takes advantage of accumulated percentages derived from user-specified planning percentage on the Network Routing. Referring to the figure, the resource requirements at operation sequence 20 is calculated for  $100 \times \text{Net Planning Percent}$  at operation sequence 20. Considering an order of 100 units, the resource requirements at operation sequence 40 is calculated for 8 units, and so on.

### Optimize

With this method, you can analyze the current conditions on the shop floor, intelligently choose alternate paths, and determine the quantity that needs to be processed on various paths. Given a specific order, you should be able to schedule the order on the primary path. If you run into capacity constraints on the primary path, you should be able to schedule as much of the order as possible using the primary path and schedule the rest of the order on alternate paths. If you happen to go to an alternate path, the objective still is to get back to the primary path as soon as possible. For example, if you schedule resources at 40, you should seek the path 50, 60, 80 instead of 70, 80 or 50, 70, 80. Do not use this method with unconstrained plans.

You can influence the decision of using alternate paths as opposed to primary path or vice versa using system level profile options. Oracle ASCP provides profile options to influence scheduling decision. Oracle ASCP schedules the orders based on the availability of resources in a window defined by the following profile options:

MSO: Network Routing Cycle Time coefficient, is a multiple of the longest path of the network; the longest path is based on theoretical durations.

MSO: Network Routing fixed time window, is a fixed amount of time in days that you would like to add to your window



If the duration using longest path on the network is 5 days, and you entered 2 for MSO: Network Routing Cycle Time coefficient and 3 for MSO: Network Routing fixed time window, the total window size will be: fixed time window + cycle time coefficient \* longest path on the network, or  $3 + 2(5) = 13$  days.

You can further influence the scheduling decision using the following two profile options:

MSO: NFL BACKWARD COMPRESSION PCT, specifies the percentage of resources available for scheduling within the window described earlier during backward scheduling. If you set this profile option to 60%, the system only considers 60% of the available capacity in the window specified above while backward scheduling.

MSO: NFL FORWARD COMPRESSION PCT, specifies the percentage of resources available for scheduling within the window described earlier during forward scheduling. If you set this profile option to 20%, the system only considers 20% of the available capacity in the window specified above while forward scheduling.

These last two profile options give you the flexibility in controlling the on-time delivery of orders.

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:  $\text{Order Qty} * \text{RCY} * 0.8 (\text{NPP}) * \text{Qty Per Assembly}$ .

### 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 as firm if the operation has already started. 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) . Future operations and the completion date of the job may still be rescheduled out. This affects constrained plans only.

#### **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-11.

### 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

### Release window

The screenshot shows the 'Release window' in Oracle Advanced Supply Chain Planning. The window title is 'Supply/Demand (dmf/WSM)'. It has tabs for 'Order', 'Release Properties', 'Sourcing', 'Line', and 'Project'. The 'Order' tab is active, showing a table with columns: Org, Item, For Release, Firm, Order Type, Sugg Due Date, Qty/Rate, Order Number, Action, and New Date. The table lists several orders, including discrete jobs and planned orders. A 'Release (dmf/WSM)' dialog box is open, showing a table with columns: Instance, New Discrete Jobs, New Schedules, Rescheduled Jo, New Requisition, Reschedule Re, and Re. The dialog box also has an 'OK' button.

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.

2. To view the operation details, navigate to OSFM > Lot Based Job.

3. Query the job.
4. Select Tools > Plan Details.

#### Tools menu

The screenshot shows the Oracle Applications - dmst111 interface. The 'Tools' menu is open, displaying options: Change Status 1, Apply Default Job Name, View Workflows, Transaction Summary, Print Reports..., Forwards Infinite Schedule, Backwards Infinite Schedule, and Plan Details (highlighted). The main window displays the 'Plan Details' page for 'Chip Assembly Small'. The page includes fields for Type (Standard), UOM (Ea), Status (Released), and a checkbox for Firm. Below these are sections for Quantities (Start: 100, Net Planned: 30) and Dates (Start: 16-FEB-2006 13:28:00, Completion: 17-FEB-2006 23:59:00). At the bottom, there are tabs for Bill, Routing, Job History, Schedule Group, Project, Planning, Scheduling, and More. The 'Bill' tab is active, showing fields for Reference, Alternate, Revision (0), Supply Type (Based on Bill), and Revision Date (17-FEB-2006 23:59:00). Buttons for 'Lgt Attributes', 'Operations', and 'Components' are at the bottom right.

The Plan Details page appears.

## Plan Details page

**ORACLE**  
Shop Floor Management

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Plan Details: KevinTemp1

Job Description	<b>Job Mass Loaded on 23-MAR-2004 18:28:36 (server timezone)</b>	Quantity Remaining	<b>100</b>
Assembly	<b>XX.CH.S.BG</b>	UOM	<b>Ea</b>
Assembly Description	<b>Chip Assembly Small</b>	Coproducts Supply	<b>Yes</b>
Released Date	<b>23-MAR-2004 18:28:37</b>	Current Routing Operation Sequence	<b>10</b>
Scheduled Start Date	<b>16-FEB-2006 13:28:00</b>	Current Operation Code	<b>TS1</b>
Scheduled Completion Date	<b>17-FEB-2006 23:59:00</b>	Current Operation Department	<b>XX-D2-HK</b>
Requested Due Date		Routing Refresh Date	<b>23-MAR-2004 18:28:43</b>

[Show Additional Details](#)

**Operations**

View

Routing Operation Sequence	Code	Department	Operation Description	Start Date	Completion Date	Scheduled Quantity	Yield	Details
10	TS1	XX-D2-HK		16-FEB-2006 13:28:00	16-FEB-2006 13:43:00	100	1	
20	TS2	XX-D2-HK		16-FEB-2006 13:43:00	16-FEB-2006 13:58:00	100	1	
30	PAC	XX-D2-HK		16-FEB-2006 13:58:00	17-FEB-2006 23:59:00	100	1	

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- To view and update the yield for a specific operation, click the Details icon at the end of the operation row.

## Operations page

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Shop Floor Management

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Plan Details: KevinTemp1 > Operation: 20

Operation: 10

Operation Seq Num	<b>10</b>	Scheduled Quantity	<b>100</b>
Operation Code	<b>TS1</b>	Start Date	<b>16-FEB-2006 13:28:00</b>
Department	<b>XX-D2-HK</b>	Completion Date	<b>16-FEB-2006 13:43:00</b>
Yield	<input type="text" value="75"/>		

[Hide Details](#)

**Operation Yield**

Cumulative Yield	<b>1</b>	Net Planning Percent	<b>100</b>
Reverse Cumulative Yield	<b>1</b>	Include In Rollup	<b>Yes</b>

**WIP**

Count Point	<b>Yes</b>	Autocharge	<b>Yes</b>
Backflush	<b>Yes</b>	Minimum Transfer Quantity	<b>0</b>

**Other**

Description		Effectivity Date	<b>11-DEC-2003 16:52:25</b>
Option Dependent	<b>No</b>	Disable Date	
Operation Lead Time Percent			

Resource Sequence	Schedule Sequence	Substitute Group	Resource	Start Date	Completion Date	Usage Rate/Amount	Required Units	UOM	Basis	Scheduled	Source Phantom	Details
10		10	XX-R13-HK	16-FEB-2006 13:28:00	16-FEB-2006 13:43:00	0.25	25	HR	Lot	Yes		

- To view and update a resource for a specific operation, drill down to operation details to view the primary and alternate resources.

### Operations page drill down

ORACLE

Shop Floor Management

Close Window Preferences

Plan Details: KC-JOB1 > Operation: 20

Resource: 10

Resource Seq Num 10

Substitute Group Num 1

Recommended Start Date 12 JAN 2006 19:30:00

Recommended Completion Date 16 FEB 2006 19:30:00

Resource Code XX-R2-HK

UOM Code HR

Basis Item+

Usage Rate or Amount 4

Usage Rate or Amount Inverse 0.25

Setup

Costing

Activity

Standard Rate No

Charge Type WIP move

Phantom

Scheduling

Schedule Seq Num

Assigned Units 1

Scheduled Yes

Resource Offset

Recommended Resource Replacement Group

Replacement Group	Resource Sequence	Schedule Sequence	Resource Start Date	Completion Date	Usage Rate/Amount	UOM Basis	Source Phantom	Primary
0	10		XX-R2-HK 12-JAN-2006 19:30:00	16-FEB-2006 19:30:00	4	HR Item+		<input checked="" type="checkbox"/>

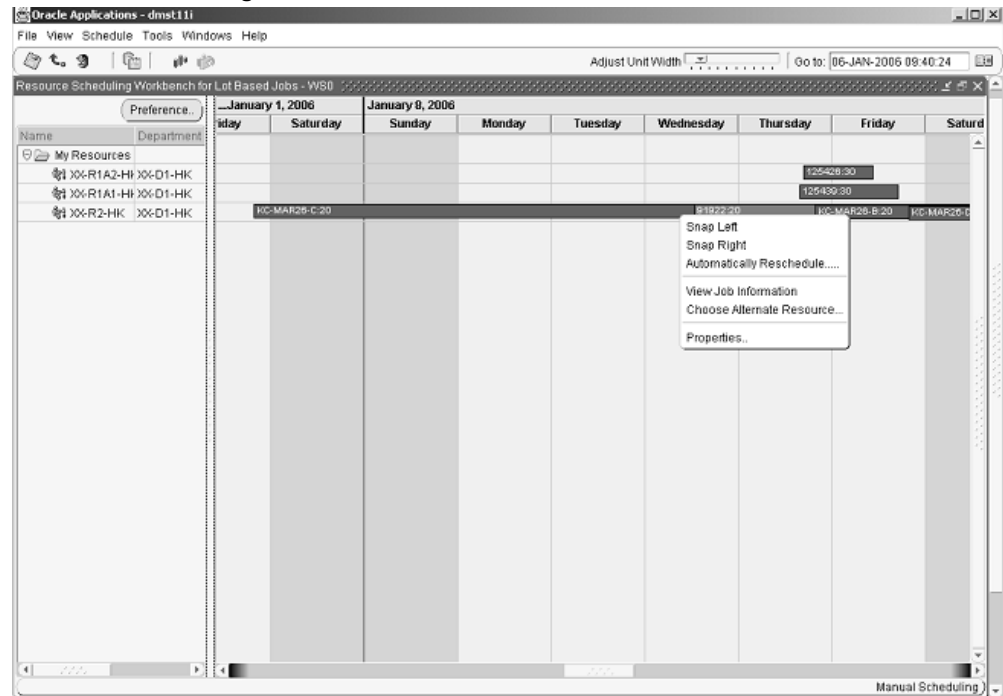
Alternate Resource Replacement Groups

Replacement Group	Resource Sequence	Schedule Sequence	Resource	Usage Rate/Amount	UOM Basis	Source Phantom	Primary
2	12		XX-R1A2-HK	0.1	HR Item+		<input type="checkbox"/>
3	11		XX-R1A1-HK	0.1	HR Item+		<input type="checkbox"/>

Return to Operation Details Page

- Navigate to OSFM > View Resource Scheduling.

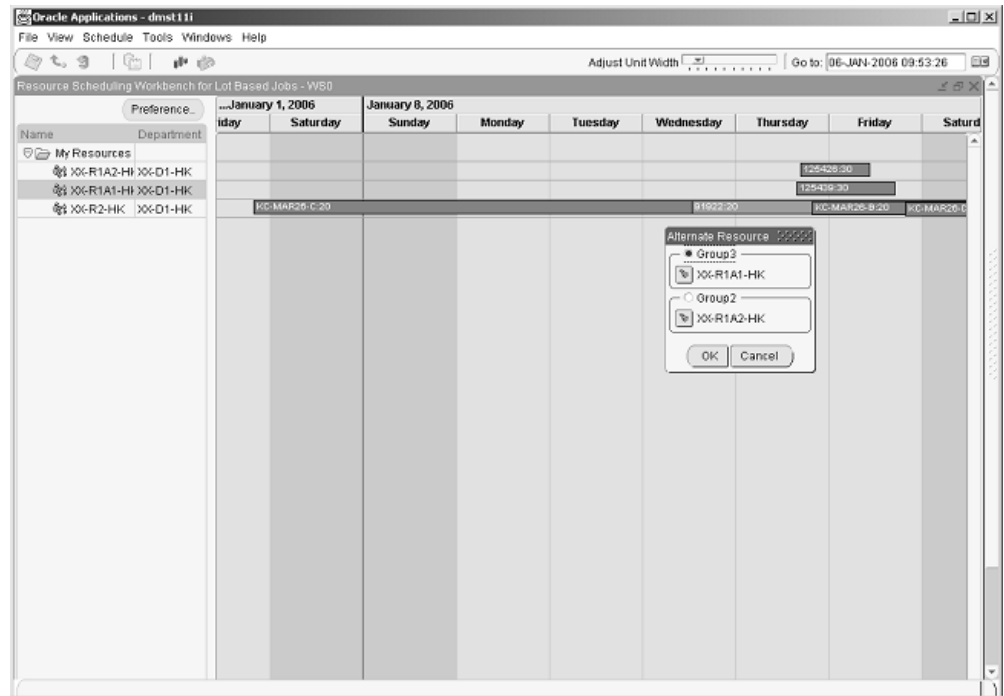
### Resource scheduling Gantt chart form



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.



### Resource scheduling Gantt chart form, right-click option



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.

Operations page, Components subtab

ORACLE

Shop Floor Management

Close Window Preferences

Plan Details: KC-JOB1

Operation: 30

Operation Seq Num 30

Scheduled Quantity 80

Operation Code C03

Start Date 16-FEB-2006 19:30:00

Department XX-01-HK

Completion Date 02-MAR-2006 19:30:00

Yield 0.8

Show Details

ResourcesComponents

Select Component: Update

Select	Details	Component	Required Quantity	Onhand Quantity	UOM	Quantity Per Assembly	Component Yield	Date Required	Supply Type	Supply Subinventory	Supply Locator	Source Phantom
<input checked="" type="radio"/>	Show	XX-MA-BG	40	0	Ea	1	2	16-FEB-2006 19:30:00	Assembly Pull	Sub1	wsm.1.1...	
<input type="radio"/>	Show	XX-SE-WA-HK	80	143	Ea	1	1	16-FEB-2006 19:30:00	Operation Pull	Sub1	wsm.1.1...	

ResourcesComponents

CancelApply

Close Window | Preferences

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13. Drill down to review component details.

### Update Components page

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Shop Floor Management

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[Preferences](#)

[Plan Details: KC-JOB1](#) > [Operation: 30](#)

**Update Component: XX-MA-HK**

[Cancel](#)
[Apply](#)

Operation Seq Num: 30

Operation Code: C03

Operation Department: XX-D1-HK

Scheduled Quantity: 80

Backflush: Yes

Select Component: (Recommend)

Select Component	Quantity Per Assembly	Component Yield	Supply Type	Supply Subinventory	Supply Locator	Required Quantity	Onhand Quantity	UOM	Primary	Recommended
<input type="radio"/> XX-MA-HK	1	2	Assembly Pull	Sub1	wsm.1.1..	40	-10	Ea	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/> XX-MA-BG	1	2	Assembly Pull	Sub1	wsm.1.1..	40	0	Ea	<input type="checkbox"/>	<input checked="" type="checkbox"/>

[Cancel](#)
[Apply](#)

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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.

## Update Recommended Path page

[Close Window](#)
[Preferences](#)

Plan Details: KevinTemp1

Update Recommended Path: KevinTemp1

Cancel
Apply

Job NameKevinTemp1
Job DescriptionJob Mass Loaded on 23-MAR-2004 18:20:36 (server timezone)

AssemblyXX-CH-S-BG
Assembly DescriptionChip Assembly Small

Routing Reference
Alternate Routing Designator

Routing Revision Date17-FEB-2006 23:59:00
Routing Revision0

Details	From Sequence ^	From Code	To Sequence	To Code	Planning Percent	Recommended	Transition Type
▶ Show 10	TS1	15	TS3	40		<input type="checkbox"/>	Alternate
▶ Show 10	TS1	20	TS2	60		<input checked="" type="checkbox"/>	Primary
▶ Show 15	TS3	30	PAC	100		<input type="checkbox"/>	Alternate
▶ Show 20	TS2	30	PAC	100		<input checked="" type="checkbox"/>	Primary

Cancel
Apply

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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.

### ***Refresh Open Jobs Copies concurrent process parameters***

The screenshot shows a window titled 'WSM\_REFRESH\_JOBS (WS0)' with a 'Run this Request...' section. Below this, the 'Name' is 'Refresh Open Jobs Copies' and the 'Parameters' are 'No:KC-MAR26-A:KC-MAR26-B::Standard:KC-SE-HK:::Yes:Yes:No:No:No:No:No'. A 'Copy...' button is in the top right. Below the parameters, a 'Parameters' tab is active, showing a list of fields with their current values: 'Refresh All Open Jobs' (No), 'From Job Name' (KC-MAR26-A), 'To Job Name' (KC-MAR26-B), 'Job Assembly' (empty), 'Job Type' (Standard), 'Common Bill Item' (KC-SE-HK), 'Alternate Bill Designator' (empty), 'Common Routing Item' (empty), 'Alternate Routing Designator' (empty), 'Select Jobs by Status' (Yes), 'Released Jobs' (Yes), 'Unreleased Jobs' (No), 'On Hold Jobs' (No), 'Complete Jobs' (No), 'Closed Jobs' (No), and 'Cancelled Jobs' (No). At the bottom are 'OK', 'Cancel', 'Clear', and 'Help' buttons.

Field	Value
Refresh All Open Jobs	No
From Job Name	KC-MAR26-A
To Job Name	KC-MAR26-B
Job Assembly	
Job Type	Standard
Common Bill Item	KC-SE-HK
Alternate Bill Designator	
Common Routing Item	
Alternate Routing Designator	
Select Jobs by Status	Yes
Released Jobs	Yes
Unreleased Jobs	No
On Hold Jobs	No
Complete Jobs	No
Closed Jobs	No
Cancelled Jobs	No

## **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.

---

# Integrating Production Scheduling

This chapter covers the following topics:

- Overview
- Running Production Scheduling with ASCP
- Running Production Scheduling in Standalone Mode Without ASCP
- Setting Profile Options for Production Scheduling
- Running Collections
- Creating a Schedule
- Setting Schedule Options
- Running a Schedule from the Workbench
- Copying a Schedule Within Production Scheduling
- Publishing a Schedule
- 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.

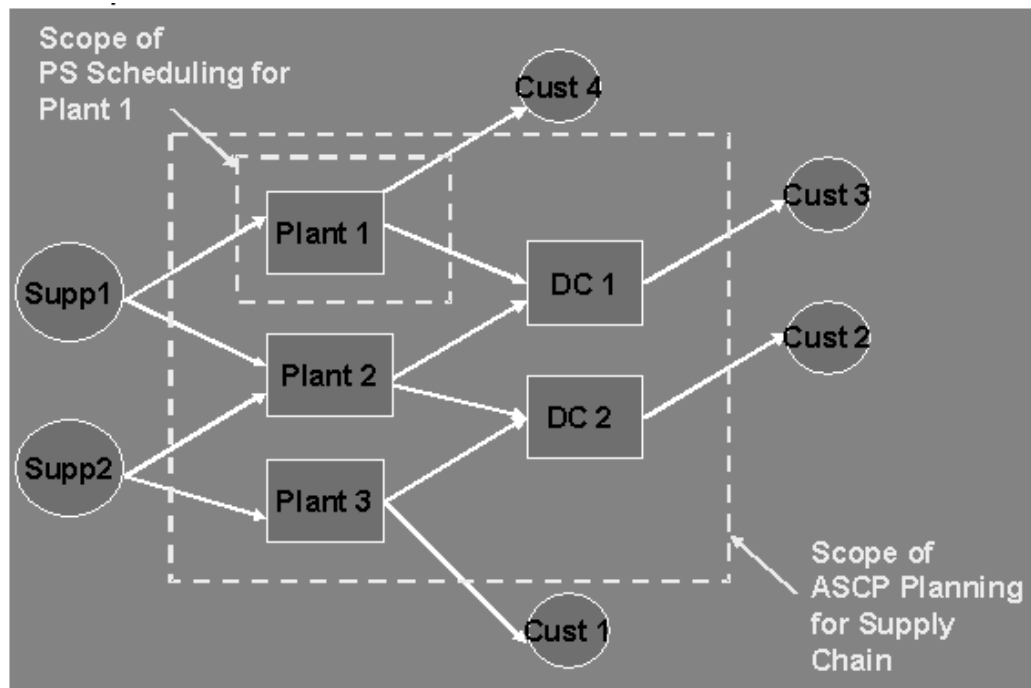
Production Scheduling can either interact only with the E-Business Suite, or additionally receive planned orders from Advanced Supply Chain Planning (ASCP) when generating detailed production schedules.

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.



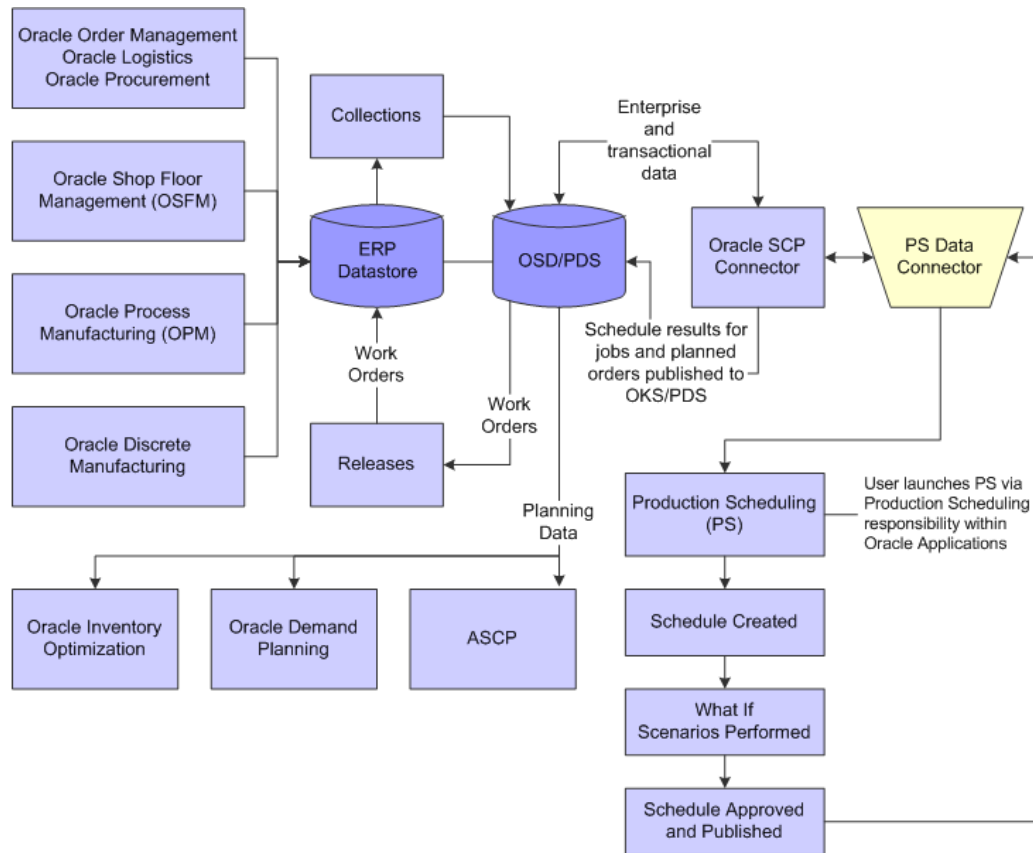
The objectives of ASCP and Production Scheduling are compared below:

ASCP	Production Scheduling
Create New Supply Orders	Schedule the supply orders that have already been created

<b>ASCP</b>	<b>Production Scheduling</b>
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 E.g. 6 months to 1 year	Schedule the short term horizon E.g. 2 - 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 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:

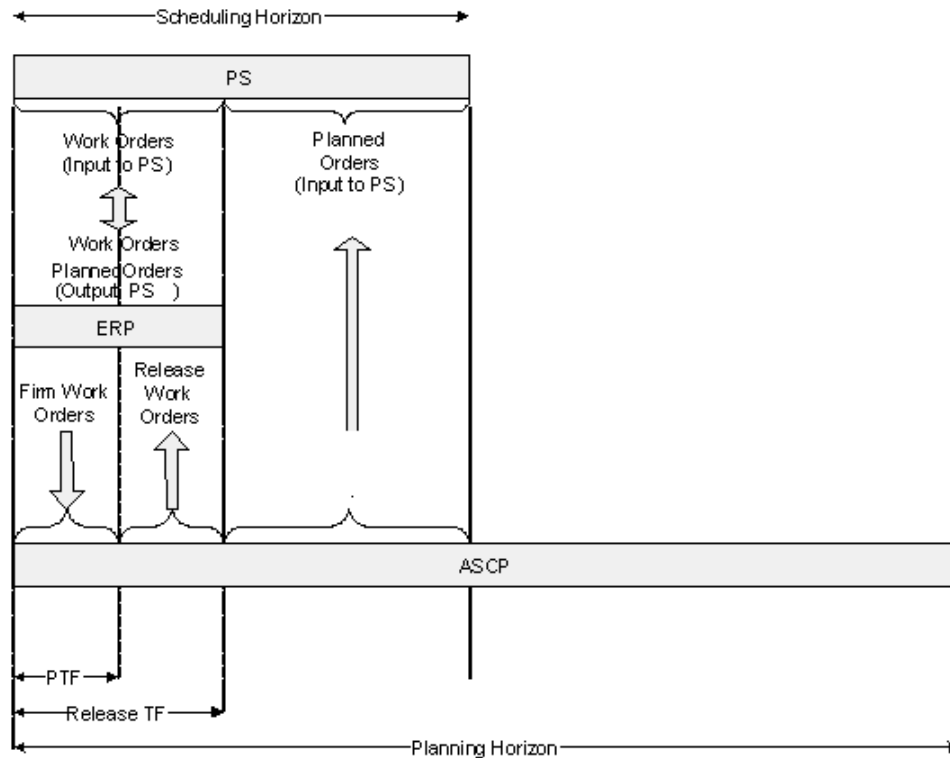
- Inter-organizational transfer demands placed against the organization that is being scheduled by the downstream organizations in the supply chain including:
  - Internal sales orders
  - Planned order demands which are fed in from the ASCP plan to the production schedule.
- Independent customer demands 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).

**Note:** Production Scheduler will not perform any forecast consumption for these new sales orders.

Business Process with ASCP:



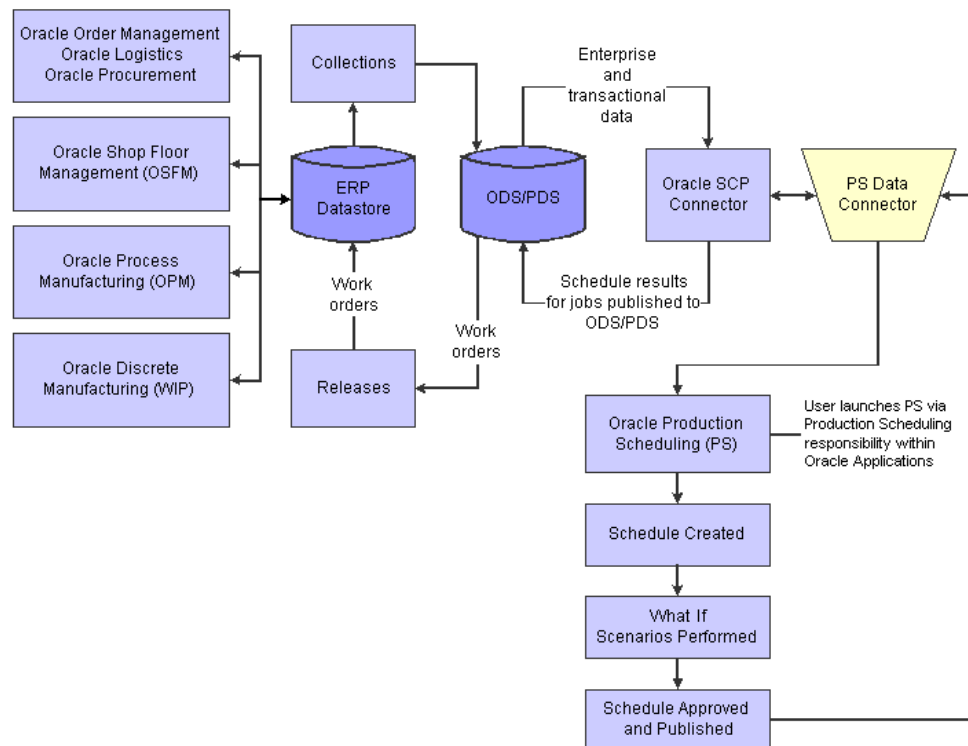
1. Run the ASCP plan. Within the planning time fence (PTF), ASCP does not create new orders. The existing work orders within the planning time fence are treated as firm in ASCP.
2. Release new orders from the ASCP plan using either a manual release process or an automated process. In the automated process, 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.

## 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.

## 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 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

See MSC Profile Options, page A-11 for more information about setting the Production Scheduling profile options.

## 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 6-1 for details on how to set up manufacturing model related data in the Oracle E-Business Suite.

See Running Collections, page 4-1 for more details about the data collections process.

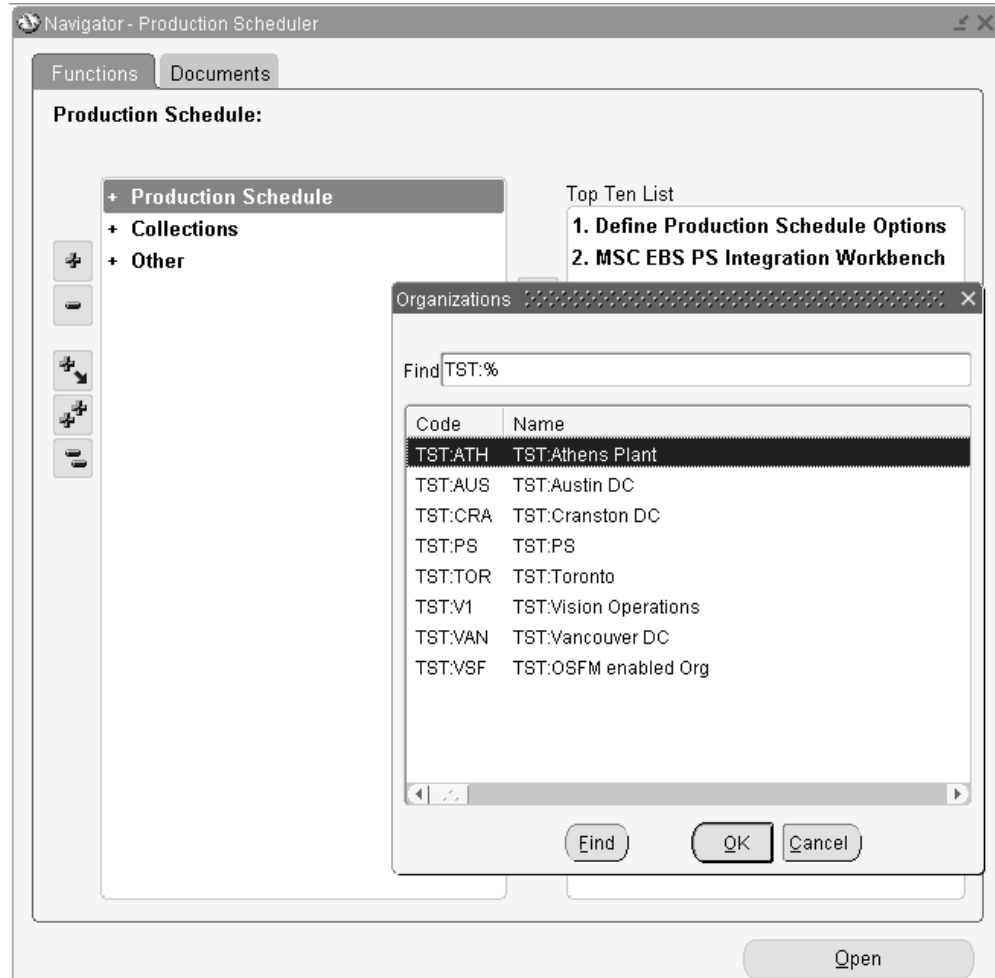
## Creating a Schedule

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.

Name	Description
PS-Pancake	Pancake plan option

Copy Schedule      Schedule Options

### 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.

Field/Flag	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.

Field/Flag	Description
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 (TST:PS)

Schedule **PS-Pancake** Description **Pancake plan option**

Horizon Scope **Schedule Parameters** Display Parameters Run Optimization

Include Past Due Sales Orders :  Days

ASCP Plan Reference :

Demand Timefence :  Days

Demand Schedules		
Name	Description	Type

Supply Schedules		
Name	Description	Type

Field/Flag	Description
Include Past Due Sales 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	The ASCP plan from which Production Scheduling reads in dependent and independent demands as well as planned orders.



Field/Flag	Description
Demand Timefence	<p>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.</p> <p>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.</p> <p>Without an ASCP plan reference, all forecasts are dropped within the demand timefence and only sales orders are considered.</p>
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.
Category Set	The category set to be used to filter the items for consideration.
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 (TSTPS)

Schedule **PS-Pancake** Description **Pancake plan option**

Horizon Scope **Schedule Parameters** Display Parameters Run Optimization

Cost Time Unit : **Day** ☐ Allow Resource Offloading on Workorders

Fixed Time Fence : **0** **Day** ☐ Ship Complete for Transfer Orders

Decimal Precision : **2** ☐ Critical Components Only

Bottleneck Resource Group :

Simulation Set :

Global Offload Threshold : **85**

Global Offload Threshold Window : **7**

Demand Build Strategy : **JIT**

JIT Operation Placement To : **Available Date**

Field/Flag	Description
Cost Time Unit	<p>Select the unit of measure for the cost time displayed in Production Scheduling. Valid values are:</p> <ul style="list-style-type: none"> <li>• Minutes</li> <li>• Hour</li> <li>• Shift</li> <li>• Day</li> <li>• Week</li> </ul>
Fixed Time Fence	<p>Duration of the fixed timefence at the beginning of the calendar horizon. During this time, new operations are not scheduled by Production Scheduling. The fixed timefence applies to all resources.</p>

Field/Flag	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.
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.
Bottleneck Resource Group	The resource group in the model designated as the bottleneck. Any resource in this group is considered to be constrained by Production Scheduling. All other resources have relaxed capacity constraints.
Simulation Set	A simulated set of resource capacity changes defined within Oracle Manufacturing that can be used to model a different resource availability scenario than the baseline capacity. When specified as input, the specified simulated resource capacity is considered by Production Scheduling as input rather than the baseline capacity.
Global Offload Threshold	The percentage of capacity above which Production Scheduling offloads production to alternate resources in a set. If manufacturing utilization is not set up in the Oracle e-Business Suite, this setting applies to all resources.

Field/Flag	Description
Global Offload Threshold Window	<p>The defined time window before operations must begin, expressed in days, that 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 closer to the time your operation must begin, providing you with a more accurate picture of whether capacity is available to fulfill the operation on time. If resource utilization is greater than the global offload threshold level, the operation can be transferred to an alternate resource for fulfillment. The Global Offload Threshold Window, also known as the Prebuild Target within Production Scheduling, applies to machines, crews, and tools. If left blank, Production Scheduling will determine utilization from the start of the horizon.</p>
Demand Build Strategy	<p>Select the preferred demand build strategy. Valid values are:</p> <ul style="list-style-type: none"> <li>• Just-in-time (JIT) - Items normally produced as late as possible.</li> <li>• Prebuild - Items normally produced as early as possible.</li> </ul> <p>JIT is the default.</p>

Field/Flag	Description
JIT Operation Placement To	<p>Select how the operations that Production Scheduling creates to satisfy demand are handled when bottleneck or downstream operations are manually moved in a schedule using cut and paste. Valid values are:</p> <ul style="list-style-type: none"> <li>• Available Date - Use the routing precedence constraints to schedule operations in a just-in-time (JIT) manner to meet the available date.</li> <li>• Due Date - Allow operations to be scheduled earlier to better align with the order due date.</li> </ul>
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 (TST:PS)

Schedule **PS-Pancake** Description **Pancake plan option**

Horizon Scope Schedule Parameters Display Parameters Run Optimization

Create Demand Folders Based On : **Class**

Create Supply Folders Based On : **Type**

Create Work Order Folders Based On : **Routing**

Field/Flag	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.
Create Work Order Folders Based On	Specifies how the Production Scheduling Work Order folders are structured. Valid values are item or routing.

5. Access and fill out the fields on the Run Optimization 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 (TST-PS)

Schedule: **PS-Pancake**      Description: **Pancake plan option**

Horizon    Scope    Schedule Parameters    Display Parameters    **Run Optimization**

☒ Use Run Optimization

**Run Optimization Parameters**

Work Week Start Day : **Monday**

Work Week Start Time (HH24:MM) : **08:00**

Minimum Cycle Time : **Days**

☒ Minimize Changeovers Between Cycles

Ideal Operation Sequence Based On : **Cost**

Inventory Carrying Cost Scale Factor : **1**

Inventory Stockout Cost Scale Factor : **1**

Changeover Cost Scale Factor : **1**

Safety Stock Violation Cost Scale Factor : **1**

Field/Flag	Description
Use Run Optimization	Select this option to use run optimization in PS.
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.

Field/Flag	Description
Minimum Cycle Time	<p>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:</p> <ul style="list-style-type: none"> <li>• Shift</li> <li>• Days</li> <li>• Weeks</li> </ul>
Minimize Changeovers Between Cycles	<p>Select this option to minimize the changeovers between cycles. Based on what operations ran in the previous cycle, Production Scheduling will try to schedule operations without necessitating changeovers.</p>
Ideal Operation Sequence Based On	<p>The changeover optimization criteria preferred for run optimized resources. Valid values are:</p> <ul style="list-style-type: none"> <li>• Cost - The cost of the changeover.</li> <li>• Time - The duration between operations.</li> </ul>
Inventory Carrying Cost Scale Factor	<p>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.</p>



Field/Flag	Description
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

You can start Production Scheduling directly from the Oracle E-Business Suite with:

- The latest snapshot of ERP data and ASCP planned orders.
- An existing snapshot of ERP data and ASCP planned orders on the planning server.
- An existing snapshot of ERP data and ASCP planned orders saved on the client computer.

### Running a schedule from the Workbench:

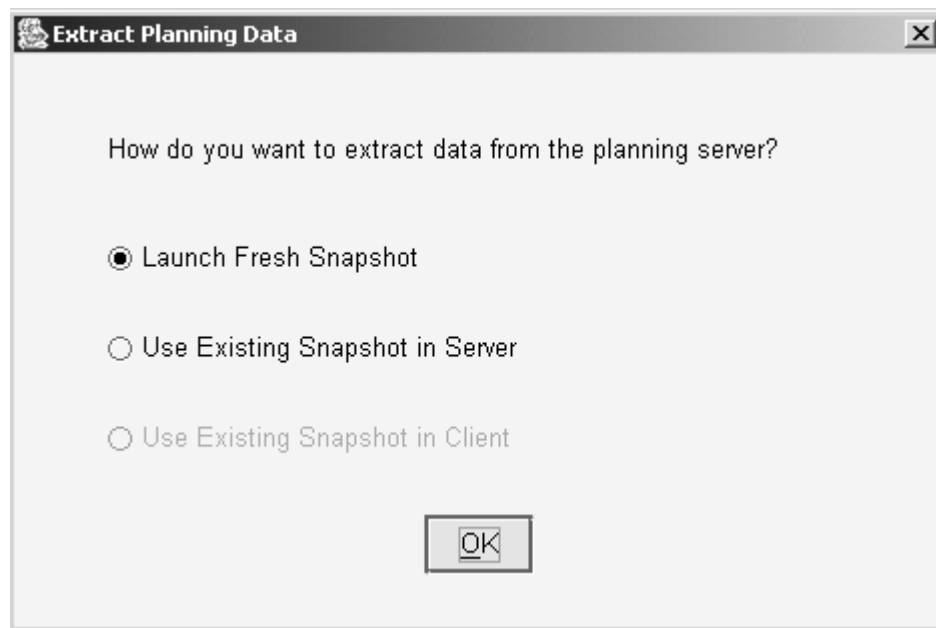
1. Sign in using the Production Scheduler responsibility.
2. Choose Workbench from the Applications Menu.  
The PS Plans form appears.
3. Specify the schedule's organization.

This will take you to a page where all the defined schedules are displayed. The displayed columns are:

Field/Flag	Description
Plan	The schedule that you want to run or analyze.
Phase	<p>Specifies whether the schedule has been created in Production Scheduling. Valid values are:</p> <ul style="list-style-type: none"> <li>• New - New schedules are those that have never been run by Production Scheduling.</li> <li>• Completed - Schedule has been run on Production Scheduling in the past, potentially resulting in a saved schedule.</li> </ul>
Status	The status message returned by the concurrent manager after last running this schedule.

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 finetuning.

See *Oracle Production Scheduling 8.11.2* for more information about how to modify and solve schedules 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 8.11.2* for more information about how to copy a

schedule within Production Scheduling.

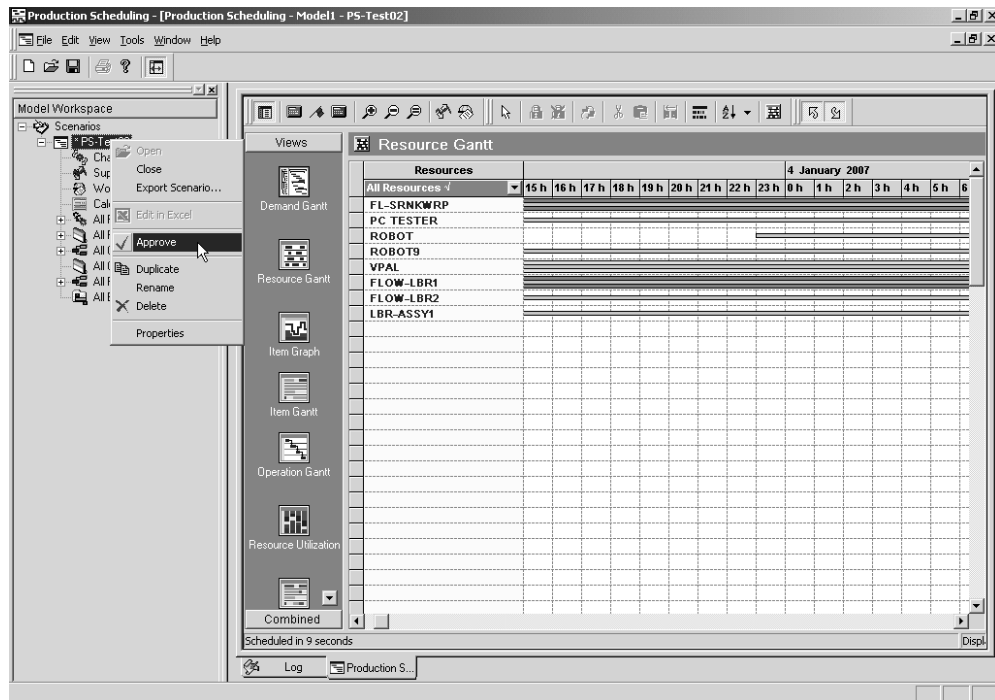
## Publishing a Schedule

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 finetuning 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.

## 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.

For each organization in the plan, you can specify the following:

Field/Flag	Description
Firm Planned Orders From Production Schedule	Check this to specify a production schedule as input to this ASCP plan
Production Schedule	Name of the production schedule. Note that this production schedule should be referencing this ASCP plan within its schedule options
Firm Horizon (days)	The number of days for which the planned orders from the feeding production schedule are considered by the ASCP plan



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# 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
- Running a Plan Using the Workbench
- Publishing a Plan

## 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.

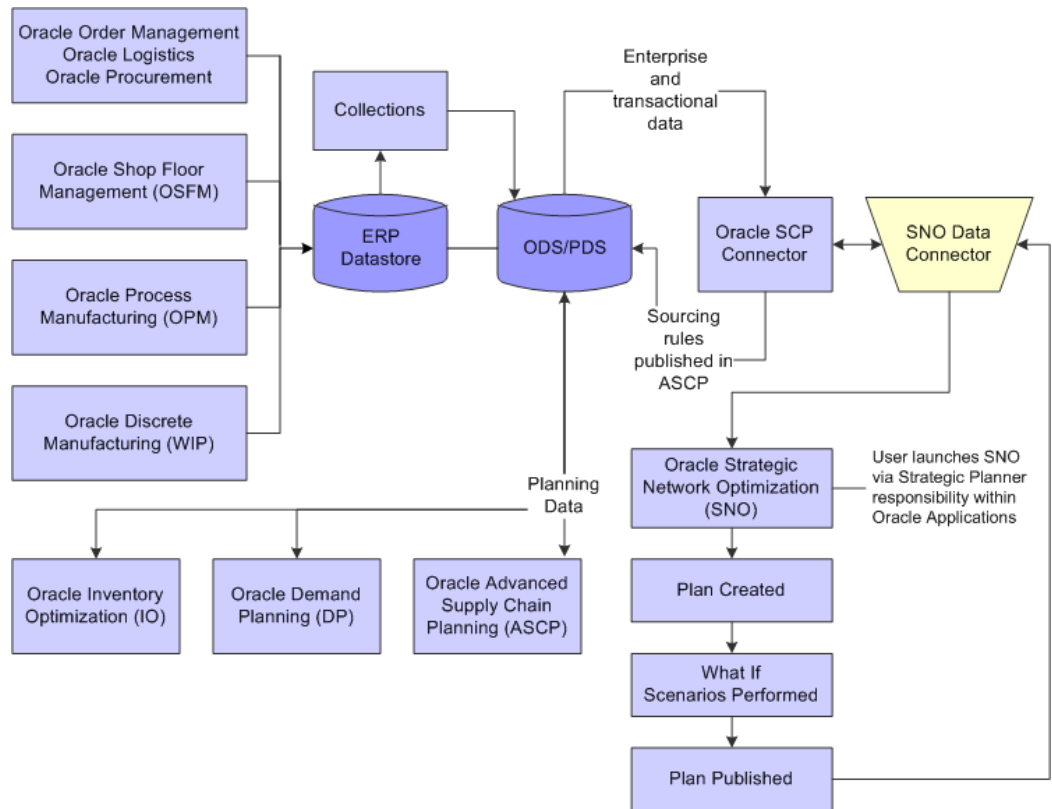
You can optimize plans by performing a variety of detailed analyses including expected profit, new market, marketing promotions, materials and finished goods sourcing, and inventory builds.

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: 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 Optimization Type
- MSC: SNO Run Application Script
- MSC: SNO Run Connector Script
- MSC: SNO Transportation Capacity By

See MSC Profile Options, page A-11 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, page 4-1 for more details about the data collections process.

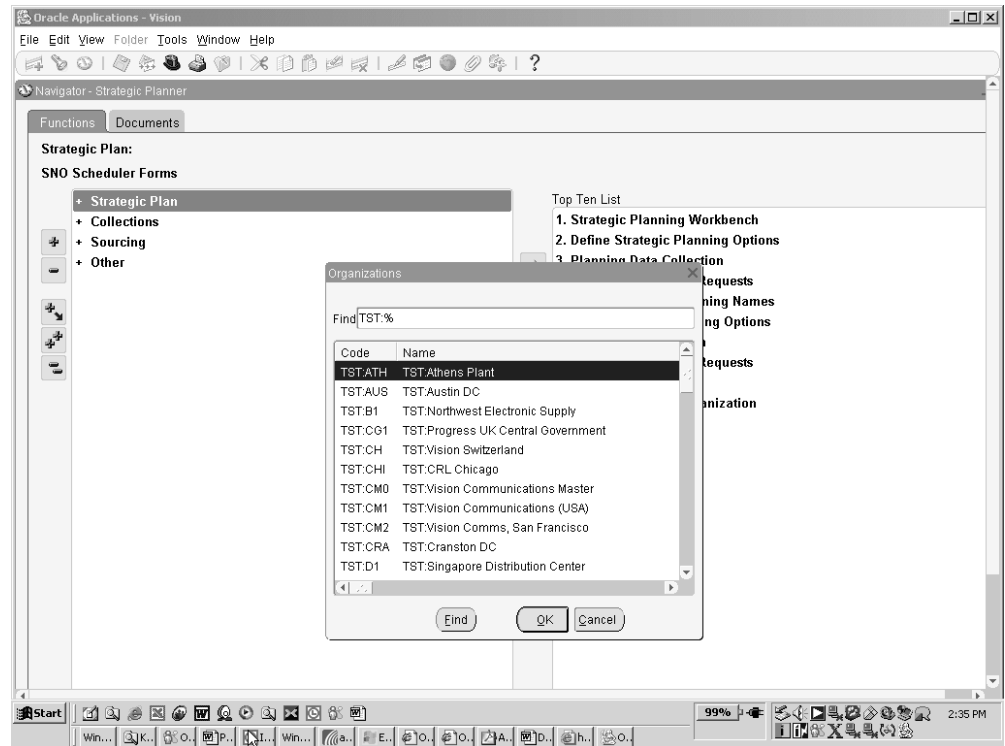
## Creating a New Plan Using the Workbench

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.

Name	Description
<b>AKIM</b>	<b>Test SNO model</b>
Bug5135149	Test SNO model
KR-PLAN1	Test SNO model
KR-PLAN10	Test SNO model diff shipmethods
KR-PLAN10A	Test SNO model diff shipmethods
KR-PLAN10B	Test SNO model Period buckets
KR-PLAN10C	Test SNO model Multiple demands in same bucket
KR-PLAN11	Test SNO model IO Input
KR-PLAN12	SNO plan with DP in mfg weeks
KR-PLAN13	SNO plan with DP published at Demand Class

Copy Schedule Options      Schedule Options

#### 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 SNO Schedule Options Main Tab form appears.

Oracle Applications - Vision

File Edit View Folder Tools Window Help

SNO Schedule Options (TST-TOR)

Schedule: SD\_TestSNO Description: Test

Main Organizations

Buckets: 32 Weeks

Planned Resources: All Resources

Plan Start Date: 01-JAN-2007

Plan End Date: 01-JAN-2008

Bottleneck Resource Group:

Assignment Set (Input):

Assignment Set (Output):

Items

Include Items belonging to the following categories:

Category Set: SNO Plan Split Used for split plan

Category	Description
BIKE	Bike Products
BIKE-COM	Bike Components
BIKE-RAW	Raw material for bike product

### 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.
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.
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 21-75 for more information.
Org	Select the organizations to be included in the model.
Description	The description of the selected organizations is automatically filled in.
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.

Field/Flag	Description
Demand Schedules	Select the MDS, MPS, Source Forecast, Demand Planning, or Inventory Optimization schedules to be brought into the plan. The description and type fields are filled in automatically.

## Running a Plan Using the Workbench

Strategic Network Optimization plans can be run directly from the E-Business Suite using the Workbench. You have the choice of running:

- A plan based on the latest E-Business Suite data.
- A plan based on the latest data available on the Planning Server.
- An existing plan located on the client computer.

### To run a plan using the Workbench:

1. Sign in using the Strategic Planner responsibility.
2. Choose Workbench from the Applications Menu.

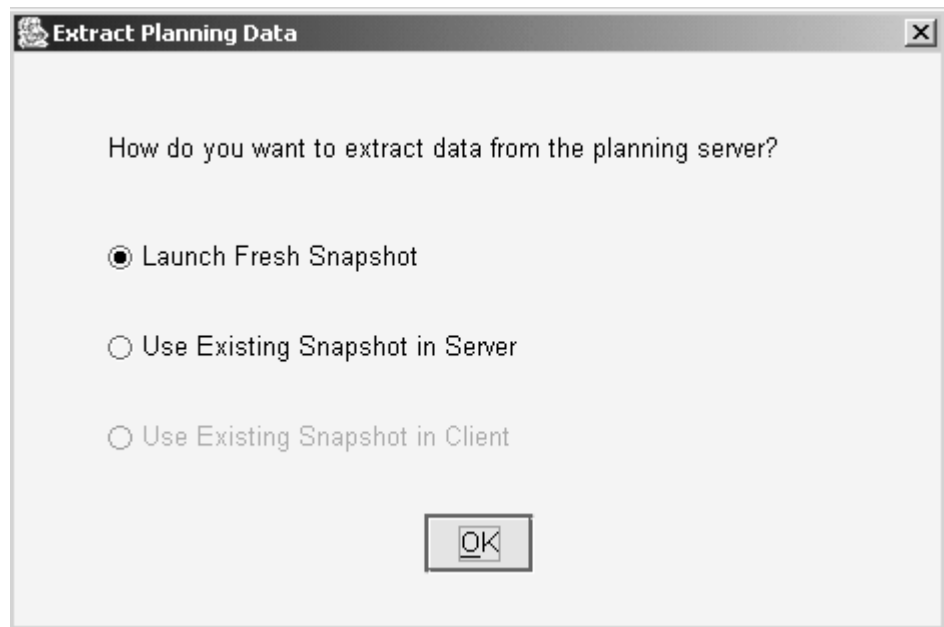
The Strategic Plans form appears. The displayed columns represent:

Field/Flag	Description
Plan	The plan that you want to run or analyze.
Phase	Specifies whether the plan has been created in Strategic Network Optimization. Valid values are: <ul style="list-style-type: none"> <li>• New - New plans are those that have never been run by Strategic Network Optimization.</li> <li>• Completed - The plan has been run on Strategic Network Optimization in the past, potentially resulting in a saved plan.</li> </ul>

Field/Flag	Description
Status	The status message returned by the concurrent manager the last time the plan was run.

- Click on the plan you want to run.

The Extract Planning Data window appears.



- Choose the type of data extraction required to run your plan.

Option	Description
Launch Fresh Snapshot	Collect the latest E-Business Suite data for planning in Strategic Network Optimization. If this is the first time you are running this plan, this is the only option available to you.
Use Existing Snapshot in Server	If the E-Business Suite data has been previously collected, this option creates the Strategic Network Optimization plan based on that data.

Option	Description
Use Existing Snapshot in Client	Start Strategic Network Optimization with the last model saved on the client computer.

5. Click OK.

A "waiting for concurrent request to complete" message appears. If it is the first time that you are running a plan, the Strategic Network Optimization client software is installed on your computer at this point. Finally, your plan is displayed in Strategic Network Optimization, ready for finetuning.

See *Oracle Strategic Network Optimization 8.11.2* for more information about how to modify and solve plans in Strategic Network Optimization.

**Note:** When internal key fields are populated in the Strategic Network Optimization model, the entities that are created cannot be pushed back into the E-Business Suite. For example, when running a Capital Asset management Scenario, if a new manufacturing plant is created in the user interface, this data will not be populated to the E-Business Suite.

## 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.



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## Supply Chain Plan Configure to Order

This chapter covers the following topics:

- Models
- Configure to Order Sales Orders
- Configure to Order Order Promising
- Configure to Order Forecast Explosion
- Configure to Order Forecast Consumption
- Configure to Order Collections
- Configure to Order Planning Process

### 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.

Oracle Advanced Supply Chain Planning works with 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.

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 6-2.

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

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 Explosion

See Forecast Explosion, page 5-59.

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 maintain and explode forecasts only in Oracle Demand Planning.

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.

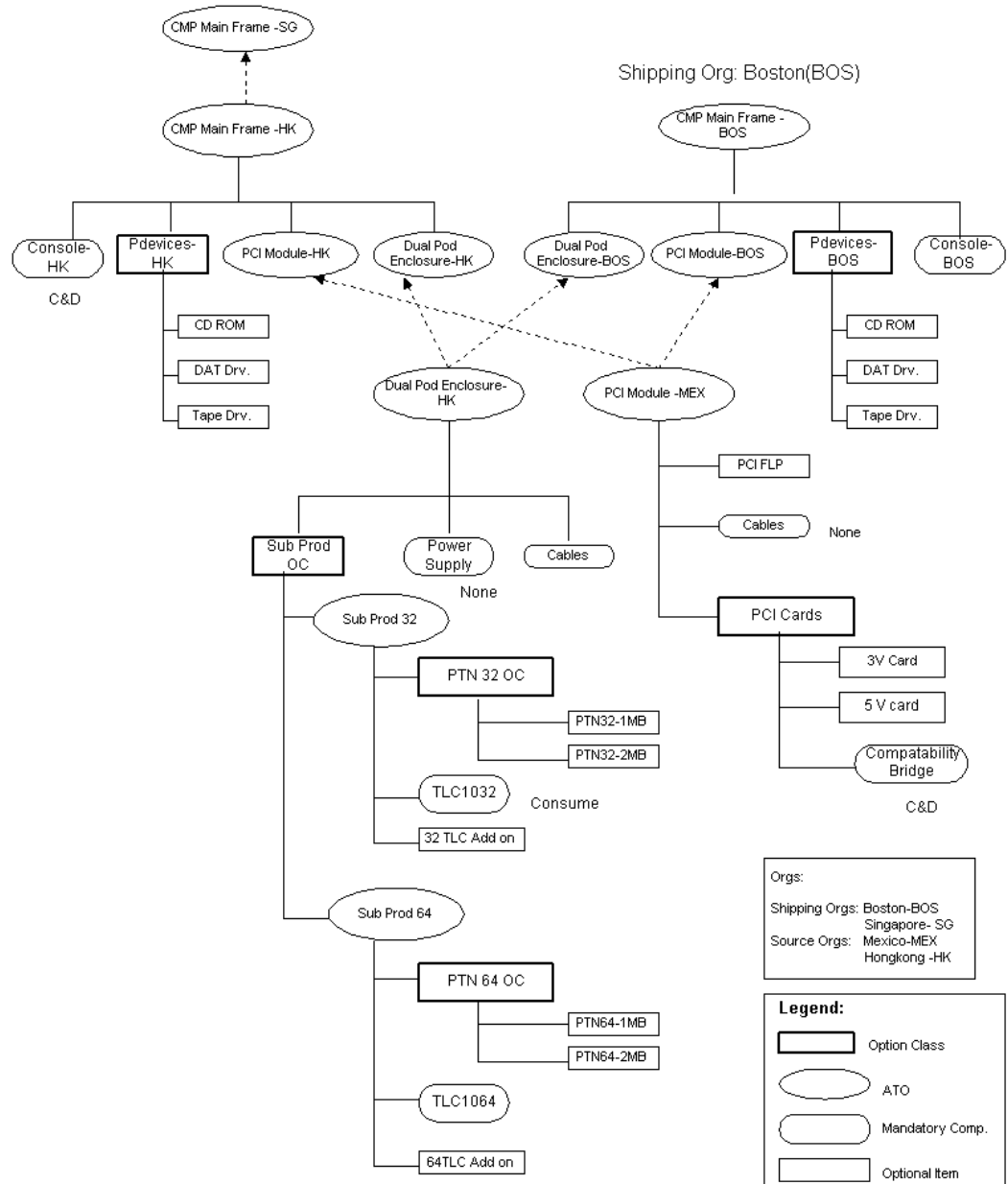
### Multilevel ATO Example

This diagram shows a multi-level supply chain bill of materials.



## Supply Chain Bill

Shipping Org: Singapore(SG)



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

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 Forecast Consumption, page 5-62 and Global Forecasting, page 6-2, sections Global Forecast Consumption, To set up global forecast consumption, To consume global forecasts, Internal Sales Order Forecast Consumption, and Lower Level Pre-configuration Consumption.

The planning engine can perform inline forecast consumption both for Oracle Demand Planning 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, page 4-1.

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.



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## 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:

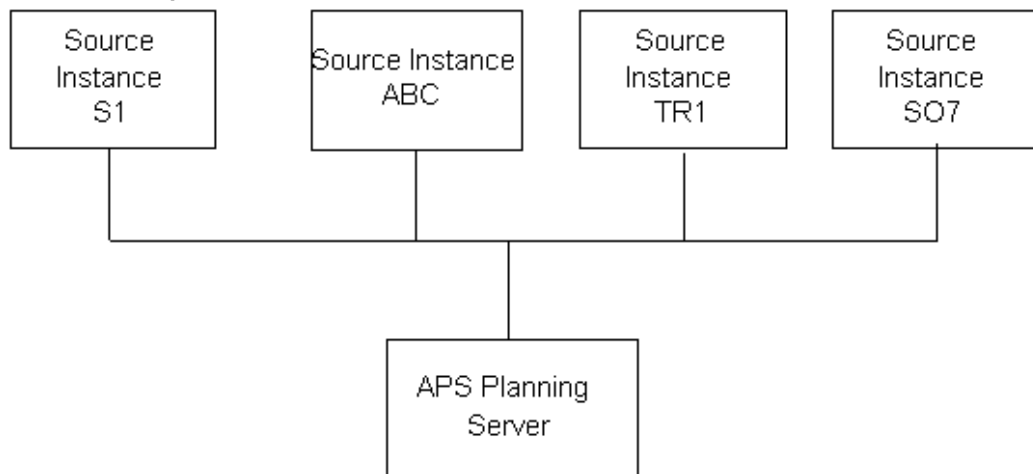
- Source instances hold source information, for example, items, bill of materials, orders. Source instances are Oracle Applications instances and legacy systems.

- 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, page 4-9.

## Cross-Instance Supply Chain Modeling

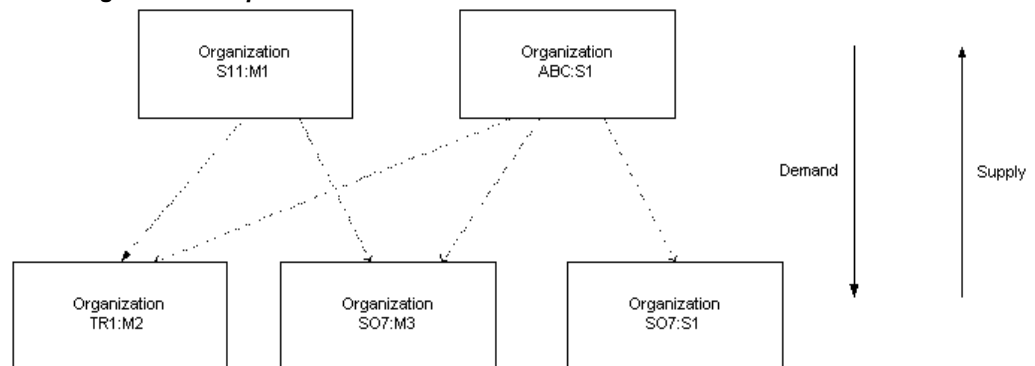
Cross-instance supply chain planning involves planning organizations that are in different instances in one planning process. The organization are:

- 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 Intransit 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).

### Transit Times window

The screenshot shows the 'Transit Times' window with the following details:

- Organization:** TST:M1 (selected), TST:Seattle Manufacturing (available)
- Scope:** From Organization (selected)
- Find:** Button
- Shipping Networks:**

From Org	Location	To Org	Location
TST:M1	M1- Seattle	TST:S1	S1- Chicago
TST:M1	M1- Seattle	TST:M2	M2- Boston
TST:M1	M1- Seattle	TST:D2	D2- Miami
TST:M1	M1- Seattle	TST:D1	D1- Singapore
- Ship Methods:**

Shipping Method	Default Method	Transit Time	Daily Capacity	Load Weight UOM	Cost Per Unit	Daily Capacity	Volume UOM	Cost Per Unit
RSTRUCK	<input type="checkbox"/>	5						
Roadway	<input type="checkbox"/>	1	200	KGM		200	M3	
AIR	<input checked="" type="checkbox"/>	2						
OVERNIGHT	<input type="checkbox"/>	1						
- Ship Methods Lookup:** Button

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 the sourcing rules example.

<b>Sourcing Rule/Bill of Distribution</b>	<b>Receiving Org</b>	<b>Shipping Org</b>	<b>Allocation %</b>	<b>Intransit lead-times</b>
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



### Sourcing Rule window

Sourcing Rule (TST:M1)

Name: **BK-VS-SRC-M1-5** ● All Orgs ☑ Planning Active

Description: **Transfer/Buy at M1** [ ] ○ Org **dmt:M1** Copy From...

Effective Date

Org	Customer	Address
dmt:M1		

Shipping Organization

Type	Org	Supplier	Supplier Site	Allocation %	Rank	Shipping Method	Intransit Time	[ ]
Transfer From	dmt:M2			100	1	OVERNIGHT	1	
Buy From		Allied Manufa	DANVILLE-CTF	100	2			

View Eurge Copy Shipping Orgs From... Assignment Set...

- 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 Assigning Rules and Bills in *Oracle Master Schedule/MRP and Supply Chain Planning User's Guide*.

## 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 22-39.

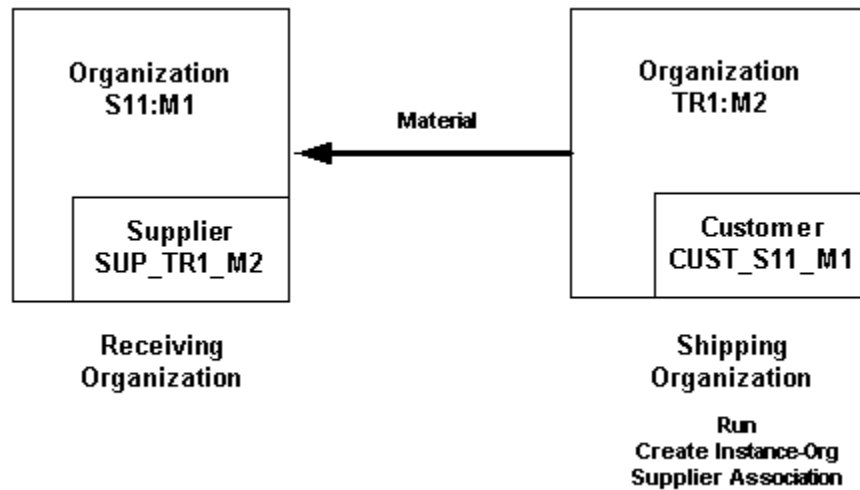
For example, in shipping organization TR1:M2, run concurrent process Create Instance-Org Supplier Association with parameter values:

- 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.

### Plan Options window

The screenshot shows the 'Plan Options (tps:JM1)' window. It has a title bar with standard window controls. Below the title bar, there are tabs for 'Plan' (set to 'ProdPlan1') and 'Production Plan'. To the right, 'Plan Type' is set to 'Distribution Plan'. Below these are more tabs: 'Main', 'Aggregation', 'Organizations', 'Constraints', 'Optimization', and 'Decision Rules'. The 'Organizations' tab is currently selected, showing a table of organizations and their settings.

Org	Description	Net WIP	Net Reservations	Net Purchases	Plan Safety Stock	Include Sales Order
tps:JM1	tps:Minneapolis Mfg	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
tps:JL1	tps:JL1 Mfg (Kitty Hawk,	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Below the organizations table, there are two more sections: 'Demand Schedules' and 'Supply Schedules'.

**Demand Schedules**

Name	Description	Type	Ship To Consumption Level	Inter Plant
RS-Mat1		FCST		<input type="checkbox"/>
RS-SRC1	RS SRC Test1	FCST		<input type="checkbox"/>
				<input type="checkbox"/>

**Supply Schedules**

Name	Description	Type

At the bottom right of the 'Supply Schedules' section, there is a button labeled 'Subinventory Netting'.

For more information on defining plans, see 'Overview of Defining Plans, page 5-1.

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
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.

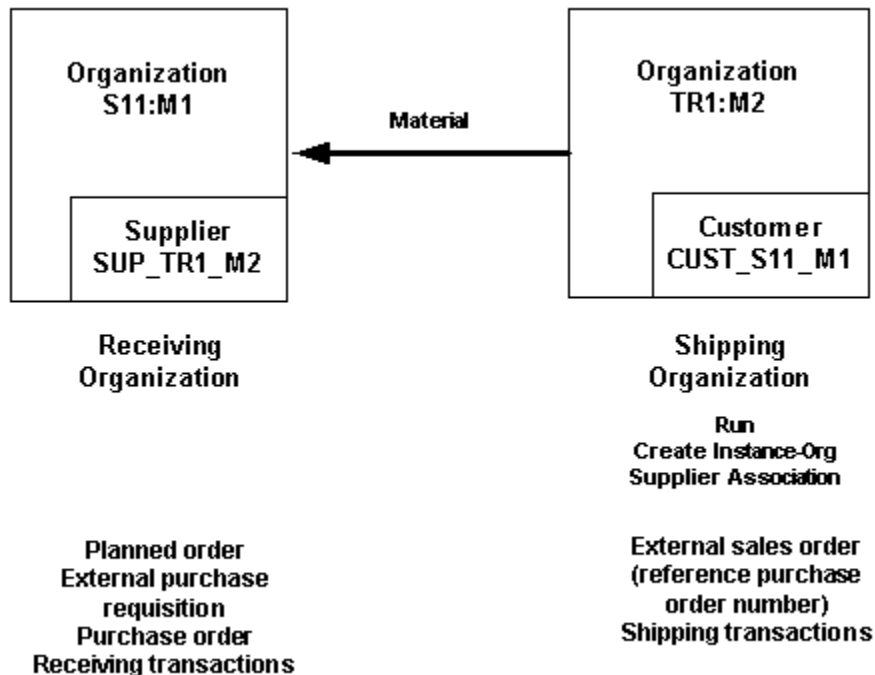
The collections process brings the sales orders into the planning server for display, including pegging.

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 Oracle *MetaLink*.

## 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.

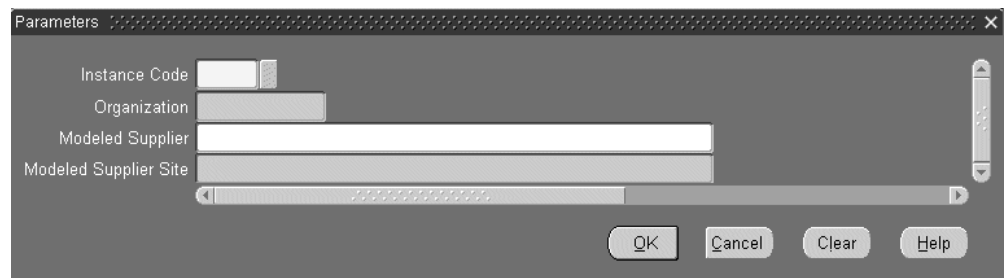
## Designating Supplier Organization As External Supplier Organization

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.

### Parameters window



The screenshot shows a 'Parameters' window with a title bar containing a close button (X). The window has a dark gray background. It contains four input fields with labels to their left: 'Instance Code', 'Organization', 'Modeled Supplier', and 'Modeled Supplier Site'. The 'Instance Code' field is a small text box. The 'Organization' field is a larger text box. The 'Modeled Supplier' field is a very long text box. The 'Modeled Supplier Site' field is a long text box. Below the input fields is a horizontal scrollbar. At the bottom right of the window are four buttons: 'OK', 'Cancel', 'Clear', and 'Help'.

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.

---

## 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.

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 is 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

## 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  $A \diamond B$  (reciprocal). However, once you create  $A > B$  (not reciprocal), you cannot create  $B > A$  (not reciprocal). You can simulate  $A \diamond B$  (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.

#### **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.

### Item Relationships window

The screenshot shows the 'Item Relationships (V1)' window. It contains a table with columns: From Item, To Item, Type, Reciprocal, and Effective Dates (From, To, [ ]). The first two rows are populated with data:

From Item	To Item	Type	Reciprocal	Effective Dates (From)	Effective Dates (To)	Effective Dates ([ ])
PS1001	PS1002	Substitute	<input type="checkbox"/>			
PS4001	PS1001	Substitute	<input type="checkbox"/>			
			<input type="checkbox"/>			
			<input type="checkbox"/>			
			<input type="checkbox"/>			
			<input type="checkbox"/>			
			<input type="checkbox"/>			
			<input type="checkbox"/>			
			<input type="checkbox"/>			
			<input type="checkbox"/>			
			<input type="checkbox"/>			

Below the table is the 'Item Description' section with 'From' and 'To' fields, both containing 'Finished Goods'. A 'Planning Details' button is located to the right of this section.

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.
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.



### Planning Details - Substitute window

From Item **PSS2** **PRODUCT SUBSTITUTION**

To Item **PSS1** **PRODUCT SUBSTITUTION TEST**

**Planning Details**

Substitution Set: **PSS\_SIM1**

Partial Fulfillment: ☒

Effective Dates: From **17-APR-2002** To **31-JAN-2003**

**Customer References**

Customer	Address	Type	From	To
<b>Customer XYZ</b>	<b>1234 Beach Street</b>	<b>Ship To</b>		

- 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 21-26.

Field	Description
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. 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	<p>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.</p> <p>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.</p> <p>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.</p>
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	<p>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.</p>

## 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.

### Items window

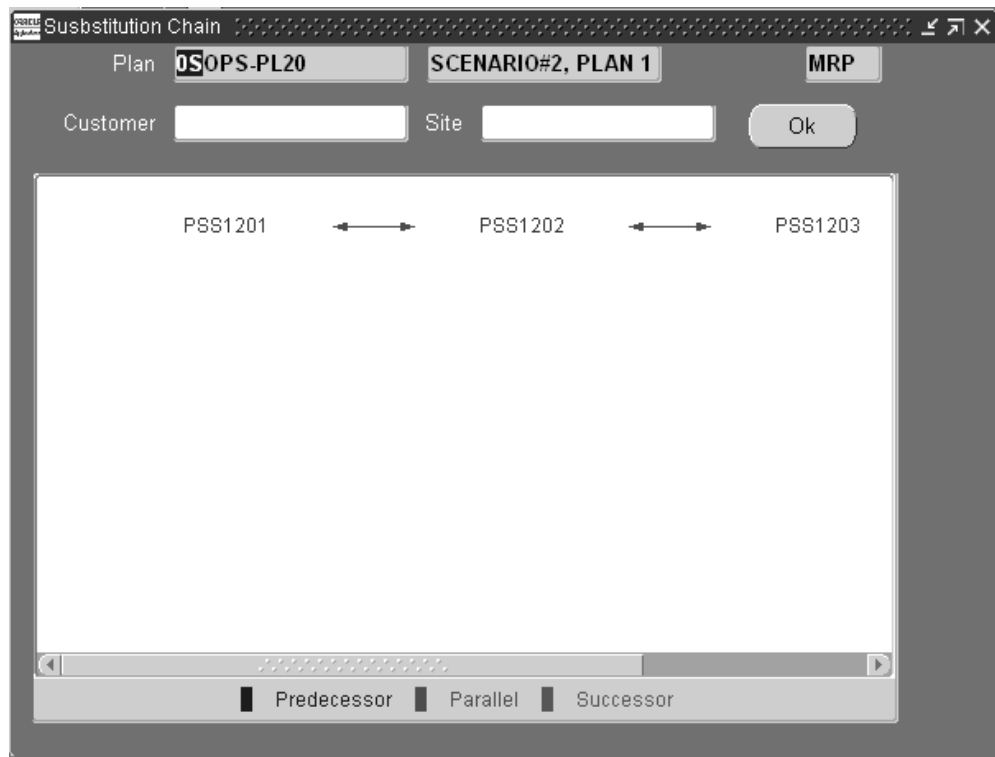
Item	Org	BOM Item Type	Pegging	Preprocessing LT	Processing LT	Po
PSS1201	dmt:M1	Standard	End Assembly/Soft Pe	0	1	0
PSS1201	dmt:M2	Standard	End Assembly/Soft Pe	0	1	0

Buttons: Destinations, Sources, Where Used, Components, Co-Product, Routing Operations, Safety Stock, Substitutes

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.

### Substitution Chain window



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.

### ***Substitution Properties window***

From	To	Implied Substitution	Highest level item	Effective date	Disable date	Customer	Customer site	Substitution set	Partial Fulfillment

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

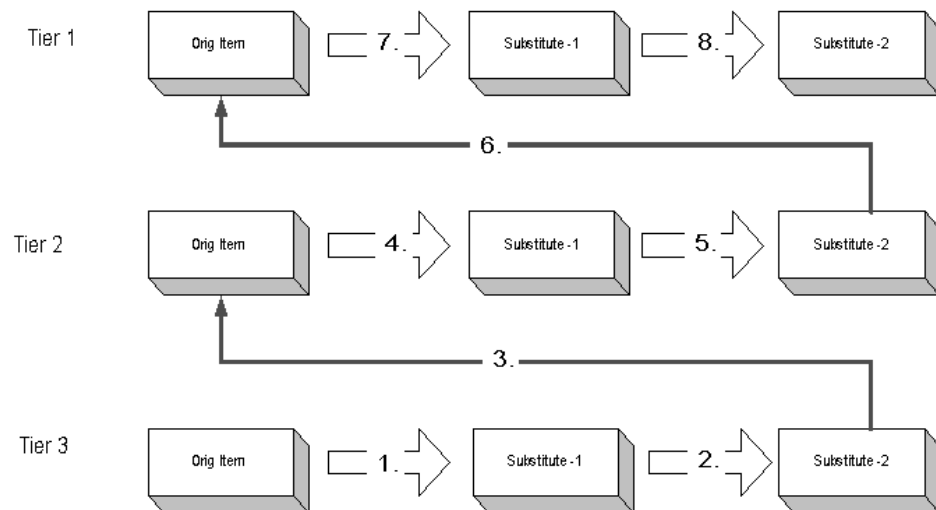
The section contains description of how substitution logic functions. It contains information about:

- 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.

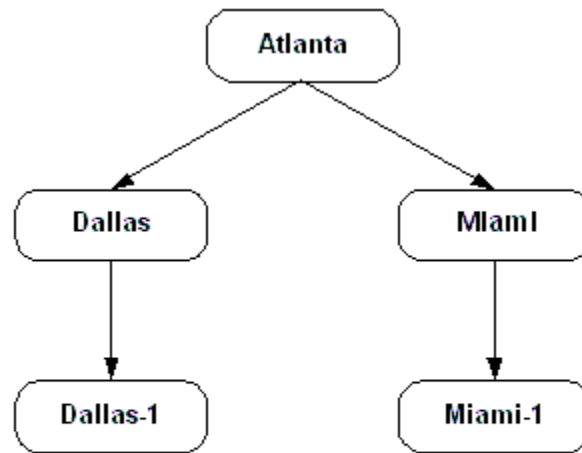
If profile option MSC: Choice of item for which to create supplies in substitute

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. It does not necessarily use the next item within the substitution chain with flag Create Supply as Yes.

### **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.:

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 need 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, 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

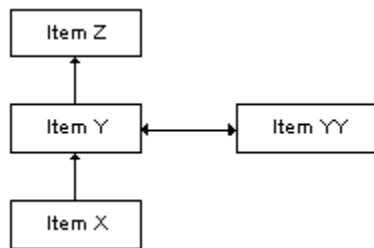
- Simulate possible substitutions
- Transfer of demands on to substitute supplies

### 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.

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 coproduced, 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-11.

### **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

#### 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 be 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	Time Bucket 1	Time Bucket 2	Time Bucket 3	Time Bucket 4	Time Bucket 5	Time Bucket 6
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

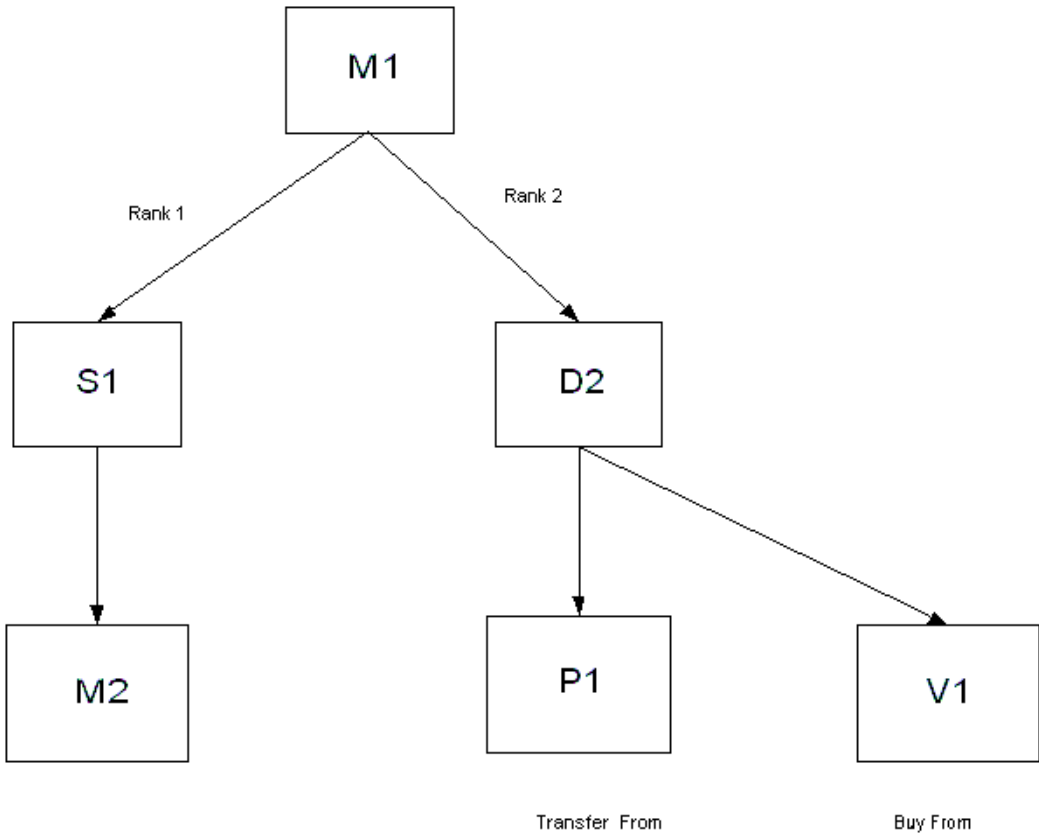
Record Type	Item	Day 2	Day 15	Between Day 16 and Day 49	Day 50
Supply	A1	60	0	0	0

## 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.

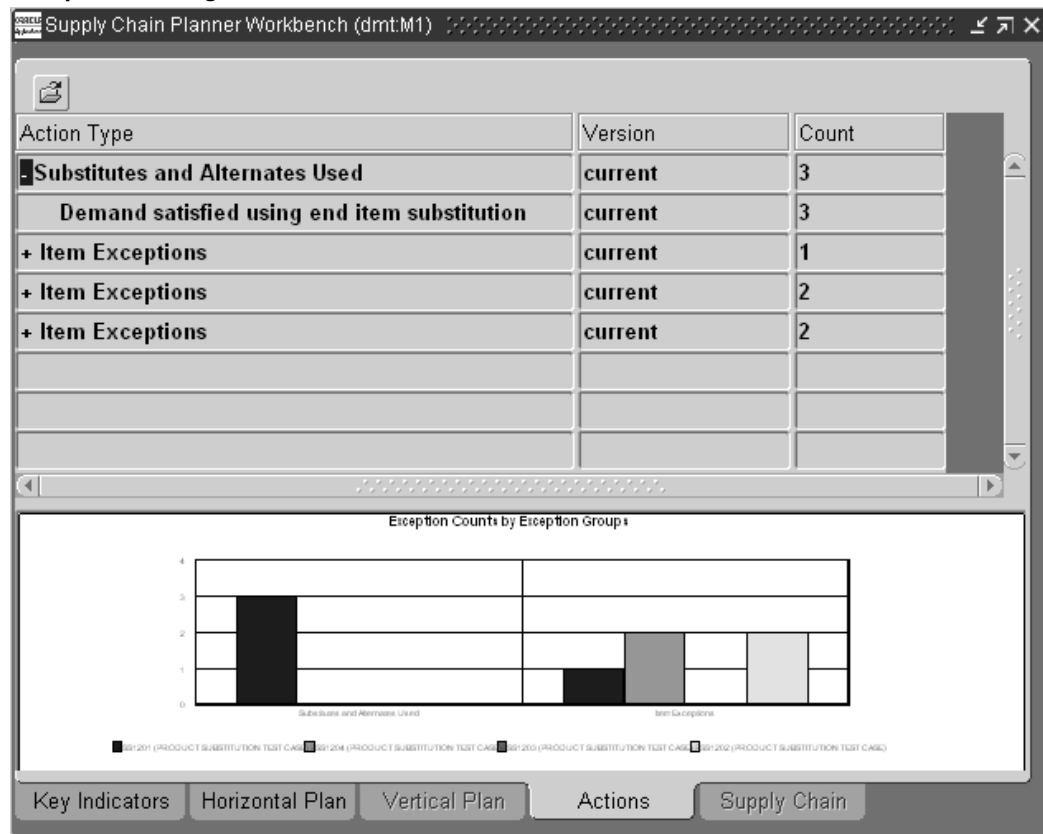
## Exception Messages

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. The following screen shot shows this exception message.

### Exception Message



### 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.

### Exception Details window

Action	Exception	Org	Item	Quantity
<input type="checkbox"/>	Demand satisfied using end item substitution	dmt:M1	PSS1201	86
<input type="checkbox"/>	Demand satisfied using end item substitution	dmt:M1	PSS1201	60
<input type="checkbox"/>	Demand satisfied using end item substitution	dmt:M1	PSS1201	75
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				

Suppliers Resources Items Supply/Demand

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
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.

### The Demand window

Org	Item	For Release	Firm	Order Type	Sugg Due Date
dmt:M1	PSS1201	<input type="checkbox"/>	<input type="checkbox"/>	Manual MDS	17-JAN-2003 23:59:00
dmt:M1	PSS1202	<input type="checkbox"/>	<input type="checkbox"/>	Manual MDS	17-JAN-2003 00:00:00
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		

Pegging for PSS1201/dmt:M1 Qty 32 on 17-JAN-2003 23:59:00 (Manual MDS MDS-PSS)

- PSS1201/dmt:M1 Qty 30 Pegged Qty 30 on 03-JAN-2003 00:00:00 (On Hand)
- PSS1201/dmt:M1 Qty 2 Pegged Qty 2 on 17-JAN-2003 23:59:00 (Planned order)
  - 10 (Operation)
    - PROD-D2/PSRes10 (Department 2/Resource 10)
  - PS200C/dmt:M1 Qty 1 Pegged Qty 1 on 17-JAN-2003 23:53:00 (Planned order demand)
    - PS200C/dmt:M1 Qty 1 Pegged Qty 1 on 17-JAN-2003 23:53:00 (Planned order)

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.

### 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

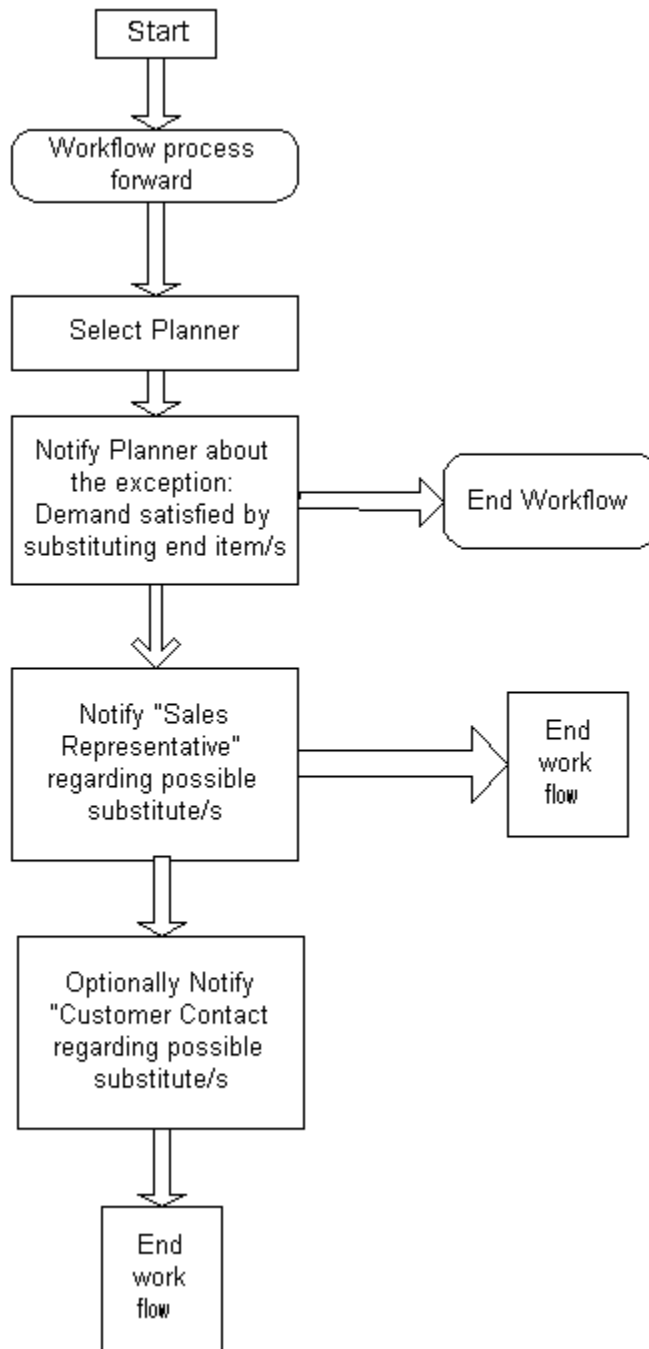
#### **End Item Substitution Workflow for Planning**

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.

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 11-1.

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.

**Plan Options window**

The screenshot shows the 'Plan Options (dmtM1)' window. At the top, there are fields for 'Plan' (PSS-S1), 'Probsub 5/1 (Const,EDD,Demand,All)', and 'Plan Type' (Manufacturing Plan). Below these are tabs for 'Main', 'Aggregation', 'Organizations', 'Constraints', 'Optimization', and 'Decision Rules'. The 'Main' tab is active, displaying several configuration options: 'Planned Items' (Demand schedule ...), 'Material Scheduling Method' (Order Start Date), 'End Item Substitution Set' (DEFAULT), 'Assignment Set' (KCC - NEW PSUB ASS), 'Demand Priority Rule' (empty), 'Overwrite' (All), and 'Demand Class' (empty). There are also checkboxes for 'Demand Time Fence Control', 'Planning Time Fence Control', 'Append Planned Orders' (checked), 'Move Jobs to PIP' (unchecked), and 'Lgt for Lot' (checked). A section titled 'Default Forecast Consumption Days' contains 'Backward Days' and 'Forward Days' input fields. At the bottom, there is a section for 'Enable Pegging' (checked), which includes 'Peg Supplies by Demand Priority' (checked), 'Reservation Level' (None), and 'Hard Pegging Level' (None).

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>

Decision Rule	Status
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.
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

Decision Rule	Status	Meaning
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. The following screens depict where you can define ranks for Alternate Sources. The first screen shows rank using Sourcing Rules. For additional information about the following two screens,

please refer to the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User Guide*.

**Sourcing Rule**

Sourcing Rule (M1)

NameRouter

DescriptionRouter Sourcing Rule

All Orgs

Planning Active

Org

Copy From...

Effective Date

From Date

To Date

27-AUG-1997

Shipping Organization

Type	Org	Supplier	Supplier Site	Allocation %	Rank	Shipping Method	Intransit Time	
Buy From		Star Gate Ltd	STAR GATE - E	100	3			
Buy From		Advantage Co	MALMÖ	100	1			
Buy From		Star Gate Ltd	MÜNCHEN	100	2			
Buy From		Star Gate Ltd	TRIUMPH A	100	4			

View

Purge

Copy Shipping Orgs From...

Assignment Set...

The second screen shot shows rank using Bill of Distribution.

### Bill of Distribution



Name: **PLASTIC HOUSING**

Description: **Plastic Housing Sourcing List** [ ]

☒ Planning Active

Copy From...

**Receiving Organization**

Org	Customer	Address	From Date	To Date	[ ]
M1			01-MAY-1997		
M2			01-MAY-1997		
S1			01-MAY-1997		

**Shipping Organization**

Type	Org	Supplier	Supplier Site	Allocation % Rank	Shipping Method	Intransit Time	[ ]
Make At	M1			10 1			
Buy From		Consolidated	HOUSTON	20 1			
Transfer From	S1			70 1	AIR	1	

View Purge Copy Shipping Orgs From... Assignment Set...

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.

The following screen shot depicts where you can define priorities for Substitute Components.

### Substitute Component Information

**Bills of Material (M2)**

Item: **PM-YC01-COMP-C** Subassembly: **C** UOM: **Ea**

Alternate:  Revision: **A** Date: **20-JUN-2002 16:02:24**

**Substitute Components (M2)**

Bill: **PM-YC01-COMP-C** Alternate:

Component: **PM-YC01-RM-C** Effective Date: **17-APR-2002 14:19:56**

Item Seq: **10** Operation Seq: **1** Quantity: **1**

**Substitute Components**

Substitute Component	Description	UOM	Quantity	Enforce Integer Req.
<b>PM-YC01-RM-C</b>	<b>Raw material</b>	<b>Ea</b>	<b>1</b>	<b>None</b>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Substitute Component Information**

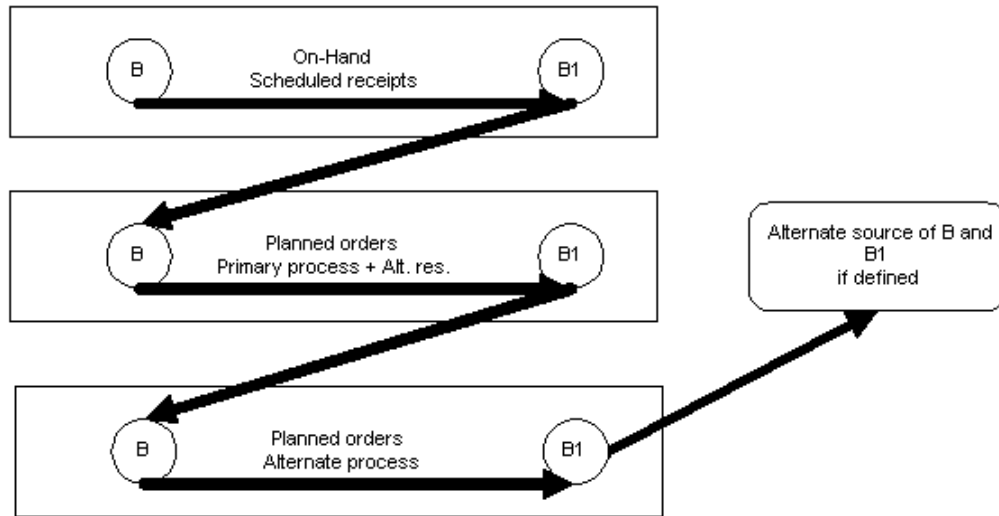
Substitute Priority: **1**

Buttons: **Substitutes**, **OK**, **Cancel**, **Clear**, **Help**, **Revision**

For additional information on this and other screen shots in this section, 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.

The following screen shot depicts where you can define priorities for Alternate Resources.



### Operation Alternate Resources

Item: SB68415      Alternate:      Sequence: 10      Effective Date: 09-APR-1997  
Resource Seq.: 10      Resource Code: LBR-

**Alternate Resources**

Main    Scheduling    Costing

Resource	Replacement Group	UOM	Basis	Usage	Inverse
AM_OSP_RES		HR	Item	1	0

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. The intersection of BOM and Routing is based on the definition of the alternate designator. Bill of Material and Routings intersect to create a valid process only when the alternate designator matches.

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.

The following screen shot depicts where you can define priorities for Alternate BOM/Routing.

### Routing Details

Routing Details (M1)

Item **SB68415** Chassis - Sentinel Multimedia

Alternate  Priority

Product Family

**Completion**

Subinventory **Stores**  Locator

Comment

**Common Routing**

Item

#### 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 21-1.

### 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
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

Rank	Objective
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

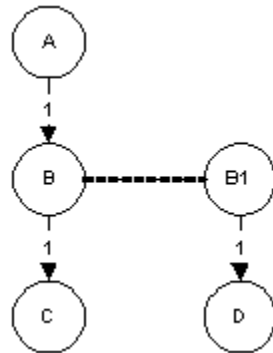
This section contains two scenarios that describe the selection of alternates for network routing based on:

- Primary Path
- Planned Percentage

(For additional information, please see 'Network Routings, page 16-79). 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.

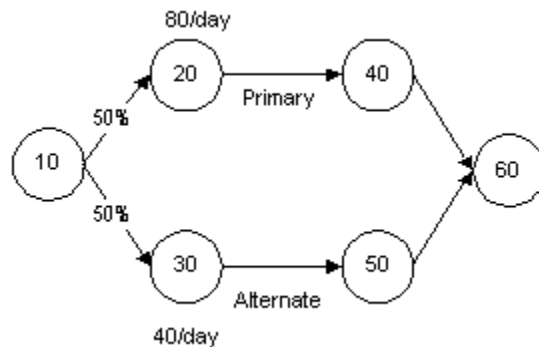
The following diagram shows the BOM for Item A where B1 is the substitute for B.

#### 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.

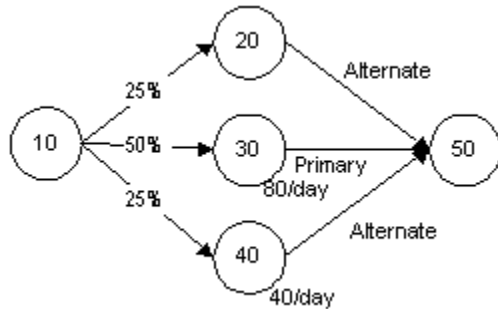
#### Network Routing for Item B



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



Item	Date	Supply
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 7-1.

## 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.

#### *Plan Options window*

The screenshot shows the 'Plan Options (dmtM1)' window. At the top, there are fields for 'Plan' (PSS-S1), 'Prodsup 5/1 (Const,EDD,Demand,All)', and 'Plan Type' (Manufacturing Plan). Below these are tabs for 'Main', 'Aggregation', 'Organizations', 'Constraints', 'Optimization', and 'Decision Rules'. The 'Main' tab is active. It contains several settings: 'Planned Items' (Demand schedule ...), 'Material Scheduling Method' (Order Start Date), 'End Item Substitution Set' (DEFAULT), 'Assignment Set' (KCC - NEW PSUB ASS), 'Demand Priority Rule' (empty), 'Overwrite' (All), and 'Demand Class' (empty). There are checkboxes for 'Demand Time Fence Control', 'Planning Time Fence Control', 'Append Planned Orders' (checked), 'Move Jobs to PIP' (unchecked), and 'Lot for Lot' (checked). A section for 'Default Forecast Consumption Days' has 'Backward Days' and 'Forward Days' input fields. At the bottom, there is a section for 'Enable Pegging' (checked) with sub-options 'Peg Supplies by Demand Priority' (checked), 'Reservation Level' (None), and 'Hard Pegging Level' (None).

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 8-1.

#### 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 21-55 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.

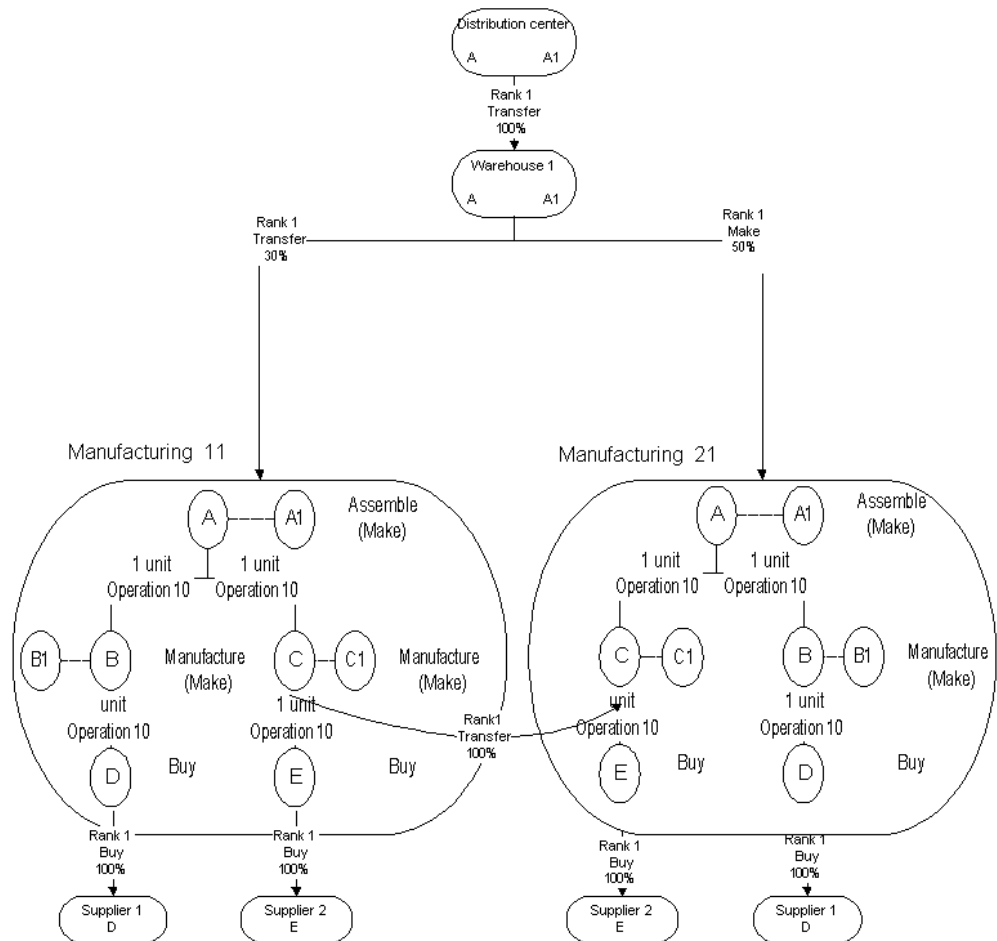
## Planning Search Logic

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

Supply chain for item A



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.

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

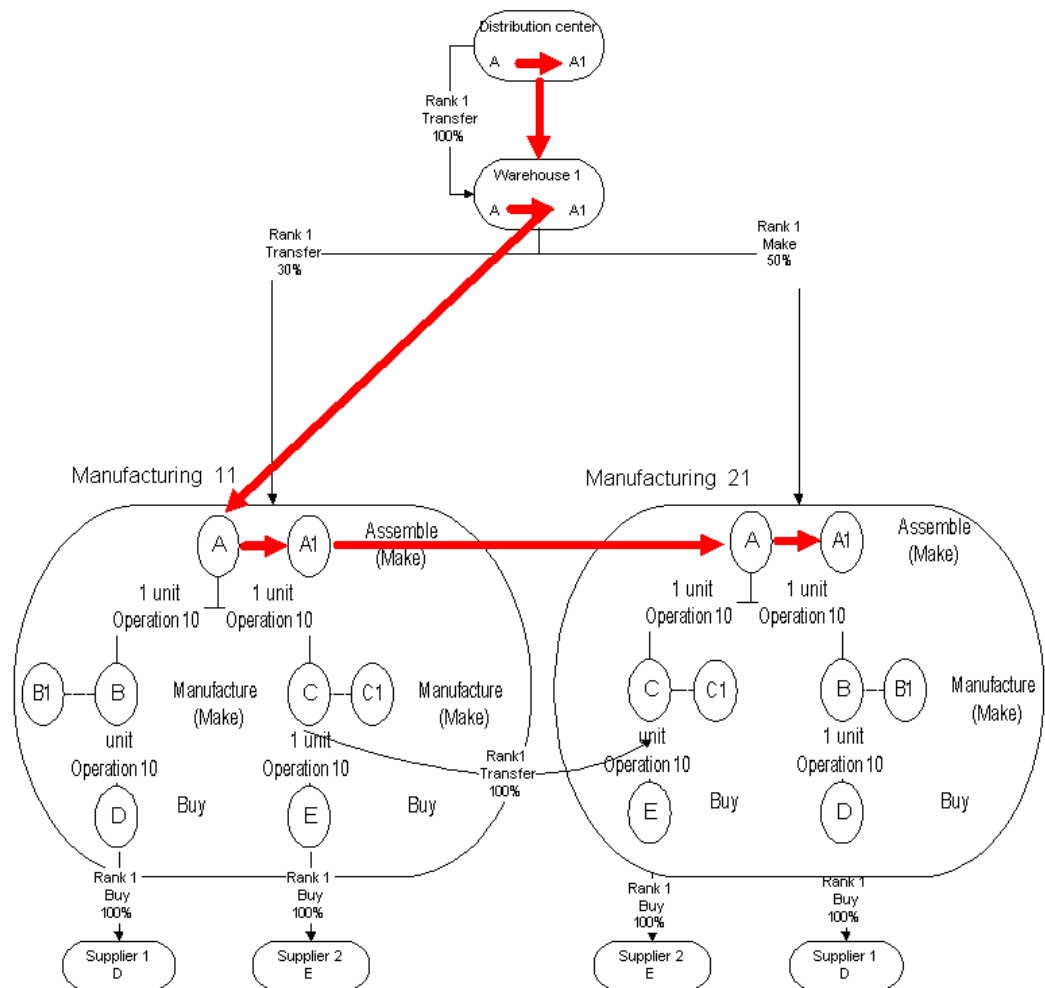
3. Warehouse 1 for item A
4. Warehouse 1 for item A1
5. Manufacturing 11 for item A
6. Manufacturing 11 for item A1
7. Manufacturing 21 for item A
8. Manufacturing 21 for item A1

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 21-70), C (Refer to 'Planning for C at Manufacturing 11, page 21-71), D (Refer to 'Planning for D at Manufacturing 11, page 21-72), and E (Refer to 'Planning for E at Manufacturing 11, page 21-72)

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 21-71), C (Refer to 'Planning for C at Manufacturing 21, page 21-72), D (Refer to 'Planning for D at Manufacturing 21, page 21-72), E (Refer to 'Planning for E at Manufacturing 21, page 21-73)
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 21-72)
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 21-72)
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 21-72)
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 21-73)
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-defined decision rules:

### Make Item

Total processing lead-time =  $((1 + \text{Queue time factor}) * \text{Processing lead-time})$  --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 50 units of substitute component B1, which follows the user-defined sequence.

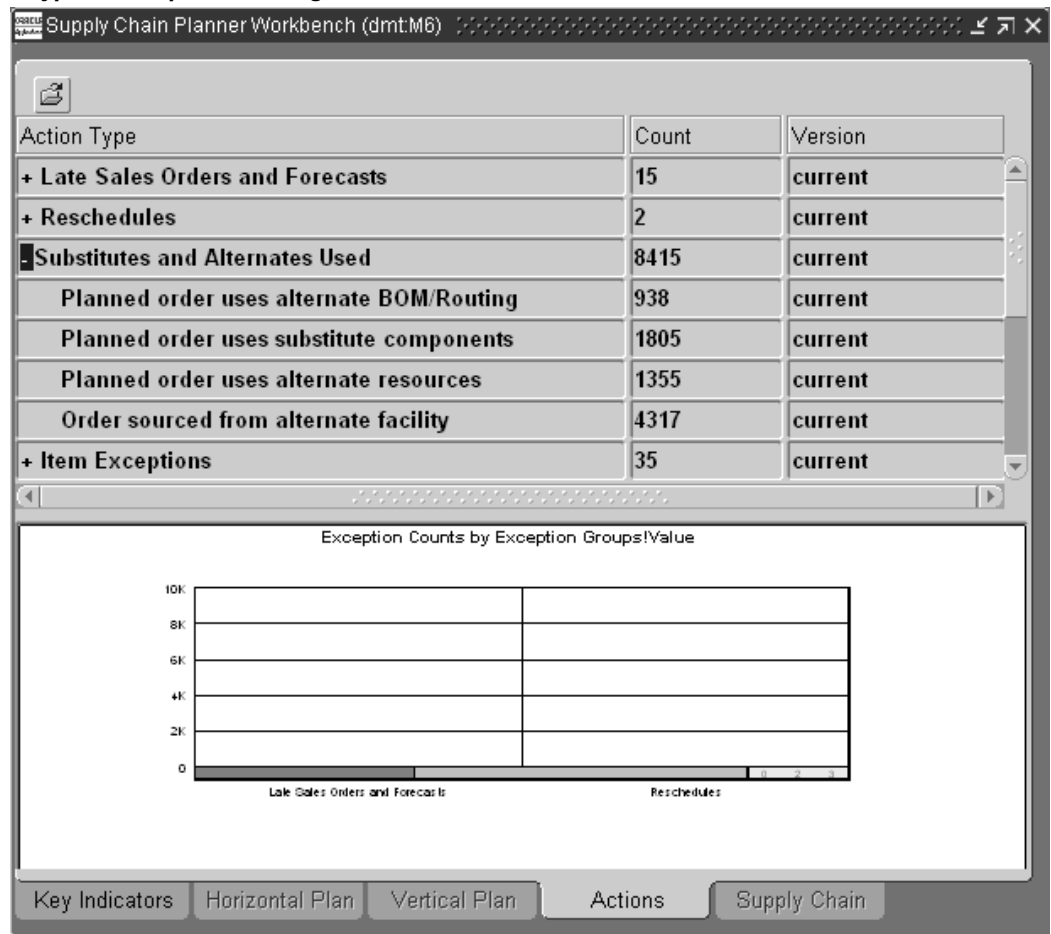
## **Exception Messages**

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.

### A typical exception message



## Organization Security

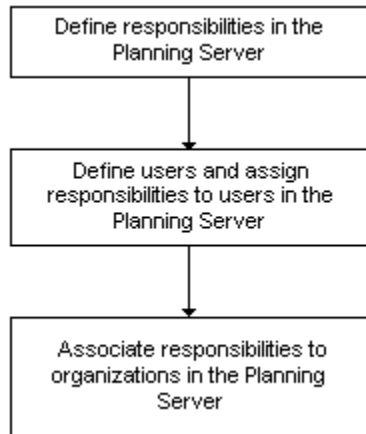
This feature restricts plan information access to authorized individuals. Oracle ASCP allow users to associate job responsibilities to organizations for security purposes. This ensures that you see/change planning data in an organization only if you have a job responsibility associated with the organization.

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.



## Assign Organizations to Responsibilities

The screenshot shows the Oracle Advanced Planning web interface. At the top, the Oracle logo and 'Advanced Planning' text are on the left, and navigation links 'Return to Portal', 'Logout', and 'Preferences' are on the right. Below this is a header bar with the title 'Assign Organizations to Responsibilities'. A dropdown menu for 'Responsibility' is set to 'Advanced Supply Chain Planner'. The main area is divided into two columns: 'Available Organizations' and 'Assigned Organizations'. The 'Available Organizations' list contains 'A1', 'B1', 'R1', 'dmt:PKD', and 'v11:VC5'. The 'Assigned Organizations' list contains 'AC1', 'AC2', 'ARP', 'ARS', 'AT1', 'AV1', 'AV2', 'AVG', 'CH1', and 'CL2'. Between the columns are buttons: '>' (Move), '>>' (Move All), '<' (Remove), '<<' (Remove All), and '<' (Remove). A 'Save' button is at the bottom right. At the very bottom, there are links for 'Return to Portal', 'Logout', 'Preferences', 'Privacy Statement', and a copyright notice for 2001 Oracle Corporation.

ORACLE®  
Advanced Planning

Return to Portal Logout Preferences

Assign Organizations to Responsibilities

Responsibility Advanced Supply Chain Planner

Available Organizations

A1  
B1  
R1  
dmt:PKD  
v11:VC5

Assigned Organizations

AC1  
AC2  
ARP  
ARS  
AT1  
AV1  
AV2  
AVG  
CH1  
CL2

Move  
Move All  
Remove  
Remove All

Save

Return to Portal | Logout | Preferences

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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.
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.  User3 can delete planned organization M2 but cannot add organization M2.  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

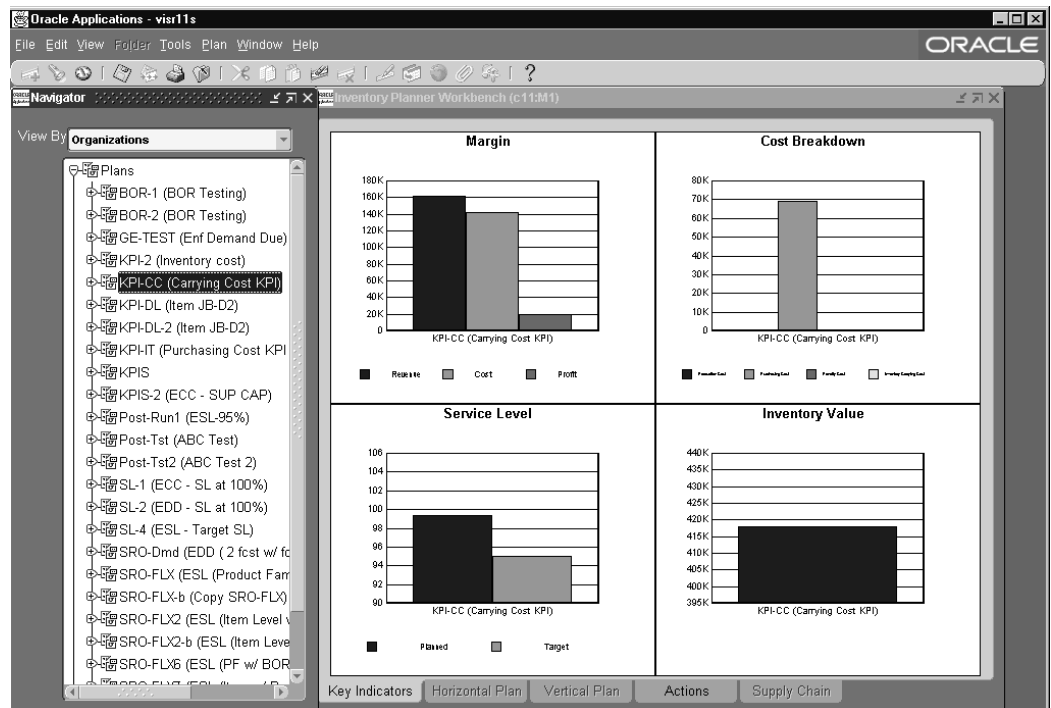
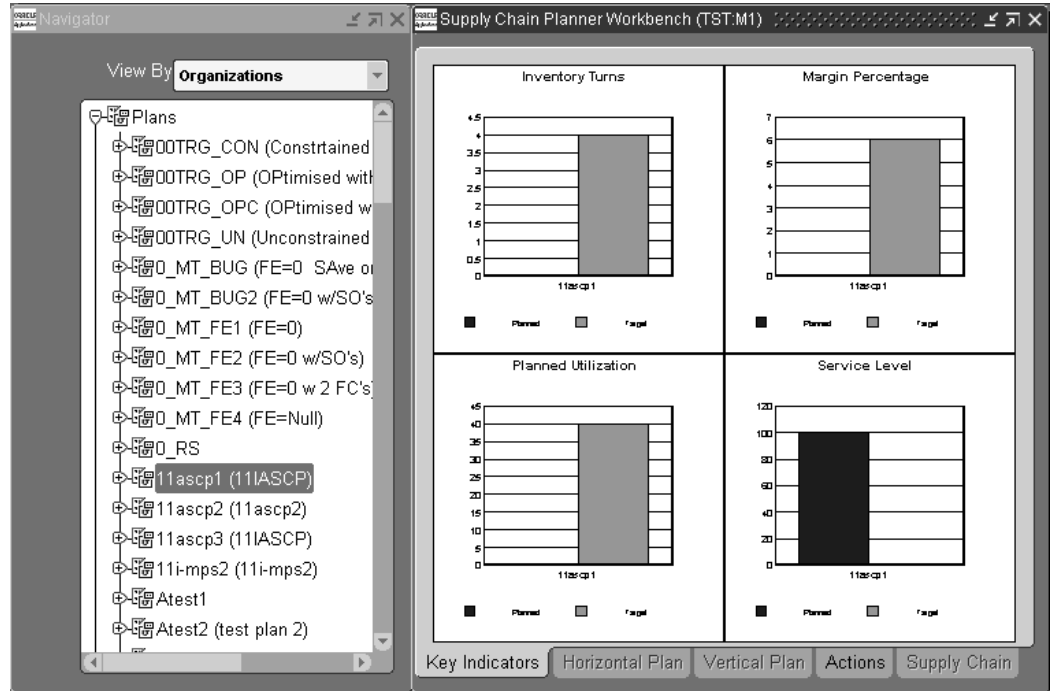
Oracle ASCP is integrated with the Oracle Business Intelligence System (BIS) performance management system. BIS lets you set the organizational objectives. These objectives, known as Performance Measures in BIS, are referred to as Key Performance Indicators (KPIs) in Oracle ASCP.

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
- Cost breakdown
- Service level



Following are descriptions of various KPIs.

Key performance indicators at the plan and organization levels do not display properly until you have run the Plan Partitions concurrent request for the plan.

Key performance indicator displays for weeks and periods group their information for uniformity across organizations in the supply chain plan. They group according to the calendar in profile option MSC: Calendar Reference for Bucketing. If this profile option has no value, then they group according to the manufacturing calendar of the plan owning organization

## 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  $t_2$  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.

## Margin Percentage

Margin percentage is the net difference between planned revenues and planned production costs.

Margin percentage = [(Total shipment units \* Standard price \* Standard discount) - (Total shipment units \* Standard cost)] / [Total shipment units \* Standard price \* Standard discount]

where Total shipment units include sales orders and forecasts.

## 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 =  $\text{Sum of [Planned utilization for all Planning time buckets]} / \text{Number of Planning time buckets}$

Plan level Planned utilization does not include supplier utilization.

## On-Time Delivery

Customer service level or delivery performance are calculated as follows:

$((\text{Total number of orders} - \text{Number of late orders}) * 100) / \text{Total number of orders}$

## Margin

Margin is calculated as follows:

- Top assembly margin =  $(\text{Total shipment units} * \text{Standard price}) - (\text{Total shipment units} * \text{Standard cost})$

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.

## 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 =  $\text{Sum of (Resource time needed} * \text{Resource cost)}$  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) =  $\text{Average inventory of period i} * \text{Carrying cost percent}$

Penalty cost is calculated as follows:

- $\text{Penalty cost} = \text{Demand lateness cost} * (\text{Demand satisfied date} - \text{Requirement date}) * \text{Demand quantity} * \text{Item list price}$

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.

- $\text{Purchasing cost} = \text{Sum of } [\text{Item list price} * \text{Supply quantity}] \text{ for all items}$

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  $(\text{Demand quantity satisfied by due date} / \text{Demand quantity}) * 100$ .

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% $[(100 + 90 + 100 + 190 + 280) / (100 + 100 + 100 + 300)] * 100 = (470 / 500) * 100$



Item	BIS period	Demand Due Date	Demand Quantity	Demand Quantity Satisfied by Demand Due Date	Service Level
-	1 January - 31 January	-	-	-	97% $[(100 + 90 + 100) / (100 + 100 + 100)] * 100 = (290 / 300) * 100$
-	-	10 January	100	100	-
-	-	15 January	100	90	-
-	-	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

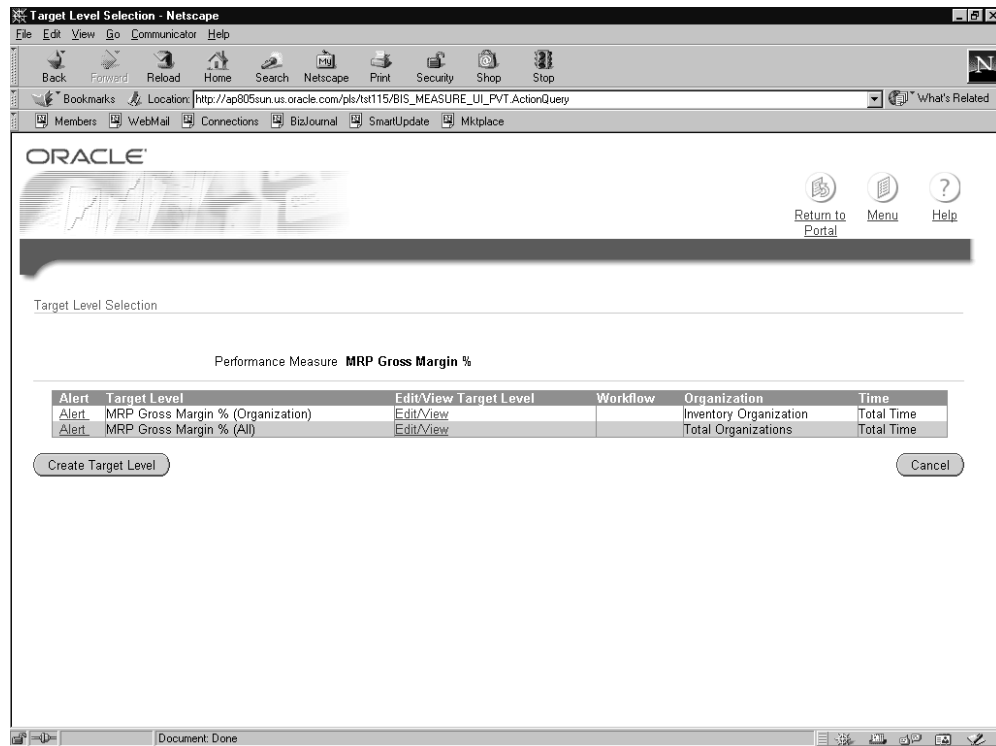
A graphical representation of the least risk inventory values at the intersection of the levels in the hierarchies that you have selected for inventory planning (e.g., item or product family and organization by month) are displayed in a time-phased view.

**Note:** For more information on using KPIs, refer to 'Planner Workbench, page 10-1.

## KPI Setup

Currently, setting up targets for the following KPIs or performance measures are set up within the BIS application. You can access the BIS application to set the following KPIs (now known as performance measures) at the following dimensions:

- MRP gross margin % at the total organizations and total time dimensions
- MRP inventory turns at the total organizations and total time dimensions
- MRP on-time delivery % at the total organizations and total time dimensions
- MRP planned utilization % at the total organizations and total time dimensions



### To set targets for KPIs or Performance Measures

1. From the BIS Personal Home Page, click Performance Management Framework (Full Access).
2. Click Performance Measures.

3. In the Performance Measure drop down box, select the correct performance measure (for example, MRP Gross Margin %).
4. Click the View Target Levels button.
5. Click BIS\_EDIT\_VIEW in the row that shows the correct dimensions (e.g.; Total Organizations, Total Time).
6. Scroll down to the access section. Make sure the Selected Responsibilities include Performance Management Framework (Full Access) and Performance Management Framework (Targets Access).
7. Click the Save and View Targets button.
8. In the Organization drop down box, select Total Organizations.
9. Click the Find Targets button.
10. Click the Retrieve button.
11. In the Business Plan drop down box, select Standard.
12. Click the Refresh button.
13. If there is no target set and you wish to set a target, click the New Target button.
14. If there is an existing target you wish to edit, click BIS\_EDIT\_VIEW for the target you wish to edit.
15. Enter the target.
16. Click the Save button.
17. Use the home button in the Performance Target Details bar and start over with the next target.

## **Tracking Plan Performance Using KPIs**

Oracle ASCP lets you track plan performance against KPIs. For more information, see 'Planner Workbench., page 10-1

## **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 or 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:

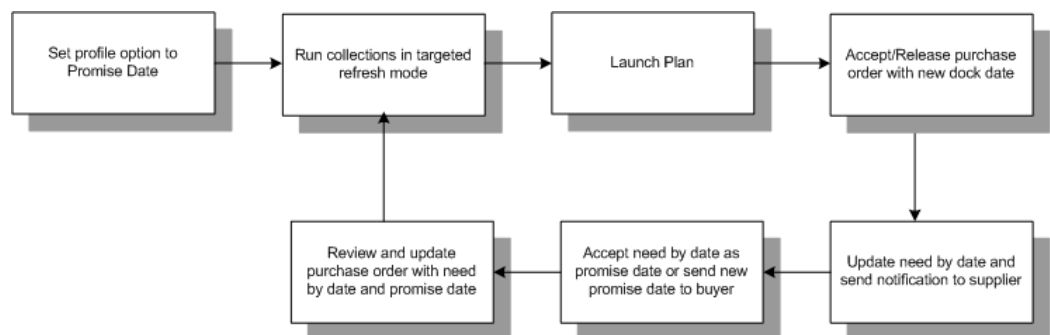
- Increase penalty factor for unmet demand and late demand

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-64 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 *iSupplier 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 *iSupplier Portal* uses it as the promise date. If the supplier specifies a new promise date, Oracle *iSupplier 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

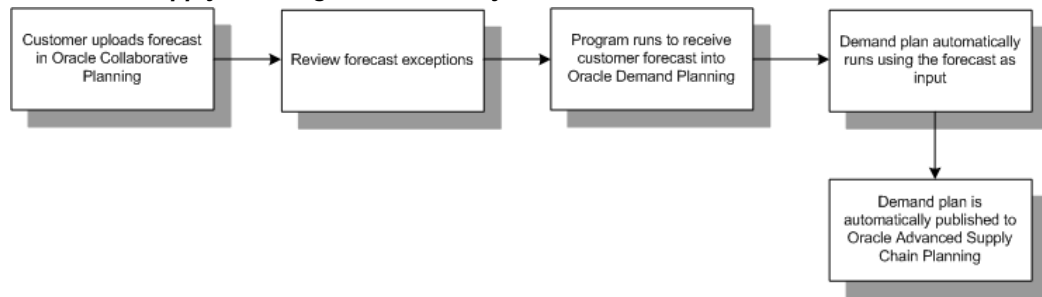
You can set up collaboration between Oracle Advanced Supply Chain Planning and Oracle Demand Planning to automatically launch an unconstrained supply chain plan based on forecast scenarios that you publish.

### 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.



---

## 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.

**Parameters window**

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

Report	Audits data setups related to ...
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.

This figure shows a sample audit report.

### **Sample Audit Report**

#### **Audit Report - Audit Collections Setup For Instance dmt**

*Checking For Instance Setup information ...*  
No errors.

*Checking for User Information on Destination.*  
No errors.

*Checking for Responsibility Information on Destination.*  
No errors.

*Checking If MRP\_AP\_APPS\_INSTANCES Table has the Correct Instance Information ...*  
No errors.

*Checking to see if Instance Information matches in MRP\_AP\_APPS\_INSTANCES On SOURCE and MSC\_APPS\_INSTANCES in DESTINATION ...*  
No errors.

*Checking Source Instance to see if the User exists on the source Instance.*  
*Please note that all the users planning to run Collections should run this report ...*  
No errors.

*Checking Source Instance to see if the Responsibility exists on the source Instance. ...*  
No errors.

*Checking for Planning flexfields in the source instance....*  
No errors.

*Checking for Profile Option Values Corresponding to the Planning flexfields in the source instance....*  
No errors.

*Checking for Views in the source instance....*  
No errors.

## **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.

### Preference Set Search Page (Top)

ORACLE  
Advanced Planning

Return to Portal Logout Preferences Help Email

Plan Comparison Comparison Settings

Preferences Filter Criteria

### Preference Set Search

**Search**  
Please choose a Preference Set and Press Go Button  
Preference Set: Default  
Go

### Preference Set Results

**Exceptions**  
Please specify the exceptions to display.  
☒ All  
☐ None  
☒ Late sales order and forecast

- ☒ Late supply pegged to sales order
- ☒ Late supply pegged to forecast
- ☒ Late replenishment for sales order
- ☒ Early replenishment for sales order
- ☒ Late replenishment for forecast
- ☒ Early replenishment for forecast

### Preference Set Search Page (Bottom)

The screenshot shows the bottom section of the 'Preference Set Search Page'. It includes several sections: 'Transportation resource constraint' with a checked checkbox; 'Projects/Tasks' with a checked checkbox; 'Items with a shortage in a project/task' with a checked checkbox; 'Items with excess inventory in a project' with a checked checkbox; 'Items allocated across projects/tasks' with a checked checkbox; 'Plan Options' with a sub-header 'Please specify whether or not to display plan options.' and two radio buttons, 'No' and 'Yes', with 'Yes' selected; 'Preference Set' with a sub-header 'Edit/save your preference set.' and three checkboxes: 'Make this my default Preference Set' (checked), 'Delete Plan Comparison Preference Set' (unchecked), and 'Make Plan Comparison Preference Set' (unchecked); 'Private' and 'Public' radio buttons with 'Private' selected; 'Save Plan Comparison Preference Set As' with a text input field containing 'Default'; and three buttons: 'Cancel', 'Save', and 'Display Report'. At the bottom, there is a navigation bar with links: 'Plan Comparison', 'Comparison Settings', 'Return to Portal', 'Logout', 'Preferences', 'Help', 'Email', and a 'Privacy Statement' link. Copyright text 'Copyright 2001 Oracle Corporation. All rights reserved.' is also present.

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.

### Filter Criteria Page

ORACLE Advanced Planning

Return to Portal Logout Preferences Help Email

Plan Comparison Comparison Settings

Preferences Filter Criteria

Filter Criteria

Item

Select All | Select None Previous 1-1 of 1 Next

Select	* Field Name	* Condition	From	To
<input type="checkbox"/>	Buyer	Equals	Andretti, Mr. Evan	

Add Another Row

Resource

Select All | Select None Previous 1-1 of 1 Next

Select	* Field Name	* Condition	From	To
<input type="checkbox"/>	*	*		

Add Another Row

Cancel Clear Display Report

Plan Comparison | Comparison Settings | Return to Portal | Logout | Preferences | Help | Email

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.

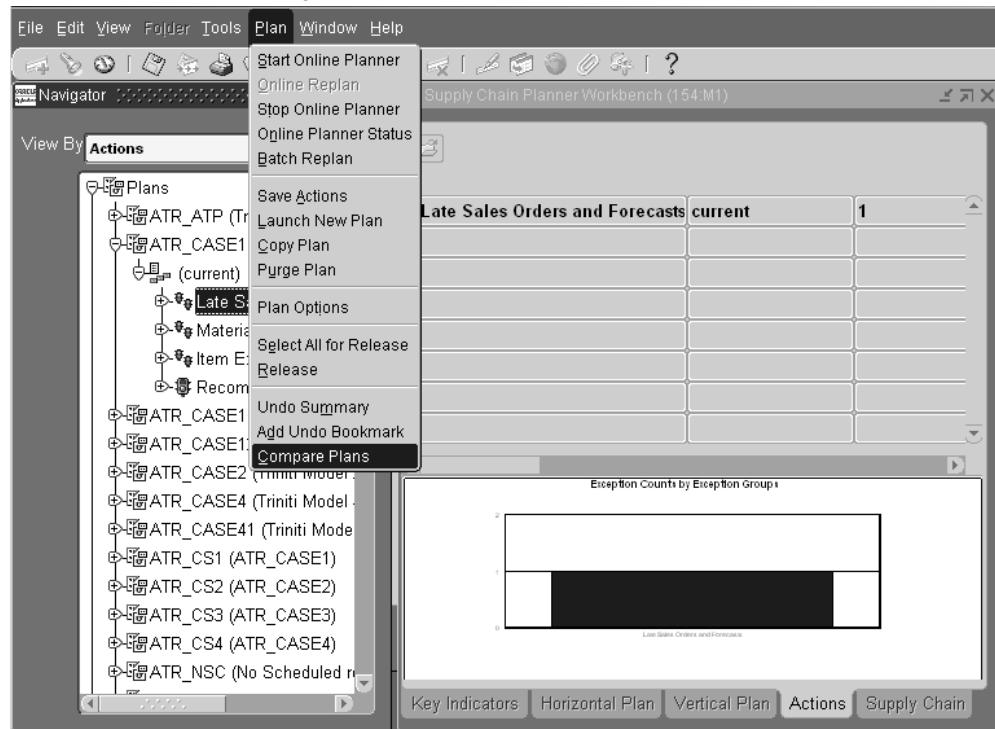
### Viewing Plan Comparison

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.

#### ***Planner Workbench: 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.

## Plan Comparison Page

ORACLE  
Advanced Planning

[Return to Portal](#) [Logout](#) [Preferences](#) [Help](#) [Email](#)

[Plan Comparison](#) [Comparison Settings](#)

[Exceptions](#) [Plan Options](#)

### Exception Group Summary

**Search**  
Please enter the following, and select the "Go" button.  
Plan A   
Plan B   
Preference Set

### Exception Groups

Exception Group	Plan A only	Plan B only	Changed Exceptions	Common Exceptions	Total Plan A Count	Total Plan B Count

[Plan Comparison](#) | [Comparison Settings](#) | [Return to Portal](#) | [Logout](#) | [Preferences](#) | [Help](#) | [Email](#)  
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### 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.

## Exception Group Summary Page



### Exception Group Summary

#### Search

Please enter the following, and select the "Go" button.

Plan A

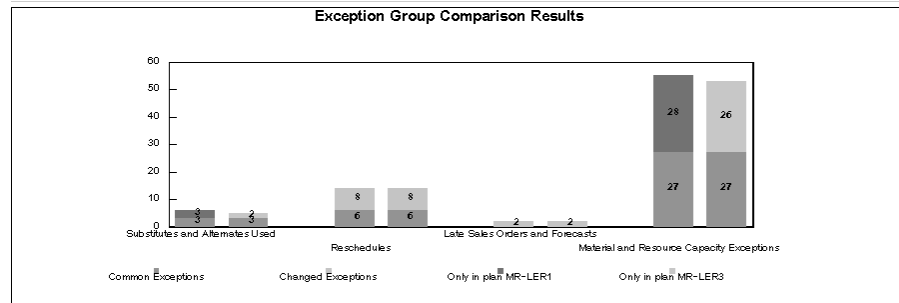
Plan B

Preference Set

[Go](#)

[Create/Edit Preferences](#)

#### Exception Groups



Exception Group	MR-LER1 Only	MR-LER3 Only	Changed Exceptions	Common Exceptions	Total MR-LER1 Count	Total MR-LER3 Count
Substitutes and Alternates Used	3	2	0	3	6	5
Reschedules	0	0	8	6	14	14
Late Sales Orders and Forecasts	0	0	2	0	2	2
Material and Resource Capacity Exceptions	27	26	0	27	56	53

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.

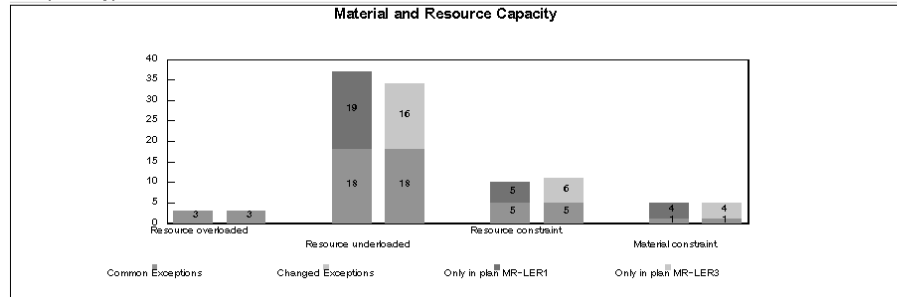
The Exception Types Summary page appears.

## Exception Types Summary Page



### Exception Types Summary

#### Exception Types



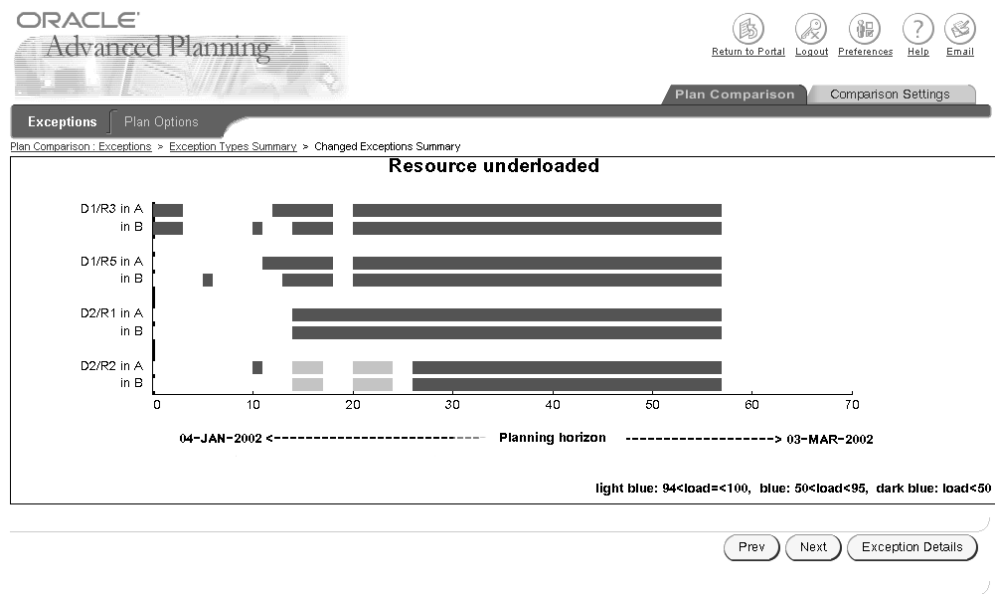
Exception Type	MR-LER1 Only	MR-LER3 Only	Changed Exceptions	Common Exceptions	Total MR-LER1 Count	Total MR-LER3 Count
Resource overloaded	0	0	0	3	3	3
Resource underloaded	19	18	0	18	37	34
Resource constraint	5	5	0	5	10	11
Material constraint	4	4	0	1	5	5

This screen shows the exception count allocated to each exception type in the exception group.

- From the Exception Types Summary page, click a link in the Exception Type column.

The exception details graph appears.

Exception Details Page (Graphical)



- To view corresponding tabular data, click Exception Details.  
The Exception Details page appears.

## Exception Details Page (Tabular)



Plan Comparison Comparison Settings

Exceptions Plan Options

Plan Comparison > Exceptions > Exception Types Summary > Changed Exceptions Summary > Exception Details

Exception Details : Resource underloaded

Previous 1-25 Next 25

Plan	Org	From Date	To Date	Dept/Line	Resource	Load Ratio
MR-LER1	c11:M1	04-Jan-2002 00:00:00	07-Jan-2002 00:00:00	D1	R3	0
MR-LER3	c11:M1	04-Jan-2002 00:00:00	07-Jan-2002 00:00:00	D1	R3	0
MR-LER1	c11:M1	08-Jan-2002 00:00:00	08-Jan-2002 00:00:00	D1	R3	78.125
MR-LER3	c11:M1	08-Jan-2002 00:00:00	08-Jan-2002 00:00:00	D1	R3	78.125
MR-LER1	c11:M1	09-Jan-2002 00:00:00	09-Jan-2002 00:00:00	D1	R3	40.625
MR-LER3	c11:M1	09-Jan-2002 00:00:00	09-Jan-2002 00:00:00	D1	R3	40.625
MR-LER1	c11:M1	10-Jan-2002 00:00:00	10-Jan-2002 00:00:00	D1	R3	0
MR-LER3	c11:M1	10-Jan-2002 00:00:00	10-Jan-2002 00:00:00	D1	R3	0
MR-LER1	c11:M1	11-Jan-2002 00:00:00	11-Jan-2002 00:00:00	D1	R3	43.75
MR-LER3	c11:M1	11-Jan-2002 00:00:00	11-Jan-2002 00:00:00	D1	R3	43.75
MR-LER1	c11:M1	23-Jan-2002 00:00:00	23-Jan-2002 00:00:00	D1	R3	41.25
MR-LER3	c11:M1	23-Jan-2002 00:00:00	23-Jan-2002 00:00:00	D1	R3	41.25
MR-LER1	c11:M1	24-Jan-2002 00:00:00	02-Mar-2002 00:00:00	D1	R3	0
MR-LER3	c11:M1	24-Jan-2002 00:00:00	02-Mar-2002 00:00:00	D1	R3	0
MR-LER1	c11:M1	04-Jan-2002 00:00:00	04-Jan-2002 00:00:00	D1	R5	0
MR-LER3	c11:M1	04-Jan-2002 00:00:00	04-Jan-2002 00:00:00	D1	R5	0
MR-LER1	c11:M1	07-Jan-2002 00:00:00	07-Jan-2002 00:00:00	D1	R5	25.925926
MR-LER3	c11:M1	07-Jan-2002 00:00:00	07-Jan-2002 00:00:00	D1	R5	25.925926
MR-LER1	c11:M1	08-Jan-2002 00:00:00	08-Jan-2002 00:00:00	D1	R5	77.777778
MR-LER3	c11:M1	08-Jan-2002 00:00:00	08-Jan-2002 00:00:00	D1	R5	77.777778
MR-LER1	c11:M1	23-Jan-2002 00:00:00	23-Jan-2002 00:00:00	D1	R5	66.666667
MR-LER3	c11:M1	23-Jan-2002 00:00:00	23-Jan-2002 00:00:00	D1	R5	66.666667
MR-LER1	c11:M1	24-Jan-2002 00:00:00	02-Mar-2002 00:00:00	D1	R5	0
MR-LER3	c11:M1	24-Jan-2002 00:00:00	02-Mar-2002 00:00:00	D1	R5	0
MR-LER1	c11:M1	04-Jan-2002 00:00:00	04-Jan-2002 00:00:00	D2	R1	62.5

Plan Comparison Comparison Settings Return to Portal Logout Preferences Help Email

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### To view plan options

1. Select the Plan Options tab.

The Plan Options page appears.

## Plan Options Page

ORACLE Advanced Planning

Return to Portal Logout Preferences Help

Plan Comparison Comparison Settings

Exceptions Plan Options

Main

Aggregation

Organization

Constraints

Optimization

Decision Rules

Plan Options

Previous Next 10

Plan Option	S/DDRLDWN	S/DDRLDWN2
Plan Type	MRP	MRP
Planned Items	Demand scheduled items only	Demand scheduled items only
Assignment Set		
Material Scheduling Method	Order Start Date	Order Start Date
Demand Priority Rule		
End Item Substitution Set		
Overwrite	All	All
Demand Class		
Demand Time Fence Control	No	No
Append Planned Orders	Yes	Yes

Previous Next 10

Plan Comparison | Comparison Settings | Return to Portal | Logout | Preferences | Help

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- 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

The Planning Detail Report has been enhanced for release 12. The enhanced Planning Detail Report uses XML Publisher for the output and is available to OPM and ASCP users. The Planning Detail Report that was available in previous releases is referred to as the Planning Detail Report (Discoverer) because it uses Oracle Discoverer for the output.

This section discusses both reports:

- Planning Detail Report, which is new with release 12.
- Planning Detail Report (Discoverer), which was available to ASCP users prior to release 12.

In previous releases, process manufacturing planners use these Oracle Process Manufacturing reports to view results of their plans:

- MRP Bucketed Material Report
- MRP Material Activity Report
- MRP Action Message Report
- MRP Error Message Report



In release 12, the source of this information has changed. 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. In release 12, the source of this information has changed. Process manufacturing planners use the Oracle Inventory Reorder Point Report to view the results of reorder point planning.

This diagram shows 11i Oracle Process Manufacturing Material Requirements Planning reports and their R12 equivalents:

11i Oracle Process Manufacturing	R12 Oracle Advanced Supply Chain Planning
MRP Bucketed Material Report	Planning Detail Report (available to ASCP and OPM users)
MRP Material Activity Report	
MRP Action Messages Report	
MRP Error Messages Report	
MPS Material Activity Report	OPM: Enhanced MPS Material Activity Report
MPS Bucketed Material Report	OPM: Enhanced MPS Bucketed Material Report
OPM Reorder Point Report	INV: Inventory Reorder Point Report (existing report; unchanged in R12)
No direct equivalent	Planning Detail Report (Discoverer) (previously available to ASCP users only; unchanged in R12; output uses Discoverer)

## 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.

### ***The Parameters window***

The screenshot shows the 'Parameters' dialog box in the GMP\_PDR application. The dialog has a title bar with 'GMP\_PDR' and standard window controls. Inside, there's a 'Run this Request...' button and a 'Copy...' button. The main area contains several input fields: 'Instance' (a dropdown menu), 'Organization' (a text field), 'Plan Name' (a text field), 'Plan Organizations' (a text field), 'Day Buckets' (a text field), 'Week Buckets' (a text field), 'Period Buckets' (a text field), 'First Sort' (a text field), 'Second Sort' (a text field), 'Third Sort' (a text field), 'Exception Types' (a text field), 'Planner From' (a text field), 'To' (a text field), 'Buyer From' (a text field), 'To' (a text field), and 'Item From' (a text field). At the bottom right, there are four buttons: 'OK', 'Cancel', 'Clear', and 'Help'.

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 <b>Collections</b> to create the report based on the ODS data.
Plan Organizations	Select all planned organizations or a single plan.

Parameter	Description
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 <b>en-US</b> for English: United States.
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 <b>en-US</b> for English: United States.

Parameter	Description
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 <b>en-US</b> 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 <b>en-US</b> 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 <b>en-US</b> for English: United States.

4. Click the OK button. The GMP\_PDR window displays the Parameter selection string in the Parameter field.

### The GMP\_PDR window

The screenshot shows the GMP\_PDR window with the following fields and buttons:

- Run this Request...** section:
  - Name:** Planning Detail Report
  - Operating Unit:** (empty)
  - Parameters:** TST:TST\PR1:CONST1:All:30:5:1:Inventory Item:Planner:Category:Items that are over-comr
  - Language:** American English
  - Buttons:** Copy..., Language Settings..., Debug Options
- At these Times...** section:
  - Run the Job:** As Soon as Possible
  - Button:** Schedule...
- Upon Completion...** section:
  - ☒ Save all Output Files
  - Layout:** (empty)
  - Notify:** (empty)
  - Print to:** noprint
  - Button:** Options...
- Bottom Buttons:** Help (C), Submit, Cancel

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.

### Planning Detail Report (Discoverer)

The Planning Detail Report (Discoverer) 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.

As of release 12, you must add this report to the ASCP responsibility to invoke it from a menu and print the worksheets selectively. You can select the plan, organizations, items, resources, projects, and many other parameters to filter the information to display in the report and you can change these parameters at any time.

The Planning Detail Report (Discoverer) contains six worksheets:

- Plan Details: Shows the details of the selected plan from form Plan Options.
- Item Details: Shows the details of the selected items.
- Resource Details: Shows the details of the selected resources
- Vertical Plan- shows the cumulative supply/demand picture (No buckets).
- Late Order Exceptions: Shows the details of late orders. Only the following exceptions are included in the Late Orders Exception Worksheet:
  - Past Due Sales Order and Forecast
  - Late supply pegged to sales order or forecast
  - Late replenishments for sales order or forecast
  - Replenishment after need date
  - Past Due orders
- Other Exceptions: Shows the material and resource related exceptions that span the following exception groups:
  - Material and resource capacity constraints
  - Shortages and Excess

You can specify the details you need to see in the report. For example:

- You can choose not to see a particular worksheet, and you can control the display by selecting the sorting rule.
- A column can be removed from a worksheet, but if the new format (with the deleted column) is saved by any one user, other users would also not be able to view that column.

There are many Discoverer 4i features which enable you to flexibly manipulate the reports. For more details on using Discoverer, see *Oracle Discoverer User's Guide*.

#### **To add the Planning Detail Report (Discoverer) to ASCP Responsibilities**

To run the Planning Detail Report (Discoverer) you must add the report to ASCP responsibilities:

1. From Oracle Applications, select the Application Developer responsibility.
2. Navigate to Application > Menu, to open the Menu form.
3. Press F11 (view > query by example > enter) and enter **MSC\_TOP\_4.0** in the Menu

field.

4. Press ctrl+F11 (view > query by example > run).
5. Place your cursor in the details block and press F11 (view > query by example > enter).
6. In the Function field, enter **Planning Detailed Report - Discoverer**.
7. Press ctrl+F11 (view > query by example > run), and change the prompt to **Planning Detail Report (Discoverer)**.
8. Save your work, and change the responsibility to **Advanced Supply Chain Planner**.

**To create the Planning Detail Report (Discoverer)**

1. From the Advanced Supply Chain Responsibility, select Planning Detail Report (Discoverer). The Planning Detail window appears.

### Planning Detail Report (Discoverer)

Parameters

Plan **RAJ\_DTL2**

	Condition	From	To
Org	All		
Category Set	Equals	Inv.Items	
Category	Equals	MISC.MISC	
ABC Class	Outside	Class X	Low
Item	Between	rt1-item1	rt1-item7
Planner	All		
Buyer	All		
Supplier	All		
Planning Group	All		
Project	All		
Resource Group	All		
Dept/Line	Is Not	rt1-d2	
Resource	Among	rt1-r1,rt1-r2,rt1-r3	

Reporting Dates

From Date **04-JAN-2002 00:00:00** To Date **31-OCT-2002 00:00:00**

Clear Go

The following table describes each condition and defines the number of values that can be selected in the From and To fields for each condition.

Condition	Definition	From	To
All	all the values for the parameter are selected	n/a	n/a
Equals	only one value is selected	single value	n/a
Between	a range of values is selected	single value	single value



Condition	Definition	From	To
Among	multiple values are selected	multiple values	n/a
Is Not	a value that is not required to be included in the report is selected	single value	n/a
Outside	a range of values is selected that are not required to be included in the report	single value	single value

The information is filtered and displayed in the report on the basis of the values selected for the parameters. The following table is an example of the values that can be selected for the different parameters.

Parameter	Value
Plan Name	Select a plan.
Org	Select multiple organizations for a multi-org plan and for the owning organization. For single-org plan or when not working in the owning organization, only the current organization can be selected.
Category Set	The default is the category set used for the plan. You can select another category set. At least one category set should be selected.
ABC Class	Select a range of item ABC class
Item	Select a range of Items.
Planner	Select the name of a planner
Buyer	Select the name of a buyer

Parameter	Value
Supplier	Select one or more suppliers
Planning Group	Select the planning groups
Project	Select the projects
Resource Group	Select resource groups
Dept./Line	Select the departments/lines
Resource	Select a range of resources

2. Select the Go button. The Planning Detail Report (Discoverer) is launched in Discoverer 4i. The six worksheets, namely Plan Details, Item Details, Resource Details, Late Order Exceptions, and Other Exceptions can be accessed by selecting the respective tabs at the bottom of the report. If you rerun the report for a different plan, the Discoverer4i worksheets are already open. Click Refresh to see the new report.
3. Select the Item Details tab to open the Item Details worksheet.

### Item Details Worksheet

Oracle Discoverer - [APS.MSC.PLANNING.DETAILED.REPORT]

File Edit Sheet Tools Graph Help

Page Items: Plan: RAJ\_DTL2 Report Creation Date: 04-JAN-2002

Organization	Product Category	Item	Description	Unit Of Measure	ABC Class	Preprocessing Lead Time, Days	P
c11.M1	MISC.MISC	rt1-item4	rt1-item4	Ea		0	
c11.M1	MISC.MISC	rt1-item3	rt1-item3	Ea		0	
c11.M1	MISC.MISC	rt1-item2	rt1-item2	Ea		0	
c11.M1	MISC.MISC	rt1-item1	rt1-item1	Ea		0	
c11.M2	MISC.MISC	rt1-item4	rt1-item4	Ea		0	
c11.M2	MISC.MISC	rt1-item7	rt1-item7	Ea		0	
c11.M2	MISC.MISC	rt1-item6	rt1-item6	Ea		0	
c11.M2	MISC.MISC	rt1-item5	rt1-item5	Ea		0	
c11.D2	MISC.MISC	rt1-item1	rt1-item1	Ea		0	

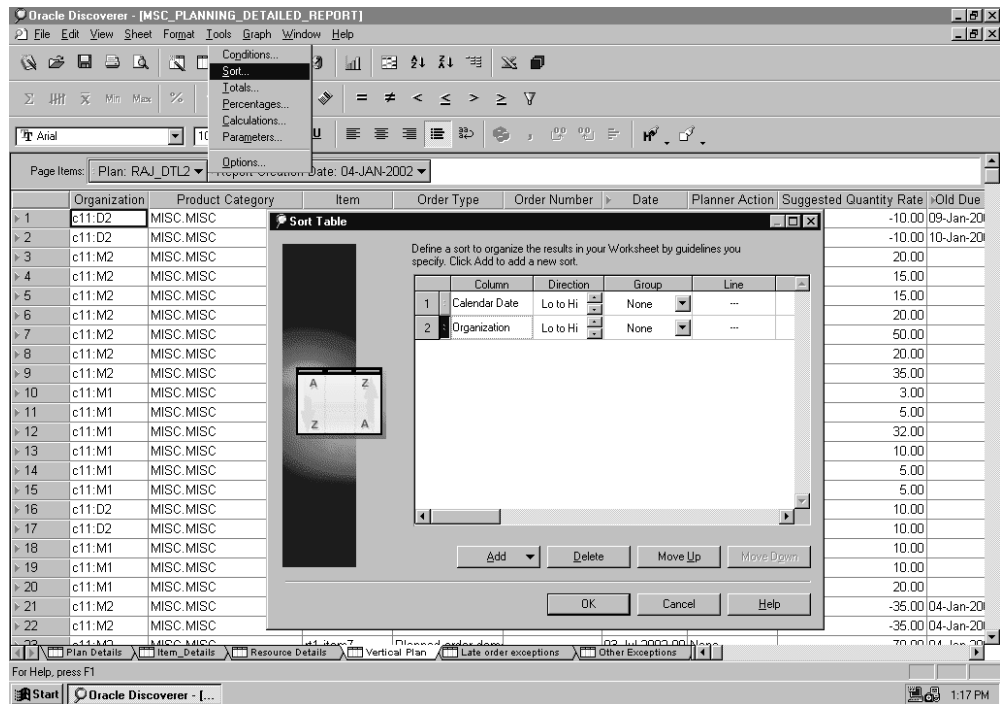
Page 1 of 1

25 Rows per Page

Plan Details Item Details Resource Details Vertical Plan Late order exceptions Other Exceptions

- To sort the data by Organization in Vertical Plan worksheet, select the Vertical Plan tab, then select Tools > Sort. The Sort Table appears. Use this table to change or add the sort parameter and condition.

## Sort Table



5. To sort the data based on Organizations, select Add and select Organization in the Sort Table.
6. To view the sorted Vertical Plan worksheet, select OK on the Sort Table Window. The sorted Vertical Plan worksheet appears.

### Vertical Plan worksheet, sorted

Oracle Discoverer - [MSC\_PLANNING\_DETAILED\_REPORT]

File Edit View Sheet Format Tools Graph Window Help

Page Items: Plan: RAJ\_DTL2 Report Creation Date: 04-JAN-2002

	Organization	Product Category	Item	Order Type	Order Number	Date	Planner Action	Suggested Quantity Rate	Old Due
> 1	c11:D2	MISC.MISC	rt1-item1	Manual MDS	rt1-mds2	09-Jan-2002 00	None	-10.00	09-Jan-20
> 2	c11:D2	MISC.MISC	rt1-item1	Manual MDS	rt1-mds2	10-Jan-2002 00	None	-10.00	10-Jan-20
> 3	c11:D2	MISC.MISC	rt1-item1	Planned order	78863536	30-Oct-2002 00	Release	10.00	
> 4	c11:D2	MISC.MISC	rt1-item1	Planned order	78863535	30-Oct-2002 00	Release	10.00	
> 5	c11:M1	MISC.MISC	rt1-item1	Planned order dem		30-Oct-2002 00	None	-10.00	03-Jan-20
> 6	c11:M1	MISC.MISC	rt1-item1	Planned order dem		30-Oct-2002 00	None	-10.00	03-Jan-20
> 7	c11:M1	MISC.MISC	rt1-item2	Planned order dem		30-Oct-2002 00	None	-20.00	04-Jan-20
> 8	c11:M1	MISC.MISC	rt1-item3	Planned order dem		30-Oct-2002 00	None	-20.00	04-Jan-20
> 9	c11:M1	MISC.MISC	rt1-item4	Planned order dem		30-Oct-2002 00	None	-40.00	04-Jan-20
> 10	c11:M1	MISC.MISC	rt1-item4	Planned order	78863540	30-Oct-2002 00	Release	3.00	
> 11	c11:M1	MISC.MISC	rt1-item4	Planned order	78863539	30-Oct-2002 00	Release	5.00	
> 12	c11:M1	MISC.MISC	rt1-item4	Planned order	78863538	30-Oct-2002 00	Release	32.00	
> 13	c11:M1	MISC.MISC	rt1-item3	Planned order	78863544	30-Oct-2002 00	Release	10.00	
> 14	c11:M1	MISC.MISC	rt1-item3	Planned order	78863543	30-Oct-2002 00	Release	5.00	
> 15	c11:M1	MISC.MISC	rt1-item3	Planned order	78863542	30-Oct-2002 00	Release	5.00	
> 16	c11:M1	MISC.MISC	rt1-item2	Planned order	78863546	30-Oct-2002 00	Release	10.00	
> 17	c11:M1	MISC.MISC	rt1-item2	Planned order	78863545	30-Oct-2002 00	Release	10.00	
> 18	c11:M1	MISC.MISC	rt1-item1	Planned order	78863537	30-Oct-2002 00	Release	20.00	
> 19	c11:M2	MISC.MISC	rt1-item7	Planned order	78863547	03-Jul-2002 00	Release	20.00	
> 20	c11:M2	MISC.MISC	rt1-item4	Planned order	78863541	30-Oct-2002 00	Release	35.00	
> 21	c11:M2	MISC.MISC	rt1-item6	Planned order dem		03-Jul-2002 00	None	-35.00	04-Jan-20
> 22	c11:M2	MISC.MISC	rt1-item6	Planned order dem		03-Jul-2002 00	None	-35.00	04-Jan-20
> 23	c11:M2	MISC.MISC	rt1-item7	Planned order dem		03-Jul-2002 00	None	-70.00	04-Jan-20

Plan Details Item Details Resource Details Vertical Plan Late order exceptions Other Exceptions

Start Oracle Discoverer - I... 1:19 PM

## 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 concurrent process switches inquiries to the new plan. While the process typically runs automatically, Oracle may ask you to run this process independently to save time.

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 through the supplier organization to issue buy planned orders.

See Modeling Cross-Instance Customers and Suppliers, page 20-7.

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 through 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 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 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 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 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.

## 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 minutes 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, page 4-30.

### 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 find 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 whether 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 there 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.

#### **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`.

## 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 ( $\geq 1$ ): 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 ( $\geq 1$ ): For Replenishments to Customers, choose to increase the duration in which vendor managed inventory engine evaluates supplies by a multiplier of the lead times.

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## 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  $2.1 \times 10^9$ . 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	<p>This is a site level profile. Valid values are:</p> <ul style="list-style-type: none"><li>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.</li><li>ATP Based on Collected Data: set the profile to this value if you want to use collected data for order promising.</li></ul>
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	<p>Indicates whether excess exceptions are calculated at the time fence or up to the time fence. Valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: The planning engine issues exceptions only at the time fence date.</li> <li>- No: The planning engine issues individual exceptions.</li> </ul>
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 Yes. 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	<p>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.</p> <p>The planning engine honors the item attribute Planning Time Fence regardless of the value of this profile option</p>
MRP: Cutoff Date Offset Months	Integer $\geq 0$	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 is viewed as infinite. Set this value to your plan horizon.
MRP: Cutoff History Days	-	-	Not used by Oracle Advanced Planning.
MRP: Debug Mode	Yes/No	No	Enables debug messages within Oracle Master Scheduling/MRP and Oracle Advanced Supply Chain Planning when set to Yes. It captures details about runs of concurrent process WIP Mass Load.

Profile Option Name	Valid Values	Default Value	Description
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.
MRP: Explode Demand Through Phantom Component	-	-	



Profile Option Name	Valid Values	Default Value	Description
MRP: Firm Internal Req Transferred to OE	Yes/No	Yes	<p>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:</p> <ul style="list-style-type: none"> <li>- Yes: All internal requisitions transferred to Oracle Order Management are treated as firm supplies by Oracle Advanced Supply Chain Planning.</li> <li>- No: Oracle Advanced Supply Chain Planning may generate reschedule recommendations for these internal requisitions.</li> </ul> <p>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.</p>
MRP: Firm Planned Order Time Fence	Yes/No	Yes	<p>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.</p>
MRP: Firm Requisitions within time fence	-	-	<p>Not used. Replaced by profile option MRP: Net All Purchase Orders Prior To Requisitions.</p>
MRP: Include Sched Rcpts in Use-up	Yes/No	No	<p>If set to Yes it includes scheduled receipts when computing the engineering change order use-up date.</p>

Profile Option Name	Valid Values	Default Value	Description
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	<p>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:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- No: Net purchase orders and purchase requisitions together.</li> </ul>
MRP_NEW_PLAN NER_BACK_COMP ATIBILITY	-	-	Not used by Oracle Advanced Planning.
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.

Profile Option Name	Valid Values	Default Value	Description
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.
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. 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), and 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.
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.

Profile Option Name	Valid Values	Default Value	Description
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.
MRP: Use Ship Arrived Flag	Yes/No	No	Determines whether sales orders are automatically viewed as arrived at a customer site after transit lead-time has expired. You can an manually update the ARRIVED_FLAG in SO_PICKING_HEADERS. Used when a customer is modeled as an organization. Valid Values are Yes (use arrived flag in SO_PICKING_HEADERS) and No (use transit time between source and the destination organizations).

## 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	<p>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.</p> <p>If you set this profile option, consider setting MSC: ATP Synchronization Downtime (minutes).</p> <p>This is a site level profile option.</p>
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.

Profile Option Name	Valid Values	Default Value	Description
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	<p>This profile controls the forward consumption method for allocated available to promise using the user-defined allocation percentage method. The values are:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> </ul> <p>This is a site level profile option.</p>
MSC: Allocation Assignment Category Set	Valid category set	Category specified in profile option MSC: Sourcing Category Set	<p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Allow Release of Planned Orders from Demand Schedule Plan	Yes/No	No	<p>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:</p> <ul style="list-style-type: none"> <li>- Yes: You can release demand schedule MPP or MPP planned orders from the lower level plan</li> <li>- No: You cannot release demand schedule MPP or MPP planned orders from the lower level plan</li> </ul>
MSC: Allow Release of Planned Orders from Demand Schedule Plan	Yes/No	No	<p>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:</p> <ul style="list-style-type: none"> <li>- Yes: Allow manual release</li> <li>- No: Do not allow manual release</li> </ul> <p>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.</p>



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	<p>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.</p> <p>- Order start date: Use the order start date to check for operation effectivity and select yield value</p> <p>- Operation start date: Use the operation start date to check for operation effectivity and select yield value.</p> <p>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.</p> <p>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.</p>
MSC: Apply Lot Modifiers in Weekly/Period Buckets	Yes/No	Null	<p>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</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Apply Order Modifier To Start Quantity	Yes/No	No	<p>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:</p> <ul style="list-style-type: none"> <li>- Yes: The planning engine inflates the order start quantity by the routing operation yield and then applies order modifiers.</li> <li>- No: The planning engine applies the order modifiers to the end quantity.</li> </ul>
MSC: Apply Safety Stock Change interval to non MRP Planned Safety Stock	Yes/No	No	<p>Use this profile option to specify the safety stock to which the smoothing within time interval applies. Valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: Smoothing applies to all types of safety stock</li> <li>- No: Smoothing applies only to MRP planned safety stock</li> </ul>
MSC: ATP Allocation Method	User-Defined Allocation Percentage, Demand Priority	Null	<p>Determines the allocation method used by ATP. This is a site level profile. Valid values are:</p> <ul style="list-style-type: none"> <li>• User-Defined Allocation Percentage</li> <li>• Demand Priority</li> </ul>

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	<p>Determines whether to enable debug messages within Oracle Global Order Promising. You can update it at the user level. Valid values are:</p> <ul style="list-style-type: none"> <li>- Debug Only: ATP generates a log file for an ATP request.</li> <li>- Debug and Database Trace: ATP generates a log file and a database trace file.</li> <li>- Database Trace Only: ATP generates a database trace file.</li> <li>- None: ATP does not generate log file or database trace file.</li> </ul>
MSC: ATP Enforces Lead Time for ATO Model	Yes/No	Yes	<p>Use this profile option to specify how ATP considers lead-time. Valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: ATP always enforces lead-times for non-ATPable ATO models</li> <li>- No: ATP does not enforce lead-times for non-ATPable ATO models</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSC: ATP Infinite Time Fence Pad	Integer >=0	Null	<p>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.</p> <p>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.</p> <p>This is a site level profile option.</p>
MSC: ATP Synchronization Downtime (minutes)	Integer > 0	Null	<p>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.</p> <p>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.</p> <p>This is a site level profile option.</p>
MSC: Auto-Release Compression Days Tolerance	Integer >= 0	Null	<p>Indicates the number of compression days allowed for the automatic release of planned orders.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Calendar Reference for Bucketing	Null/List of Values	Null	<p>This profile option specifies the workday calendar that the planning engine uses to bucket the beginning and end of weeks and periods.</p> <p>Values are:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> </ul> <p>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.</p>
MSC: Cancel Outstanding Sales Order Quantities	Yes/No	No	<p>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.</p>
MSC: Category set for CP Horizontal View	-	-	<p>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.</p>

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	<p>Determines the item for which Oracle Global Order Promising and Oracle Advanced Supply Chain Planning creates planned supplies when item substitution relationships are specified.</p> <p>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.</p> <p>When you have a substitution chain A --&gt; B --&gt; 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.</p>
MSC: Circular Sourcing Surplus Inventory Basis	-	-	Not used.
MSC: Circular sourcing surplus days	-	-	Not used.
MSC: Class Hierarchy	Demand / Customer	Demand	<p>Indicates which allocation hierarchy to use. Users can update at the site level. Valid values are:</p> <ul style="list-style-type: none"> <li>- Demand Class: User-defined, single-level hierarchy.</li> <li>- Customer Class: Three levels: customer class, customer, and site.</li> </ul>

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 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: 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.
MSC: Compute Project Exception	Yes/No	Yes	<p>This profile option determines whether to generate project specific exceptions when running a project based plan.</p> <p>- Yes: Enable the generation of project specific exceptions.</p> <p>- No: Disable the generation of project specific exceptions. The default value is Yes.</p>
MSC: Configuration	Not applicable	Not applicable	Used by Oracle Collaborative Planning.

Profile Option Name	Valid Values	Default Value	Description
MSC: Consume Forecast Inside Demand Time Fence	Yes/No	No	<p>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.</p> <p>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.</p> <p>If you are using forecast spreading:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> <li>- If the daily entry is outside the demand time fence, the process ignores this profile option and consumes against the entry.</li> </ul>



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	<p>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:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul>
MSC: Cost of Using a BOM/ Routing Flexfield Attribute	-	-	Not used.

Profile Option Name	Valid Values	Default Value	Description
MSC: Cost Type	Frozen, Average, Any user-defined cost type	Null	<p>Use this profile option on the source instance (execution system) to specify the cost type that collections should use when collecting the item costs.</p> <p>You should perform a cost rollup for the specified cost type before collecting data.</p> <p>If this profile option is null, collections uses the:</p> <ul style="list-style-type: none"> <li>- Frozen cost type for standard costed organizations and</li> <li>- Average cost type specified in organization setup for average costed organizations</li> </ul>
MSC: CP Debug Level	Debug - Off, Debug - On, or Debug - High	Debug - High	<p>Controls the level of detail in the concurrent program log messages for Oracle Collaborative Planning.</p> <p>Off: No debug messages generated</p> <p>On: Short debug messages generated</p> <p>High: Detailed debug messages generated.</p>
MSC: Create resource requirements for all operations	Yes/No	Yes	<p>If an operation has no resources with Schedule = Yes, when this profile option is set to:</p> <ul style="list-style-type: none"> <li>• Yes: The planning engine creates a dummy resource requirement for the operation</li> <li>• No: The planning engine does not create a dummy resource requirement for the operation; the operation does not have any resource requirements</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
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: 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 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.

Profile Option Name	Valid Values	Default Value	Description
MSC: Degree of Parallelism for Index Creation	Integer $\geq 0$	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 $\geq 0$	Null	Stores the value of the attribute column that controls the demand priority. See 'Flexfield Attributes, page A-1 for more information.
MSC: Demand Satisfied Percent Threshold for Pegging	Decimal percent	100.0	<p>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.</p> <p>Even if you set this profile option below 100.0, the planning engine still satisfies 100% of the demand.</p>
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.

Profile Option Name	Valid Values	Default Value	Description
MSC: Display Warning Message When Rescheduling Recommendation Not Suggested by the Plan	Yes/No	Yes	<p>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.</p> <p>The values are:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> </ul>
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)	<p>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:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> <li>- Latest possible ship date (Target): Trips ship just in time to prevent inventory levels from dropping below target.</li> <li>- Latest possible ship date (SS): Trips ship just in time to prevent inventory levels from dropping below safety stock.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSC: DPP Discrete Job Cutoff Window (Days)	Integer >=0	Null	<p>Use this profile option to control the number of days from plan start date that discrete jobs are considered. Valid values are:</p> <ul style="list-style-type: none"> <li>- Null: All discrete jobs are considered by the distribution plan.</li> <li>- 0: No discrete jobs are considered by the distribution plan.</li> <li>- Integer &gt;=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.</li> </ul>
MSC: Enable Allocated ATP	Yes/No	No	<p>Use this profile options to indicate whether allocated order promising is used. Users can update this profile at the site level.</p>
MSC: Enable ATP for Phantom Components	Yes/No	No	<p>If you set to Yes, Oracle Global Order Promising treats phantom items like standard items and net their supply and demand.</p> <p>If you set to No, Oracle Global Order Promising explodes phantom items to their components and performs availability check for the components only.</p> <p>This is a site level profile option.</p>
MSC: Enable ATP Summary Mode	Yes/No	No	<p>Enables the summarization of supply / demand data for performance improvement. This is a site level profile. Valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: Enable ATP Summary Mode</li> <li>- No: Disable ATP Summary Mode.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSC: Enable ATP Workflow	Yes/No	No	<p>Controls the generation of workflow notifications to send to the planner. This is a site level profile. Valid values are:</p> <p>Yes: Generate ATP Workflow Notifications</p> <p>No: Do not generate ATP Workflow Notifications</p>
MSC: Enable Enhanced Sourcing	Yes/No	Yes	<p>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.</p> <p>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.</p>
MSC: Enable Group Based Netting	Yes/No	Yes	<p>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.</p> <p>Oracle recommends that you set the value to Yes and use the latest netting features. This profile option is for backward compatibility.</p>
MSC: ENFORCE CRITERIA REQUIREMENT BEFORE EXECUTING QUERY	Yes/No	Yes	<p>Use this profile option to specify if a query requestor needs to specify criteria before executing a query:</p> <p>- Yes: They do. This ensures that the query performs more efficiently.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Enforce Hard Links	Yes/No	Yes	<p>This profile option specifies whether time offsets are hard constraints or soft constraints.</p> <p>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".</p> <p>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.</p>
MSC: Excess and Safety Stock by Demand Class	Yes/No	No	<p>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.</p> <p>The valid values are:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- No: Allocate such supply or demand to OTHER.</li> </ul>
MSC: File Flush Limit	Integer > 0	20000	<p>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.</p>



Profile Option Name	Valid Values	Default Value	Description
MSC: Firm Internal Requisition Time Fence	Yes/No	No	<p>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.</p> <p>The values are:</p> <ul style="list-style-type: none"> <li>- Yes: Use this to create a natural time fence for a firm internal requisition.</li> <li>- No: Use this if you do not want to create a natural time fence for a firm internal requisition.</li> </ul>
MSC: Firm Intransit and PO in Receiving Supplies	Yes/No	Yes	<p>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.</p> <p>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.</p> <p>These recommendations are informational only and cannot be released from the Planner Workbench.</p> <p>This is a user level profile option.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Forecast Priority Flexfield Attribute	Integer $\geq 0$	Null	Stores the value of the attribute column that will control the forecast priority. See 'Flexfield Attributes, page A-1 for more information.
MSC: High Volume Items	Yes/No	No	<p>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:</p> <ul style="list-style-type: none"> <li>- 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 planning data store. If the items have demand schedules only, snapshot only inserts the items in demands schedules into the planning data store.</li> <li>- No: The snapshot uses weed out logic.</li> </ul>
MSC: Horizontal Plan Demand Bucketing Preference	Plan Recommended Date/Demand Due Date	Demand Due Date	<p>This profile controls how Oracle Global Order Promising treats demand due date when calculating availability. Valid values are:</p> <ul style="list-style-type: none"> <li>- Plan Recommended Date, Oracle Global Order Promising treats the demand due as the date recommended by Oracle Advanced Supply Chain Planning.</li> <li>- Demand Due Date, Oracle Global Order Promising treats the demand due as the Schedule Ship Date.</li> </ul>
MSC: Hour UOM	Text	HR	Specifies unit of measure. Can be defined at the site level.

Profile Option Name	Valid Values	Default Value	Description
MSC: Include Firm Planned Orders In Firm Allocation Window	Yes/No	No	<p>For priority pegging, controls the point at which demands peg to firm planned orders. Valid values are:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> </ul>
MSC: Include Safety Stocks in Priority based Pegging	Yes/No	No	<p>Controls whether to exclude non-transient safety stock levels from the priority-based pegging logic. Valid values are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSC: Inflate WIP Resource Requirements	Yes/No	No	<p>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.</p> <p>The values are:</p> <ul style="list-style-type: none"> <li>- Yes: Planning engine inflates the resource requirements for the firm, unfirm, and non-standard discrete jobs considering the resource efficiency and utilization.</li> <li>- No: The planning engine does not consider resource efficiency and utilization to inflate the resource requirements for the collected discrete jobs.</li> </ul> <p>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.</p> <p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Inventory Rebalancing Surplus Inventory Basis	Target, Safety Stock	Safety Stock	<p>Use this option to specify whether inventory rebalancing considers target or safety stock inventory levels. Valid values are:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> </ul>
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	<p>Used with legacy data collections only. Valid values are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul> <p>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</p>
MSC: Maximum Percentage variation in safety stock values	Null or positive number	Null	<p>The safety stock is not allowed to deviate by more than this value between two adjacent time intervals. Null allows any deviation.</p>
MSC: Minimize Project Cross Peg within Window	Yes/No	Yes	<p>Used in conjunction with profile option MSC: Use attribute based netting in priority pegging. Valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: The planning engine tries to minimize cross pegging within the Supply/Demand window.</li> <li>- No: The planning engine does not attend to the amount of cross pegging.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
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	<p>Controls pegging for work orders pegging to minimize crossovers during rescheduling.</p> <p>- Yes: The planning engine does not push the supply forward even if there is some excess.</p> <p>- 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.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: MPS Auto-Firm Planned Orders	Yes/No	Yes	<p>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:</p> <p>Valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: All planned orders in the master production schedule are automatically firmed and not rescheduled during a batch replan.</li> <li>- No: Use the same behavior as distribution requirements plans and material requirements plans.</li> </ul> <p>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.</p> <p>This profile option applies only to master production schedule plans. You can set it at the site and user levels.</p>
MSC: Net Change Temp Dir	Text	Null	<p>Stores the location of image cache used in the Plan Comparison Report. Indicate the location in the following format: &lt;directory&gt;@&lt;subdir&gt; where &lt;directory&gt;</p> <p>This must match the absolute path of the OA_MEDIA environment variable and &lt;subdir&gt; is the name of a subdirectory under the OA_MEDIA directory. The subdirectory must have write permissions for all.</p>



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	<p>Determines whether phantom items are planned as standard items or if they are planned to components.</p> <p>- Yes: Phantoms are planned as standard items.</p> <p>- No: Phantoms are exploded to their components and supplies are not planned for the phantom.</p>
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.
MSC: Operator Company Name	-	-	Used by Oracle Collaborative Planning.

Profile Option Name	Valid Values	Default Value	Description
MSC: Overwrite all Order Forecast records	Yes/No	No	<p>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:</p> <ul style="list-style-type: none"> <li>- Yes: Use this if you want to delete all previous order forecast records for an item, organization, customer, or customer site combination.</li> <li>- No: Use this if you do not want to delete the previous forecasts.</li> </ul>
MSC: Overwrite all supplier capacity records	Yes/No	No	<p>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:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- No: Use this if you do not want to delete the previous supplier capacity records.</li> </ul>
MSC: Plan co-products	Yes/No	Yes	<p>Indicate whether co-products are planned and whether supplies are created for the co-products. Can be defined at the site level.</p>

Profile Option Name	Valid Values	Default Value	Description
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: 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.
MSC: Project Task Collection Window Days	Null, Integer	Null	<p>Controls which projects/tasks are collected after the collection engine deletes all of the previously collected records for the instance. Valid values:</p> <ul style="list-style-type: none"> <li>- Null: Collects all of the records from the source.</li> <li>- 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.</li> </ul> <p>The collections process never collects tasks whose projects are completed.</p>
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.

<b>Profile Option Name</b>	<b>Valid Values</b>	<b>Default Value</b>	<b>Description</b>
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.
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.

Profile Option Name	Valid Values	Default Value	Description
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.
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 Currency Symbol	text	\$	The currency symbol used by PS for measurement of costs and calculation of key performance indicators.
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.
MSC: PS/SNO API Version	Text	3.2	The Supply Chain Planning XML format being used to generate SNO and PS models.

Profile Option Name	Valid Values	Default Value	Description
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: Purchase Order Dock Date Calculation Preference	Need By Date and Promise Date	Promise Date	<p>This profile option specifies the purchase order line date that the planning engine uses as the material arrival (dock) date:</p> <ul style="list-style-type: none"> <li>- Promise Date: If the Promise Date is not available, the planning engine uses Need by Date so that unacknowledged purchase orders consume supplier capacity.</li> <li>- Need By Date: Existing purchase orders do not consume supplier capacity.</li> </ul> <p>This is a site level profile option.</p> <p>Use the same setting of this profile option for running both collections and plans.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Purge Stg Tbl Cntrl	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.
MSC: Release WIP Dtls if Order Date different then BOM Revision Date	Yes/No	Yes	<p>If the value is Yes, then planning engine releases the WIP details even if the Suggested Start Date is different than BOM Revision Date.</p> <p>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.</p>
MSC: Released Only By User	Yes/No	No	<p>Use this profile option to specify whether to restrict implementation of planned orders and recommendations to the current user. Valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: Only implement planned orders and recommendations that this user marked</li> <li>- No: Implement planned orders and recommendations that any user marked</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSC: Resource Group for a Line Flexfield Attribute	Integer $\geq 0$	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: 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.



Profile Option Name	Valid Values	Default Value	Description
MSC: Sales Orders Offset Days	Integer >= 0	Null	<p>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.</p> <p>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.</p>
MSC: SCEM Engine Launch Events	None, Load, Publish, or All	All	Launch the Supply Chain Event Manager when data is loaded, published, or both.
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.

Profile Option Name	Valid Values	Default Value	Description
MSC: Share Plan Partitions	-	-	<p>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.</p> <p>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.</p>
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.
MSC: SNO - Snapshot Calendar Package	Yes/No	Yes	Specifies whether the Calendar Package is used for creating a model in Strategic Network Optimization.

Profile Option Name	Valid Values	Default Value	Description
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.
MSC: SNO - Snapshot Supplier Package	Yes/No	Yes	Specifies whether the Supplier Package is used for creating a model in Strategic Network Optimization.

Profile Option Name	Valid Values	Default Value	Description
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.
MSC: SNO Optimization Type	text	Cost	<p>Specifies the optimization type to be used when solving the model. Valid values are:</p> <ul style="list-style-type: none"> <li>- Cost: The item list price is not considered.</li> <li>- Profit: The item list price is considered.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
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.
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.
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.

Profile Option Name	Valid Values	Default Value	Description
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%.
MSC: Split Planned Order to perform safety stock pegging	No, Yes but do not violate order modifier, or Yes	No	<p>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:</p> <ul style="list-style-type: none"> <li>- No: Do not split planned orders</li> <li>- Yes but do not violate order modifier: Split planned orders only if the split does not violate an order modifier</li> <li>- Yes: Split planned orders</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSC: Split Planned Orders for Scheduling Flexibility	Yes/No	Yes	<p>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.</p> <p>- Yes: Do not consolidate planned orders prior to scheduling.</p> <p>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.</p> <p>- No: Consolidate orders when possible prior to scheduling.</p> <p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Supplier Capacity Accumulation (multiplier)	Numeric value > 0; may be larger than 1	1	<p>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.</p> <p>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 accumulate capacity within their lead-time.</p> <p>This is a site level profile option.</p>
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
MSC: Unit of Measure	-	-	Not used.
MSC: Update Requested Completion Date when Releasing Reschedules	n/a	n/a	n/a



Profile Option Name	Valid Values	Default Value	Description
MSC: Use attribute based netting	Yes/No	No	<p>Use this profile option to control netting in a project manufacturing environment. Valid values:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- No: The planning engine uses customary netting in a project manufacturing environment.</li> </ul>
MSC: Use FIFO Pegging	Yes/No	No	<p>If this profile option is Yes, the planning engine uses FIFO pegging.</p> <p>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.</p> <p>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.</p> <p>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).</p> <p>This is a user level profile option.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Use Hash Key	-	-	This profile option is for use by Oracle
MSC: Use Optimization Supply Due Dates for Pegging	Yes/No	No	<p>Use this profile option to instruct the planning engine on the date fields to use when pegging.</p> <p>- Yes: Pegging uses the optimization recommended supply date for planned orders and scheduled receipts.</p> <p>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.</p> <p>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</p> <p>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.</p> <p>It reduces pegging discrepancies in which the main supply is pulled out and the by product supply remains at the original schedule date.</p> <p>- No: Pegging behaves in the standard way.</p>

Profile Option Name	Valid Values	Default Value	Description
MSC: Use Shipping Receiving Calendars	Yes/No	Yes	<p>Controls the use of shipping, receiving, and carrier calendars. Values are:</p> <ul style="list-style-type: none"> <li>- Yes: Use shipping, receiving, or, carrier calendar for planning/scheduling</li> <li>- No: Use the organization manufacturing calendar while generating a plan.</li> </ul> <p>This profile option specifies:</p> <ul style="list-style-type: none"> <li>- At the site level, whether the collection engine collects the calendars. If the calendars are collected, the planning engine uses them.</li> <li>- 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.</li> </ul>
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.
MSC: Wait Time to Obtain Lock on Table/Partition for Snapshot Delete Worker (in sec)	Number >=0	60 seconds	<p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
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.

## 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 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.

Profile Option Name	Valid Values	Default Value	Description
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	<p>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.</p> <p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
MSD: Default DP Scenario	Valid demand planning scenarios	Null	<p>This profile option specifies a demand scenario, which appears as a demand schedule in the Plan Options window.</p> <p>You can select the demand scenario from the list of values.</p> <p>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.</p>
MSD: Master Org	Master organizations	Null	<p>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.</p>
MSD: OLAP Directory Alias	-	-	<p>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.</p> <p>This profile option can be set at the site level.</p>

Profile Option Name	Valid Values	Default Value	Description
MSD: One Step Collection	Yes/No	No	<p>This profile option controls the number of steps in the data collection process. Valid values are:</p> <p>Yes: indicating that the collection programs should take the data directly into the Fact Tables in a single step.</p> <p>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.</p>



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'	<p>Use this profile option to forecast demand at product family level on the basis of sales histories of member items.</p> <p>You can collect the sales histories of all the product family members regardless of their forecast control; set:</p> <ul style="list-style-type: none"> <li>- Product family forecast control to Consume or Consume and derive</li> <li>- Planning method for the product family and its members to Not planned</li> <li>- This profile option to Collect all family members and their sales histories</li> </ul> <p>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'.</p> <p>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:</p> <ul style="list-style-type: none"> <li>- Product family forecast control is Consume or Consume and Derive</li> <li>- Planning method for the product family and its members is Not planned.</li> <li>- Set this profile option to Collect all family members and their sales histories.</li> </ul> <p>The default profile value is Exclude family members with forecast control 'None' specifies that only Consume or</p>

Profile Option Name	Valid Values	Default Value	Description
			Consume and Derive product family members are subject to collection.

## MSO Profile Options

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	<p>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.</p> <p>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.</p>
MSO: Allow Partial Demand Completion	All End Demands, Sales Orders, or None	None	<p>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.</p> <p>This functionality can be enabled for all independent demands or only for Sales Orders.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Allow Schedule Gaps for Shared Supplies	Yes/No	No	<p>This profile option controls the scheduling of shared supplies (scheduled receipts, firm planned orders, and planned orders with multiple demands pegged to them).</p> <p>- 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.</p> <p>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.</p> <p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
			<p>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.</p> <p>- 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.</p> <p>This is a user level profile option.</p>
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.
MSO: Alternate Resource Selection Method	Rank of Alternate  Setup Type Match		<p>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.</p> <p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Alternate Source Penalty	Number > 0	See 'Automatic Calculations, page A-1.	Specifies weight for alternate source objective in optimization.
MSO: Avoid non working days for Buy/Transfer order dates	Yes/No	No	<p>This profile option applies only when profile option MSO: Use Shift definitions when scheduling lead-times is No. Valid vales are:</p> <ul style="list-style-type: none"> <li>- Yes: The planning engine avoids placing the ship, dock, due dates of buy and transfer orders on non-workdays according to the appropriate calendar.</li> <li>- No: The planning engine does not schedule buy and transfer orders with regard to the appropriate calendar.</li> </ul> <p>This profile option does not govern the placement of order dates.</p> <p>If profile option MSO: Use Shift definitions when scheduling lead-times is Yes, the planning engine assumes accurate shift timings.</p>
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.

Profile Option Name	Valid Values	Default Value	Description
MSO: Capacity Units Recalculation Threshold	Any value between 0 and 1	0	<p>The planning engine schedules supplies in two phases:</p> <ul style="list-style-type: none"> <li>- Backward schedule: From demand due date to see if demand can be met on time.</li> <li>- Forward schedule: If the backward schedule results in a late demand, the forward schedule from the plan start date meet demands with minimum lateness.</li> </ul> <p>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 than there were in its previously scheduled time.</p> <p>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 <math>0.5 * \text{Max assigned units on the routing for the item}</math>.</p> <p>If this profile option is 0, the planning engine does not consider assigning more resource units.</p> <p>This is a user level profile option.</p>
MSO: Check Redundant Constraints	0 and 1	See 'Automatic Calculations, page A-1.	Specifies location and removal of redundant constraints.

Profile Option Name	Valid Values	Default Value	Description
MSO: Choice of supply for substitution	All Supplies, Excess Supplies	All Supplies	<p>Determines which supplies are considered by the Planning Engine for substitution. Valid values are:</p> <p>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.</p> <p>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.</p> <p>Oracle Order Promising does not honor this profile option. Oracle Order Promising always honors native demand satisfaction logic.</p>
MSO: Continuous transfer across organizations	Yes/No	No	<p>Allows you to model continuous or non-continuous transfers across organizations.</p> <p>- Yes: Allows continuous transfers across organizations.</p> <p>- No: Allows discrete, incremental or non-continuous transfers across organizations.</p> <p>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.</p>



Profile Option Name	Valid Values	Default Value	Description
MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders	Series/ Parallel	Parallel	<p>Allows you to fulfill a demand in series or in parallel from multiple supplies from suppliers and/or other organizations. Values are:</p> <ul style="list-style-type: none"> <li>- Series - Demand is satisfied in series from multiple supplies.</li> <li>- Parallel - This is the default value. Demand is satisfied in parallel from multiple supplies.</li> </ul> <p>For supplier sourced orders, use profile option MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced Orders.</p>
MSO: Convergent Supplies Consumption Pattern for Intra-Org Sourced orders	Series / Parallel	Parallel	<p>Allows you to satisfy a demand in series or in parallel from multiple supplies in the same organization. Values are:</p> <ul style="list-style-type: none"> <li>- Series - Demand is satisfied in series from multiple supplies.</li> <li>- Parallel - This is the default value. Demand is satisfied in parallel from multiple supplies</li> </ul> <p>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.</p>
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 $\geq 0$	See 'Automatic Calculations, page A-1.	Specifies the value of the parameter to control the refactor rate.

Profile Option Name	Valid Values	Default Value	Description
MSO: CPLEX Scaling Factor	-1, 0, and 1	See 'Automatic Calculations, page A-1.	Contains the scaling factor in the Planning Engine.
MSO: Default Forecast Priority	Integer $\geq$ 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.
MSO: Default Resource Sequencing Window (Days)	any number	7	<p>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.</p> <p>The large this number, the longer the time spent by the resource on a setup type before changing over to the next setup type.</p>
MSO: Default Sales Order Priority	Integer $\geq$ 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	<p>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:</p> <p>Values are:</p> <ul style="list-style-type: none"> <li>- Beginning of Day: Supplies must be available at 00:00</li> <li>- End of Day: Supplies must be available at 23:59</li> </ul> <p>This profile option does not apply to sales orders.</p>

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	<p>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:</p> <p>Values are:</p> <ul style="list-style-type: none"> <li>- Beginning of Day: Supplies must be available at 00:00.</li> <li>- End of Day: Supplies must be available at 23:59.</li> <li>- 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.</li> </ul> <p>This profile option does not apply to forecasts.</p>

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	<p>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.</p> <p>The values are:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> </ul>
MSO: Demand Size Tolerance Before Splitting Planned Orders	Number >=0	Null	<p>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%).</p>

Profile Option Name	Valid Values	Default Value	Description
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.
MSO: Divergent Supply Feeding Pattern for Inter-Org and Supplier Sourced orders	Series With MTQ Only / Series	Series With MTQ Only	<p>Allows you to fulfill multiple downstream demands in parallel or in series by a supply from another internal organization. Values are:</p> <ul style="list-style-type: none"> <li>- Series With MTQ Only - This is the default value. A supply always feeds multiple demands in series when a corresponding MTQ has been specified.</li> <li>- Series - Supply feeds multiple demands in series.</li> </ul>
MSO: Divergent Supply Feeding Pattern for Intra-Org Sourced orders	Series With MTQ Only / Series	Series With MTQ Only	<p>Allows you to fulfill multiple downstream demands in parallel or in series by a supply in the same organization. Values are:</p> <ul style="list-style-type: none"> <li>- Series With MTQ Only - This is the default value. A supply always feeds multiple demands in series when a corresponding MTQ has been specified.</li> <li>- Series - Supply feeds multiple demands in series.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSO: Dual Simplex Parameter	0, 1, 2, 3, and 4	See 'Automatic Calculations, page A-1.	Gradient parameter for dual simplex.
MSO: EDD Scheduling Window Control	Any value between 0 and 1	0.5	<p>This profile option is applicable to constrained plans with enforce demand due dates.</p> <p>The planning engine calculates an actual scheduling window for each resource activity and supply. The actual window is defined by the dates:</p> <ul style="list-style-type: none"> <li>- Latest Possible completion time (LPCT): Determined by the start time of downstream activities that have already been scheduled.</li> <li>- Earliest Allowable Completion Time (EACT): Calculated by the planning engine which accounts for the unscheduled upstream activities and how much time those activities need.</li> </ul> <p>If this profile option is the default value, the planning engine uses the calculated EACT.</p> <p>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.</p> <p>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.</p> <p>This is a user level profile option.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Enable Cost Rollup for Optimization	Yes/No	Null (interpreted as No)	<p>This profile specifies where the optimization engine looks for costs during cost-based optimization. Valid values are:</p> <ul style="list-style-type: none"> <li>- No: Use user-provided costs from the source system</li> <li>-Yes: Use costs from the internal cost rollup</li> </ul>
MSO: Enable Decision Rules	Yes / No	No	<p>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.</p> <p>If you select No, you can duplicate the functionality of the decision rule Use Alternate Sources parameter for buy items but not for transfers from other organizations; set profile option MSC: Enable Enhanced Sourcing to Yes.</p>
MSO: Enable Triangulation in Optimization	-	-	Reserved for future use.



Profile Option Name	Valid Values	Default Value	Description
MSO: Enforce Resource Sequence Contiguity	Yes / No	Yes	<p>Controls contiguity constraints between resource activities within an operation. Valid values are:</p> <ul style="list-style-type: none"> <li>- 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).</li> <li>- No: The contiguity constraint is relaxed and in certain cases, the chances of obtaining feasible schedules improved.</li> </ul>
MSO: Firm Purchase Orders Within Time Fence	Yes/No	No	<p>Indicates whether or not the planning engine should firm those purchase orders that are within the time fence. The valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: Firms purchase orders that are within the time fence.</li> <li>- No: The planning engine does not reschedule the non-firm purchase orders that have dock dates within the Planning Time Fence. The planning engine does not reschedule or cancel recommendations even if there are conditions for reschedules and cancellations.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSO: Firm Requisitions Orders Within Time Fence	Yes/No	No	<p>Indicates whether or not the planning engine should firm those requisitions that are within the time fence. The valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: Firms requisitions that are within the time fence.</li> <li>- No: The planning engine does not reschedule the non-firm purchase requisitions that have dock dates within the Planning Time Fence. The planning engine does not reschedule or cancel recommendations even if there are conditions for reschedules and cancellations.</li> </ul> <p>The planning engine uses the start date of the receiving organization as the reference for internal requisitions.</p>
MSO: Firm Supply Allocation Window (Backward days)	Integers $\geq 0$	1	<p>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.</p> <p>This is stated as the number of calendar days including non-workdays.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Firm Supply Allocation Window (Forward days)	Integers $\geq 0$	Null	<p>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.</p> <p>This is stated as the number of calendar days including non-workdays.</p> <p>To use this feature, set profile option MSO: Net All Firm Supplies Before Creating Planned Orders to Yes.</p>
MSO: Firm Work Orders/ Operations Within Time Fence	Yes / No	No	<p>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.</p>
MSO: Floating Point Precision	-	-	<p>Not used. Replaced by profile option MSO: Floating Point Precision for Order Quantities</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Floating Point Precision for Order Q	-	-	Not used. Replaced by profile option MSO: Floating Point Precision for Order Quantities
MSO: Floating Point Precision for Order Quantities	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.
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.
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.

Profile Option Name	Valid Values	Default Value	Description
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.
MSO: Generate Compression Days Exception	Yes/No	Yes	<p>Use this profile option to control issuance of exception message Orders with compression days. Valid values:</p> <ul style="list-style-type: none"> <li>- Yes: Issue the exception message</li> <li>- No: Do not issue the exception message</li> </ul> <p>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.</p> <p>To avoid seeing both these exceptions for the same order, select No for this profile option.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Generate Compression/Firming Exceptions for Orders in Progress	Yes/No	Yes	<p>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:</p> <ul style="list-style-type: none"> <li>• Order with Insufficient Lead Time</li> <li>• Order is Firmed Early</li> </ul>
MSO: Generate Shared Supply Exceptions	Yes/No	No	<p>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.</p> <p>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.</p> <p>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.</p> <p>This is a user level profile option.</p>

Profile Option Name	Valid Values	Default Value	Description
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).
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: Heuristic type	Look Ahead	Look Ahead	Determines which heuristic to use.  The look-ahead heuristic reserves time for lower priorities so the schedule begins with the tasks of higher priorities.  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.

Profile Option Name	Valid Values	Default Value	Description
MSO: Incremental factor of internal cost roll up	Number	1	<p>This profile option controls the cost increments used by the internal cost roll up in Oracle Advanced Supply Chain Planning. The cost calculation is:</p> <p>SUM across all components for the assembly [K * Cost of a component * (Usage of the component for the assembly + 0.01)].</p> <p>K is the value that you set in this profile option. Oracle recommends a minimum value of 1.</p>
MSO: Internal Demand Aggregation Within Optimization	Yes/No	Null (interpreted as No)	<p>This profile specifies how the optimization engine should prioritize independent demands. Valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: Prioritize by date. This value improves optimization engine performance.</li> <li>- No: Prioritize by demand priority</li> </ul>
MSO: Inventory Carrying Costs Percentage	A percentage between 0 and 100	Null	<p>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%).</p>



Profile Option Name	Valid Values	Default Value	Description
MSO: Late Demands Exceptions Tolerance Minutes	Integer > 0	0	<p>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.</p> <p>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 15:00 on Wednesday.</p>
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	<p>This profile option is applicable to constrained plans with enforce demand due dates:</p> <ul style="list-style-type: none"> <li>- 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).</li> <li>- 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.</li> </ul> <p>This is a user level profile option.</p>
MSO: List Size for Pricing Candidates	Integer > 0	See 'Automatic Calculations, page A-1.	Parameter to set the list size for pricing candidates.

Profile Option Name	Valid Values	Default Value	Description
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	<p>Enhances the capability of the scheduling engine to accurately identify pockets of available time where resource activities can be feasibly scheduled. Valid values are:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- No: Detailed Resource Profile is not maintained.</li> </ul> <p>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.</p> <p>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 9-1.</p>
MSO: Maximum Activity Duration	Number > 0	See 'Automatic Calculations, page A-1.	<p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Maximum Allowable Days Late	Integer > 0	300	<p>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.</p> <p><b>Note:</b> Set this to a number as large as the typical planning horizon to avoid unusual results.</p>
MSO: Maximum Allowable Days Late before Forecast Expiration	Integer > 0	Null	<p>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.</p> <p>The profile option does not apply to sales orders.</p>
MSO: Maximum Demands per Group	Integer > 0, smaller than the size of a slice	5	<p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
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.
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.

Profile Option Name	Valid Values	Default Value	Description
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.
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.

Profile Option Name	Valid Values	Default Value	Description
MSO: Maximum Number of Pushes for Operation	-1 or Integer > 0	-1	<p>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:</p> <p>-1: Continues the search for available capacity till the end of the planning horizon.</p> <p>Integer &gt; 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.</p>
MSO: Maximum Operations Per Slice	Integer > 0	3000 operations	<p>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.</p> <p>Oracle recommends that you use a large value such as the default value.</p>

Profile Option Name	Valid Values	Default Value	Description
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.
MSO: Maximum Simplex Iterations	Integer > 0	See 'Automatic Calculations, page A-1.	Parameter to set the maximum number of simplex iterations.
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 the profile option MSC: Multiplier to Derive Firm Supply Allocation Window. If you specify any value for the latter 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,  All Supply Types,  Only for Work Orders,  Only for Purchase and Transfer Supplies,  All Supply Types Including By-product Supplies	No	<p>Nets all firm supply available in any future period before creating new planned orders. The profile option treats firmed planned orders the same as real supplies.</p> <p>The values are:</p> <ul style="list-style-type: none"> <li>- No: Does not net firm supplies before creating planned orders.</li> <li>- 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.</li> <li>- Only for Work Orders: Net only firm discrete jobs before creating planned orders.</li> <li>- Only for Purchase and Transfer Supplies: Net all firm purchased and transfer supplies before creating planned orders.</li> <li>- 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.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSO: Network routing cycle time coefficient	Numeric	2	Used by the Scheduling Engine to calculate the window of time allocated to schedule a network flow. This is used in conjunction with NFL Fixed Time Window. The window of time is (Coefficient * Cycle time) + Fixed time window. Defined at the site level.
MSO: Network routing fixed time window	Number > 0	0	Used by the Scheduling Engine to calculate the window of time allocated to schedule a network flow. This is used in conjunction with NFL Cycle Time Coefficient. The window of time is (Coefficient * Cycle time) + Fixed time window). Defined at the site level.
MSO: Nfl Backward Compression Pct	Between 10 and 100%	100%	Defines the percentage of the actual resources capacity that the network flow takes into account. A value under 100 percent tends to offload more activities to alternate resources. Can be defined at the site level.
MSO: Nfl Forward Compression Pct	Between 10 and 100%	100%	Defines the percentage of the actual resources capacity that the network flow takes into account. Use in forward phase to force the system to use alternates and limit the tardiness of activities. Can be defined at the site level.

Profile Option Name	Valid Values	Default Value	Description
MSO: Number of Demand Groups for Optimization	Integer > 0	50	<p>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.</p> <p>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.</p> <p>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.</p> <p>Note that too many groups may affect performance.</p>
MSO: Number of Threads for Optimization	Integer > 0	Null	<p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Optimization Advanced Start	0 and 1	Null (internally defaulted as a value of 1)	<p>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.</p> <p>This is an optimization engine profile option and should not be changed under ordinary circumstances.</p>
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: Peg By-product Supplies	Yes/No	Yes	<p>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.</p> <p>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.</p>
MSO: Penalty Basis for Changeovers	Changeover Time  Changeover Penalty		<p>Indicates whether the changeover time of the changeover penalty is to be used as the criterion for calculation the ideal sequence.</p> <p>If Changeover Time, ASCP uses the relative changeover times between setup types as the criteria for deciding on the ideal sequence of setup types.</p> <p>If Changeover Penalty, ASCP uses the relative changeover penalties between setup types as the criteria for deciding on the ideal sequence of setup types.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Penalty Cost Factor for Exceeding Item Material Capacity Flexfield Attribute	Integer $\geq 0$	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 Material Capacity	Number $\geq 0$	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 Generate 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 $\geq 0$	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 $\geq 0$	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 $\geq 0$	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 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.
MSO: Penalty Cost Factor for Exceeding Resource Capacity Flexfield Attribute	Integer $\geq$ 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 $\geq$ 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 $\geq$ 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 $\geq$ 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 Org Demands Flexfield Attribute	Integer $\geq 0$	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 Sales Orders Flexfield Attribute	Integer $\geq 0$	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: 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.
MSO: Preprocessing Flag for LP Matrix	0 and 1	See 'Automatic Calculations, page A-1.	Contains the presolve indicator.
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.



Profile Option Name	Valid Values	Default Value	Description
MSO: Pull push base	Positive Integers	1	<p>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.</p> <p>For more details, see 'Requirement causes resource overload exception, page 9-32.</p>
MSO: Pull push offset	Positive integer in mnutes	1440	<p>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.</p> <p>For more details, see 'Requirement causes resource overload exception, page 9-32 .</p>
MSO: Queue Time Factor	Number >= 0	None	<p>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.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Reschedule Jobs Out to Reduce Inventory Carrying Costs	Yes/No	Yes	<p>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:</p> <ul style="list-style-type: none"> <li>- Yes: The planning engine attempts to schedule the job as late as possible for one or more demands.</li> <li>- 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.</li> </ul> <p>This profile option does not apply to other order types, for example, purchase orders and purchase requisitions.</p>
MSO: Reschedule Shared Supply to Influence Batching	Yes/No	No	<p>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).</p>

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	<p>A window is calculated by multiplying the Resource's Sequencing window value by the value in this profile.</p> <p>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.</p>
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 window width	Integers $\geq 0$	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.
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.

Profile Option Name	Valid Values	Default Value	Description
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.
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.
MSO: Slack Hours for Batch Resource	Integer	Null	<p>This profile value is used by Oracle Advanced Supply Chain Planning to right justify the maximum end date for a scheduled batch resource.</p> <p>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.</p>
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.

Profile Option Name	Valid Values	Default Value	Description
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.
MSO: Split Planned Orders for Assigned Units	Yes / No	Yes	<p>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.</p> <p>The valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: Create more planned orders with quantities that can be scheduled by the resource units available within a given day.</li> <li>- No: The planning engine generates larger planned orders that may require a resource duration spanning several days.</li> </ul> <p>Note that the maximum number of resource units at the routing level will always be respected.</p>
MSO: Spread Resource Consumption Within Optimization	Yes/No	Null (interpreted as No)	<p>This profile specifies how the optimization engine should model resource consumption is modeled in optimization. Valid values are:</p> <ul style="list-style-type: none"> <li>- Yes: Consume resources at the first operation. This value provides improved optimization engine performance.</li> <li>- No: Consume resources at the operation to which they belong. This value provides improved optimization engine accuracy.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSO: Substitute Item Penalty	Number > 0	None	Defines an internal penalty weight for substitute item objective in supply chain optimization.
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.
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: Use Breaks in Calculation of Unconstrained Scheduling Windows	Yes/No	Yes	<p>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:</p> <ul style="list-style-type: none"> <li>- Unconstrained Earliest Possible Start Time (UEPST)</li> <li>- Unconstrained Earliest Possible Completion Time (UEPCT)</li> <li>- Unconstrained Latest Possible Start Time (ULPST)</li> <li>- Unconstrained Latest Possible Completion Time (ULPCT).</li> </ul> <p>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.</p> <p>If this profile option is No, the planning engine does set any of these dates during a break if the calculation places it there.</p> <p>This is a user level profile option.</p>



Profile Option Name	Valid Values	Default Value	Description
MSO: Use Collections Start Time	Yes No, Use Input Demand Plan Start Time or Collections Start Time, Use Input Demand Plan Start Time or Plan Start Time	Yes	<p>Use this profile option to coordinate plan start date and collections start time. This affects how the plan calculates resource availability. Valid values are:</p> <ul style="list-style-type: none"> <li>- No: Always use plan start time.</li> <li>- Yes: Use collections start time.</li> <li>- 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.</li> <li>- 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.</li> </ul>
MSO: Use Item Shelf Life Days in Scheduling Buy or Make Orders	Yes/No	No	<p>This profile option specifies whether to use item shelf life days as a maximum time offset between operations that produce and consume the item.</p> <p>If Yes, the planning engine uses item shelf life days as a maximum time offset if a maximum time offset value is not specified on the routing step that produces the item.</p> <p>If No, the planning engine does not use item shelf life days as a maximum time offset between operations.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Use of Assigned Units in Scheduling	Variable / Fixed at Routing Value	Variable	<p>Controls the number of resource units to be used when scheduling a resource activity. Valid values are:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> </ul> <p><b>Note:</b> 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 &gt; Resources form.</p>
MSO: Use Optimization and Decision Rules for Simulation	Yes/No	No	<p>For online planner sessions against constrained plans with decision rules or optimized plans, select:</p> <ul style="list-style-type: none"> <li>• Yes: To rerun the optimization and decision rules-based decisions during the online planner session</li> <li>• No: To retain the optimization and decision rules-based decisions from the initial planning run for the online planner session</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSO: Use SCO Time Aggregation	True/False	False	<p>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.</p>
MSO: Use Sequencing Template	Yes/No	No	<p>This profile option specifies whether Oracle Advances Supply Chain Planning tries to schedule activities in accordance with a determined preferred sequence of activities.</p> <p>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.</p> <p>If No, the sequence of activities is determined more dynamically when scheduling other activities. This setting is recommended if there are multiple bottleneck resources.</p>

Profile Option Name	Valid Values	Default Value	Description
MSO: Use Shift Definitions When Scheduling Lead Times	Yes/No	No	<p>Determines whether the planning engine needs to take into account shift times for calculating lead-times on shipping, receiving, and carrier calendars. Values are:</p> <ul style="list-style-type: none"> <li>- Yes: Considers shift definitions for calculating lead-times on calendars in case of constrained plans.</li> <li>- No: Shift definitions are not considered when offsetting lead-times on calendars.</li> </ul>

## 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	<p>Use this profile option to specify the categories that you can use when defining budgets in Oracle Inventory. Valid values are:</p> <ul style="list-style-type: none"> <li>- Null: Define budgets with any category.</li> <li>- Any category set: Define budgets only with categories that are in the category set.</li> </ul>
MSR: Postponement Factor	Integers $\geq 0$	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.



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## 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).

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## 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.ctf
Bill of Materials	Bills of Material Components	MSC_ST_BOM_COMPONENTS.ctf
Bill of Materials	Component Substitutes	MSC_ST_COMPONENT_SUBSTITUTES.ctf
Items	Items	MSC_ST_SYSTEM_ITEMS.ctf
Routings	Routings	MSC_ST_ROUTINGS.ctf
Routings	Routing Operations	MSC_ST_ROUTING_OPERATIONS.ctf

<b>Business Object</b>	<b>Flat File Loader's File Name Option</b>	<b>Control Files</b>
Routing	Operation Resources	MSC_ST_OPERATION_RESOURCES.ctf
Resources	Resources	MSC_ST_DEPARTMENT_RESOURCES.ctf
Resource	Resource Availability	MSC_ST_RESOURCE_CHANGES.ctf
Resource	Resource Shifts	MSC_ST_RESOURCE_SHIFTS.ctf
Resource	Resource Groups	MSC_ST_RESOURCE_GROUPS.ctf
Projects and tasks	Project Tasks	MSC_ST_PROJECT_TASKS.ctf
Unit of Measure	Units of Measure	MSC_ST_UNITS_OF_MEASURE.ctf
Unit of Measure	Units of Measure Class Conversions	MSC_ST_UOM_CLASS_CONVERSIONS.ctf
Unit of Measure	Units of Measure Conversions	MSC_ST_UOM_CONVERSIONS.ctf
Item Categories	Category Sets	MSC_ST_CATEGORY_SETS.ctf
Item Categories	Item Categories	MSC_ST_ITEM_CATEGORIES.ctf
Sourcing Rules	Item Sourcing	MSC_ST_ITEM_SOURCING.ctf
Sourcing Rules	Inter Org Shipment Method	MSC_ST_INTERORG_SHIP_METHODS.ctf
Calendars	Calendars	MSC_ST_CALENDARS.ctf

<b>Business Object</b>	<b>Flat File Loader's File Name Option</b>	<b>Control Files</b>
Calendar	Workday Patterns	MSC_ST_WORKDAY_PATTERNS.ctf
Calendar	Shift Times	MSC_ST_SHIFT_TIMES.ctf
Calendar	Calendar Exceptions	MSC_ST_CALENDAR_EXCEPTIONS.ctf
Calendar	Shift Exceptions	MSC_ST_SHIFT_EXCEPTIONS.ctf
Resource Demand	Resource Requirements	MSC_ST_RESOURCE_REQUIREMENTS.ctf
Supplier Capacity	Item Suppliers	MSC_ST_ITEM_SUPPLIERS.ctf
Supplier Capacity	Supplier Capacities	MSC_ST_SUPPLIER_CAPACITIES.ctf
Supplier Capacity	Supplier Flex Fences	MSC_ST_SUPPLIER_FLEX_FENCES.ctf
Trading Partners	Trading Partners	MSC_ST_TRADING_PARTNERS.ctf
Trading Partners	Trading Partner Sites	MSC_ST_TRADING_PARTNER_SITES.ctf
Trading Partners	Location Associations	MSC_ST_LOCATION_ASSOCIATIONS.ctf
Trading Partners	Sub Inventories	MSC_ST_SUB_INVENTORIES.ctf
Supply Chain People	Partner Contacts	MSC_ST_PARTNER_CONTACTS.ctf
Demand Class	Demand Class	MSC_ST_DEMAND_CLASSES.ctf

## 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

<b>Business Object</b>	<b>Flat File Loader's File Name Option</b>	<b>Control Files</b>
Master Demand Schedule	Demand Schedule Demands	MSC_ST_DEMANDS_MDS.ct l
Master Demand Schedule	Demand Schedule Designators	MSC_ST_DESIGNATORS_M DS.ctl
Work Order Component Demand	Work Order Component Demands	MSC_ST_DEMANDS_WORK _ORDER.ctl
Safety Stocks	Safety Stocks	MSC_ST_SAFETY_STOCKS.c tl
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.

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
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),  ASSEMBLY_NAME,  ALTERNATE_BOM_DESIGN ATOR (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),  ASSEMBLY_NAME,  ALTERNATE_BOM_DESIGN ATOR (can be null),  OPERATION_SEQ_CODE (if null or character would be defaulted to 1),  COMPONENT_NAME, EFFECTIVITY_DATE,  DISABLE_DATE (can be null), COMPANY_NAME
BOM	MSC_ST_COMPONENT_S UBSTITUTES	SR_INSTANCE_CODE, ORGANIZATION_CODE, BOM_NAME (defaulted from ASSEMBLY_NAME if Null),  ASSEMBLY_NAME,  ALTERNATE_BOM_DESIGN ATOR (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,  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,  UNIT_OF_MEASURE (if null would be defaulted by UOM_CODE), COMPANY_NAME
UOM	MSC_ST_UOM_CLASS_CONVERSIONS	ITEM_NAME,  FROM_UOM_CODE, FROM_UNIT_OF_MEASURE (defaulted from FROM_UOM_CODE if null),  TO_UOM_CODE, TO_UNIT_OF_MEASURE, (defaulted from TO_UOM_CODE if null)  COMPANY_NAME
UOM	MSC_ST_UOM_CONVERSIONS	ITEM_NAME,  UOM_CODE, UNIT_OF_MEASURE (defaulted from UOM_CODE if null), COMPANY_NAME
Demand Class	MSC_ST_DEMAND_CLASSES	SR_INSTANCE_CODE  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_CHANNELS	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,  COMPANY_NAME,  GROUP_CODE
Routings	MSC_ST_ROUTINGS	SR_INSTANCE_CODE,  ORGANIZATION_CODE,  ROUTING_NAME (defaulted from ASSEMBLY_NAME if Null),  ASSEMBLY_NAME,  ALTERNATE_ROUTING_DE SIGNATOR (can be null), COMPANY_NAME

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
Routings	MSC_ST_ROUTING_OPERATIONS	SR_INSTANCE_CODE, ORGANIZATION_CODE, ROUTING_NAME (defaulted from ASSEMBLY_NAME if Null), ASSEMBLY_NAME, OPERATION_SEQ_CODE (if null or character would be defaulted to 1), ALTERNATE_ROUTING_DESIGNATOR (can be null), EFFECTIVITY_DATE, DISABLE_DATE, COMPANY_NAME
Routings	MSC_ST_OPERATION_RESOURCES	SR_INSTANCE_CODE, ORGANIZATION_CODE, ROUTING_NAME (defaulted from ASSEMBLY_NAME if Null), 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), 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

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
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

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
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),  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

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
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,  DEMAND_SCHEDULE_NAME,  SCHEDULE_LINE_NUM (Null allowed - in case of item not being demanded on the same date more than once),  ORIGINATION_TYPE = 8 (MDS),  ORGANIZATION_CODE  SR_INSTANCE_CODE  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,  FORECAST_DESIGNATOR,  SCHEDULE_LINE_NUM (Null allowed - in case of item not being demanded on the same date more than once),  ORIGINATION_TYPE = 29 (Forecast),  ORGANIZATION_CODE,  SR_INSTANCE_CODE,  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,  ORGANIZATION_CODE,  ITEM_NAME,  PERIOD_START_DATE

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
Reservations	MSC_ST_RESERVATIONS	SR_INSTANCE_CODE, COMPANY_NAME, SALES_ORDER_NUMBER, LINE_NUM, 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



<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
Trading Partners	MSC_ST_TRADING_PARTNERS	SR_INSTANCE_CODE, PARTNER_NAME  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  PARTNER_TYPE  SR_TP_CODE  LOCATION_CODE,  ORGANIZATION_CODE, COMPANY_NAME
Trading Partners	MSC_ST_SUB_INVENTORIES	ORGANIZATION_CODE SR_INSTANCE_CODE  SUBINVENTORY_CODE, COMPANY_NAME
Trading Partners	MSC_ST_PARTNER_CONTACTS	PARTNER_NAME, SR_INSTANCE_CODE, PARTNER_TYPE, TP_SITE_CODE, COMPANY_NAME, NAME  (A partner site can have only one contact)
Organizations	MSC_ST_TRADING_PARTNERS	ORGANIZATION_CODE, SR_INSTANCE_CODE,  PARTNER_TYPE (3 - organizations), COMPANY_NAME

Business Object	Table	User-Defined Key (UDK)
Sourcing Rules	MSC_ST_INTER_ORG_SHIP_METHODS	SR_INSTANCE_CODE  FROM_ORGANIZATION_CODE,  TO_ORGANIZATION_CODE,  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

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# 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 and 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.



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# Index

## A

---

accessing and executing planned orders, 10-196  
accessing the Gantt Chart, 10-197  
accessing the resource tool tip, 10-207  
actions  
    saving, 7-7  
    undoing, 7-7  
    viewing, 7-7  
    viewing details, 7-7  
Actions tab, 7-7  
actual end date, 9-125  
actual start date, 9-125  
a day in the life of a planner, 3-3  
adding capacity, 10-211  
adjustable item field, 10-55  
adjusted resource hours, 11-18  
advanced forecast spreading, 5-80  
Advanced Planning Suite, 1-1  
aggregate resources, 16-6  
aggregation levels, 5-100  
    choosing, 5-100  
    material, 5-104  
    product, 5-101  
    resource, 5-102  
    routing, 5-104  
    time, 5-100  
aggregation tabbed region, 13-9  
allocating demand based on historical demand, 6-63  
allocating demand to suppliers, 6-61  
allocation

    fair share, 15-18  
alternate bills of materials  
    selecting, 11-44  
alternate resources, 16-6  
    loading, 10-211  
alternate routings  
    selecting, 11-44  
alternate sources  
    selecting, 11-44  
Analyze Plan Partition (concurrent process), 22-29  
append planned orders, 5-90  
Application Instances window  
    setting up, 2-11  
approved supplier list  
    delivery calendar, 6-121  
    processing lead-time, 6-121  
    viewing attributes in workbench, 6-121  
APS information flows, 3-2  
assemble to order, 19-3  
    example, 19-3  
assignment set  
    viewing, 6-193  
assignment sets  
    assignment hierarchy, 6-47  
    defining, 6-46  
ATO  
    See assemble to order, 19-3  
ATP  
    See available to promise, 20-10  
ATP 24x7 Switch Plans (concurrent process), 22-27  
ATP 24x7 Synchronization Process (concurrent

- process), 22-28
- atp post plan processing (concurrent process), 22-29
- attaching a priority rule to a supply chain plan, 5-97
- Audit Statements report, 22-1
  - running, 22-1
  - viewing, 22-3
- Auto Release Planned Order (concurrent process), 22-30
- available to promise, 20-10

## **B**

---

- batch plan
  - running, 7-4
- batch replan, 11-67
- batch resources, 6-189
- Batch was started with less than minimum capacity exception message, 9-60
- Batch was started with more than maximum capacity exception message, 9-62
- bill of distribution
  - view, 6-193
- bills of distribution
  - See BODs, 6-45
- Bills of Materials, 11-3
- BODs, 6-45
  - defining, 6-46
- borrow payback, 16-17
- bottleneck resource group
  - scheduling, 5-53
- breadth-first search, 21-15
- Build Collaborative Planning Calendar (concurrent process), 22-30
- business flow
  - demand-to-make/demand-to-buy, 3-2
  - inquiry-to-order, 3-3
- business flows, 3-1
- by-products, 11-4

## **C**

---

- Calculate Cumulative Lead Time concurrent process, 6-113
- Calculate Manufacturing Lead Time concurrent process, 6-113
- Calculate Resource Availability (concurrent

- process), 22-31
- calendar
  - carrier, 6-179
  - hierarchy, 6-180
  - receiving, 6-179
  - shift times, 6-184
  - shipping, 6-178
  - supplier capacity, 6-180
- calendars
  - shipping receiving carrier supplier capacity, 6-178
- capacity
  - adding, 10-211
- capacity changes, 11-16
- capacity tolerance, 6-48
- centralized planning, 4-7
- chaining-multiple levels of substitution, 21-16
- Changes recommended for sales orders, 9-25
- checking status of an online planner session, 7-5
- choosing plan classes
  - constraints, 5-34
  - enforce capacity constraints, 5-34
  - enforce demand due dates, 5-34
  - optimization, 5-34
- collection methods
  - when to use, 4-9
- collections, 4-1, 19-7, 20-2
  - and resource usage, 11-18
  - architecture, 4-5
  - configure to order, 19-7
  - continuous, 4-23
  - definitions, 4-3
  - legacy systems, 4-30
  - methods, 4-9
  - net change, 4-19
  - running, 3-5
  - standard, 4-10
  - strategy, 4-3
- Collections Synonyms (concurrent process), 22-31
- collection strategy
  - data consolidation, 4-4
  - detect net change, 4-4
  - multi-process collection architecture, 4-4
  - projects/tasks and Seiban numbers, 4-5
  - pull architecture, 4-4
- Collections Triggers (concurrent process), 22-32



- Collections Views (concurrent process), 22-32
- Collection Workbench, 4-3
- combining objectives, 5-107
- common planner tasks
  - a day in the life of a planner, 3-3
- Compare Plan Exceptions (concurrent process), 22-33
- comparing KPIs for multiple plans, 10-194
- Components window, 10-178, 10-179
- concurrent processes
  - Analyze Plan Partition, 22-29
  - ATP 24x7 Switch Plans, 22-27
  - ATP 24x7 Synchronization Process, 22-28
  - atp post plan processing, 22-29
  - Auto Release Planned Order, 22-30
  - Build Collaborative Planning Calendar, 22-30
  - Calculate Cumulative Lead Time, 6-113
  - Calculate Manufacturing Lead Time, 6-113
  - Calculate Resource Availability, 22-31
  - Collections Synonyms, 22-31
  - Collections Triggers, 22-32
  - Collections Views, 22-32
  - Compare Plan Exceptions, 22-33
  - Continuous Collections, 22-33
  - Create AHL Snapshots, 22-36
  - Create APS Partitions, 22-36
  - Create ATP Partitions, 22-37
  - Create BOM Snapshots, 22-38
  - Create Forecast Priority Flexfield, 22-38
  - Create Instance-Org Supplier Association, 22-39
  - Create Inventory Planning Flexfields, 22-40
  - Create INV Snapshots, 22-39
  - Create MRP Snapshots, 22-41
  - Create OE Snapshots, 22-41
  - Create Planning Flexfields, 22-42
  - Create PO Snapshots, 22-42
  - Create Resource Batch Planning Flexfields, 22-44
  - Create Setup and Run Flexfield, 22-44
  - Create WIP Snapshots, 22-44
  - Create WSH Snapshots, 22-45
  - Create WSM Snapshots, 22-46
  - Create Zone Flexfields, 22-46
  - Custom Exception Generator, 22-47
  - Detail Scheduling Continuous Collection, 22-47
  - Detail Scheduling Data Pull, 22-47
  - Detail Scheduling ODS Load, 22-48
  - Download Profile Options Value, 22-48
  - Drop Collections Snapshot, 22-48
  - ERP Legacy Collections Request Set, 22-49
  - Flat File Loader, 22-49
  - Launch Supply Chain Planning Process Request Set, 22-53
  - Legacy Collections Request Set, 22-54
  - Load ATP Summary Based on Collected Data, 22-54
  - Load ATP Summary Based on Planning Output, 22-55
  - Load Transaction Data, 22-56
  - MDS Data Collection, 22-57
  - Planning Data Collection - Purge Staging Tables, 22-58
  - Planning Data Collection Request Set, 22-58
  - Planning Data Pull, 22-59
  - Planning ODS Load, 22-61
  - Pre-Process Monitor, 22-62
  - Pre-Process Transaction Data, 22-64
  - Purge Collaborative Planning Historical Records, 22-64
  - Purge Designator, 22-65
  - Purge Interface Tables, 22-65
  - Purge Legacy Data, 22-66
  - Push Plan Information, 22-67
  - Realign Operational Data Stores Dates, 22-72
  - Refresh Allocation Hierarchy Materialized View, 22-72
  - Refresh Collection Snapshots, 22-73
  - Refresh Global Forecast Materialized Views, 22-74
  - Refresh KPI Summary Data, 22-74
  - Refresh Materialized Views, 22-75
  - Register Ask Oracle Planning Question, 22-75
  - Rollup Cumulative Lead Time, 6-113
  - Send XML Releases to Legacy Sources, 22-75
  - Supply Chain Event Manager, 22-76
  - VMI Replenishment Engine, 22-79
- configuration
  - hardware, 2-1
- configurations
  - supported, 4-6
  - support for, 4-5
- configure to order

- collections, 19-7
- forecast consumption, 19-6
- forecast explosion, 19-3
- models, 19-1
- order promising, 19-3
- planning process, 19-8
- sales orders, 19-2
- conflict between choice to create supplies and enabling item in an organization, 21-20
- conflicts related to enforce demand due dates plan, 21-20
- constrained plans
  - look-ahead heuristic, 11-32
  - rules, 11-32
  - shift times, 11-34
  - user-defined alternate decision rules, 21-43
- constrain new orders only, purchase order placed early scheme, 6-52
- constrain new orders only scheme, 6-51
- constraint
  - enforce purchasing lead-time, 11-30
- constraint-based planning
  - overview, 11-1
- constraint-based planning rules
  - look-ahead heuristic, 11-32
- constraints
  - disabling, 11-26
  - enabling, 11-26
  - hard, 11-27
  - item lead time, 9-131
  - partial demand satisfaction, 11-39
  - phantom routings, 11-42
  - plan type differences, 11-28
  - rules, 11-32
  - shared supplies, 11-45
  - soft, 11-27
  - split planned orders, 11-42
- constraints firm work orders, 11-45
- Constraints tab, 11-27
- constraint types, 11-2
  - demands, 11-2
  - items, 11-2, 11-3
    - BOMs, 11-3
    - by-products, 11-4
    - coproducts, 16-63
    - ECOs, 11-3
    - order modifiers, 11-4
    - product families, 11-4
    - substitute components, 11-4
  - lot-based jobs, 16-62
  - manufacturing resources, 11-2, 11-10
  - sourcing, 11-25
  - sourcing constraints, 11-2
  - suppliers, 11-2, 11-25
  - transportation resources, 11-2, 11-25
- consumption
  - forecast, 5-62
  - forecast bucket, 5-74
- consumption level, 5-67
- continuous collections
  - running, 4-26
- Continuous Collections (concurrent process), 22-33
- continuous data collection, 4-3
- control files
  - demand, C-4
  - keys, C-5
  - setup data, C-1
  - supplies, C-4
  - supply, C-4
  - user-defined keys, C-5
- controlling planned items, 5-116
- co-products, 16-9
  - process manufacturing, 16-59
  - shop floor manufacturing, 16-64
- Co-product window, 10-185
- copying a horizontal plan, 10-76
- copying a production schedule, 17-25
- cost breakdown, 21-83
- Create AHL Snapshots (concurrent process), 22-36
- Create APS Partitions (concurrent process), 22-36
- Create ATP Partitions (concurrent process), 22-37
- Create BOM Snapshots (concurrent process), 22-38
- Create Forecast Priority Flexfield (concurrent process), 22-38
- Create Instance-Org Supplier Association (concurrent process), 22-39
- Create Inventory Planning Flexfields (concurrent process), 22-40
- Create INV Snapshots (concurrent process), 22-39
- Create MRP Snapshots (concurrent process), 22-41

- Create OE Snapshots (concurrent process), 22-41
- Create Planning Flexfields (concurrent process), 22-42
- Create PO Snapshots (concurrent process), 22-42
- Create Resource Batch Planning Flexfields (concurrent process), 22-44
- Create Setup and Run Flexfield (concurrent process), 22-44
- Create WIP Snapshots (concurrent process), 22-44
- Create WSH Snapshots (concurrent process), 22-45
- Create WSM Snapshots (concurrent process), 22-46
- Create Zone Flexfields (concurrent process), 22-46
- creating and launching a global supply chain plan, 5-4
- creating a plan, 3-5
- creating a production schedule, 17-9
- creating demand priority flexfield numbers manually, B-3
- creating profile, B-4
- cross-instance
  - pegging, 20-16
- cross-instance lead-times
  - create, 20-4
  - maintain, 20-4
  - view, 20-4
- cross instance planning
  - collections, 20-13
- cross-instance planning, 20-1
  - available to promise, 20-10
  - collections, 20-2
  - execution, 20-11
  - instances, 20-1
  - plan setup, 20-9
  - purchase orders, 20-15
  - sales orders, 20-15
  - supply chain modeling, 20-3
- cross-instance sourcing relationships
  - define, 20-5
- cross-instance supply chain modeling
  - customers, 20-7
  - intransit lead-time, 20-4
  - sourcing, 20-5
  - suppliers, 20-7

- cumulative manufacturing lead-time, 6-112, 6-114
- cumulative total lead-time, 6-112, 6-114
- customer lists, 15-32
- customer-specific substitution rules, 21-24
- Custom Exception Generator (concurrent process), 22-47
- cycle, planning, 3-3

## D

---

- data collection
  - architecture, 4-5
  - collection strategy, 4-4
  - multiple source instances, 4-4
  - setting up, 4-12
  - simplified architecture, 4-8
- data collection see Collections, 4-1
- data consolidation, 4-4
- days late, 6-134
- decentralized planning, 4-6
- decreasing demands, 5-111
- decreasing items, 5-111
- decreasing resources, 5-110
- Define Priority Rule window, 5-96
- defining a priority rule, 5-95
- defining bills of material for kitting, 12-3
- defining demand priority rules, 12-4
- defining graphs, 10-77, 10-77, 10-79
- defining items as distribution planned, 12-2
- defining plans, 5-1
  - choosing plan classes, 5-34
  - controlling aggregation levels, 5-100
  - global supply chain planning and subset planning, 5-9
  - setting plan options, 5-36
- defining sourcing rules, 12-10
- delays
  - demand satisfaction
    - item lead time constraints, 9-131
- demand
  - pegging, 3-8
- demand class, 5-67
- demand control files, C-4
- demand dates
  - days late, 6-134
  - request date, 6-131

- suggested due date, 6-132
  - viewing in workbench, 6-131
- demand due date
  - transfer calculation, 6-122
- demand management, 16-38
- demand priority rules, 5-95
- Demand quantity not satisfied exception message, 9-43
- demands
  - decreasing, 5-111
- Demand satisfied using end item substitution exception message, 9-101
- demand sources, 3-4
- demand to supply planning
  - automation
    - setup, 21-91
- destination instance, 20-2
  - setup, 2-10
- Destinations window, 10-148, 10-149
  - Assignment tabbed pane, 10-150
  - Effectivity Dates tabbed pane, 10-150
  - Sourcing tabbed pane, 10-149
- Detail Scheduling Continuous Collection (concurrent process), 22-47
- Detail Scheduling Data Pull (concurrent process), 22-47
- Detail Scheduling ODS Load (concurrent process), 22-48
- discrete jobs
  - firm, 11-45
  - planning time fence logic, 6-130
  - reschedule within time fence, 11-18
  - rescheduling
    - data consistency while rescheduling, 11-20
  - resource usage, 11-18
  - scheduling, 6-160
  - scheduling in constrained - enforce capacity constraints plan, 6-163
  - scheduling in constrained - enforce demand due dates plan, 6-165
  - scheduling in unconstrained plan, 6-161
  - scheduling with firm operations and orders, 6-166
- displaying the Find window, 10-202
- displaying the pegging tree, 10-139
- displaying your plan horizontally, 10-154

- displaying your plan vertically, 10-91
- distribution planning
  - aggregation tabbed region, 13-9
  - customer lists, 15-32
  - daily allocation buckets, 13-9
  - defining bills of material for kitting, 12-3
  - defining items as distribution planned, 12-2
  - defining sourcing rules, 12-10
  - demand priority rules, 12-4
  - global forecasting, 14-1
  - inventory rebalancing, 12-21
  - main tabbed region, 13-1
  - multiple inventory policies, 12-11
  - organization selection lists, 14-46
  - organizations tabbed region, 13-16
  - overview, 1-3
  - plan options, 13-1
  - prerequisites, 12-2
  - set up overview, 12-1
  - ship method selection, 14-2
  - supply allocation rules, 12-27
  - trip consolidation days, 13-9
  - trip identifiers, 13-9
  - trip limits for ship methods by lane, 12-7
- distribution plan options, 13-1
- dock date, 6-112
- Download Profile Options Value (concurrent process), 22-48
- Drop Collections Snapshot (concurrent process), 22-48
- DRP
  - See* distribution planning
- due date, 6-112

## E

---

- earliest completion date, 9-123
- earliest dates, 9-120
- earliest order date, 9-121
- earliest possible demand satisfied date, 9-124
- Early replenishment for forecast exception message, 9-23
- Early replenishment for sales order exception message, 9-22
- ECC plans, 11-49
- ECO
  - See* engineering change orders, 11-59

- ECOs, 11-3
- EDD plans
  - See enforce demand due date plans, 11-49
- effectivity, 16-43, 16-44
- effectivity (time phasing), 21-23
- effectivity in the BOM, 16-22
- efficiency, 11-17
- elongation factor, 11-38
- enabling and disabling constraints, 11-26
- end-item-level substitution
  - breadth-first search, 21-15
  - chaining-multiple levels of substitution, 21-16
  - conflict between choice to create supplies and enabling item in an organization, 21-20
  - conflicts related to enforce demand due dates plan, 21-20
  - customer-specific substitution rules, 21-24
  - effectivity (time phasing), 21-23
  - enforce sourcing splits and substitute supply across the supply chain, 21-16
  - examples illustrating substitution logic, 21-28
  - exception messages, 21-37
  - features, 21-17
  - general substitution examples, 21-33
  - optimization, 21-37
  - Oracle Global Order Promising, 21-43
  - overview, 21-1
  - partial order fulfillment, 21-22
  - preference for generating planned orders, 21-18
  - process, 21-2
  - processing logic, 21-14
  - reciprocal-unidirectional and bidirectional substitution, 21-18
  - resolving conflict between item attributes and profile options, 21-19
  - search direction and transferring demands, 21-34
  - search the supply chain for substitution, 21-14
  - simulate possible substitution, 21-26
  - substitution chain, 21-10
  - substitution logic, 21-14
  - substitution relationship, 21-2
  - transfer of demands on to substitute supplies, 21-27
  - viewing substitution display, 21-10
  - window for substitution, 21-20
  - workflow for planning, 21-41
- enforce capacity constraints plans, 11-49
- enforce capacity constraints scenario, 5-112
- enforce demand due date plans
  - scheduling, 11-49
- enforce demand due dates scenario, 5-112, 5-112
- Enforce Purchasing Lead-time constraint, 11-30
- enforce sourcing splits, 6-73
- enforce sourcing splits and substitute supply across the supply chain, 21-16
- engineering change orders
  - use-up effectivity date, 11-59
- enhanced exceptions, 9-114
- ERP Legacy Collections Request Set (concurrent process), 22-49
- examples illustrating substitution logic, 21-28
- examples of how user-defined alternate decision rules are used, 21-55
- exceeding resource capacity, 8-17
- exception
  - change requests from suppliers, 21-90
  - early replenishment from supplier, 21-91
  - excess replenishment from supplier, 21-91
  - late replenishment from supplier, 21-91
  - short supply from supplier, 21-91
- exception details
  - days late column, 9-10, 10-69
- exception groups, 9-2
  - item exceptions, 9-105
  - late sales orders and forecasts, 9-16
  - material and resource capacity, 9-48
  - projects/tasks, 9-103
  - recommendations, 9-112
  - reschedules, 9-78
  - shortages and excess, 9-73
  - substitutes and alternates used, 9-97
  - supply problems for late sales orders and forecasts, 9-26
  - transportation and distribution, 9-65
- exception message
  - demand satisfied using end item substitution, 21-37
- exception messages, 9-1
  - Batch was started with less than minimum capacity, 9-60
  - Batch was started with more than maximum capacity, 9-62

- causes of late demands, 9-118
- Changes recommended for sales orders, 9-25
- comparing plans, 9-134, 22-4
- constraint exceptions, 9-115
- Demand quantity not satisfied, 9-43
- Demand satisfied using end item substitution, 9-101
- details of each, 9-15
- diagnosis, 9-114
- Early replenishment for forecast, 9-23
- Early replenishment for sales order, 9-22
- end-item-level substitution, 21-37
- exception groups, 9-2
- forecast expiration, 11-65
- implementing, 9-135
- Items allocated across projects/tasks, 9-104
- Items below safety stock, 9-75
- Items with a shortage, 9-73
- Items with a shortage in a project/task, 9-103
- Items with excess inventory, 9-76
- Items with excess inventory in a project/task, 9-105
- Items with expired lot, 9-107
- Items with negative starting on hand, 9-106
- Items with no activity, 9-108
- late demands, 9-118
- Late replenishment for forecast, 9-21
- Late replenishment for MPP/MPS demands, 9-24
- Late replenishment for sales order, 9-19
- Late supply pegged to forecast, 9-43
- Late supply pegged to sales order, 9-44
- Material constraint, 9-50
- online simulation, 9-134
- operation hard link violation, 9-64
- Order causes supplier capacity overload, 9-35
- Order causes transportation volume capacity overload, 9-37
- Order causes transportation weight capacity overload, 9-36
- Order lead time constraint, 9-40
- Order sourced from alternate facility, 9-100
- Order sourced from alternate supplier, 9-100
- Orders scheduled to next inventory point, 9-88
- Orders to be cancelled, 9-82
- Orders to be rescheduled in, 9-84
- Orders to be rescheduled out, 9-81

- Orders with compression days, 9-85
- Order with insufficient lead time, 9-38
- Past due forecast, 9-19
- Past due orders, 9-80
- Past due sales orders, 9-18
- Planned order uses alternate BOM/routing, 9-98
- Planned order uses alternate resources, 9-99
- Planned order uses substitute components, 9-99
- Recommendations, 9-113
- Requirement causes resource overload, 9-32
- Requirement lead time constraint, 9-41
- Requirement with insufficient lead time, 9-39
- resolution, 9-114
- resolution suggestions, 9-15
- Resource constraint, 9-52, 9-89, 9-91, 9-92, 9-94, 9-95
- Resource overloaded, 9-54
- Resource underloaded, 9-58
- reviewing, 3-6
- Sales order/forecast at risk, 9-17
- Sales order/forecast at risk due to material shortage, 9-29, 9-31
- simulation, 9-134
- Supplier capacity overloaded, 9-56
- Supplier split percentage violated, 9-108
- Transportation resource's volume overloaded, 9-71
- Transportation resource's weight overloaded, 9-69
- Transportation resource constraint, 9-66, 9-67
- user-defined alternate decision rules, 21-74
- viewing, 9-7, 9-115
- workflow, 9-115
- exceptions
  - enforce capacity constraints related exceptions, 9-116
  - enhanced, 9-114
  - firming related exceptions, 9-117
  - late demands, 9-119
    - late replenishment for forecasts, 9-119
    - late replenishment for sales order, 9-119
  - lead-time related exceptions, 9-115
  - overload related exceptions, 9-115
  - See exception messages, 9-1
  - sorting, 9-9, 10-68

- exceptions, resolving, 9-114
- exceptions details
  - viewing, 9-9, 10-69
- exception sets, 9-5
  - assigning, 9-6, 9-7
  - creating and updating, 9-6
- excess demand
  - planned order to sales order
    - Accept Demands from Unmet PO flag, 20-16

## **F**

---

- factors affecting objectives, 5-108
- fair share allocation, 15-18
- fictitious demand, 11-80
- Find Requests, 4-28
- Find window
  - displaying, 10-39, 10-202
- firm discrete jobs, 11-45
- firming an operation, 10-210
- firming orders, 3-11
- firm planned orders
  - creating and implementing, 10-195
- firm work orders constraint, 11-45
- fixed days supply, 11-5
- fixed lead-time, 6-111, 6-113
- fixed lot multiple, 11-5
- fixed order quantity, 11-5
- flags
  - Operation Resource Schedule, 6-78
- Flat File Loader (concurrent process), 22-49
- flexfield attributes, A-1
- flexfield numbers
  - creating manually, B-3
- flexfields
  - applying to database, B-2
  - list, B-1
  - transportation capacity, B-3
- flexible shift times, 11-34
  - elongation factor, 11-38
- flexible tolerance fences, 6-48
- flow line scheduling, 16-23
- flow manufacturing
  - See Oracle Flow Manufacturing, 16-37
- flow schedules, 16-37
  - planning time fence logic, 6-130

- release, 16-39
- forecast
  - forecast expiration
    - forecast expiration with online and batch replan, 11-67
- forecast bucket consumption, 5-74
- forecast consumption
  - configure to order, 19-6
  - viewing, 5-72
- forecast consumption days, 5-63
- forecast expiration, 5-74, 11-62
  - controlling late replenishments, 11-66
  - demand priority, 11-67
  - exception messages, 11-65
  - implementing, 11-65
  - setup, 11-63
  - viewing results, 11-64
- forecast explosion, 5-59
  - configure to order, 19-3
- forecasts
  - bucket consumption, 5-74
  - consumption, 5-62
  - expiration, 11-62
  - explosion, 5-59
  - spreading, 5-75
- Forecast Schedule Association form, 16-58
- forecast spreading, 5-75
  - considerations, 5-78
  - setup, 5-76
- form-based application, 4-43
- forms
  - Exception Details, 11-42
- formulas, 16-43, 16-44
- fractional dependent demands, 11-8
- fractional supply order quantities, 11-7

## **G**

---

- Gantt chart, 10-197
  - firming operations, 10-210
  - icon options, 10-212
  - operations, 10-208, 10-210, 10-210
  - order-centric view, 10-199
  - overload, 10-210
  - reschedule operations, 10-208
  - resolving overload, 10-210
  - resource-centric view, 10-200

- right-click menu, 10-203
- supplier capacity view, 10-201
- time buckets, 10-207
- view operations, 10-205
- view resources, 10-207
- Gantt Chart
  - accessing, 10-197
  - Find window, 10-202
  - user preferences, 10-201
- Gantt chart pegging, 10-214
- general substitution examples, 21-33
- generating planned orders, 16-22
- global forecasting, 6-2
  - distribution planning, 14-1
  - examples, 6-18
  - global forecast consumption, 6-4
  - global forecast distribution, 6-11
  - global forecast explosion, 6-3
  - lower level pre-configuration consumption, 6-10
- global supply chain and subset plans
  - choosing between, 5-9
- global supply chain plan, 5-9
  - creating and launching, 5-4
  - running, 5-2
- global supply chain planning, 5-1
  - create plans, 5-3
  - decision points, 5-3, 5-9, 5-9
  - prerequisites, 5-2
  - single plan, 5-3, 5-9
  - subset planning, 5-9
  - subset plans, 5-7, 5-9
- graphs
  - changing number of periods, 10-78
  - choosing types of, 10-78
  - defining, 10-77
  - defining dynamically, 10-77, 10-79
- group netting, 16-17

## H

---

- hard and soft constraints
  - setting, 11-28
- hard pegging, 16-15
  - supply chain planning with, 16-16
- hardware configuration, 2-1
- heuristics, 11-32

- historical demand
  - allocating demand according to, 6-63
- horizontal plan
  - copy, 10-76
  - preferences
    - hide or show graph, 10-81
    - hide or show options for a row, 10-81
    - set column width and row height of data cells, 10-81
  - save preferences, 10-80
  - save preferences for viewing, 10-80
- hub and spoke planning, 5-10

## I

---

- ILOG libraries and executables, 2-13
- implementing planning recommendations, 10-195
- implicit objectives, 5-106
- increasing inventory turns, 21-87
- increasing margin percentage, 21-88
- increasing on-time delivery, 21-88
- increasing planned utilization, 21-88
- installation, ILOG libraries and executables, 2-13
- instances, 20-1
- integration
  - demand management, 16-96
  - sales and operations planning, 16-97
- interactive scheduling, 10-197
- inventory carrying costs percentage, 8-17
- inventory rebalancing, 12-21
- inventory turns, 5-105, 10-191, 21-82
- inventory value, 21-85
- item definition, 11-3
- Item Details Worksheet window, 22-25
- item exceptions exception group, 9-105
- item lead time constraints, 9-131
- item planning information, 10-193
- item relationship
  - cross-sell, 5-83
  - substitution, 5-83
  - up-sell, 5-83
- items
  - decreasing, 5-111
- Items allocated across projects/tasks exception message, 9-104
- Items below safety stock exception message, 9-75



- Items window, 10-142, 10-143
  - buttons, 10-147
  - description of fields, 10-143
  - right-click menu options, 10-148
  - viewing, 10-142
- Items with a shortage exception message, 9-73
- Items with a shortage in a project/task exception message, 9-103
- Items with excess inventory exception message, 9-76
- Items with excess inventory in a project/task exception message, 9-105
- Items with expired lot exception message, 9-107
- Items with negative starting on hand exception message, 9-106
- Items with no activity exception message, 9-108
- item workflow, 3-7

## **J**

---

- jobs
  - lot-based, 16-62

## **K**

---

- kanbans, 16-39
- key performance indicators
  - cost breakdown, 21-83
  - inventory turns, 21-82
  - inventory value, 21-85
  - making improvements, 21-87
  - margin, 21-83
  - margin percentage, 21-82
  - on-time delivery, 21-83
  - overview, 21-80
  - plan performance, 21-87
  - service level, 21-84
  - setup, 21-86
  - simulations, 7-11
- key performance indicators see KPIs, 3-5
- kitting, 12-3
- KPIs
  - comparing multiple plans, 10-194
  - inventory turns, 10-191
    - calculation, 21-82
    - increasing, 21-87
  - margin percentage, 10-193
    - increasing, 21-88

- on-time delivery, 10-192
  - increasing, 21-88
- planned utilization, 10-192
  - calculation, 21-82
  - increasing, 21-88
- reviewing, 3-5
- reviewing item planning information, 10-193
- viewing, 10-189, 10-189
- viewing an enlarged version, 10-189

## **L**

---

- late demand
  - earliest possible completion time (EPCT), 9-119
  - material constraints, 9-131
  - resource constraints, 9-131
  - viewing late demand information, 9-133
- late demand penalty cost, 8-7
  - item level, 8-5
  - organization level, 8-6
  - plan level, 8-6
- late demands
  - latest possible start time (LPST), 9-119, 9-119
- Late replenishment for forecast exception message, 9-21
- Late Replenishment for MPP/MPS demands, 9-24
- Late replenishment for sales order exception message, 9-19
- late sales orders and forecasts exception group, 9-16
- latest possible start time, 9-120
- Late supply pegged to forecast exception message, 9-43
- Late supply pegged to sales order exception message, 9-44
- launching a plan, 3-5
- Launch Supply Chain Planning Process Request Set (concurrent process), 22-53
- lead time, 12-3
- lead-time, 6-110, 11-10
  - approved supplier list, 6-121
  - calculation examples, 6-138
  - concurrent processes, 6-113
  - cumulative manufacturing, 6-112, 6-114
  - cumulative total, 6-112, 6-114
  - dock date, 6-121

- examples, 6-138
- fixed, 6-111, 6-113
- item attributes, 6-111
- lead-time lot size, 6-111
- manufactured item calculations, 6-118
- manufactured supply component item calculation, 6-120
- planned order demand due date, 6-116
- postprocessing, 6-112
- preprocessing, 6-111
- processing, 6-112, 6-113, 6-121
- purchased item calculations, 6-121
- setting, 6-110
- total, 6-114
- transfer item calculations, 6-122
- user-defined decision rules, 21-73
- variable, 6-111, 6-113
- viewing in workbench, 6-114
- lead-time lot size, 6-111
- legacy collection, 4-30
  - collect into ERP instance, 4-53
  - collect into legacy instance, 4-43
  - loading transaction data using flat files into ERP Instance, 4-52
  - non-Oracle ERP systems, 4-30
  - preprocessing, 4-38
  - process, 4-32
  - running, 4-42
  - setting up batch uploads, 4-33
  - setting up legacy instance, 4-41
  - transaction data, 4-32
- Legacy Collections Request Set (concurrent process), 22-54
- legacy system
  - data flow, 4-31
- line design and balancing, 16-38
- Load ATP Summary Based on Collected Data (concurrent process), 22-54
- Load ATP Summary Based on Planning Output (concurrent process), 22-55
- loading alternate resources, 10-211
- Load Transaction Data (concurrent process), 22-56
- look-ahead heuristic, 11-32
- look-ahead heuristic constraint, 11-32
- lot-based job
  - future operation details, 16-82, 16-83

- lot-based jobs, 16-62
- lower level pre-configurations, 6-10

## M

---

- main tabbed region, 13-1
- manufactured item lead-time calculations, 6-118
- manufactured supply component item lead-time calculations, 6-120
- manufacturing environments, 16-1
- manufacturing resources
  - efficiency, 11-17
  - efficiency and utilization, 11-17
  - network routings, 16-79
  - operation yield, 16-71
  - resource availability, 11-16
  - resources, 11-11
    - backward scheduling with fixed assigned units in scheduling, 11-13
    - backward scheduling with variable assigned units in scheduling, 11-12
    - forward scheduling with fixed assigned units in scheduling, 11-14
- routings, 11-10
- shifts, 11-15
  - capacity changes, 11-16
- utilization, 11-17
- workday calendar, 11-17
- margin, 21-83
- margin percentage, 5-105, 10-193, 21-82
- master production schedule, 16-57
- master scheduling, 5-24
- material aggregation, 5-104
- material aggregation levels
  - setting for a time horizon, 5-104
- material and resource capacity exception group, 9-48
- Material constraint exception message, 9-50
- material planning
  - cmro, 16-93
- material scheduling method
  - manufactured supply component item calculation, 6-120
- Material tabbed pane, 10-57
- material workflow, 3-8
- maximize inventory turns, 8-2
- maximize on-time delivery, 8-3

- maximize plan profit, 8-2
- maximum allowable days late, 8-17
- maximum inventory level, 12-11
- MDS Data Collection (concurrent process), 22-57
- menu
  - Planner Workbench
  - Tools, 10-7
- minimum and maximum order quantity, 11-5
- minimum transfer quantity, 6-79
- min possible days late, 9-130
- mixed mode manufacturing, 16-1, 16-2
  - common features, 16-2
  - efficiency, 16-5
  - Oracle Flow Manufacturing, 16-37
  - Oracle Project Manufacturing, 16-14
  - phantom routings, 16-2, 16-5
  - routing effectivity, 16-6
  - utilization, 16-5
- model/unit effectivity
  - effectivity in the BOM, 16-22
  - flow line scheduling, 16-23
  - model unit number, 16-22
  - pegging, 16-23
  - Planner Workbench, 16-22
  - unit numbers in sales orders, 16-22
  - WIP mass/load PO requisitions interface, 16-23
- models
  - configure to order, 19-1
- model unit number, 16-22, 16-22
  - generating planned orders, 16-22
- modifying resources, 3-10
- modifying supply and demand, 3-9
- modify objectives, 3-8
- modify supplier parameters, 3-10
- MRP Planning Type item attribute, 5-31
- multi-instance data collection, 20-13
- multiple inventory policies, 12-11
- multi-process collection architecture, 4-4
- multiresource scheduling, 6-105
  - using, 6-105

## N

---

- need by date, 6-115, 6-135, 6-136
  - manufacturing calculation, 6-118
  - purchasing calculation, 6-121

- transfer calculation, 6-122
- nervousness, 5-112
- net availability, 16-5
- net change, 4-4
- net change online replan, 3-10
- net change planning, 3-11
- net change replan, 7-3, 7-4
- network routings, 16-79
  - optimize, 16-80
  - planned percent, 16-80
  - primary path, 16-80
- Network Routing window, 10-183

## O

---

- objective functions, 5-105
  - choosing, 5-105
  - combining objectives, 5-107
  - computational burden, 5-110
  - factors affecting, 5-108
  - implicit objectives, 5-106
  - inventory turns, 5-105
  - margin percentage, 5-105
  - nervousness, 5-112
  - on-time delivery, 5-106
  - optimized plan data requirements, 5-111
  - optimized plan sourcing effects, 5-112
  - plan profit, 5-105
- old dock date, 6-116, 6-138
- old due date, 6-116, 6-137
- on-hand quantities, 11-80
- online planner, 7-3
  - batch mode planner, 7-3
- online planner session
  - checking status, 7-5
  - stopping, 7-6
- online replan, 11-67
  - running, 7-5
- on-time delivery, 10-192, 21-83
- on-time delivery objective, 5-106
- operation, 10-209
  - firming, 10-210
  - rescheduling, 10-210
- Operational Data Store (ODS), 4-3
- Operational Data Store (ODS) Load, 4-2
- operation hard link violation exception message, 9-64

- Operation Resource Schedule flag, 6-78
- operations
  - firming, 10-210
  - overload, 10-210
  - rescheduling, 10-208
  - viewing, 10-205
- operation yield, 16-71
- optimization
  - comparing plans, 8-18
  - maximize inventory turns, 8-2
  - maximize on-time delivery, 8-3
  - maximize plan profit, 8-2
  - objectives, 3-8, 8-2
    - See also KPIs, 8-2
  - overview, 8-1
  - plan types, 3-9
  - See also plan classes, 5-36
- optimization and end-item-level substitution, 21-37
- optimization effects
  - enforce capacity constraints scenario, 5-112
  - enforce demand due dates scenario, 5-112, 5-112
- optimization see also KPIs, 3-8
- Optimization tab, 8-7, 8-11, 8-15
- optimize
  - network routings, 16-80
- optimized plan
  - running, 3-8
- optimized plans
  - user-defined alternate decision rules, 21-62
- Oracle Advanced Planning and Scheduling
  - instance, 20-1
  - shop floor scheduling
    - efficiency and utilization, 11-17
- Oracle Advanced Planning Suite, 1-1
- Oracle Advanced Supply Chain Planning
  - capacity planning, 16-5
  - introduction, 1-1
- Oracle Applications Data Store (ADS), 4-3
- Oracle ASCP Flexfields, B-1
- Oracle Collaborative Planning, 1-1, 10-217, 21-91, 21-92
- Oracle Demand Planning, 1-1
- Oracle Flow Manufacturing, 16-37, 16-37, 16-37, 16-38
  - demand management, 16-38
  - kanbans, 16-39
  - product families, 16-39
- Oracle Global Order Promising, 1-1, 21-43
- Oracle iSupplier Portal
  - need by date, 21-90
  - promise date, 21-90
- Oracle Manufacturing Scheduling, 1-1
  - resource usage, 11-18
- Oracle Process Manufacturing, 16-40
  - contiguous operations, 16-50
  - effectivities, Oracle Process Manufacturing
    - formulas, 16-43, 16-44
  - master production schedule, 16-57
  - merged organization structure, 16-41
  - OPM data for Oracle ASCP, 16-59
  - organizations, 16-44
  - organization structure, 16-40, 16-42
  - production details, 16-41
  - resources, 16-52
  - resource warehouse, 16-43
  - routings, 16-43, 16-44
  - set up, 16-44
  - unit of measure, 16-43
- Oracle Production Scheduling, 1-1
- Oracle Project Manufacturing, 16-14
  - assemble-to-order environment, 16-15
  - borrow payback, 16-17
  - default project, 16-18
  - engineer-to-order (ETO), 16-15
  - exception messages, 16-30
  - group netting, 16-17
  - hard pegging, 16-15, 16-16
  - implementation, 16-31
  - model/unit effectivity, 16-22
  - planning logic, 16-33
  - project planning, 16-16
  - safety stock, 16-24
  - Seiban production, 16-15
  - serial effectivity, 16-22
  - setup, 16-31
  - soft pegging, 16-15
  - supplies pegged to excess, 16-18
  - viewing plans, 16-36
- Oracle Purchasing
  - dock date
    - need by date, 21-90
  - promise date, 21-90

- Oracle Shop Floor Management, 16-61
    - coproducts
      - coproducts, 16-63
      - lot-based jobs, 16-62
      - network routings, 16-79
      - operation yield, 16-71
  - Oracle Strategic Network Optimization, 1-1
  - Oracle Workflow, 16-30
    - item workflow, 3-7
    - material workflow, 3-8
    - notifications, 3-7
    - project workflow, 3-8
    - rescheduling workflow, 3-7
    - sales order workflow, 3-8
  - Order causes supplier capacity overload exception message, 9-35
  - Order causes transportation volume capacity overload exception message, 9-37
  - Order causes transportation weight capacity overload exception message, 9-36
  - order date, 6-112
  - order dates
    - dock date, 6-112
    - due date, 6-112
    - order date, 6-112
    - start date, 6-112
  - Order lead time constraint exception message, 9-40
  - order modifier item attribute
    - round order quantities, 11-7
  - order modifiers, 11-4
    - fixed days supply, 11-5
    - fixed lot multiple, 11-5
    - fixed order quantity, 11-5
    - minimum and maximum order quantity, 11-5
    - rounding order quantities, 11-6
  - order promising
    - configure to order, 19-3
  - orders
    - firming, 3-11
    - releasing, 3-11
  - order size, 12-3
  - Order sourced from alternate facility exception message, 9-100
  - Order sourced from alternate supplier exception message, 9-100
  - Orders scheduled to next inventory point exception message, 9-88
  - Orders to be cancelled exception message, 9-82
  - Orders to be rescheduled in exception message, 9-84
  - Orders to be rescheduled out exception message, 9-81
  - Orders with compression days exception message, 9-85
  - Order with insufficient lead time exception message, 9-38
  - organizations, 16-40, 16-42
  - organization security, 21-75
    - example, 21-78
    - organization validation, 21-77
    - plan names, 21-78
    - Plan Options form, 21-78
    - process, 21-76
  - organization selection lists, 14-46
  - organization specific collections, 4-59
    - single source to multiple destinations, 4-63
  - organizations tabbed region, 13-16
  - Organization window
    - setting up, 2-12
  - original need by date, 6-116
  - outbound ship method, 6-42
  - outlier percentage, 5-67
  - overwrite all, append planned orders, 5-90
  - overwrite none, append planned orders, 5-92
  - overwrite none, do not append planned orders, 5-93
  - overwrite option
    - planning time fence, 6-126
  - overwrite options, 5-89
  - overwrite outside planning time fence, 5-91
- ## P
- 
- page
    - Collaborative Planning Suite, 4-46
    - Exception Details (Graphical), 22-12
    - Exception Details (Tabular), 22-13
    - Exception Group Summary, 22-10
    - Exception Types Summary, 22-11
    - Filter Criteria, 22-7
    - Oracle Collaborative Planning Suite
      - Load Data Files, 4-58, 4-59
    - Plan Comparison, 22-9

- Plan Options, 22-14
- Preference Set Search page, 22-5, 22-6
- Parameters, 4-27
- partial demand satisfaction constraint, 11-39
- partial order fulfillment, 21-22
- Past due forecast exception message, 9-19
- Past due orders exception message, 9-80
- Past due sales orders exception message, 9-18
- pegging, 3-8, 5-98, 10-111, 16-15, 16-16, 16-18, 16-23
  - cross-instance, 20-16
  - firm supply allocation window, 10-122
  - fractional demand quantities, 11-8
  - modes, 10-114
  - safety stock, 10-133
  - sizing demand and supply windows, 10-123
  - user-defined decision rules, 21-74
  - viewing pegging information, 10-139
- Pegging
  - Gantt chart view, 10-214
- pegging mode
  - FIFO, 10-128
  - priority, 10-119
  - priority and FIFO/priority comparison, 10-131
  - standard, 10-114
- pegging tree, 10-139
  - displaying, 10-139
- penalty costs, 8-17
  - exceeding material capacity, 8-16
  - exceeding resource capacity, 8-17
  - exceeding transportation capacity, 8-16
  - late demand, 8-16
- penalty costs vs. penalty factors, 8-3
- penalty factors
  - exceeding material capacity, 8-8, 8-8
  - exceeding resource capacity, 8-12, 8-12
  - late demand, 8-3
  - late demand penalty costs, 8-3
  - setting, 8-3
  - setting penalty factors for exceeding material capacity at the item level, 8-10
  - setting penalty factors for exceeding material capacity at the organization level, 8-10
  - setting penalty factors for exceeding material capacity at the plan level, 8-10
  - setting penalty factors for exceeding resource capacity at the organization level, 8-14
  - setting penalty factors for exceeding resource capacity at the plan level, 8-14
  - setting penalty factors for exceeding resource capacity at the resource level, 8-13
  - setting through plan options, 8-16
  - setting using profile options, 8-17
  - setting using the Optimization tab, 5-56
- penalty factors for exceeding material capacity
  - profile option, 8-11
- penalty factors for exceeding resource capacity
  - profile option, 8-15
- phantom routings, 16-2, 16-5
- phantom routings constraint, 11-42
- PIP
  - see planned inventory points, 11-77
- plan
  - viewing undo summary, 7-7
- plan classes
  - choosing, 5-34
  - constraints, 5-34
  - enforce capacity constraints, 5-34
  - enforce demand due dates, 5-34
  - material and resource constrained, 5-34, 5-35
  - material constrained, 5-34, 5-35
  - optimization, 5-34
  - optimized, 5-34, 5-36
  - resource constrained, 5-34, 5-35
  - unconstrained, 5-34, 5-35
- plan comparisons
  - view, 22-7
- plan constraints
  - earliest completion date, 9-123
  - earliest order date, 9-121
  - earliest possible demand satisfied date, 9-124
  - min possible days late, 9-130
- plan dates
  - promise, 5-98
  - request, 5-98
  - schedule, 5-98
- planing engine
  - and resource usage, 11-18
- planned inventory point
  - using, 11-82
- planned inventory points, 11-77
  - setup, 11-78
- planned inventory points (PIP)
  - generate PIP orders exception, 11-81

- job properties
  - Firm and Status, 11-81
- planned items
  - controlling, 5-116
- planned orders
  - accessing and executing, 10-196
  - planning time fence logic, 6-128
  - split, 11-42
  - suggested dates, 11-37
- Planned order uses alternate BOM/routing exception message, 9-98
- Planned order uses alternate resources exception message, 9-99
- Planned order uses substitute components exception message, 9-99
- planned percent
  - network routings, 16-80
- planned utilization, 10-192
- planner workbench
  - adjusted resource hours, 11-18
  - overview, 10-1
  - resource efficiency, 11-18
  - resource hours, 11-18
  - resource utilization, 11-18
  - touchtime, 11-18
- Planner Workbench, 10-54, 16-22
  - accessing from Oracle Collaborative Planning, 10-217
  - BOM/Routing, 10-177
  - Component window, 10-178, 10-179
  - Co-product window, 10-185
  - cross-instance planned orders, 20-11
  - Destinations window, 10-148, 10-149
    - Assignment tabbed pane, 10-150
    - Effectivity Dates tabbed pane, 10-150
    - Sourcing tabbed pane, 10-149
  - drill down, 10-4
  - Exception Details window, 10-69, 10-69
    - navigate using buttons, 10-70
    - right-click menu options, 10-71
  - Exceptions icon, 10-6
  - Exception Summary window, 10-60
  - expand partial, 10-41
  - Expand Partial menu option, 10-42
  - Find window, 10-38
    - rolling dates search condition, 10-40
    - wildcard search condition, 10-40
  - firm planned orders, 10-195
  - Gantt Chart icon, 10-6
  - horizontal plan, 10-71
    - Copy Horizontal Plan menu option, 10-77
    - description of fields, 10-74
    - exporting, 10-76
  - Horizontal Plan icons, 10-5
  - icons, 10-5
  - Icons, 10-5
  - Items icon, 10-6
  - Items window, 10-142, 10-143
    - buttons, 10-147
    - description of fields, 10-143
    - right-click menu options, 10-148
    - viewing, 10-142
  - key performance indicators, 10-187, 21-87
  - More icon, 10-6
  - multi-selecting nodes, 10-5
  - Network Routing window, 10-183
  - Planning Detail report, 22-14
  - Process Effectivity window, 10-185
  - Properties window, 10-36
  - pull-down menus, 10-6
  - Queries Result window, 10-50
  - Queries tabbed pane, 10-43, 10-44
    - create query, 10-46
    - navigating, 10-44
    - Personal Queries node, 10-45
    - Public Queries node, 10-45
    - Query icons, 10-44
    - Query Result node, 10-45
    - view results, 10-49
  - Query icons, 10-5
  - recommendations, 10-196, 10-197
  - releasing recommendations, 10-196, 10-197
  - Resource Availability (Details) window, 10-167
    - description of fields, 10-168
  - Resource Availability Summary window, 10-165
    - buttons, 10-167
    - description of fields, 10-166
  - Resource Requirements window, 10-169, 10-171
  - Resources window, 10-161
    - buttons, 10-165

- right-click menu options, 10-165
- right-click menu options, 10-7
- Routing Operations window, 10-181
- Safety Stock window, 10-158
- Sources window, 10-151, 10-152
  - Assignment tabbed pane, 10-154
  - buttons, 10-154
  - Effectivity Dates tabbed pane, 10-153
  - Sourcing tabbed pane, 10-152
- Substitution Chain window, 10-160
  - right-click menu options, 10-160
- Supplier Administrator responsibility, 10-217
- Supplier Capacity window, 10-154, 10-155
  - description of fields, 10-155
  - Supplier Capacity tabbed pane, 10-157
  - Supplier Flexfences tabbed pane, 10-157
  - viewing, 10-154
- suppliers, 10-217
- Supplier User responsibility, 10-220
- Supplier Variability window, 10-158
- Supply/Demand icon, 10-6
- Supply/Demand region
  - right-click menu options, 10-110
- Supply/Demand window, 10-92
  - Line tabbed pane, 10-109
  - Order tabbed pane, 10-94
  - Pegging icons, 10-140
  - Project tabbed pane, 10-110
  - Release Properties tabbed pane, 10-106
  - Sourcing tabbed pane, 10-108
  - viewing, 10-92
- supply chain, 10-175
- Supply Chain bill, 10-175
- Tools menu, 10-7
- using context windows
  - context synchronization, 10-60
- vendor managed inventory supplies, 10-141
- vertical plan, 10-90
  - display, 10-91
  - right-click menu options, 10-92
- view by, 10-3
  - Actions, 10-3
  - Items, 10-3
  - Organizations, 10-4
  - Projects, 10-4
  - Resources, 10-4
  - Suppliers, 10-4
  - view horizontal plan, 10-73
  - view operations, 10-205
  - view payback demand, 16-17
  - view resources, 10-207
  - Where Used window, 10-184
- planning
  - global forecasts, 6-10
- planning business flows, 3-1
- planning cycle, 3-3
- Planning Data Collection - Purge Staging Tables (concurrent process), 22-58
- Planning Data Collection Request Set (concurrent process), 22-58
- Planning Data Pull (concurrent process), 22-59
- Planning Data Store (PDS), 4-3
- Planning Detail report, 22-14
- Planning Detail Report, 22-15
- Planning Detail Report (Discoverer), 22-19
- planning engine
  - conditions when a non-firm open job is treated as firm, 11-20
- planning environments, 16-1
- planning level, 9-131
- Planning ODS Load (concurrent process), 22-61
- planning process
  - configure to order, 19-8
- planning recommendations
  - planning, 10-195
- planning search logic for user-defined decision rules, 21-62
- planning time fence, 6-124
  - calculation examples, 6-160
  - discrete jobs, 6-130
  - examples, 6-160
  - firm planned orders, 6-128
  - flow schedules, 6-130
  - logic for order types and supply types, 6-128
  - overwrite option, 6-126
  - planned orders, 6-128
  - planning time fence date, 6-125
  - planning time fence days, 6-125
  - profile options, 6-127
  - purchase orders, 6-129
  - purchase requisitions, 6-129
  - repetitive schedules, 6-130
  - setting, 6-124
  - viewing in workbench, 6-125



- planning time fence constraints
  - constraints
    - planning time fence, 9-131
- planning time fence date, 6-125
  - and plan type, 6-126
- planning time fence days, 6-125
- plan options
  - demand priority rules, 5-95
  - demand schedules, 5-58
  - forecast bucket consumption, 5-74
  - forecast consumption, 5-62
  - forecast spreading, 5-75
  - overwrite options, 5-89
  - pegging, 5-98
  - setting, 5-36
  - setting penalty factors, 8-16
  - viewing, 22-13
- Plan Options
  - Optimization tab, 8-7, 8-11, 8-15
- Plan Options form
  - Aggregation tabbed region, 5-44
  - Constraints tabbed region, 5-51
  - Decision Rules tabbed region, 5-57
  - Main tabbed region, 5-38
  - Optimization tabbed region, 5-55
  - Organizations tabbed region, 5-46
  - security, 21-78
- plan profit objective, 5-105
- plans
  - automatic launch, 21-91
  - comparing, 9-134, 22-4
  - creating, 3-5
  - defining, 5-1
  - global supply chain, 5-1
  - launching, 3-5
- plan type
  - and planning time fence date, 6-126
- plan types, 3-9
  - choosing, 5-30
  - MRP Planning Type item attribute, 5-31
  - setting constraints, 11-28
  - unconstrained, 3-9
- postprocessing lead-time, 6-112
- preference for generating planned orders, 21-18
- Preferences
  - gantt chart, 10-201
- preprocessing lead-time, 6-111
- Pre-Process Monitor (concurrent process), 22-62
- Pre-Process Transaction Data (concurrent process), 22-64
- prerequisites for distribution planning, 12-2
- primary path
  - network routings, 16-80
- priority rule
  - attaching, 5-97
  - defining, 5-95
- Process Effectivity window, 10-185
- processing lead-time, 6-112, 6-113
- process manufacturing
  - co-products, 16-59
- procured models
  - supplier capacity, 19-10
- product families, 11-4
- product family, 16-39
- production duration
  - manufacturing calculation, 6-119
  - purchasing calculation, 6-122
- production schedules, 17-1
  - copying a schedule, 17-25
  - creating, 17-9
  - feeding back into ASCP, 17-27
  - publishing, 17-26
  - running from the Workbench, 17-23
  - running with ASCP, 17-3
  - running without ASCP, 17-7
  - setting schedule options, 17-11
- profile option
  - CRP: Spread discrete requirements, A-3
  - MSC: Allow Release of Planned Orders from Demand Schedule Plan, A-14
  - MSC: ATP Enforces Lead Time for ATO Models, A-17
  - MSC: PS - Snapshot Beginning Inventory, A-42
- profile options, 2-5, 2-6, 2-7, 2-9, 2-9, 2-9, 2-9, 5-55, 5-107, 5-112, 5-112, 6-50, 6-74, 6-110, 6-125, 6-127, 6-160, 8-3, 8-17, 8-17, 8-17, 17-8, 21-19, 21-19, 21-20, 22-1, 22-1, 22-3, A-1
  - automatic calculations, A-1
  - CP HZ View Default Query, A-12
  - flexfield attributes, A-1
  - floating point precision, A-2
  - for strategic plans, 18-5
  - INV: Capable to Promise, 19-3, A-2

INV: External ATP, 2-9, A-2  
 INV --> PROFILE OPTIONS, A-2  
 MRP  
     Explode Demand Through Phantom  
     Component, A-6  
     Net All Purchase Orders Prior To  
     Requisitions, A-8  
 MRP\_NEW\_PLANNER\_BACK\_COMPATABI  
 LITY, A-8  
 MRP: Activate OLP, A-3  
 MRP: ATP Assignment Set, A-3  
 MRP: ATP Database Link, 2-6, 2-9, A-3  
 MRP: Backlog Progress Timeout, A-3  
 MRP: Calculate Excess Exceptions on Time  
 Fence, A-4  
 MRP: Calculate Plan Performance, A-4  
 MRP: Calculate Supply Demand, A-4  
 MRP: Category Set for Backlog Form, A-4  
 MRP: Combine Sugg Rep Schedules, A-4  
 MRP: Compute Sales Order Changes, A-4  
 MRP: Compute Standard Mandatory  
 Components for ATO Models, A-4  
 MRP: Consume Fcst Set Summary, A-4  
 MRP: Consume Forecast, A-5  
 MRP: Consume MDS, A-5  
 MRP: Consume MPS, A-5  
 MRP: Create Time fence, A-5  
 MRP: Create Time Fence, 6-127, 6-127, 11-20  
 MRP: Cutoff Date Offset Months, A-5  
 MRP: Cutoff History Days, A-5  
 MRP: Debug Mode, A-5  
 MRP: Default Criteria Set, A-6  
 MRP: Default DRP Plan Name, A-6  
 MRP: Default Forecast Date, A-6  
 MRP: Default Forecast Name, A-6  
 MRP: Default Plan Name, A-6  
 MRP: Default Schedule Name, A-6  
 MRP: Default Sourcing Assignment, 19-3  
 MRP: Default Sourcing Assignment Set, A-6  
 MRP: Demand Time Fence Days, A-6  
 MRP: Enhanced Exception, A-6  
 MRP: Environment variable to set path for  
 MRP files, A-6  
 MRP: Firm Internal Req Transferred to OE, 6-  
 127, 6-127, A-7  
 MRP: Firm Planned Order Time Fence, 6-127,  
 6-127, 6-128, 11-20, A-7

MRP: Firm Requisitions within time fence, A-7  
 MRP: Firm Requisitions within Time Fence, 6-  
 127, 6-128  
 MRP: Include Schd Rcpts in Use-up, A-7  
 MRP: Include Substitute Components, A-8  
 MRP: Interface Table History Days, A-8  
 MRP: Maintain Original Schedule Version, A-  
 8  
 MRP: MPS Relief Direction, A-8  
 MRP: Old Sales Orders Cutoff Days, A-8  
 MRP: Penalty cost factor for exceeding  
 material capacity flexfield attribute, 2-7  
 MRP: Penalty cost factor for late demands  
 flexfield attribute, 2-7  
 MRP: Perform Planning Manager Functions in  
 Loads, A-8  
 MRP: Planner Batch Size, A-9  
 MRP: Planner Workers, A-9  
 MRP: Planning Manager Batch Size, A-9  
 MRP: Planning Manager Max Worker, A-9  
 MRP: Planning Manager Run First Time, A-9  
 MRP: Plan Revenue Discount Percent, A-9  
 MRP: Plan Revenue Price List, A-9  
 MRP: Purchasing By Revision, A-9  
 MRP: Purge Batch Size, A-9  
 MRP: Recommend action within Planning  
 Time Fence, 6-128  
 MRP: Recommend Action within PTF, 6-127  
 MRP: Repetitive Past Due Supply Days, A-9  
 MRP: Requisition Load Group Option, A-10  
 MRP: Retain Dates Within Calendar  
 Boundary, A-10  
 MRP: RHX Check Profile, A-10  
 MRP: Round Source Entries, A-10  
 MRP: Snapshot Pause for Lock (Minutes), A-  
 10  
 MRP: Snapshot Workers, A-11  
 MRP: Sourcing Rule Category Set, A-11  
 MRP: Time Fence Warning, A-11  
 MRP: Trace Mode, A-11  
 MRP: Use Direct Load Option, A-11  
 MRP: Use Ship Arrived Flag, A-11  
 MRP and CRP--> PROFILE OPTIONS, A-3  
 MSC  
     Use attribute based netting, A-55  
 MSC: 64-bit Planner Platform, A-12  
 MSC: Action Allowed on ATP 24x7 Plan

While Running, A-12

MSC: Aggregate Resource Name Flexfield Attribute, A-12

MSC: Allocated ATP Forward Consumption Method, A-13

MSC: Allocation Assignment Category Set, A-13

MSC: Allow Release of Planned Orders from Demand Schedule Plans, A-14

MSC: Anchor dates for calculating operation yield, A-15

MSC: Apply Lot Modifiers in Weekly/Period Buckets, A-15

MSC: Apply Order Modifier To Start Quantity, A-16

MSC: Apply Safety Stock Change Interval to non MRP Planned Safety Stock, A-16

MSC: ATP Allocation Method, A-16

MSC: ATP Assignment Set, A-17

MSC: ATP Capacity Allocation, A-17

MSC: ATP Debug Mode, A-17

MSC: ATP Infinite Time Fence Pad, A-18

MSC: ATP Synchronization Downtime (minutes), A-18

MSC: Auto-Release Compression Days Tolerance, A-18

MSC: Calendar Reference for Bucketing, A-19

MSC: Cancel Outstanding Sales Order Quantities, A-19

MSC: Category set for CP Horizontal View, A-19

MSC: Choice of item for which to create supplies in substitute relationship, 21-28

MSC: Choice of Item for Which to Create Supplies in Substitute Relationship, A-20

MSC: Choice of Items for which to Create Supplies in a Substitute Relationship, 21-19

MSC: Choice of Items for Which to Create Supplies in Substitute Relationship, 21-19

MSC: Circular sourcing surplus days, A-20

MSC: Circular Sourcing Surplus Inventory Basis, A-20

MSC: Class Hierarchy, A-20

MSC: Collaborative Planning Default Calendar, A-21

MSC: Collection Window for Trading Partner Changes (Days), A-21

MSC: Collect Item, Material and Resource Costs, A-21

MSC: Compute Project Exception, A-21

MSC: Configuration, 21-92, A-21

MSC: Consume Forecast Inside Demand Time Fence, A-22

MSC: Consume forecast within demand time fence, 5-68, 5-70

MSC: Consume forecast with No demand class, A-23

MSC: Cost of Using a BOM/ Routing Flexfield Attribute, A-23

MSC: Cost Type, A-24

MSC: CP Debug Level, A-24

MSC: Create resource requirements for all operations, A-24

MSC: Daily Allocation to Maintain Safety Stock Level, A-25

MSC: Day UOM, A-25

MSC: Default Workbench Height, A-25

MSC: Default Workbench Width, A-25

MSC: Degree of Parallelism for Index Creation, A-26

MSC: Demand Priority Flexfield Attribute, A-26

MSC: Demand Satisfied Percent Threshold for Pegging, A-26

MSC: Display Order Scheduling Supplies, A-26

MSC: Display Warning Message When Rescheduling Recommendation Not Suggested by the Plan, A-27

MSC: Distribution Planning Ship Date, A-27

MSC: DPP Discrete Job Cutoff Window (Days), A-28

MSC: Enable Allocated ATP, A-28

MSC: Enable ATP for Phantom Components, A-28

MSC: Enable ATP Summary Mode, A-28

MSC: Enable ATP Workflow, A-29

MSC: Enable Enhanced Sourcing, 5-57, 5-57, 9-56, 9-101, A-29

MSC: Enable Group Based Netting, A-29

MSC: Enable User Defined Decision Rules, 11-63

MSC: ENFORCE CRITERIA REQUIREMENT BEFORE EXECUTING QUERY, A-29

MSC: Enforce Hard Links, A-30  
 MSC: Excess and Safety Stock by Demand Class, A-30  
 MSC: File Flush Limit, A-30  
 MSC: Firm Internal Requisition Time Fence, 6-127, 6-127, A-31  
 MSC: Firm Intransit and PO in Receiving Supplies, 6-128, A-31  
 MSC: Firm In-transit and PO in Receiving Supplies, 6-127  
 MSC: Forecast Priority Flexfield Attribute, A-32  
 MSC: High Volume Item, A-32  
 MSC: Horizontal Plan Demand Bucketing Preference, A-32  
 MSC: Hour UOM, A-32  
 MSC: Include Firm Planned Orders In Firm Allocation Window, A-33  
 MSC: Include Safety Stocks in Priority based Pegging, A-33  
 MSC: Inflate WIP Resource Requirements, 11-18, 11-19, 11-21, A-34  
 MSC: Inventory Rebalancing Surplus Inventory Basis, A-35  
 MSC: Launch Analyze Plan Partition, A-35  
 MSC: Launch Workflow-Enabled Exception Message Notifications, A-35  
 MSC: Legacy Collections Using Lot Based Job Details, A-36  
 MSC: Maximum Percentage variation in safety stock values, 6-173, A-36  
 MSC: Minimize Project Cross Peg Within Window, A-36  
 MSC: Minimize Workorder crossovers during reschedules, A-37  
 MSC: Minimum Percentage variation in safety stock values, 6-173, A-37  
 MSC: Minimum Supply/Demand Percent for Pegging, A-37  
 MSC: MPS Auto-Firm All Planned Orders, 6-127, 6-128  
 MSC: MPS Auto-Firm Planned Orders, A-38  
 MSC: Multiplier to Derive Supply Allocation Window, 10-123  
 MSC: Net Change Temp Dir, A-38  
 MSC: New Forecast Auto Plan, 21-91, A-39  
 MSC: New Planner Backward Compatibility, A-39  
 MSC: New Supply Commit Auto Plan, 21-92, 21-93, A-39  
 MSC: Operator Company Name, A-39  
 MSC: Order Type for Consigned VMI, A-39  
 MSC: Organization containing generic BOM for forecast explosion, A-39  
 MSC: Overwrite all Order Forecast records, A-40  
 MSC: Overwrite all supplier capacity records, A-40  
 MSC: Plan co-products, A-40  
 MSC: Plan for order at risk calculation, A-41  
 MSC: Planning Currency, A-41  
 MSC: Priority for Substitute Items Flexfield Attribute, A-41  
 MSC: Priority of Alternate Resources for an Operation Flexfield Attribute, A-41  
 MSC: Project Task Collection Window Days, A-41  
 MSC: Provide Warning for Dates Entered on Non-work Days, A-41  
 MSC: PS/SNO Alignment Date, A-43  
 MSC: PS/SNO API Version, A-43  
 MSC: PS/SNO Client Install Path, A-44  
 MSC: PS/SNO Compress Xml Package Files, A-44  
 MSC: PS/SNO Data Store Path, A-44  
 MSC: PS Currency Symbol, A-43  
 MSC: PS Run Application Script, A-43  
 MSC: PS Run Connector Script, A-43  
 MSC: PS - Snapshot Base Package, A-42  
 MSC: PS - Snapshot Calendar Package, A-42  
 MSC: PS - Snapshot Customer Package, A-42  
 MSC: PS - Snapshot Distribution Package, A-42  
 MSC: PS - Snapshot Enterprise Forecast Package, A-42  
 MSC: PS - Snapshot Inventory Safety Targets Package, A-42  
 MSC: PS - Snapshot Manufacturing Package, A-42  
 MSC: PS - Snapshot Purchase Orders Package, A-42  
 MSC: PS - Snapshot Sales Orders Package, A-43  
 MSC: PS - Snapshot Supplier Package, A-43

MSC: PS - Snapshot Transfer Orders Package, A-43  
 MSC: PS - Snapshot Work Orders Package, A-43  
 MSC: Purchase Order Dock Date Calculation Preference, 6-50, 6-51, 6-53, 6-54, 21-89, 21-89, A-44  
 MSC: Purge Stg Tbl Cntrl, A-45  
 MSC: Released Only By User, A-45  
 MSC: Release WIP Dtls if Order Date different then BOM Revision Date, 11-60, A-45  
 MSC: Resource Group for a Line Flexfield Attribute, A-46  
 MSC: Resource Type for an Operation Flexfield Attribute, A-46  
 MSC: Safety stock change interval (Days), 6-173, A-46  
 MSC: Safety stock project, 16-25  
 MSC: Safety Stock Project, 16-34, 16-35, A-46  
 MSC: Sales Orders Offset Days, 5-67, A-47, A-47  
 MSC: SCEM Engine Launch Events, 21-92, A-47  
 MSC: Scope of Analyze Plan Partition, A-47  
 MSC: Share Plan Partitions, A-48  
 MSC: Simultaneous Resource Sequence Flexfield Attribute, A-48  
 MSC: Smoothing method to calculate Safety stock within Change interval, A-48  
 MSC: SNO Connector Precision, A-50  
 MSC: SNO Currency Precision, A-50  
 MSC: SNO Decimal Precision, A-50  
 MSC: SNO Optimization Type, A-50  
 MSC: SNO Run Application Script, A-50  
 MSC: SNO Run Connector Script, A-51  
 MSC: SNO - Snapshot Base Package, A-48  
 MSC: SNO - Snapshot Beginning Inventory Package, A-48  
 MSC: SNO - Snapshot Calendar Package, A-48  
 MSC: SNO - Snapshot Customer Package, A-48  
 MSC: SNO - Snapshot Demand Package, A-49  
 MSC: SNO - Snapshot Distribution Package, A-49  
 MSC: SNO - Snapshot Enterprise Forecast Package, A-49  
 MSC: SNO - Snapshot Inventory Safety Targets Package, A-49  
 MSC: SNO - Snapshot Manufacturing Package, A-49  
 MSC: SNO - Snapshot Purchase Orders Package, A-49  
 MSC: SNO - Snapshot Sales orders Package, A-49  
 MSC: SNO - Snapshot Supplier Package, A-49  
 MSC: SNO - Snapshot Transfer Orders Package, A-50  
 MSC: SNO - Snapshot Work Orders Package, A-50  
 MSC: SNO Transportation Capacity By, A-51  
 MSC: Source Setup Required, A-51  
 MSC: Sourcing History Start Date Offset (in months), 4-16  
 MSC: Sourcing History Start Date Offset (in months), A-51  
 MSC: Sourcing Rule Category Set, A-51  
 MSC: Sourcing Variance Tolerance, 6-75, A-52  
 MSC: Split Planned Orders for Scheduling Flexibility, 11-43, 11-44, 11-45, A-53  
 MSC: Split Planned Order to perform safety stock pegging, A-52  
 MSC: Start Date Offset for Sourcing History (Months), 6-75  
 MSC: Supplier Capacity Accumulation (multiplier), 6-48, 6-49, 6-51, 6-51, 6-53, 6-54, A-54  
 MSC: Suppress Exception for Selection of Alternates, A-54  
 MSC: Temp Index Extent Size (Bytes), A-54  
 MSC: Temp Table Extent Size (Bytes), A-54  
 MSC: Unit of Measure, A-54  
 MSC: Update Requested Completion Date when Releasing Reschedules, A-54  
 MSC: Use FIFO Pegging, 10-114, 10-116, 10-124, 10-128, 10-129, 10-132, A-55  
 MSC: Use Hash Key, A-56  
 MSC: Use Optimization Supply Due Dates for Pegging, A-56  
 MSC: Vertical view default query, A-57  
 MSC: VMI Default Query, A-57  
 MSC: Wait Time to Obtain Lock on Table/Partition for Snapshot Delete Worker (in sec), A-57  
 MSC: Write MBP Flat Files, A-58

MSC --> PROFILE OPTIONS, A-11  
 MSD: Calculate Planning Percentages, A-58  
 MSD: Category Set Name, A-58  
 MSD: Client Debugging, A-58  
 MSD: Code Workspace, A-59  
 MSD: Conversion Type, A-59  
 MSD: Currency Code, A-59  
 MSD: Customer Attribute, A-60  
 MSD: Default DP Scenario, 21-91, 21-91, A-61  
 MSD: Master Org, A-61  
 MSD: OLAP Directory Alias, A-61  
 MSD: One Step Collection, A-62  
 MSD: Two-Level Planning, A-63  
 MSD --> PROFILE OPTIONS, A-58  
 MSO: Activity Selection Window (Days), A-64  
 MSO: Additional Demand Slices for Shared Supply Rescheduling, 9-95, 11-48, A-65  
 MSO: Aggregate resource name flexfield attribute, 2-7  
 MSO: Allow Partial Demand Completion, 9-20, 9-22, 11-40, A-65  
 MSO: Allow Schedule Gaps for Shared Supplies, A-66  
 MSO: Alternate Process Penalty, A-67  
 MSO: Alternate Resource Penalty, A-67  
 MSO: Alternate Resource Selection Method, A-67  
 MSO: Alternate Source Penalty, A-68  
 MSO: Avoid non working days for Buy/Transfer order dates, A-68  
 MSO: Barrier Optimizer Algorithm Choice, A-68  
 MSO: Calculate Constraint Exceptions, 9-40, 9-42, 9-50, 9-52, 9-66, 9-67, 9-116, A-68  
 MSO: Capacity Units Recalculation Threshold, A-69  
 MSO: Check Redundant Constraints, A-69  
 MSO: Choice of supply for substitution, 21-28, A-70  
 MSO: Continuous transfer across organizations, A-70  
 MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders, A-71  
 MSO: Convergent Supplies Consumption Pattern for Intra-Org Sourced orders, A-71  
 MSO: Cost of using a BOM/Routing flexfield

attribute, 2-8  
 MSO: CPLEX Crash Parameter, A-71  
 MSO: CPLEX Refactor Rate, A-71  
 MSO: CPLEX Scaling Factor, A-72  
 MSO: Default Forecast Priority, A-72  
 MSO: Default Resource Sequencing Window (Days), A-72  
 MSO: Default Sales Order Priority, A-72  
 MSO: Default Timestamp for Forecasts, A-73  
 MSO: Default Timestamp Safety Stocks, 6-170, A-75  
 MSO: Demand Size Tolerance Before Splitting Planned Orders, A-75  
 MSO: Demands Size Tolerance PCT before Splitting Planned Orders, 11-43, 11-43, 11-44  
 MSO: Demands Size Tolerance PCT Before Splitting Planned Orders, 11-43  
 MSO: Demand Window Size, 10-114, 10-116, 10-121, 10-121, 10-124, 10-133, A-76  
 MSO: Divergent Supply Feeding Pattern for Inter-Org and Supplier Sourced orders, A-76  
 MSO: Divergent Supply Feeding Pattern for Intra-Org Sourced orders, A-76  
 MSO: Dual Simplex Parameter, A-77  
 MSO: EDD Scheduling Window Control, 11-53, 11-58, A-77  
 MSO: Enable Cost Rollup for Optimization, A-78  
 MSO: Enable Decision Rules, 5-57, 11-32, 11-32, 21-44, 21-45, 21-47, 21-47, 21-47, 21-48, 21-62, 21-62, 21-73, A-78  
 MSO: Enable Triangulation in Optimization, A-78  
 MSO: Enforce Resource Sequence Contiguity, A-79  
 MSO: Firm Operations/Orders within the Planning Time Fence, 11-22  
 MSO: Firm Operations/Orders Within Time Fence, 6-129, 6-129, 6-130, 6-130, 6-166, 11-18, 11-20  
 MSO: Firm Orders/Operations within Time Fence, 6-127, 6-128  
 MSO: Firm Purchase Orders Within Time Fence, A-79  
 MSO: Firm Requisitions Orders Within Time Fence, A-80  
 MSO: Firm Supply Allocation Window

(Backward days), 10-119, 10-120, 10-122, 10-123, 10-124, 10-129, 10-133, 10-133, A-80

MSO: Firm Supply Allocation Window (Forward days), 10-120, 10-120, 10-122, 10-124, 10-129, 10-133, A-81

MSO: Firm Work Orders/Operations Within Time Fence, A-81

MSO: Floating Point Precision, A-81

MSO: Floating Point Precision for Order Q, A-82

MSO: Floating Point Precision for Order Quantities, A-82

MSO: Floating Point Precision for Planning Bucket Efficiency, 11-36, 11-37

MSO: Floating Point Precision for Planning Bucket Efficiency, A-82

MSO: Floating Point Precision for Transportation Capacities (Volume), A-82

MSO: Floating Point Precision for Transportation Capacities (Weight), A-82

MSO: Floating Point Precision for Usage in Routings, A-83

MSO: Generate Compression/Firming Exceptions for Orders in Progress, A-84

MSO: Generate Compression Days Exception, A-83

MSO: Generate Shared Supply Exceptions, 9-95, 9-117, A-84

MSO: Global Batchable Flag, A-85

MSO: Global Chargeable Flag, A-85

MSO: Global Time Limit, A-85

MSO: Heuristic type, 11-33, A-85

MSO: HLS flat files path, A-85

MSO: Improved Lead Time Offsetting in Aggregated Buckets, A-85

MSO: Incremental factor of internal cost roll up, A-86

MSO: Internal Demand Aggregation Within Optimization, A-86

MSO: Inventory Carrying Costs Percentage, A-86

MSO: Late Demands Exceptions Tolerance Minutes, 11-65, A-87

MSO: Lead Time Control, 9-38, 9-39, 9-90, 9-93, 11-54, 11-55, 11-55, A-87

MSO: List Size for Pricing Candidates, A-87

MSO: LP Constraint Batch Size, A-88

MSO: LP Markowitz Coefficient, A-88

MSO: LP Optimization Algorithm, A-88

MSO: Maximum Number of Prepones, A-92

MSO: Maximize Search of Availability Intervals, A-89

MSO: Maximum Activity Duration, A-89

MSO: Maximum Allowable Days Late, 11-63, 11-65, 11-65, 11-66, 11-66, A-90

MSO: Maximum Allowable Days Late before Forecast Expiration, 11-63, 11-63, 11-63, 11-64, 11-65, 11-65, 11-66, 11-66, 11-66, 11-67, A-90

MSO: Maximum Demands per Group, A-90

MSO: Maximum Demands per Group for Advanced Sequencing, A-91

MSO: Maximum Demands per Slice, 11-33, 11-33, A-91

MSO: Maximum Inventory Level % of Safety Stock, A-91

MSO: Maximum Number of Pull for Operation, A-92

MSO: Maximum Number of Pushes for Operation, A-93

MSO: Maximum Operations Per Slice, A-93

MSO: Maximum Resource Over-capacity, A-94

MSO: Maximum Simplex Iterations, A-94

MSO: Multiplier to derive supply allocation window, 10-123, 10-123

MSO: Multiplier to Derive Supply Allocation Window, 10-122, 10-123

MSO: Multiplier To Derive Supply Allocation Window, 10-124, 10-129, 10-133, A-94

MSO: Net All Firm Supplies Before Creating Planned Order, A-95

MSO: Net All Firm Supplies Before Creating Planned Orders, 6-127, 6-128

MSO: Network routing cycle time coefficient, A-96

MSO: Network Routing Cycle Time coefficient, 16-80, 16-81

MSO: Network routing fixed time window, A-96

MSO: Network Routing fixed time window, 16-80, 16-81

MSO: NFL Backward Compression Pct, A-96

MSO: NFL BACKWARD COMPRESSION PCT, 16-81

MSO: Nfl Forward Compression Pct, A-96  
 MSO: NFL FORWARD COMPRESSION PCT, 16-81  
 MSO: Number of Demand Groups for Optimization, A-97  
 MSO: Number of Threads for Optimization, A-97  
 MSO: Optimization Advanced Start, A-98  
 MSO: Optimization Daily Aggregation Buckets, A-98  
 MSO: Optimization Weekly Aggregation Buckets, A-98  
 MSO: Peg By-product Supplies, A-99  
 MSO: Penalty Basis for Changeovers, A-99  
 MSO: Penalty Cost Factor for Exceeding Item Material Capacity Flexfield Attribute, A-100  
 MSO: Penalty Cost Factor for Exceeding Material Capacity, 8-11, A-100  
 MSO: Penalty cost factor for exceeding material capacity (Organization) flexfield, 2-7  
 MSO: Penalty cost factor for exceeding material capacity (Supplier-Item) flexfield, 2-8  
 MSO: Penalty Cost Factor for Exceeding Material Capacity Flexfield Attribute, A-100  
 MSO: Penalty Cost Factor for Exceeding Org Material Capacity Flexfield Attribute, A-100  
 MSO: Penalty Cost Factor for Exceeding Org Resource Capacity Flexfield Attribute, A-100  
 MSO: Penalty Cost Factor for Exceeding Org Transportation Capacity Flexfield Attribute, A-100  
 MSO: Penalty Cost Factor for Exceeding Resource Capacity, 8-15, A-101  
 MSO: Penalty cost factor for exceeding resource capacity (Organization) flexfield, 2-7  
 MSO: Penalty cost factor for exceeding resource capacity (Resource) flexfield, 2-8  
 MSO: Penalty Cost Factor for Exceeding Resource Capacity Flexfield Attribute, A-101  
 MSO: Penalty cost factor for exceeding transportation capacity (Organization), 2-7  
 MSO: Penalty cost factor for exceeding transportation capacity flexfield attribute, 2-8  
 MSO: Penalty Cost Factor for Exceeding Transportation Capacity Flexfield Attribute, A-101  
 MSO: Penalty Cost Factor for Late Demands, 8-7, A-101  
 MSO: Penalty cost factor for late demands (Organization) flexfield attribute, 2-7  
 MSO: Penalty cost factor for late forecasts, 2-8  
 MSO: Penalty Cost Factor for Late Forecasts Flexfield Attribute, A-101  
 MSO: Penalty Cost Factor for Late Item Demands Flexfield Attribute, A-101  
 MSO: Penalty Cost Factor for Late Org Demands Flexfield Attribute, A-102  
 MSO: Penalty cost factor for late sales orders, 2-8  
 MSO: Penalty Cost Factor for Late Sales Orders Flexfield Attribute, A-102  
 MSO: Penalty multiplier outside unconstrained window, A-102  
 MSO: Preprocessing Aggregator Fill, A-102  
 MSO: Preprocessing Aggregator Limit, A-102  
 MSO: Preprocessing Flag for LP Matrix, A-102  
 MSO: Preprocessor LP Compression, A-102  
 MSO: Primal/Dual Preprocessing Reduction, A-102  
 MSO: Primal Simplex Parameter, A-102  
 MSO: Priority for substitute items flexfield attribute, 2-8  
 MSO: Pull push base, A-103  
 MSO: Pull push offset, A-103  
 MSO: Queue Time Factor, 11-66, 11-66, 21-73, A-103  
 MSO: Reschedule Jobs Out to Reduce Carrying Inventory, A-104  
 MSO: Reschedule Shared Supply to Influence Batching, A-104  
 MSO: Resource Adjustment Factor For Improved Offloading to Alternates, 21-47, 21-65, A-105  
 MSO: Resource Batching Strategy, A-105  
 MSO: Resource group for a line flexfield attribute, 2-8  
 MSO: Resource Group for the Line Flexfield Attribute, A-105  
 MSO: Schedule Across Breaks, A-106  
 MSO: Scheduler Time Step, A-106  
 MSO: schedule window width, A-106  
 MSO: SCO Dual Variables Tolerance, A-106  
 MSO: SCO Reduced Cost Tolerance, A-106  
 MSO: Setup Pattern Calculation Window, A-



- 105
  - MSO: Simplex Feasibility Tolerance, A-106
  - MSO: Simplex Optimality Tolerance, A-106
  - MSO: Simplex Perturbation Limit, A-107
  - MSO: Simplex Perturbation Parameter, A-107
  - MSO: Simplex Presolve Limit, A-107
  - MSO: Simplex Singularity Repair Limit, A-107
  - MSO: Simultaneous Resource Overlap, A-107
  - MSO: Slack Hours for Batch Resource, A-107
  - MSO: Solve Dual Problem, A-107
  - MSO: Sourcing Allocation Window, 6-75, A-108
  - MSO: Split Planned Orders for Assigned Units, A-108
  - MSO: Spread Resource Consumption Within Optimization, A-108
  - MSO: Substitute Item Penalty, A-109
  - MSO: Supply Reschedule Window Size for Safety Stock Pegging, A-109
  - MSO: Supply Window Size, 10-115, 10-116, 10-121, 10-122, 10-124, 10-133, A-109
  - MSO: Target Inventory Level % of Safety Stock, A-109
  - MSO: Use Breaks in Calculation of Unconstrained Scheduling Windows, 11-51, 11-57, A-110
  - MSO: Use Collections Start Time, A-111
  - MSO: Use Default Timestamp for Sales Orders, A-74
  - MSO: Use Item Shelf Life Days in Scheduling Buy or Make Orders, A-111
  - MSO: Use of Assigned Units in Scheduling, 11-12, 11-12, 11-14, 11-14, A-112
  - MSO: Use Optimization and Decision Rules for Simulation , A-112
  - MSO: Use SCO Time Aggregation, A-113
  - MSO: Use Sequencing Template, A-113
  - MSO: Use Shift Definitions When Scheduling Lead Times, A-114
  - MSO --> PROFILE OPTIONS, A-64
  - MSR: Budget Category Set, A-114
  - MSR: Postponement Factor, A-114
  - MSR: Probability Distribution Type, A-115
  - MSR: Safety Stock Holding Strategy, A-115
  - MSR --> PROFILE OPTIONS, A-114
  - special considerations, A-1
  - profile options
    - MSC: Smoothing method to calculate Safety stock, 6-173
  - Project MRP
    - Oracle ASCP setup, 16-31
    - Oracle Inventory setup, 16-31
    - Oracle Project Manufacturing setup, 16-31
  - projects/tasks and Seiban numbers, 4-5
  - projects/tasks exception group, 9-103
  - project workflow, 3-8
  - publish a schedule to ASCP, 17-26
  - publishing a strategic plan, 18-14
  - publish plan results to Oracle Order Management, 6-37
    - example, 6-41
  - pull architecture, 4-4
  - purchased item lead-time calculations, 6-121
  - purchase order
    - Oracle Purchasing, 21-90
    - supplier acknowledgement, 21-89
  - purchase orders
    - planning time fence logic, 6-129
  - purchase requisitions
    - planning time fence logic, 6-129
  - Purge Collaborative Planning Historical Records (concurrent process), 22-64
  - Purge Designator (concurrent process), 22-65
  - Purge Interface Tables (concurrent process), 22-65
  - Purge Legacy Data (concurrent process), 22-66
  - Push Plan Information (concurrent process), 22-67
- ## R
- 
- rank and allocation
    - setting, 6-61
  - Realign Operational Data Stores Dates (concurrent process), 22-72
  - receipts
    - scheduled, 6-188
  - reciprocal-unidirectional and bidirectional substitution, 21-18
  - recommendations exception group, 9-112
  - Recommendations exception message, 9-113
  - Refresh Allocation Hierarchy Materialized View (concurrent process), 22-72
  - Refresh Collection Snapshots (concurrent

- process), 22-73
- Refresh Global Forecast Materialized Views (concurrent process), 22-74
- Refresh KPI Summary Data (concurrent process), 22-74
- Refresh Materialized Views (concurrent process), 22-75
- Register Ask Oracle Planning Question (concurrent process), 22-75
- related exceptions, 9-11
  - drill down, 10-70
- related exceptions for the late replenishment viewing, 10-70
- release flow schedules, 16-39
- releasing orders, 3-11
- repetitive schedules
  - planning time fence logic, 6-130
- reports, 22-1, 22-27
  - Planning Detail, 22-14
- request date, 6-131
- Requirement causes resource overload exception message, 9-32
- requirement integer quantities, 11-7, 16-69
- Requirement lead time constraint exception message, 9-41
- requirements
  - integer quantities, 11-7, 16-69
- Requirement with insufficient lead time exception message, 9-39
- rescheduled purchase order
  - supplier acknowledgement, 21-89
- reschedules exception group, 9-78
- rescheduling an operation, 10-210
- rescheduling discrete jobs
  - data consistency, 11-20
- rescheduling non-firm open job, 11-20
- rescheduling workflow, 3-7
- resize windows, 10-54
- resolving conflict between item attributes and profile options, 21-19
- resolving exceptions, 9-114
- resource actual usage, 11-17
- resource aggregation, 5-103
- resource aggregation levels
  - choosing, 5-102
  - setting for a time horizon, 5-103
- Resource Availability (Details) window, 10-167
  - description of fields, 10-168
- Resource Availability Summary window, 10-165
  - buttons, 10-167
  - description of fields, 10-166
- resource breaks, 6-82
- Resource constraint exception message, 9-52, 9-89, 9-91, 9-92, 9-94, 9-95
- resource efficiency, 11-17
  - planner workbench, 11-18
- resource engine
  - planning engine, 11-18
- resource group
  - bottleneck, 5-53
- resource hours, 11-18
- Resource overloaded exception message, 9-54
- resource precedence constraints, 9-129
- Resource Requirements window, 10-169, 10-171
- resources, 16-52
  - aggregate, 16-6
  - decreasing, 5-110
  - efficiency, 11-17
  - modifying, 3-10
  - selecting to plot, 10-207
  - simultaneous, 16-6
  - utilization, 11-17
  - viewing, 10-207
- Resources
  - scheduling resource charges, 16-53
- resource schedule
  - modeling, 6-78
- Resources window, 10-161
  - buttons, 10-165
  - right-click menu options, 10-165
- resource tool tip
  - accessing, 10-207
- Resource underloaded exception message, 9-58
- resource units
  - one-to-one basis
    - assigning, 6-107
- resource usage, 11-18
  - and Oracle Manufacturing scheduling, 11-18
  - collections, 11-18
  - deflating, 11-18
  - discrete jobs, 11-18
  - inflating, 11-17, 11-18
- resource utilization, 11-17
  - planner workbench, 11-18

- resource warehouse, 16-43
- review constrained forecast, 3-11
- reviewing exception messages, 3-6
- reviewing KPIs, 3-5
- review workflow notifications, 3-7
- Rollup Cumulative Lead Time concurrent process, 6-113
- rounding order quantities, 11-6
- round order quantities, 11-7
- routing
  - Operation Resource Schedule flag, 6-78
- routing aggregation level
  - setting for a time horizon, 5-104
- routing effectivity, 16-6
- Routing Operations window, 10-181
- routings, 11-10, 16-43, 16-44
  - alternate resources, 6-101
  - minimum transfer quantity, 6-79
  - multiple resources, 6-105
  - multiresource scheduling, 6-105
  - network, 16-79
  - setting up, 6-78
  - simultaneous resources, 6-101
- rules
  - demand priority, 5-95
- running a batch replan, 7-4
- running a global supply chain plan, 5-2
  - prerequisites, 5-2
- running an online replan, 7-5
- running an optimized plan, 3-8
- running an unconstrained plan, 3-9
- running a production schedule, 17-23
- running a production schedule with ASCP, 17-3
- running a production schedule without ASCP, 17-7
- running a strategic plan, 18-12
- running the Audit Statements report, 22-1

## S

---

- safety stock
  - supply/demand window, 10-94
- safety stock, 6-167, 11-4, 12-11
  - constrained - enforce demand due dates plans, 11-59
  - co-products, 16-9
  - exception message, 9-73

- horizontal plan, 10-89
- inventory optimization, 6-169
- levels, 6-169
- mean absolute deviation (MAD), 6-169
- mrp planned, 6-169
- non-mrp planned, 6-169
- plan option, 5-55
- project manufacturing, 16-24
- safety stock window, 10-158
- user-defined percentage, 6-169
- user-defined quantity, 6-169
- safety stock
  - pegging, 10-133
- safety stocks, 11-4
- Safety Stock window, 10-158
- Sales order/forecast at risk due to material shortage exception message, 9-31
- Sales order/forecast at risk due to resource shortage exception message, 9-29
- Sales order/forecast at risk exception message, 9-17
- sales orders
  - configure to order, 19-2
- sales order workflow, 3-8
- saving actions, 7-7
- Schedule, 4-27
- scheduled receipts, 6-188
- scheduling
  - bottleneck resource group, 5-53
  - discrete jobs, 6-160
  - discrete jobs in constrained - enforce capacity constraints plan, 6-163
  - discrete jobs in constrained - enforce demand due dates plan, 6-165
  - discrete jobs in unconstrained plan, 6-161
  - discrete jobs with firm operations and orders, 6-166
- Scheduling Resource Charges
  - view resource charge information, 16-56
- SCP names window, 5-4
- search direction and transferring demands, 21-34
- search the supply chain for substitution, 21-14
- security, 21-75
- Seiban numbers, 4-5
- selecting resources to plot, 10-207
- selection of alternates for OSFM, 21-59
- self-service application, 4-46

- Send XML Releases to Legacy Sources (concurrent process), 22-75
- sequence dependent setups, 11-68
  - discrete manufacturing, 11-68
  - planning, 11-74
  - process manufacturing, 11-73
  - viewing changeover times and preferred sequence, 11-76
  - viewing plan results, 11-77
- sequence dependent steps, 11-20
- serial numbers, 16-22
- service level, 21-84
- set schedule options
  - for strategic plans, 18-8
- setting hard and soft constraints, 11-28
- setting penalty factor for exceeding material capacity
  - hierarchy, 8-8
- setting penalty factor for exceeding resource capacity
  - hierarchy, 8-12
- setting penalty factor for late demand
  - hierarchy, 8-3
- setting resource aggregation levels, 5-103
- setting schedule options
  - for production schedules, 17-11
- setting the material aggregation level for a time horizon, 5-104
- setting the resource aggregation levels for a time horizon, 5-103
- setting the routing aggregation level for a time horizon, 5-104
- setting up
  - Application Instances window, 2-11
  - Organization window, 2-12
- setting up distribution planning, 12-1
- Setting up Routings
  - setting up resource charge scheduling, 16-55
- set up
  - destination instance, 2-10
  - flowchart, 2-4
  - source instance, 2-5
- setup data control files, C-1
- setup for collection of transaction data, 4-32
- shared supplies constraint, 11-45
- shifts, 11-15
  - capacity changes, 11-16
- shift time constraint, 11-34
- ship date, 6-138
- ship method selection
  - distribution planning, 14-2
- shop floor manufacturing
  - co-products, 16-64
- shortages and excess exception group, 9-73
- simulate possible substitution, 21-26
- simulations
  - changing, 7-7
  - comparison, 7-11
  - key performance indicators, 7-11
  - modes, 7-2
  - net change replan, 7-3, 7-4
  - overview, 7-1
  - reversing, 7-7
  - scenarios, 7-1
  - undo, 7-7
- simulation scenarios
  - demands, 7-2
  - resource availability, 7-1
  - shutdown planning, 7-2
  - supplier capacity, 7-1
  - supplies, 7-2
- simultaneous resources, 16-6
- single-plan approach
  - advantages, 5-3
- sorting exceptions, 9-9, 10-68
- Sort Table window, 22-26
- source instance, 20-1
  - setup, 2-5
- sources of demand, 3-4
  - specifying, 3-4
- Sources window, 10-151, 10-152
  - Assignment tabbed pane, 10-154
  - buttons, 10-154
  - Effectivity Dates tabbed pane, 10-153
  - Sourcing tabbed pane, 10-152
- sourcing assignment hierarchy
  - viewing, 6-194
- sourcing constraints
  - tolerance fences, 11-26
- sourcing percentages
  - splitting demand according to, 6-61
- sourcing rules
  - defining, 6-45
  - supply chain, 6-45

- viewing, 6-193
- specifying sources of demand, 3-4
- split planned order
  - sizing and timing, 11-43
- split planned orders constraint, 11-42
- splitting demand according to sourcing percentages, 6-61
- standard data collection, 4-3
  - running, 4-10
  - setting up, 4-17
- start date, 6-112
- stopping an online planner session, 7-6
- Strategic Network Optimization
  - architecture, 18-2
  - business process, 18-2
- strategic plans, 18-1
  - create a new plan using the Workbench, 18-6
  - publishing a plan, 18-14
  - running a plan, 18-12
  - setting profile options, 18-5
  - setting schedule options, 18-8
- subset planning
  - pitfalls, 5-9
  - scenarios, 5-7
- subset plans
  - hub and spoke planning, 5-10
- substitute components, 11-4
- substitutes and alternates used exception group, 9-97
- Substitution Chain window, 10-160
  - right-click menu options, 10-160
- substitution logic, 21-14
- suggested dates
  - planned order, 11-37
- suggested dock date, 6-115, 6-137
  - manufacturing calculation, 6-119
  - purchasing calculation, 6-122
  - transfer calculation, 6-123
- suggested due date, 6-115, 6-132, 6-137
  - manufacturing calculation, 6-118
  - purchasing calculation, 6-121
- suggested order date, 6-116, 6-136
  - manufacturing calculation, 6-119
  - purchasing calculation, 6-122
  - transfer calculation, 6-123
- suggested ship date, 6-115
  - manufacturing calculation, 6-119
  - purchasing calculation, 6-122
  - transfer calculation, 6-123
- suggested start date, 6-115, 6-137
  - manufacturing calculation, 6-119
  - purchasing calculation, 6-122
  - transfer calculation, 6-123
- supplier
  - supplier organization
    - external supplier organization, 20-17
- supplier acknowledgement, 21-89
- supplier capacity, 7-1
  - accumulation, 6-48
  - constraints, 6-47
  - procured models, 19-10
  - purchase order consumption, 6-50
  - setting, 6-47, 6-59
  - setting by time periods, 6-60
- Supplier capacity overloaded exception message, 9-56
- Supplier Capacity window, 10-154, 10-155
  - description of fields, 10-155
  - Supplier Capacity tabbed pane, 10-157
  - Supplier Flexfences tabbed pane, 10-157
  - viewing, 10-154
- supplier collaboration, 21-92
  - automation
    - setup, 21-92
    - triggering launch of plan, 21-93
- suppliers
  - modeled as organizations, 10-221
- Supplier split percentage violated exception message, 9-108
- Supplier Variability window, 10-158
- supplies control files, C-4
- supply
  - pegging, 3-8
- supply allocation rules, 12-27
- supply and demand
  - modifying, 3-9
- supply chain
  - assignment sets, 6-46
  - sourcing rules, 6-45
  - viewing, 6-193
- supply chain bill
  - illustration, 19-5
- Supply Chain Event Manager (concurrent process), 22-76

- supply chain modeling, 6-1, 20-3
  - allocating demand to suppliers, 6-61, 6-63
  - Audit Statements report, 22-1
  - batch resources, 6-189
  - customers, 20-7
  - intransit lead-time, 20-4
  - lead-times, 6-110
  - planned inventory points, 11-77
  - planning server tasks, 6-194
  - planning time fence, 6-110
  - routings, 6-78
  - See also supply chain, 6-1
  - sourcing, 20-5
  - sourcing splits, 6-73
  - supplier capacity, 6-47
  - suppliers, 20-7
  - supply chain definition, 6-45
  - viewing the supply chain, 6-193
- supply chain or where used information
  - viewing, 10-175
- supply chain plan
  - attaching a priority rule, 5-97
  - copy a plan, 5-6
  - creating, 5-3
- Supply Chain Plan Names form
  - security, 21-78
- supply chain routing
  - planning level, 9-131
- supply chain synchronization, 16-37
- supply control files, C-4
- supply dates
  - demand due date, 6-122
  - need by date, 6-115, 6-118, 6-121, 6-122, 6-135, 6-136
  - old dock date, 6-116, 6-138
  - old due date, 6-116, 6-137
  - original need by date, 6-116
  - production duration, 6-119, 6-122
  - ship date, 6-138
  - suggested dock date, 6-115, 6-119, 6-122, 6-123, 6-137
  - suggested due date, 6-115, 6-118, 6-121, 6-137
  - suggested order date, 6-116, 6-119, 6-122, 6-123, 6-136
  - suggested ship date, 6-115, 6-119, 6-122, 6-123
  - suggested start date, 6-115, 6-119, 6-122, 6-123, 6-137

- updated need by date, 6-135, 6-136
  - viewing in workbench, 6-116, 6-135
- supply problems for late sales orders and forecasts exception group, 9-26
- supported configurations, 4-6

## T

---

- tabs
  - Action, 7-7
  - Constraints, 11-27, 11-28
  - Optimization, 8-7, 8-11, 8-15
- tailoring the user interface, 10-54
  - Planner Workbench, 10-55
    - customize columns, 10-55
    - display preferences, 10-56
- target inventory level, 12-11
- time aggregation levels
  - choosing, 5-100
- tolerance fences
  - sourcing constraints, 11-26
- total lead-time, 6-114
- touchtime, 11-18
- transaction data collection, 4-32
- transfer item lead-time calculations, 6-122
- transfer of demands on to substitute supplies, 21-27
- transportation and distribution exception group, 9-65
- transportation capacity
  - flexfields, B-3
- Transportation resource's volume overloaded exception message, 9-71
- Transportation resource's weight overloaded exception message, 9-69
- Transportation resource constraint exception message, 9-66, 9-67
- trip limit constraints, 12-7
- trip limits for ship methods by lane, 12-7

## U

---

- unconstrained plan
  - running, 3-9
  - See also plan types, 3-9
- undoing your actions, 7-7
- unit numbers in sales orders, 16-22
- unit of measure, 16-43

- updated need by date, 6-135, 6-136
- user-defined alternate decision rules, 21-43
  - constrained plans, 21-43
  - examples of how user-defined alternate decision rules are used, 21-55
  - exception messages, 21-74
  - lead-times, 21-73
  - optimized plans, 21-62
  - pegging, 21-74
  - planning search logic, 21-62
  - search logic, 21-66
  - selection of alternates for OSFM, 21-59
  - simulations, 21-62
- user-defined keys, C-5
- use-up effectivity date, 11-59
- using an existing plan as a demand schedule for new plan, 5-58
- utilization, 11-17

## V

---

- variable lead-time, 6-111, 6-113
- Vertical Plan Worksheet window, 22-27
- viewing actions, 7-7
- viewing exception details, 9-9, 10-69
- viewing exceptions
  - exceptions
    - expanding all actions, 10-65
    - viewing, 10-60
- viewing pegging information, 10-139
- viewing plan comparisons, 22-7
- viewing related exceptions for the late replenishment, 10-70
- viewing substitution display, 21-10
- viewing supply chain or where used information, 10-175
- viewing the Audit Statements report, 22-3
- viewing undo summary for a plan, 7-7
- VMI Replenishment Engine (concurrent process), 22-79

## W

---

- Where Used window, 10-184
- window
  - Load Transaction Data Parameters, 4-55
  - Planner Workbench
    - Compare Plans, 22-8

- Planning Data Collections, 4-53
- Planning ODS Load Parameters, 4-56
- Pre-Process Transaction Data Parameters, 4-56
- Supplier Capacity, 10-154, 10-155
  - description of fields, 10-155
  - Supplier Capacity tabbed pane, 10-157
  - Supplier Flexfences tabbed pane, 10-157
  - viewing, 10-154
- Supplier Variability, 10-158
- window for substitution, 21-20
- windows
  - Application Instances, 4-41
  - Bill of Distribution, 21-50
  - Collection Workbench, 4-18
  - Components, 10-178, 10-179
  - continuous collections, 4-27
  - Continuous Collections, 4-26
    - Requests, 4-29
  - co-product, 10-185
  - Data Pull Parameters, 4-11
  - Define Priority Rule, 5-96
  - Demand, 21-40
  - Destinations, 10-148, 10-149
    - Assignment tabbed pane, 10-150
    - Effectivity tabbed pane, 10-150
    - Sourcing tabbed pane, 10-149
  - Exception Details, 9-10, 10-69, 21-39
  - Exception Summary, 9-8, 10-60, 10-69
  - Find, 10-39, 10-203
  - Firm Option, 10-210
  - Flat File Loader Parameters, 4-43
  - Gantt: Right-click menu options, 10-205
  - Gantt Chart, 10-198
  - Horizontal Plan, 10-72
  - Item Details Worksheet, 22-25
  - Item Forecast Entries, 8-5
  - Item Relationships, 21-4
  - Items, 10-142, 10-143, 21-11
    - buttons, 10-147
    - description of fields, 10-143
    - right-click menu options, 10-148
    - viewing, 10-142
  - Key Performance Indicators (KPIs), 10-189
  - Key Performance Indicators (KPIs) trend chart, 10-191
  - MRP Forecast Dates, 8-5
  - Multiple Plans Comparison, 7-12

- Network Routing, 10-183
- ODS Load Parameters, 4-15
- online planner status, 7-5
- Operation Alternate Resources, 21-53
- operation resources, 6-79
- parameters, 22-2
- Parameters, 20-17
- Pegging, 16-33
- pegging information, 10-216
- Planner Workbench, 10-2
- Planning Data Collection, 4-10
- Planning Details - Substitute, 21-5
- Planning Exception Sets, 9-6
- Planning ODS Load Parameters, 4-45
- Plan Options, 20-10, 21-45, 21-63
  - Constraint tab, 11-27
- Preferences, 16-18
  - Other tabbed pane, 10-68
- Pre-Process Monitor Parameters, 4-44
- Process Effectivity, 10-185
- Properties, 10-36, 10-37, 10-206
- Purge Parameters, 4-48
- Reschedule, 10-209
- Resource Availability, 9-32
- Resource Availability (Details), 10-167
  - description of fields, 10-168
  - updating resource availability, 10-169
- Resource Availability Summary window, 10-165
  - buttons, 10-167
  - description of fields, 10-166
- resource capacity, 10-212
- Resource Requirements, 10-169, 10-171
- Resources, 10-161
  - buttons, 10-165
  - right-click menu options, 10-165
- Resources, 6-190
- Resource Tool Tip, 10-207
- Revised Items, 11-62
- Routing Details, 21-54
- Routing Operations, 10-181
- routings, 6-89
- Safety Stock, 10-158
- Schedule, 4-17
- SCP Names, 5-4
- Sort Table, 22-26
- Sources, 10-151, 10-152
  - Assignment tabbed pane, 10-154
  - button, 10-154
  - Effectivity Dates tabbed pane, 10-153
  - Sourcing tabbed pane, 10-152
- sourcing rule, 6-74
- Sourcing Rule, 20-7, 21-49
- Subinventory Netting, 5-59
- Substitute Component Information, 21-51
- Substitution Chain, 10-160, 21-12
  - right-click menu options, 10-160
- substitution Properties, 21-13
- supplier, 6-61
- Supplier Capacity Adjustment, 9-30
- Supply/Demand, 10-92
- Supply/Demand for Unit Effective Items, 16-23
- Supply/Demand window, 10-93
- system profile values, 6-75
- System Profile Values, 8-8, 8-12, 8-16, 11-40
- Time Buckets, 10-208
- two views, 10-217
- Vertical Plan Worksheet, 22-27
- Where Used, 10-184
- WIP mass/load PO requisitions interface, 16-23
- workflow for planning and edit-item-level substitution, 21-41
- workflow notifications, 3-7
- workflows
  - See also Oracle Workflow, 3-7, 3-7, 3-8, 3-8, 3-8
- work orders
  - firm, 11-45
- worksheets
  - Planning Detail Report, 22-19