

# **Oracle® Advanced Planning**

Implementation and User's Guide

Release 11*i*

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Oracle Advanced Planning Implementation and User's Guide, Release 11i

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**Oracle Advanced Planning Implementation and User's Guide, Release 11i**

**Part No. B10144-05**

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

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# Preface

Welcome to the Oracle Advanced Planning Implementation and User's Guide, Release 11*i*.

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

- The principles and customary practices of your business area.
- Oracle Self-Service Web Applications.

To learn more about Oracle Self-Service Web Applications, read the *Oracle Self-Service Web Applications Implementation Manual*.

- The Oracle Applications graphical user interface.

To learn more about the Oracle Applications graphical user interface, read the *Oracle Applications User's Guide*.

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

See [Other Information Sources](#) for more information about Oracle Applications product information.

## How To Use This Guide

The Oracle Advanced Planning Implementation and User's Guide contains the information you need to understand and use Oracle Advanced Planning. This guide contains 16 chapters and three appendices:

- [Chapter 1](#) provides an overview of Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization.
- [Chapter 2](#) describes setup tasks.
- [Chapter 3](#) describes Oracle Advanced Planning suite information flows and the relationship of planner tasks and Oracle Advanced Supply Chain Planning functions.
- [Chapter 4](#) describes the collections architecture and process.
- [Chapter 5](#) describes the types of plans and how to set them up.
- [Chapter 6](#) describes how to set up the supply chain.
- [Chapter 7](#) describes how to simulate plan changes.
- [Chapter 8](#) describes optimized plans.
- [Chapter 9](#) describes exception messages.
- [Chapter 10](#) describes the Planner Workbench form.
- [Chapter 11](#) describes constrained plans.
- [Chapter 12](#) describes how to plan in various manufacturing environments.
- [Chapter 13](#) describes configure-to-order planning.
- [Chapter 14](#) describes cross-instance planning.
- [Chapter 15](#) describes Oracle Inventory Optimization.
- [Chapter 16](#) describes various other functionality.
- [Appendix A](#) describes all profile options in the Oracle Advanced Planning suite.
- [Appendix B](#) describes flexfields.
- [Appendix C](#) describes control files and user-defined keys.

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You can choose from many sources of information, including documentation, training, and support services, to increase your knowledge and understanding of Oracle Advanced Planning.

If this guide refers you to other Oracle Applications documentation, use only the Release 11*i* versions of those guides.

### Online Documentation

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- **PDF Documentation**- See the Online Documentation CD for current PDF documentation for your product with each release. This Documentation CD is also available on Oracle*MetaLink* and is updated frequently.
- **Online Help** - You can refer to Oracle Applications Help for current HTML online help for your product. Oracle provides patchable online help, which you can apply to your system for updated implementation and end user documentation. No system downtime is required to apply online help.
- **Release Content Document** - See the Release Content Document for descriptions of new features available by release. The Release Content Document is available on Oracle*MetaLink*.
- **About document** - Refer to the About document for information about your release, including feature updates, installation information, and new documentation or documentation patches that you can download. The About document is available on Oracle*MetaLink*.

### Related Guides

Oracle Advanced Planning shares business and setup information with other Oracle Applications products. Therefore, you may want to refer to other guides when you set up and use Oracle Advanced Planning.

You can read the guides online by choosing Library from the expandable menu on your HTML help window, by reading from the Oracle Applications Document Library CD included in your media pack, or by using a Web browser with a URL that your system administrator provides.

If you require printed guides, you can purchase them from the Oracle Store at <http://oraclestore.oracle.com>.

## **Guides Related to All Products**

### **Oracle Applications User's Guide**

This guide explains how to enter data, query, run reports, and navigate using the graphical user interface (GUI). This guide also includes information on setting user profiles, as well as running and reviewing reports and concurrent processes.

You can access this user's guide online by choosing "Getting Started with Oracle Applications" from any Oracle Applications help file.

## **Guides Related to This Product**

### **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 11/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**

This guide describes how to validate a material plan by verifying that there are resources sufficient to perform the planned work for repetitive and discrete jobs. Using finite capacity planning techniques, you learn how to use rough-cut capacity planning to validate a master schedule and capacity planning to validate the material plan.

### **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 Demand Planning Installation and Configuration Guide**

This guide describes the information that you need to install Oracle Demand Planning.

### **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 API's 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 API's 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 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 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.

# Installation and System Administration

## **Oracle Applications Concepts**

This guide provides an introduction to the concepts, features, technology stack, architecture, and terminology for Oracle Applications Release 11*i*. It provides a useful first book to read before an installation of Oracle Applications. This guide also introduces the concepts behind Applications-wide features such as Business Intelligence (BIS), languages and character sets, and Self-Service Web Applications.

## **Installing Oracle Applications**

This guide provides instructions for managing the installation of Oracle Applications products. In Release 11*i*, much of the installation process is handled using Oracle Rapid Install, which minimizes the time to install Oracle Applications and the Oracle technology stack by automating many of the required steps. This guide contains instructions for using Oracle Rapid Install and lists the tasks you need to perform to finish your installation. You should use this guide in conjunction with individual product user guides and implementation guides.

## **Oracle Applications Implementation Wizard User Guide**

If you are implementing more than one Oracle product, you can use the Oracle Applications Implementation Wizard to coordinate your setup activities. This guide describes how to use the wizard.

## **Upgrading Oracle Applications**

Refer to this guide if you are upgrading your Oracle Applications Release 10.7 or Release 11.0 products to Release 11*i*. This guide describes the upgrade process and lists database and product-specific upgrade tasks. You must be either at Release 10.7 (NCA, SmartClient, or character mode) or Release 11.0, to upgrade to Release 11*i*. You cannot upgrade to Release 11*i* directly from releases prior to 10.7.

## **“About” Document**

For information about implementation and user documentation, instructions for applying patches, new and changed setup steps, and descriptions of software updates, refer to the “About” document for your product. “About” documents are available on *OracleMetaLink* for most products starting with Release 11.5.8.

## **Maintaining Oracle Applications**

Use this guide to help you run the various AD utilities, such as AutoUpgrade, AutoPatch, AD Administration, AD Controller, AD Relink, License Manager, and others. It contains how-to steps, screenshots, and other information that you need to run the AD utilities. This guide also provides information on maintaining the Oracle applications file system and database.

## **Oracle Applications System Administrator's Guide**

This guide provides planning and reference information for the Oracle Applications System Administrator. It contains information on how to define security, customize menus and online help, and manage concurrent processing.

## **Oracle Alert User's Guide**

This guide explains how to define periodic and event alerts to monitor the status of your Oracle Applications data.

## **Oracle Applications Developer's Guide**

This guide contains the coding standards followed by the Oracle Applications development staff and describes the Oracle Application Object Library components that are needed to implement the Oracle Applications user interface described in the *Oracle Applications User Interface Standards for Forms-Based Products*. This manual also provides information to help you build your custom Oracle Forms Developer forms so that the forms integrate with Oracle Applications.

## **Oracle Applications User Interface Standards for Forms-Based Products**

This guide contains the user interface (UI) standards followed by the Oracle Applications development staff. It describes the UI for the Oracle Applications products and how to apply this UI to the design of an application built by using Oracle Forms.

## **Other Implementation Documentation**

### **Oracle Applications Product Update Notes**

Use this guide as a reference for upgrading an installation of Oracle Applications. It provides a history of the changes to individual Oracle Applications products between Release 11.0 and Release 11*i*. It includes new features, enhancements, and changes made to database objects, profile options, and seed data for this interval.

## **Oracle Workflow Administrator's Guide**

This guide explains how to complete the setup steps necessary for any Oracle Applications product that includes workflow-enabled processes, as well as how to monitor the progress of runtime workflow processes.

## **Oracle Workflow Developer's Guide**

This guide explains how to define new workflow business processes and customize existing Oracle Applications-embedded workflow processes. It also describes how to define and customize business events and event subscriptions.

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

This guide describes how Oracle Applications users can view and respond to workflow notifications and monitor the progress of their workflow processes.

## **Oracle Workflow API Reference**

This guide describes the APIs provided for developers and administrators to access Oracle Workflow.

## **Oracle Applications Flexfields Guide**

This guide provides flexfields planning, setup and reference information for the Oracle Advanced Planning implementation team, as well as for users responsible for the ongoing maintenance of Oracle Applications product data. This guide also provides information on creating custom reports on flexfields data.

## **Oracle eTechnical Reference Manuals**

Each eTechnical Reference Manual (eTRM) contains database diagrams and a detailed description of database tables, forms, reports, and programs for a specific Oracle Applications product. This information helps you convert data from your existing applications, integrate Oracle Applications data with non-Oracle applications, and write custom reports for Oracle Applications products. Oracle eTRM is available on Oracle *Metalink*

## **Oracle Applications Message Manual**

This manual describes all Oracle Applications messages. This manual is available in HTML format on the documentation CD-ROM for Release 11i.

# Training and Support

## Training

Oracle offers a complete set of training courses to help you and your staff master Oracle Advanced Planning and reach full productivity quickly. These courses are organized into functional learning paths, so you take only those courses appropriate to your job or area of responsibility.

You have a choice of educational environments. You can attend courses offered by Oracle University at any one of our many education centers, you can arrange for our trainers to teach at your facility, or you can use Oracle Learning Network (OLN), Oracle University's online education utility. In addition, Oracle training professionals can tailor standard courses or develop custom courses to meet your needs. For example, you may want to use your organization structure, terminology, and data as examples in a customized training session delivered at your own facility.

## Support

From on-site support to central support, our team of experienced professionals provides the help and information you need to keep Oracle Advanced Planning working for you. This team includes your technical representative, account manager, and Oracle's large staff of consultants and support specialists with expertise in your business area, managing an Oracle server, and your hardware and software environment.

## 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 Oracle Applications 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.

## About Oracle

Oracle develops and markets an integrated line of software products for database management, applications development, decision support, and office automation, as well as Oracle Applications, an integrated suite of more than 160 software modules for financial management, supply chain management, manufacturing, project systems, human resources and customer relationship management.

Oracle products are available for mainframes, minicomputers, personal computers, network computers and personal digital assistants, allowing organizations to integrate different computers, different operating systems, different networks, and even different database management systems, into a single, unified computing and information resource.

Oracle is the world's leading supplier of software for information management, and the world's second largest software company. Oracle offers its database, tools, and applications products, along with related consulting, education, and support services, in over 145 countries around the world.

## Your Feedback

Thank you for using Oracle Advanced Planning and this user guide.

Oracle values your comments and feedback. In this guide is a reader's comment form that you can use to explain what you like or dislike about Oracle Advanced Planning or this user guide. Send comments to us in by electronic mail on [appsdoc\\_us@oracle.com](mailto:appsdoc_us@oracle.com).





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# Overview

This chapter includes:

- [Oracle Advanced Planning Suite](#) on page 1-2
- [Oracle Advanced Supply Chain Planning](#) on page 1-3
- [Oracle Inventory Optimization](#) on page 1-5

## 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

This document covers Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization.

## 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 combination of Oracle 11 and Oracle 11*i* 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.

## Oracle Inventory Optimization

Oracle Inventory Optimization is a comprehensive, Internet-based inventory planning solution that determines, on the basis of demand, supply and lead-time variabilities, when and where to hold inventories across the supply chain and extended supply chain so as to attain desired customer service levels. Oracle Inventory Optimization is a strategic planning tool that addresses the following key business issues:

- How can I improve customer service while reducing inventory?
  - How can I make inventory postponement decisions?
  - How can I manage demand and supply variability?
- How can I identify my strategic sources?

Key capabilities of Oracle Inventory Optimization are:

- Considers Demand and Supply lead time variability. Oracle's exclusive stochastic optimization technology allows the interdependence of demand and supplier lead time variabilities to be accounted for when generating time-phased safety stock recommendations.
- What-if Capability. Oracle Inventory Optimization allows multiple inventory planning scenarios (featuring, for example, different sets of customer service levels, different demand/supply variabilities) to be quickly evaluated, and the results to be graphically compared.
- Integration to Oracle Advanced Supply Chain Planning. The safety stock recommendations of Oracle Inventory Optimization can be automatically fed into Oracle Advanced Supply Chain Planning to drive tactical supply chain planning decisions.



This chapter includes:

- [Setup Overview](#) on page 2-2
- [Hardware Configuration](#) on page 2-3
- [Setup Flowchart](#) on page 2-8
- [Setup Steps for the Source](#) on page 2-10
- [Setup Steps for the Destination](#) on page 2-15

## Setup Overview

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

Set up for Oracle Demand Planning and Oracle Global Order Promising is briefly covered for the sake of completeness, but is described fully in the *Oracle Demand Planning Installation and Configuration Guide* and the *Oracle Global Order Promising User's Guide*.



## 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 multi-dimensional 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 if the source is Oracle Applications Release 11.0 or 11*i*. The planning server is an 11*i* instance.

Both source and destination database instances must be on the same major release of the Oracle database; see [Setup Flowchart](#) on page 2-8.

### 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.

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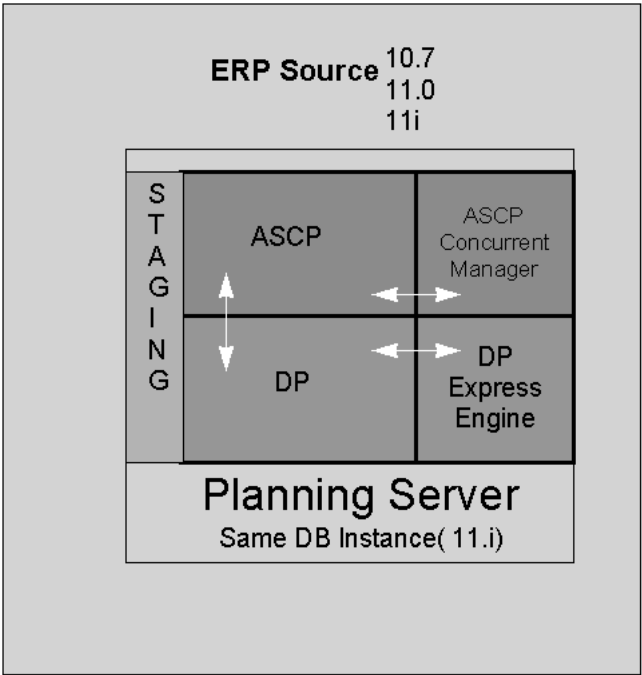
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**Note:** ASCP means Advanced Supply Chain Planning and DP means Demand Planning.

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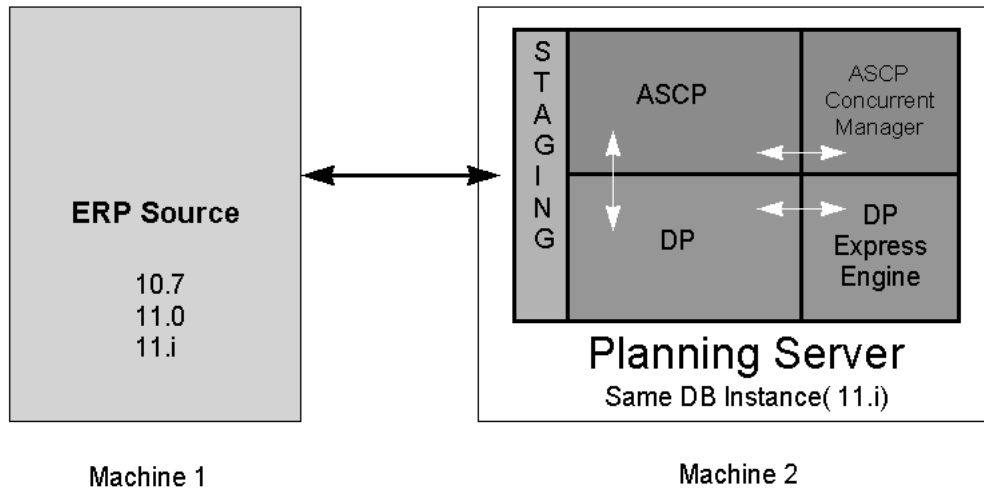
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**Figure 2–1 Single Machine Deployment Configuration**



**Two-Machine Implementation**

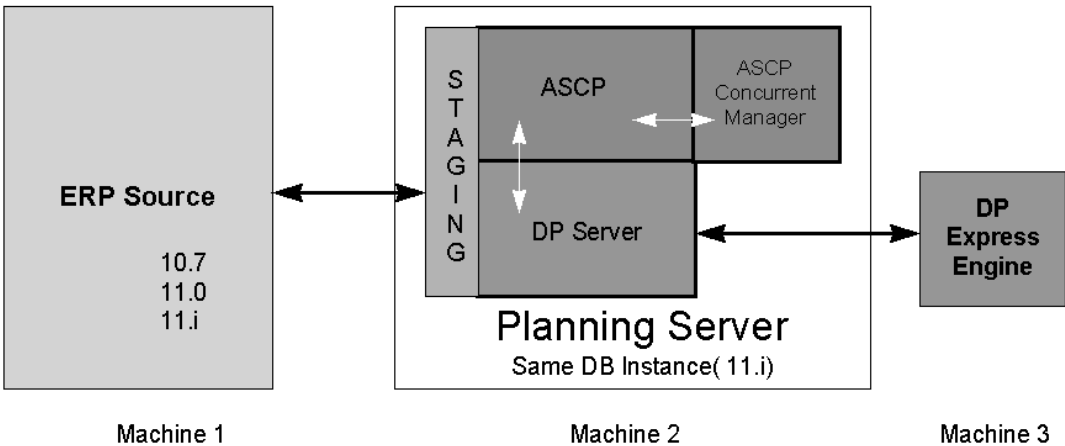
For larger implementations where system throughput is more important, the various instances can be deployed on separate machines. A two-machine deployment configuration is appropriate when the size of the demand planning data is relatively small. The following figure illustrates this configuration.

**Figure 2–2 Two-machine Deployment Configuration**

### Three-Machine Implementation

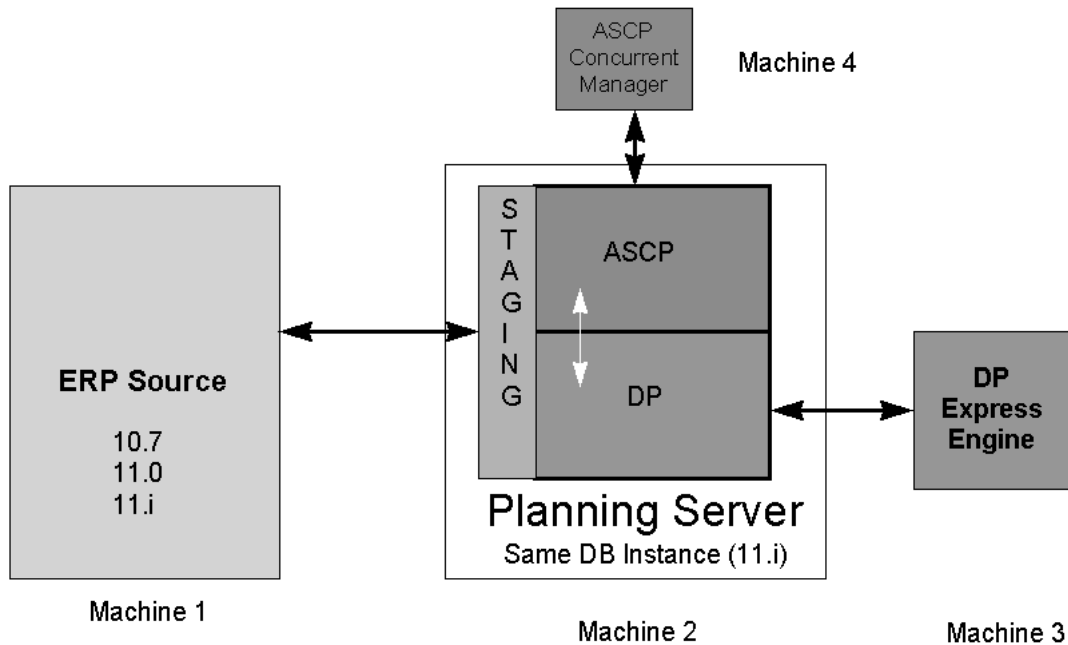
A three-machine deployment allows for the manipulation of high-dimensionality, large-scale demand planning data to occur on a machine separate from the planning calculations done on the planning server. The following figure illustrates this configuration.

**Figure 2–3 Three-machine Deployment 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.

**Figure 2–4 Four-machine APS deployment configuration**

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.

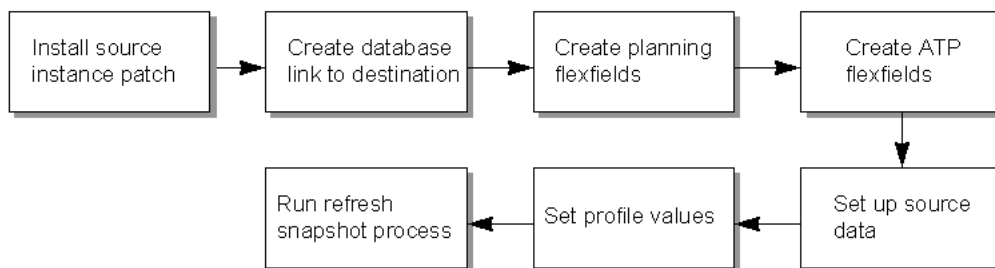
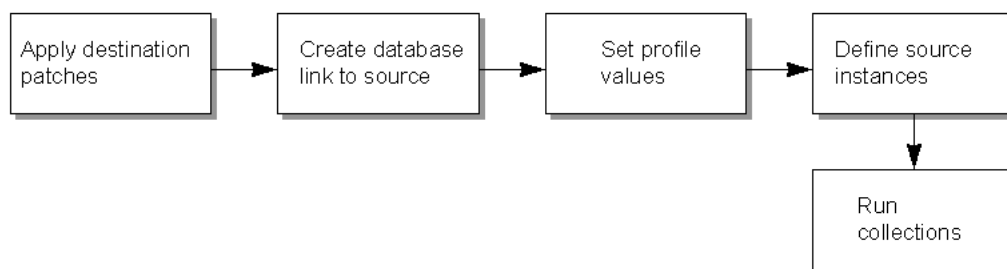
## Setup Flowchart

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 and Configuration Guide*.

Oracle Advanced Planning (consisting of the modules Oracle Advanced Supply Chain Planning, Oracle Demand Planning, Oracle Global Order Promising, Oracle Inventory Optimization, and Oracle Collaborative Planning) employs a component architecture in which transaction processing and planning occurs 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 this important restriction

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.

**Figure 2–5 Source and Destination Instance Setup****Source Instance Setup****Destination Instance Setup**

## Setup Steps for the Source

Oracle Advanced Planning (consisting of the modules Oracle Advanced Supply Chain Planning, Oracle Demand Planning, Oracle Global Order Promising, Oracle Inventory Optimization, and Oracle Collaborative Planning) employs a component architecture in which transaction processing and planning occurs 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 this important restriction

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. The current patch requirements are given in the table below.

Applications version	RDBMS version	Patch
11	8.x	1238811

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 (11i planning) instance. This database link will be referenced in a newly created profile option, MRP: ATP Database Link, discussed in Step 7.



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 [Chapter 4, Running Collections](#).

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---

**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_ITEMS	MRP: Penalty cost factor for late demands flexfield attribute
Items	Material Over-Capacity Penalty (Item)	MTL_SYSTEM_ITEMS	MRP: Penalty cost factor for exceeding material capacity flexfield attribute
Organization Parameters	Late Demands Penalty (Org)	MTL_PARAMETERS	MSO: Penalty cost factor for late demands (Organization) flexfield attribute
Organization Parameters	Material Over-Capacity Penalty (Org)	MTL_PARAMETERS	MSO: Penalty cost factor for exceeding material capacity (Organization) flexfield
Organization Parameters	Resource Over-Capacity Penalty (Org)	MTL_PARAMETERS	MSO: Penalty cost factor for exceeding resource capacity (Organization) flexfield
Organization Parameters	Transport Over-Capacity Penalty (Org)	MTL_PARAMETERS	MSO: Penalty cost factor for exceeding transportation capacity (Organization)
Department Resource Information	Aggregate Resources	BOM_DEPARTMENT_RESOURCES	MSO: Aggregate resource name flexfield attribute
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

Descriptive Flexfield Names	Parameter Name (In flexfield form and report parameter)	Base Table Name	Profile Option Name
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

- 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.

- 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

Oracle Advanced Planning (consisting of the modules Oracle Advanced Supply Chain Planning, Oracle Demand Planning, Oracle Global Order Promising, Oracle Inventory Optimization, and Oracle Collaborative Planning) employs a component architecture in which transaction processing and planning occurs 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 this important restriction

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 11i application on the destination server, be sure that the proper patches are applied to the install. The patches can be found on Metalink. Query for patches for the following products:

- msc - Oracle Supply Chain Planning, Oracle Global Order Promising, Oracle Collaborative Planning
- msd - Oracle Demand Planning
- mso - Oracle Constraint Based Option
- msr - Oracle Inventory Optimization

2. Create a database link pointing to each source.

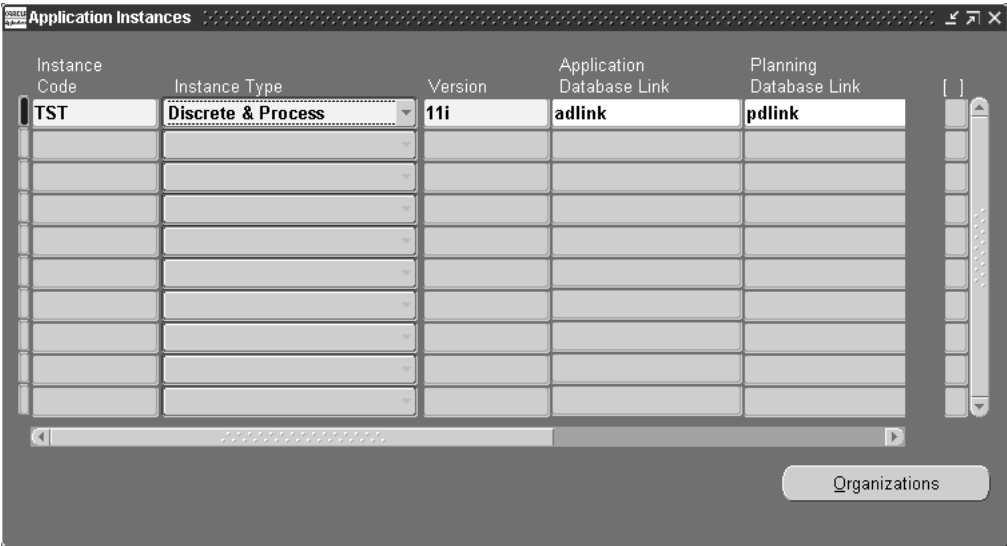
These links will be needed when defining instances later on in this setup procedure.

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.

4. From the Navigator, choose Setup > Instances.

The Application Instances window appears.



Enter each of the Application instances for which you would like the Planning Server to plan.

- 5. 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 3-character short form for the instance to be planned. It is subsequently prepended by ASCP to organization names and other designators to enable the user to positively identify the owning instance. 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.

6. 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.



7. Select the organizations for a particular instance. Be sure to select the master organization.
8. Close the Organization window.
9. 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 (MSR): MSRNEW
- 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 (MSR), 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, libschedule.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 (MSR): MSRNEW (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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## Planning Business Flows

This chapter includes:

- [Business Flows](#) on page 3-2
- [Planning Cycle](#) on page 3-4
- [Specify Sources of Demand](#) on page 3-6
- [Run Collections](#) on page 3-7
- [Create a Plan](#) on page 3-8
- [Launch the Plan](#) on page 3-9
- [Review Key Performance Indicators \(KPIs\)](#) on page 3-10
- [Review Exceptions](#) on page 3-11
- [Review Workflow Notifications](#) on page 3-12
- [View Pegged Supply and Demand](#) on page 3-14
- [Run Net Change](#) on page 3-17
- [Release or Firm Orders](#) on page 3-18

## Business Flows

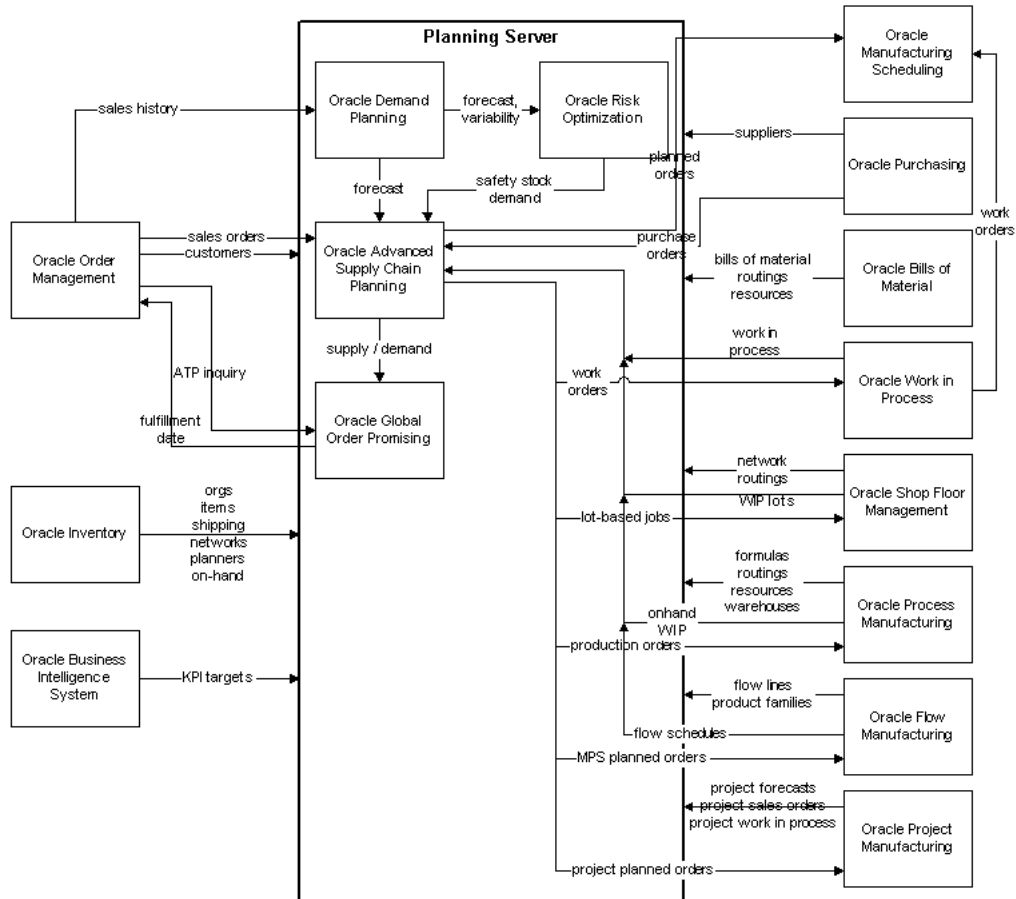
This section describes the flows of information between the components of the Oracle Advanced Planning Suite and provides an overview of how these components are to be used together in order to accomplish several key business flows.

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.

**Figure 3–1 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 semi-conductor manufacturing).

### **The Inquiry-to-Order Business Flow**

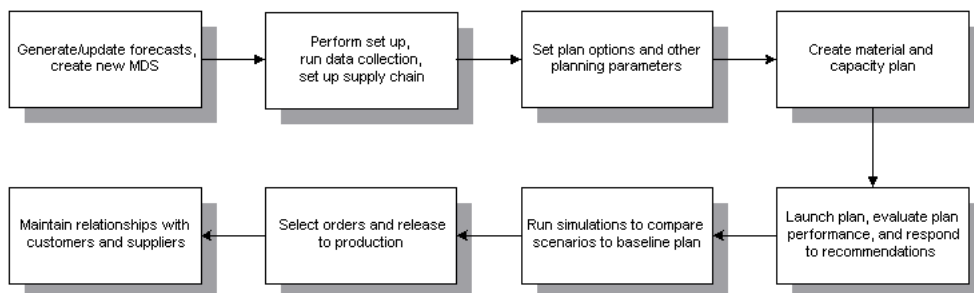
The demand/supply picture output by Oracle ASCP serves as the basis for the order promising results calculated by Oracle Global Order Promising. Oracle Global Order Promising can be called either from a customer-facing order capture application such as a web store or from Oracle Order Management.

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.

**Figure 3–2 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.

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**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.

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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 the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*. If you are using Oracle Demand Planning, see the *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 [Chapter 4, Running Collections](#) 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 [Chapter 5, Defining Plans](#) for more information.

## Launch the Plan

After you have created your MRP, MPS, or DRP 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 off-line 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 [Chapter 10, Planner Workbench](#) and on page 16-81, [Key Performance Indicators](#) 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 [Chapter 9, Exception Messages](#).

### 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 [Chapter 9, Exception Messages](#) 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 on page 3-11, [Review Exceptions](#)) or via e-mail. Certain response actions may be required.

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

**Table 3–1 Processes and Exception Types**

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>
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>

Process	Exception Types
Material Workflow	■ Material constraint (supplier capacity constraint)

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

## View Pegged Supply and Demand

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

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

For more information on pegging, see on page 10-88, [Supply /Demand Window](#). 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 on page 8-2, [Overview of Optimization](#) and on page 7-2, [Overview of Simulations](#) 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 on page 8-2, [Overview of Optimization](#) and on page 7-2, [Overview of Simulations](#) 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 [Chapter 6, Supply Chain Modeling](#).

## 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 in item supply and demand, resource availability
- changes in your objectives
- changes to demand priority rules
- changes to sourcing
- changes to BOM/Routing effectivity

See on page 7-7, [Running Net Change Replan Simulations](#) 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 includes:

- [Overview of Running Collections for ASCP](#) on page 4-2
- [Definitions](#) on page 4-3
- [Collection Strategy](#) on page 4-4
- [Architecture](#) on page 4-6
- [Collection Methods](#) on page 4-11
- [Running Standard Collections](#) on page 4-13
- [Data Changes That Can Be Collected in Net Change Mode](#) on page 4-20
- [Continuous Collections](#) on page 4-24
- [Legacy Collection](#) on page 4-32

## Overview of Running Collections for ASCP

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 Oracle 11.0 and Oracle 11*i* instances. 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 Oracle Application Versions 11.0 or higher. 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.

## 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 on page 10-2, [Overview of Planner Workbench](#).

## 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
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

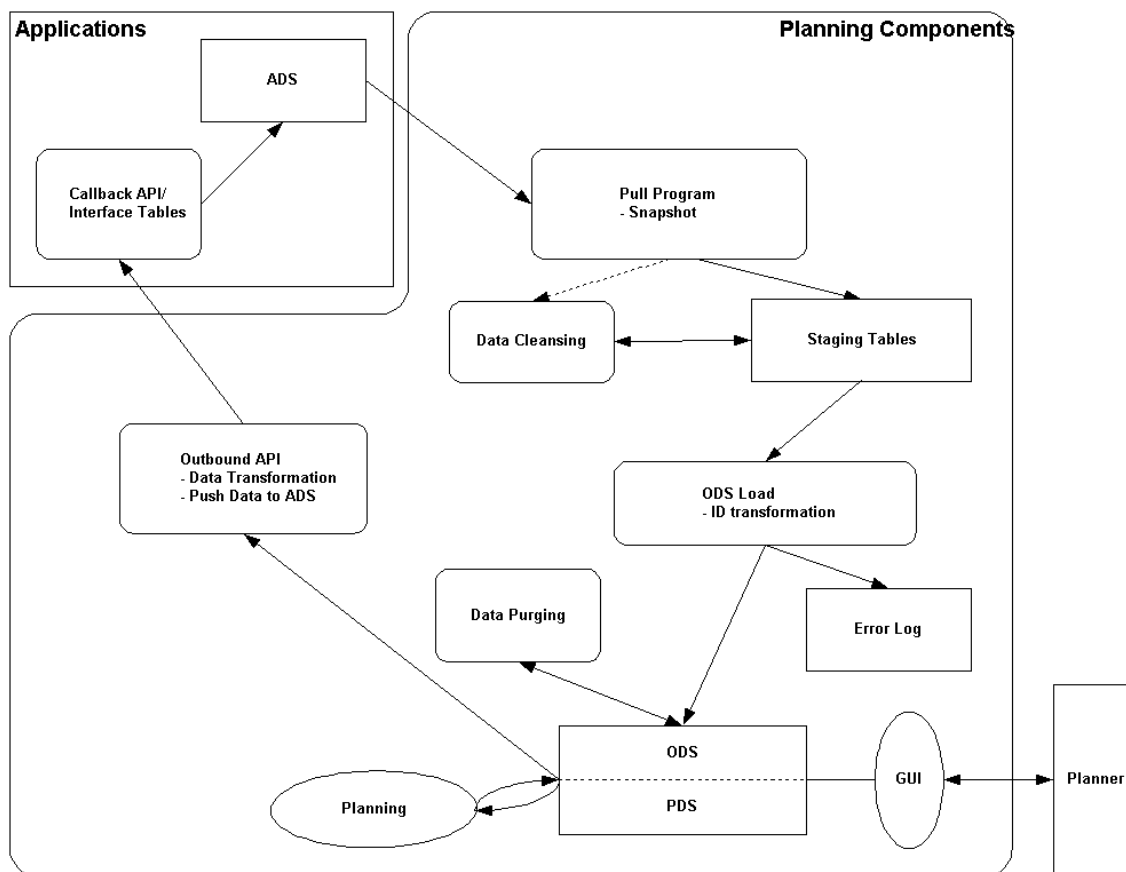
You can perform centralized and decentralized configurations based on the scale of the enterprise and specific business needs. Source data applications and Oracle ASCP can reside on one server or on separate servers.

## 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.

Figure 4–1 Data Collections Architecture



### Supported Configurations

Oracle ASCP supports the following configurations for installation and deployment.

- centralized planning
- decentralized planning

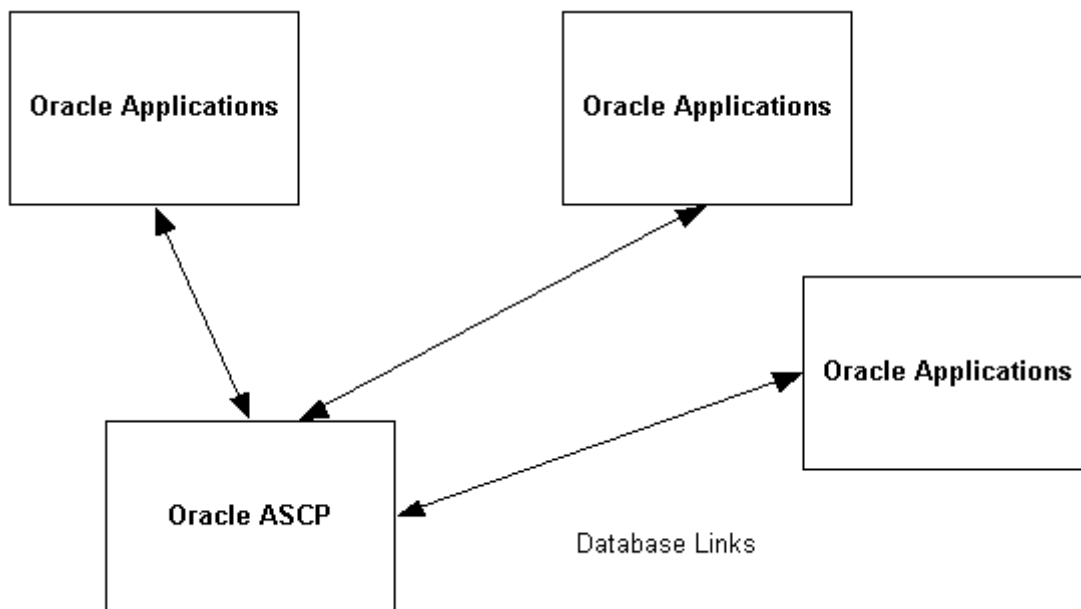
These configurations offer you enough flexibility to design a mode of planning that suits your business objectives. Both configurations are supported using a consistent architecture as outlined in the previous section. The sole distinction is that

centralized planning uses database links to pull data into the Oracle ASCP data store.

### Centralized Planning

The following figure shows the centralized planning configuration:

**Figure 4–2 Centralized Planning**



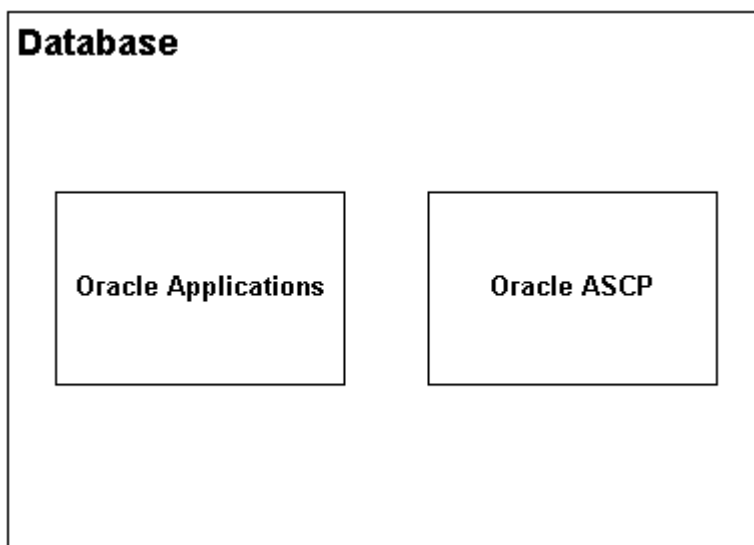
Oracle ASCP works as a central Planning Server across several source data instances. The collection program is installed on the planning server and the data stripped by `instance_id` is moved into staging tables within Oracle ASCP during the data collection process.

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

### Decentralized Planning

The following figure shows the decentralized planning configuration:

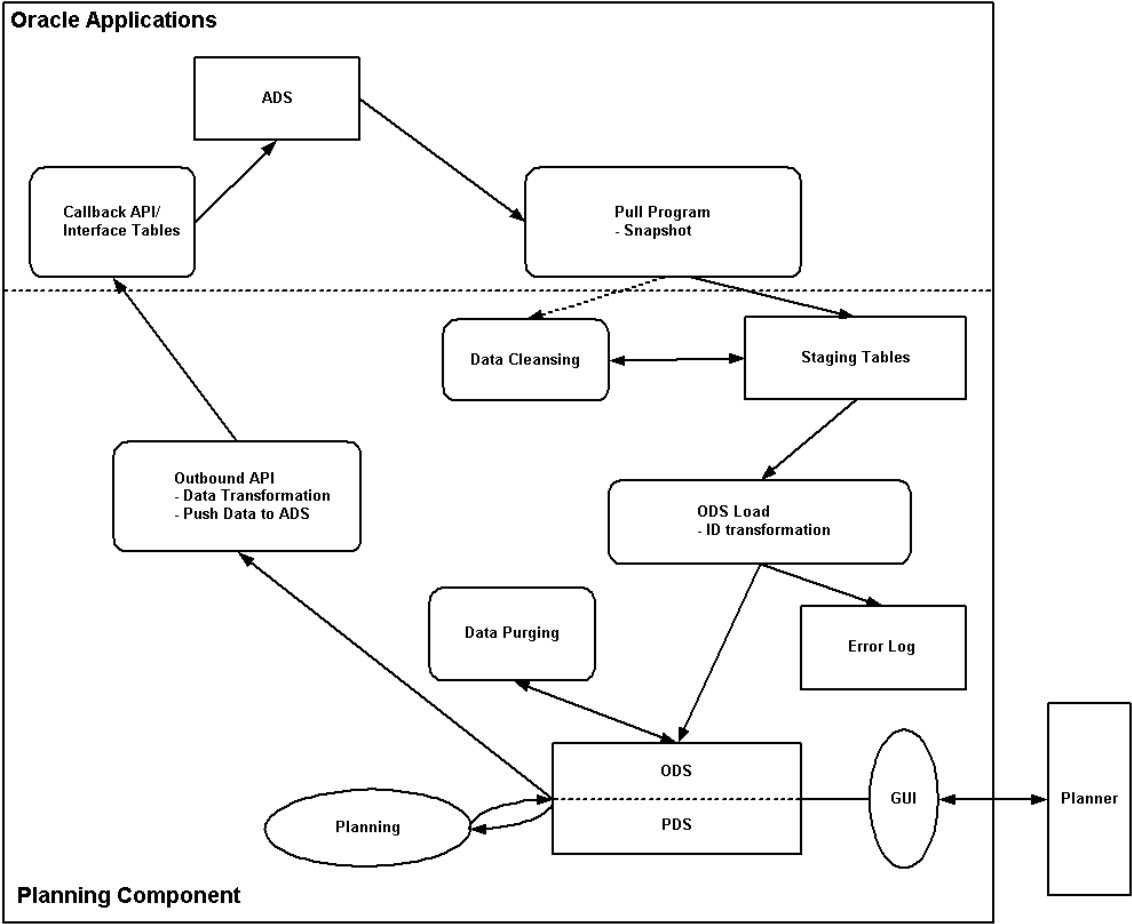
**Figure 4–3 Decentralized Planning**



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.

Figure 4–4 Simplified Data Collections Architecture



## 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 nonselected entities remains intact on the planning server. All planning business entities are supported by Targeted Refresh collections.
- 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 (11.0 or 11i)**

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.

**Figure 4–5** *Planning Data Collection window*

Planning Data Collection

Run this Request...

Request Set **Planning Data Collection** Copy...

Program	Stage	Parameters	Language
Planning Data Pull	Data Pull		American English
Planning ODS Load	ODS Load		American English

Options...

At these Times...

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

Help (A) Submit Cancel

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.

Figure 4–6 Data Pull Parameters window

Parameter	Value
Instance	
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

- 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.
Number of Workers	One or greater. Increase this number to increase the amount of computational resources to 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.

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.

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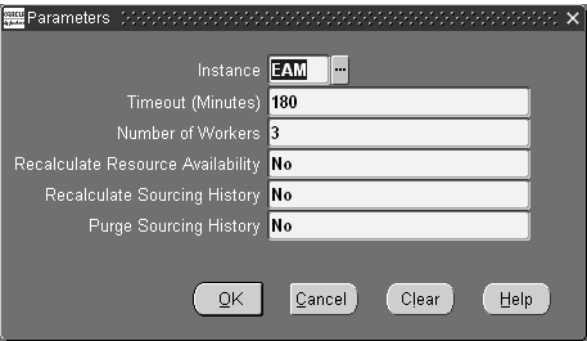
**Note:** The default value for these entities is set to Yes. Collecting information for Resource Availability and Sourcing History takes a significant amount of time. Collect this information only when necessary.

---

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

The Parameters window appears.

**Figure 4–7   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.

Parameter	Values
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.

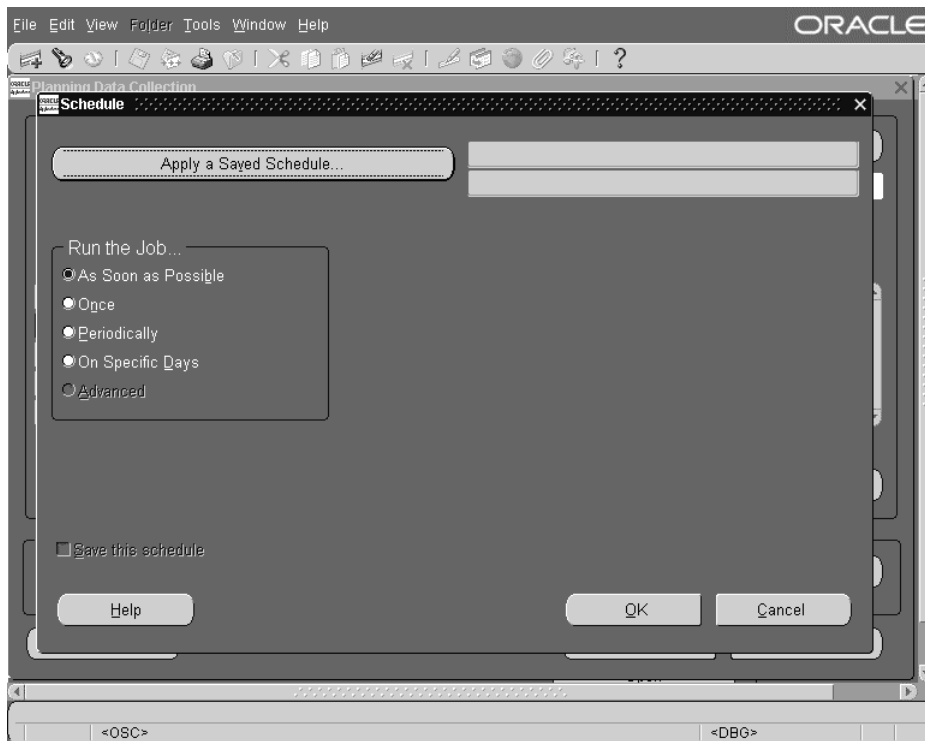
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**Note:** If you want to perform an incremental refresh frequently, use this feature.

---

---

**Figure 4–8 The Schedule Window**

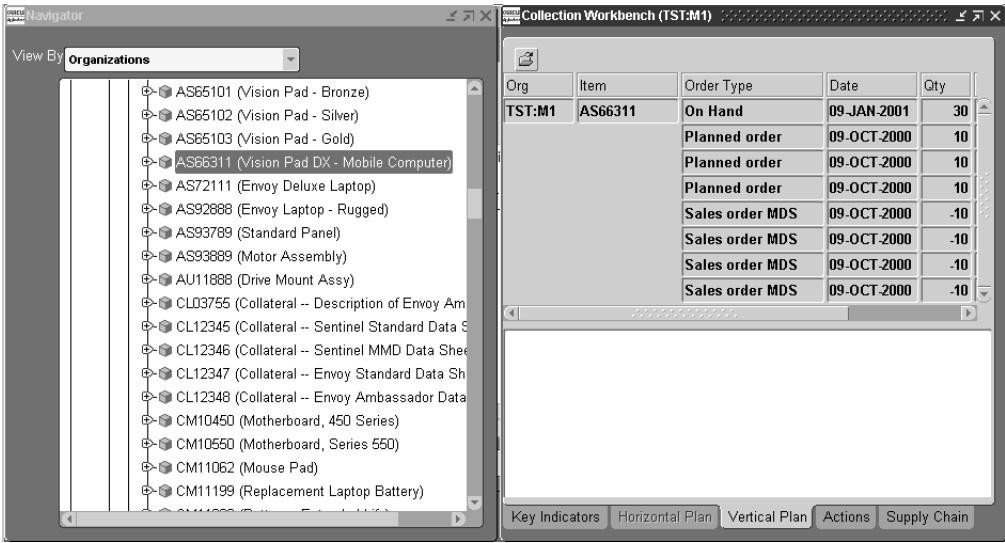
You have complete control over the timing and frequency of the collection of data from the transaction systems, and the timing and frequency of planning. You can manage the balance between network traffic and the need to monitor current status in your plans.

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

Figure 4–9 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.
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.



<b>Data Element</b>	<b>Comments</b>
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.
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.
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.

<b>Data Element</b>	<b>Comments</b>
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)
- Inter-organization 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:

**Table 4–1   Entities Supported By Continuous Collections**

Entities	Snapshot Associated
Approved supplier lists (Supplier capacity)	Yes
Bills of material	Yes
Routings	Yes
Resources	Yes

**Table 4–1 Entities Supported By Continuous Collections**

<b>Entities</b>	<b>Snapshot Associated</b>
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
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

**Table 4–1   *Entities Supported By Continuous Collections***

Entities	Snapshot Associated
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 (11.0 or 11i)**

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.

**Figure 4–10 The Continuous Collections window**

The screenshot shows a window titled "Continuous Collections" with a close button (X) in the top right corner. The window is divided into three main sections:

- Run this Request...**: Contains a "Copy..." button, a "Name" field with the value "Continuous Collections", a "Parameters" field, a "Language" dropdown menu set to "American English", and a "Languages..." button.
- At these Times...**: Contains a "Run the Job" dropdown menu set to "As Soon as Possible" and a "Schedule..." button.
- Upon Completion...**: Contains a checked checkbox for "Save all Output Files", a "Notify" field, a "Print to" field set to "noprint", and an "Options..." button.

At the bottom of the window are three buttons: "Help (H)", "Submit", and "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.

**Figure 4–11 The Parameters window**

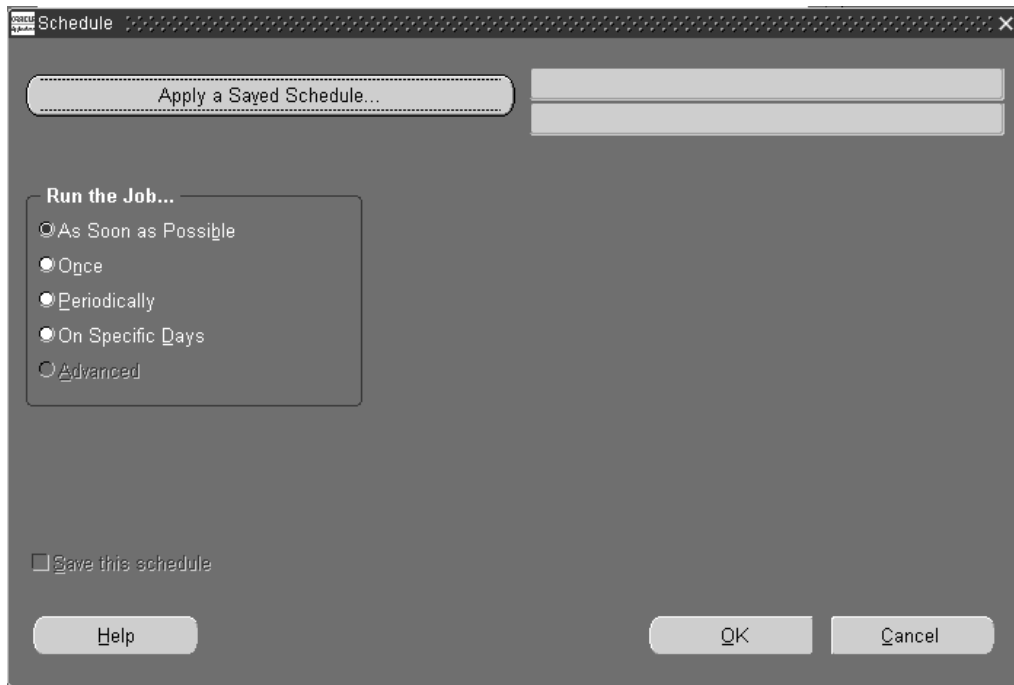
Instance	
Number of Workers	3
Timeout (minutes)	180
Snapshot Threshold (%)	40
Analyze Staging Tables	Yes
Approved Supplier Lists (Supplier Capacities)	Yes
BOM/Routings/Resources	Yes
Bill Of Resources	Yes
Forecasts	Yes
Items	Yes
Master Demand Schedule (MDS)	Yes
Master Prod. Schedule (MPS)	Yes
On Hand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

OK Cancel Clear 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.



**Figure 4–12 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.

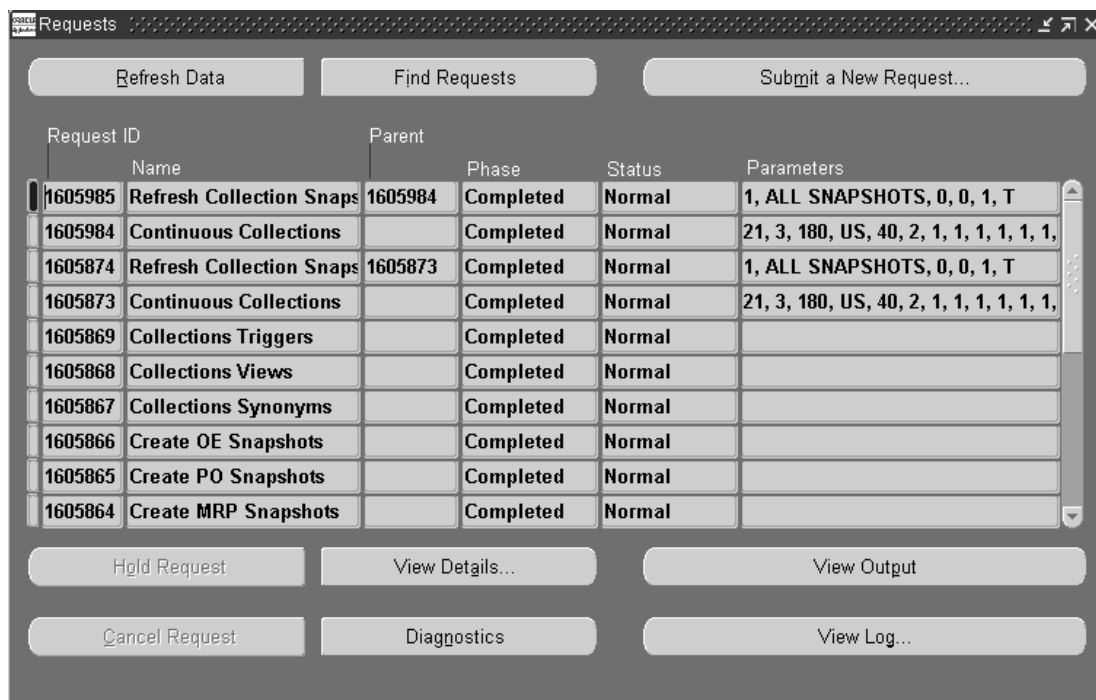
The Find Requests window appears.

**Figure 4–13    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 button options for filtering requests: "My Completed Requests", "My Requests In Progress", "All My Requests", and "Specific Requests". The "Specific Requests" option is selected. Below these options is a large rectangular area containing several input fields: "Request ID", "Name", "Date Submitted", "Date Completed", "Status" (with a dropdown arrow), "Phase" (with a dropdown arrow), and "Requestor". Below this input area is a checkbox labeled "Include Request Set Stages in Query" which is checked. Underneath the checkbox is an "Order By" label followed by a dropdown menu currently showing "Request ID". At the bottom of the window 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.

**Figure 4–14 The Requests window**

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:

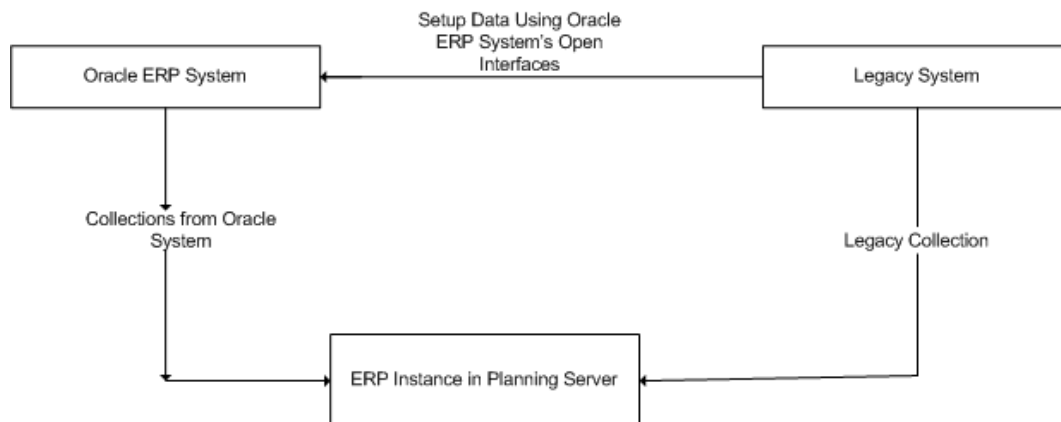
- On-hand balance
- Purchase orders
- Purchase requisition
- Work orders
- Work Order component demand
- Intransit shipment and receipt
- Planned orders
- Forecasts
- Demand schedules
- Sales orders
- Item suppliers
- Supplier capacities
- Supplier flex fences

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.

**Figure 4–15 Data Flow**



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

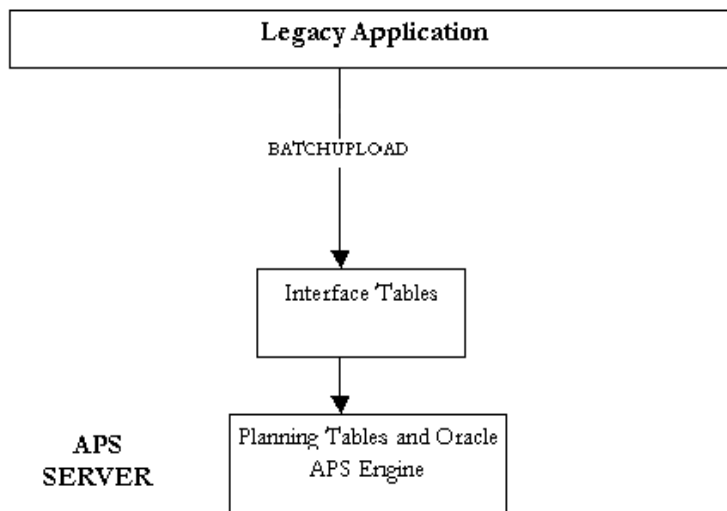
- Define two types of organizations in the source instance. The first organization is for OEM and the second is for supplier and customer. You also need to define sourcing rules between the OEM organization and the supplier and customer organization.
- Import the setup data from your non-Oracle ERP system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



## 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.

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

```

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 Firmmed */
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||'~'||
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;

```

3. 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.

**Figure 4–16 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.

### Setting 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/115/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 through 6 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.

Figure 4-17 Application Instances

The screenshot shows the 'Navigator - Advanced Supply Chain Planner' window. The 'Functions' tab is active, and the 'Setup:Instances' section is expanded. The 'Define Application' window is open, displaying a table of application instances. The table has columns for Instance Code, Instance Type, Version, From Source To APS, and From APS To Source. The instances listed are OMT, TR1, v11, ncr, sr7, EAM, 154, LEG, qa2, and dmt. The Instance Type for OMT, TR1, v11, sr7, EAM, 154, qa2, and dmt is 'Discrete', while for ncr and LEG it is 'Others'. The Version for OMT, TR1, v11, EAM, 154, qa2, and dmt is '11i', while for sr7 it is '10.7'. The 'From Source To APS' and 'From APS To Source' fields are populated for most instances, except for ncr and LEG which are blank.

Instance Code	Instance Type	Version	From Source To APS	From APS To Source
OMT	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

At the bottom right of the window, there is a button labeled 'Organizations'.

8. 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 on-line 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

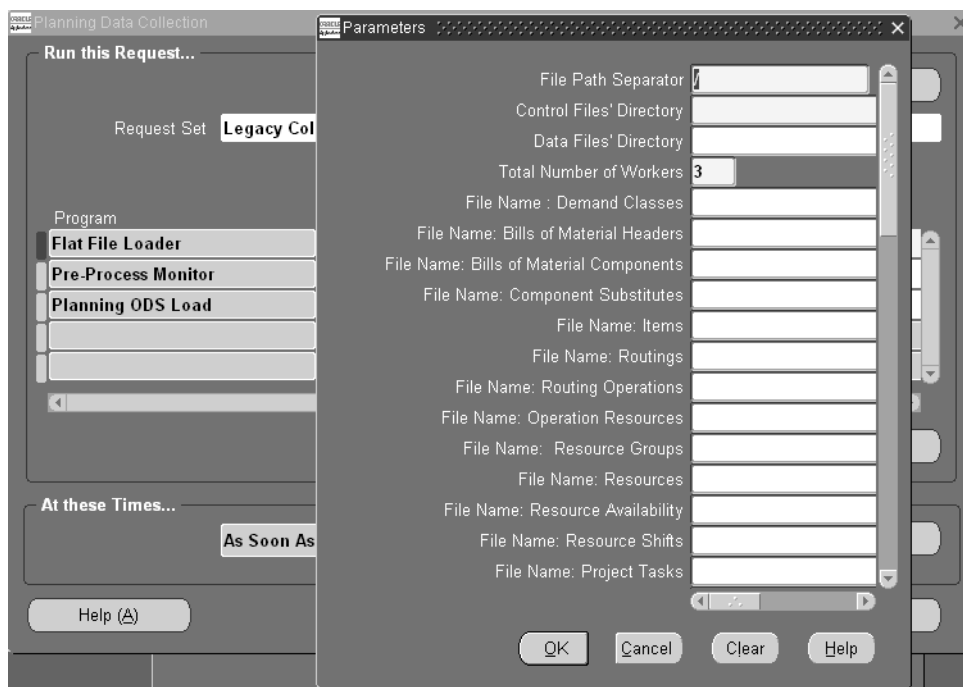
Using either an Oracle Applications form or the self-service application page, you can upload data from flat files to the legacy instance and finally to the planning engine. Using the form, you upload each data file separately.

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/115/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.



**Figure 4–18 Flat File Loader Parameters screen**

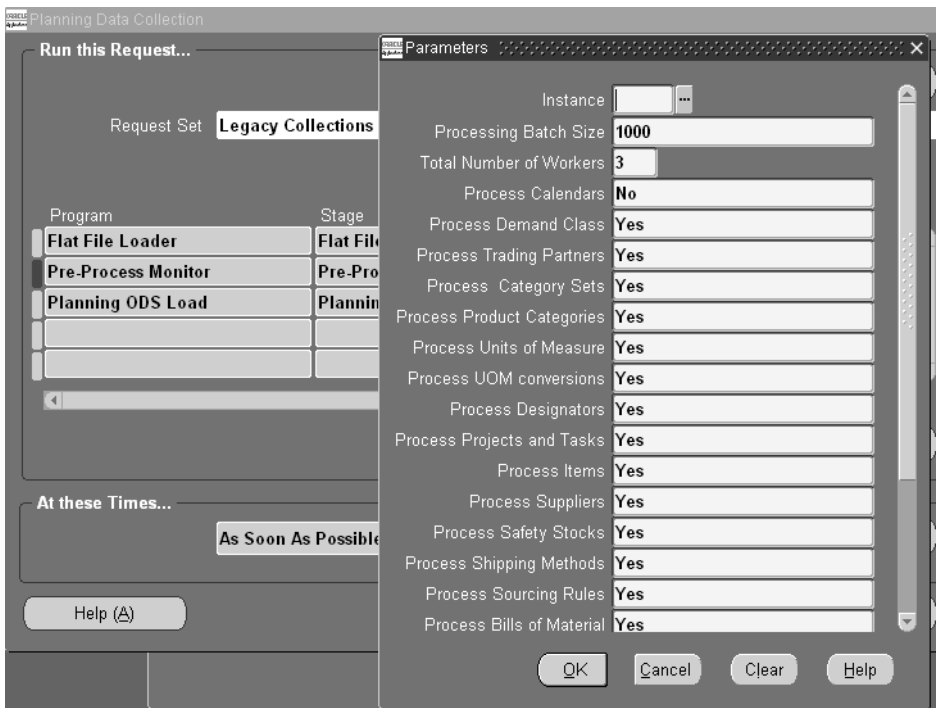
5. Enter the required information and the File Names for all the data files that you want to upload. You can either enter the directory path in the Data File's Directory field and then enter the file names for each entity to be uploaded in the File Name fields, or you can leave the Data File's Directory 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.

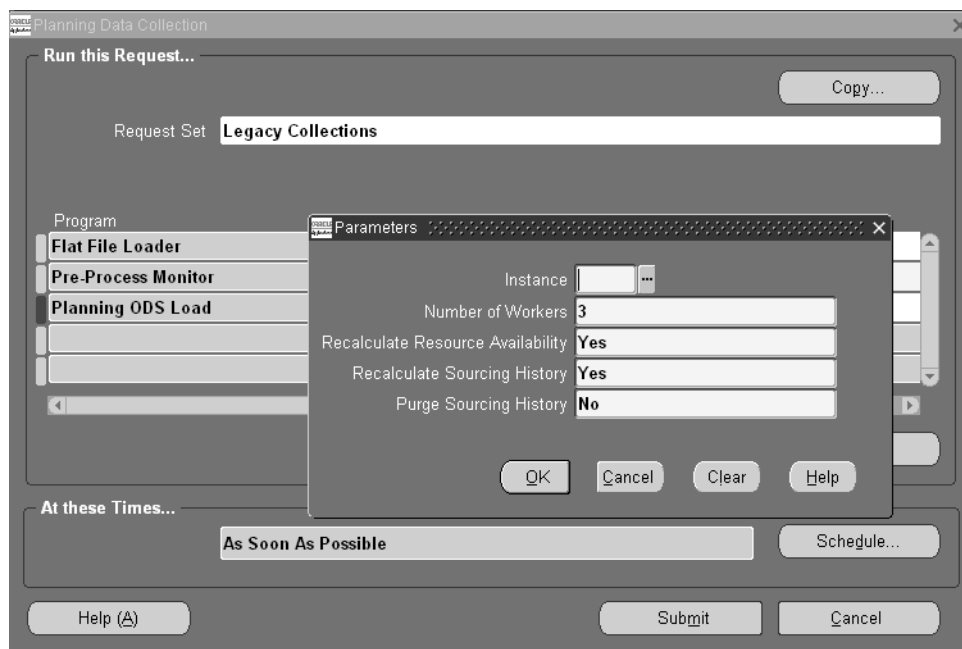
6. When finished entering information for this screen, choose the OK button.
7. Choose the Parameters field for Pre-Process Monitor.

The Parameters screen appears.

Figure 4–19 Pre-Process Monitor Parameters screen



- 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.

**Figure 4–20 Planning ODS Load Parameters screen**

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.

**Figure 4–21 Collaborative Planning Suite page**

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**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.

Figure 4-22 Purge Parameters screen

The screenshot shows a software interface for launching a purge program. The main window is titled "Launch Purge Program for Collected data". It has several sections: "Run this Request..." with a "Copy..." button; "Name" set to "Purge Legacy Data"; "Parameters" (empty); "Language" set to "American English"; "At these Times..." with a dropdown set to "As Soon as Possible"; and "Upon Completion..." with a checked "Save all Output" option, a "Notify" field, and a "Print to" field set to "30P535ap". At the bottom are "Help (H)", "Submit", and "Cancel" buttons. A smaller "Parameters" window is overlaid, showing: "Instance" as "LEG"; "Complete Refresh" as "Yes"; "Delete Records Up to Date" as "4-JAN-2002"; "Delete Supplies" as "Yes"; and "Delete Demands" as "Yes". It also has "OK", "Cancel", "Clear", and "Help" buttons.

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)
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)
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)
DISPOSTION_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.

**Figure 4–23   Purge Parameters screen**

The screenshot shows a 'Launch Purge Program for Collected data' window. It contains several input fields and buttons. A 'Parameters' sub-window is overlaid on top, showing specific settings for the purge program. The sub-window includes fields for Instance (LEG), Complete Refresh (No), Delete Records Up to Date (4 JAN 2002), Delete Supplies (Yes), and Delete Demands (Yes). There are also buttons for OK, Cancel, Clear, and Help within the sub-window.

The following table shows the values for this screen.

Field	Value
Instance	Legacy instance against which the purge program is to be run.



Field	Value
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.

### 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.

Figure 4–24 Planning Data Collections window

Planning Data Collection

Run this Request...

Copy...

Request SetERP Legacy Collections

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.

**Figure 4–25 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.

**Figure 4–26 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.

**Figure 4–27 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

Buttons: 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.

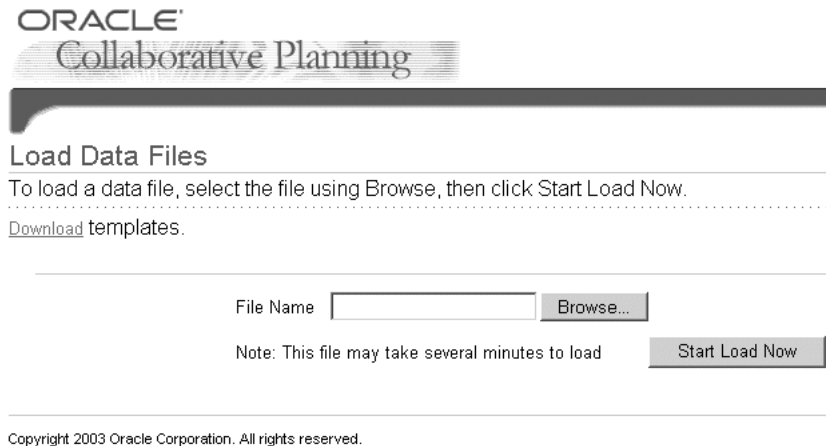
11. Specify the values for the parameters and click OK.
12. Click Submit in the Planning Data Collection window.
13. From the toolbar, choose View > Requests to view the status of the collections process.

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.

**Figure 4–28 Oracle Collaborative Planning Suite page**

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### Load Data Files

To load a data file, select the file using Browse, then click Start Load Now.  
.....  
[Download](#) templates.

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File Name

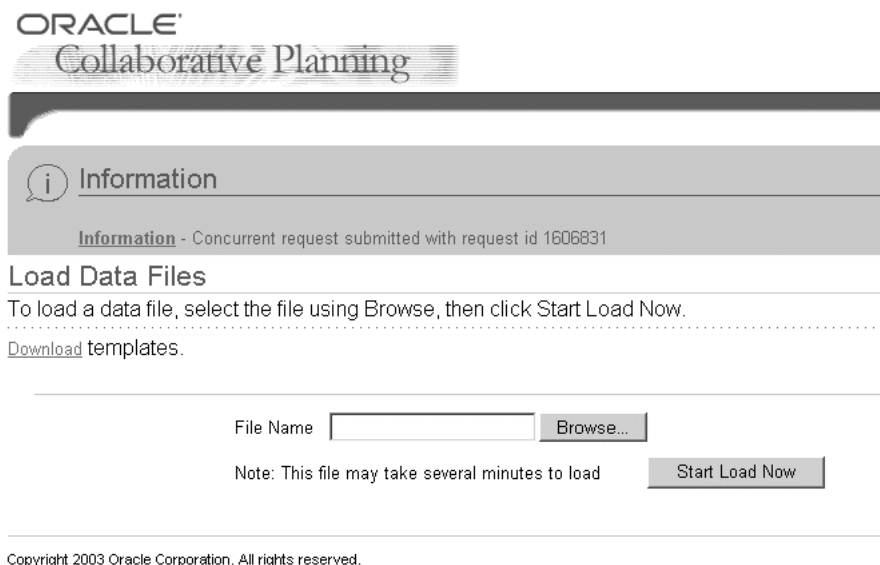
Note: This file may take several minutes to load

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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.

**Figure 4–29 Oracle Collaborative Planning Suite page**



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**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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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.





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## Defining Plans

This chapter includes:

- [Overview of Defining Plans](#) on page 5-2
- [Global Supply Chain Planning](#) on page 5-3
- [Subset Plans](#) on page 5-12
- [Choosing Between Global Supply Chain and Subset Plans](#) on page 5-14
- [Choosing a Plan Type](#) on page 5-16
- [Choosing Plan Classes](#) on page 5-21
- [Setting Plan Options](#) on page 5-24
- [Choosing Aggregation Levels](#) on page 5-78
- [Choosing an Objective Function](#) on page 5-84

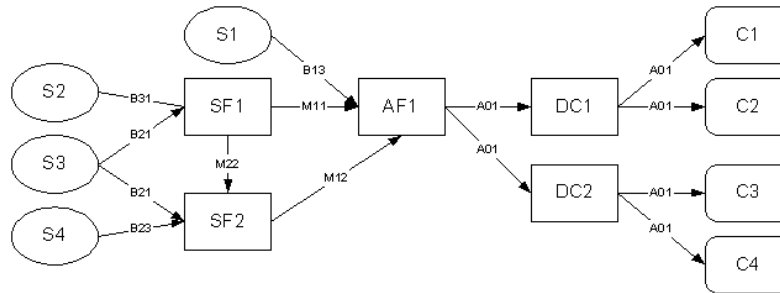
## Overview of Defining Plans

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, ontime delivery, and plan profit. Lastly, you can specify aggregation levels to view plans at varying levels of detail.

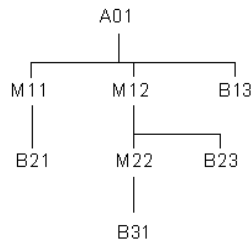
## Global Supply Chain Planning

Oracle ASCP can generate planned orders for an entire supply chain within a single multiorganization supply chain plan. This is illustrated below with a sample supply chain (see [Sample Supply Chain](#)) and bill of material (see [Sample Bill of Material](#)).

**Figure 5–1 Sample Supply Chain**



**Figure 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 tradeoffs 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 (TST.M1)

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.
ATP	If this is selected, this plan will be used for availability check.
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 Distribution 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 <a href="#">Choosing a Plan Type</a> on page 5-16 for further details.

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

Plan Options (tps:JM1)

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

Main Aggregation Organizations Constraints Optimization Decision Rules

Planned Items **Demand schedule ...** Assignment Set **RS Boat/Air 6 Orgs**

Material Scheduling Method **Order Start Date** Demand Priority Rule

End Item Substitution Set Overwrite **All**

Schedule By **Schedule Ship Date** Demand Class

☐ 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 Forecast Distribution Assignment Set

☐ Spread Forecast Evenly

☐ Consume by Forecast Bucket ☐ Explode Forecast

Backward Days Forward Days

☒ Enable Pegging

☒ Peg Supplies by Demand Priority Reservation Level **None**

Hard Pegging Level **None**

Continue setting plan options and parameters.

This table lists the controls that determine the items that are planned in the plan and their possible values.

Control	Possible Values
Plan Options form > Planned items	All planned items Demand schedule items only Supply schedule items only Demand and supply schedule items
Supply Chain Names form > Planning type option	Manufacturing Plan Production Plan Distribution Plan

Control	Possible Values
Items form > MPS/MRP Planning tab > Planning type option	Not planned MRP Planning MPS Planning MRP/DRP Planned MPS/DRP Planned DRP Planned

This table shows the relationships among these controls.

Planned Items	Distribution Plan Planning Type includes...	Production Plan Planning Type includes...	Manufacturing Plan Planning Type includes...
Include all planned items	<p>All items in the planned organizations having an MRP planning code of:</p> <ul style="list-style-type: none"><li>■ DRP planning</li><li>■ MRP and DRP planning</li><li>■ MPS and DRP planning</li></ul> <p>MRP planned and MPS planned items that are in between the above items in the bill structure.</p> <p>All items in the input schedules.</p>	<p>All items in the planned organizations having an MRP planning code of:</p> <ul style="list-style-type: none"><li>■ MPS planning</li><li>■ MPS and DRP planning</li></ul> <p>MRP planned and MRP/DRP planned items that are in between the above items in the bill structure.</p> <p>All items in the input schedules.</p>	<p>All items in the planned organizations except ones having MRP planning code of Not Planned.</p>



<b>Planned Items</b>	<b>Distribution Plan Planning Type includes...</b>	<b>Production Plan Planning Type includes...</b>	<b>Manufacturing Plan Planning Type includes...</b>
Include demand schedule items only	<p>All items in the input demand schedules, and all components of these items that have an MRP planning code of:</p> <ul style="list-style-type: none"> <li>■ DRP planning</li> <li>■ MRP and DRP planning</li> <li>■ MPS and DRP planning</li> </ul> <p>MPS and MRP planned items that are in between the above items in the bill structure.</p>	<p>All items in the input demand schedules, and all components of these items that have an MRP planning code of:</p> <ul style="list-style-type: none"> <li>■ MPS planning</li> <li>■ MPS and DRP planning</li> </ul>	<p>All items in the input demand schedules, and all components of these items that have an MRP planning code of:</p> <ul style="list-style-type: none"> <li>■ MRP planning</li> <li>■ MRP and DRP planning</li> </ul>
Include supply schedule items only	<p>All items in the input supply schedules, and all components of these items that have an MRP planning code of:</p> <ul style="list-style-type: none"> <li>■ DRP planning</li> <li>■ MRP and DRP planning</li> <li>■ MPS and DRP planning</li> </ul> <p>MRP planned and MPS planned items that are in between the above items in the bill structure.</p>	<p>All items in the input supply schedules, and all components of these items that have an MRP planning code of:</p> <ul style="list-style-type: none"> <li>■ MPS planning</li> <li>■ MPS and DRP planning</li> </ul>	<p>All items in the input supply schedules, and all components of these items that have an MRP planning code of:</p> <ul style="list-style-type: none"> <li>■ MRP planning</li> <li>■ MRP and DRP planning</li> </ul>

Planned Items	Distribution Plan Planning Type includes...	Production Plan Planning Type includes...	Manufacturing Plan Planning Type includes...
Include demand and supply schedule items only	<p>All items in the input demand and supply schedules, and all components of these items that have an MRP planning code of:</p> <ul style="list-style-type: none"><li>■ DRP planning</li><li>■ MRP and DRP planning</li><li>■ MPS and DRP planning</li></ul> <p>MRP planned and MPS planned items that are in between the above items in the bill structure.</p>	<p>All items in the input demand and supply schedules, and all components of these items that have an MRP planning code of:</p> <ul style="list-style-type: none"><li>■ DRP planning</li><li>■ MRP and DRP planning</li><li>■ MPS and DRP planning</li></ul> <p>MRP planned and MPS planned items that are in between the above items in the bill structure.</p>	<p>All items in the input demand and supply schedules, and all components of these items that have an MRP planning code of:</p> <ul style="list-style-type: none"><li>■ MRP planning</li><li>■ MRP and DRP planning</li></ul>

For more information, see [“The Main tab”](#) on page 5-25.

**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 (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 DRP plan.

**Scenario 1: Unique Local Objectives Must be Respected Along with Global Objectives** Suppose that subassembly plant SF1 (Figure 5–1, “Sample Supply Chain”), which makes M12 (Figure 5–2, “Sample Bill of Material”), 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 DRP 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 5–2, “Sample Bill of Material”), has volatile pricing. In lieu of implementing the default planned orders in facility SF1 that a global DRP would generate for M11 and its subcomponents (B21), one could plan the supply chain as follows:

1. DRP plan for organizations DC1, DC2, AF1, and SF2 to generate planned orders for A01, M12, B13, M22, and M11.
2. Load the DRP 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 DRP 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 ontime 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

## Choosing a Plan Type

In Oracle ASCP you can launch three type of plans:

- Production Plan
- Manufacturing Plan
- Distribution 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/DRP Planned
- MPS/DRP Planned
- DRP Planned

### **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**

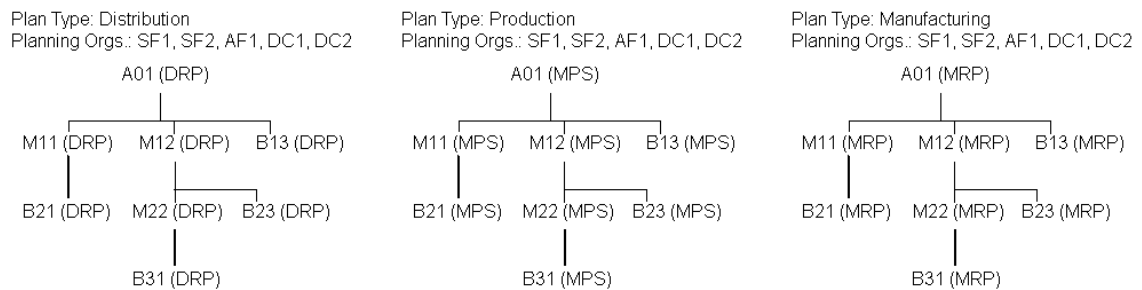
1. Sign on with the Manufacturing and Distribution Manager responsibility.
2. From the Navigator window, choose Inventory > Items > Organization Items.



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 (Distribution, Production, or Manufacturing) can be used in conjunction with MRP Planning Type item attribute values (MRP Planning, MPS Planning, DRP Planned, MRP/DRP Planned, MPS/DRP 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 (Figure 5–1, “Sample Supply Chain”) and BOM (Figure 5–2, “Sample Bill of Material”), yield identical planned orders across the supply chain. In the BOMs illustrated in the next four figures, the values in parentheses indicate the setting of the MRP Planning Type item attribute.

**Figure 5–3 Sample Bill of Material**

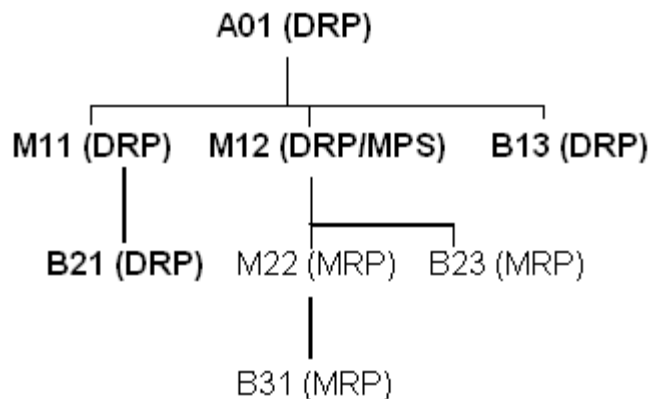


The usefulness of the different types of plans comes in when subset planning is used. Suppose, for example, that subset plan M12 and all its components and subcomponents are used. Some reasons for needing to do so are discussed above.

1. Run a Distribution plan to generate planned orders for all items except for the components and subcomponents of M12 (Figure 5–4, “Sample Bill of Material”):

**Figure 5–4 Sample Bill of Material**

Plan Name: DRP-1  
Plan Type: Distribution  
Planning Orgs.: SF1, SF2, AF1, DC1, DC2

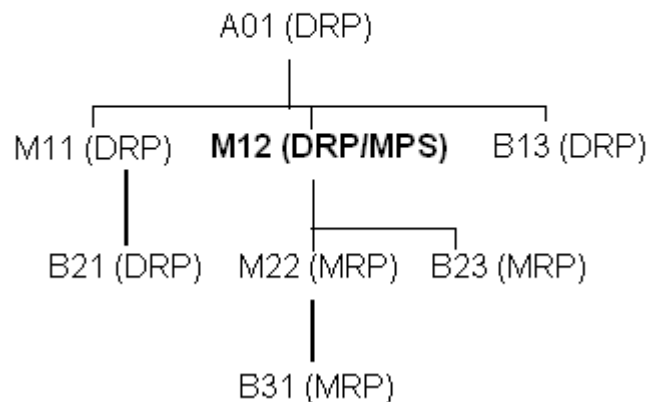


This combination of plan type and MRP Planning Type item attribute values creates cross-supply chain planned orders for A01, M11, B13, B21, and M12 and omits M22, B23, B31.

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

**Figure 5–5 Sample Bill of Material**

Plan Name: MPS-1  
Plan Type: Production  
Planning Orgs.: SF2  
Input Demand Schedule: DRP-1



3. Manually modify the MPS for M12 as necessary.

---

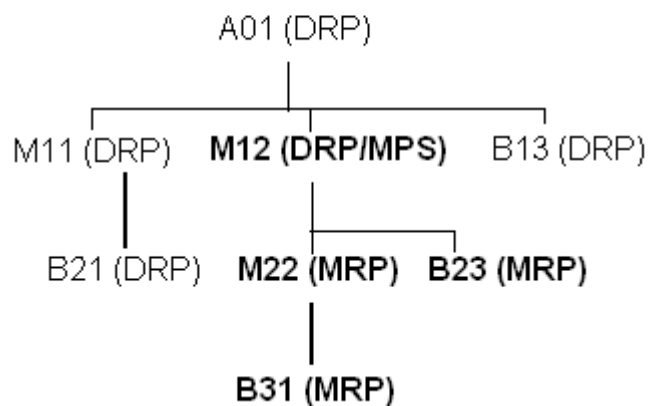
**Note:** With Oracle ASCP, this step is less frequently necessary than before. This is because the finite-capacity planning performed by Oracle ASCP takes resource and material availability into account, and therefore eliminates much of the need to manually smooth production via an MPS.

---

4. Run a Manufacturing plan, using the Production plan as an input demand schedule. This generates planned orders for M12, M22, B23 and B31 (Figure 5–6, “Sample Bill of Material”).

**Figure 5–6 Sample Bill of Material**

Plan Name: MRP-1  
 Plan Type: Manufacturing  
 Planning Orgs.: SF1, SF2  
 Input Demand Schedule: MPS-1



## 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?	Difficult to change resource capacity, but increased outsourcing is an option.  Decisions can be made on supplier sourcing to address the exceptions.
Material Constrained Plan	Long Term Future	How much resource capacity do I need to arrange in order to satisfy all anticipated demand in a timely manner?	Difficult to change material availability but internal resource acquisition/disposition is an option.  Decisions can be made on resource acquisition/disposition to address the exceptions.
Material and Resource Constrained Plan	Near Term Future	Generate a feasible plan that respects material, resource, distribution, and transportation constraints.	Impossible to overcome material and resource constraints and therefore must respect them in order to generate a feasible supply chain plan.

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
Nonoptimized (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.

If you are using Oracle Inventory Optimization, see [Chapter 15, Oracle Inventory Optimization](#) .



The Main Tabbed Region

Plan Options (tps:JM1)

Plan

ProdPlan1

Production Plan

Plan Type

Distribution Plan

Main

Aggregation

Organizations

Constraints

Optimization

Decision Rules

Planned Items

Demand schedule ...

Assignment Set

RS Boat/Air 6 Orgs

Material Scheduling Method

Order Start Date

Demand Priority Rule

End Item Substitution Set

Overwrite

All

Schedule By

Schedule Ship Date

Demand Class

☐ Demand Time Fence Control

☒ Append Planned Orders

☒ Planning Time Fence Control

☐ Move Jobs to PIP

☒ Display Key Performance Indicators

☒ Lot for Lot

☐ Include Critical Components

Forecast Allocation and Consumption

☒ Do Not Spread Forecast

Forecast Distribution

☐ Spread Forecast Evenly

Assignment Set

☐ Consume by Forecast Bucket

☐ Explode Forecast

Backward Days

Forward Days

☒ Enable Pegging

☒ Peg Supplies by Demand Priority

Reservation Level

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 <a href="#">Choosing a Plan Type</a> on page 5-16 for further details.

Object	Description
Assignment Set	The assignment set that holds the sourcing rules and bills of distribution that define the rules for material flow within your supply chain.
Material Scheduling Method	Choose from Operation Start Date or Order Start Date scheduling methods. If you choose Operation Start Date, material is scheduled to arrive at the start of the operation for which it is required. If you choose Order Start Date, material is scheduled to arrive at the start of the order for which it is required. Order State Date is usually an earlier date than the Operation Start Date and therefore this selection represents the more conservative planning logic of the two options.
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 <a href="#">Demand Priority Rules</a> on page 5-74.
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 <a href="#">on page 16-3, End-Item-Level Substitution</a> . 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 <a href="#">Overwrite Options</a> on page 5-69.

Object	Description
Schedule By	<p>Set this option to instruct the planning engine to:</p> <ul style="list-style-type: none"> <li>- Plan supplies based on sales order line request, promise, or schedule dates for either ship or arrival</li> <li>- 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>Select one of the following sales order line dates:</p> <ul style="list-style-type: none"> <li>- Schedule Ship Date</li> <li>- Schedule Arrival Date</li> <li>- Request Ship Date</li> <li>- Request Arrival Date</li> <li>- Promise Ship Date</li> <li>- Promise Arrival Date</li> </ul> <p>The default is Schedule Ship Date.</p> <p>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>
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 <a href="#">Overwrite Options</a> on page 5-69.
Planning Time Fence Control	Check this option to enforce item attribute planning time fence control.
Move Jobs 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.

Object	Description
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.
Spread Forecast Evenly	The planning engine should spread aggregate forecast demand evenly across the daily buckets from the workday calendar.
Forecast Distribution Assignment Set	<p>Select a forecast distribution assignment set for the global forecasting process. The forecast distribution assignment set contains global sourcing rules used to distribute global forecasts over multiple inventory organizations:</p> <p>The rules to distribute sales orders are in plan option Assignment Set.</p>
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>

Object	Description
Backward Days	If you are bringing in unconsumed forecast scenarios from Oracle Demand Planning as demand schedules into Oracle ASCP and would like to do forecast consumption inside ASCP (as opposed to bringing in preconsumed forecasts contained in master demand schedules as demand schedules into Oracle ASCP), then set the forecasts consumption backward days parameter here. 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. This parameter applies only to Oracle Demand Planning scenarios that are used as demand schedules in Oracle ASCP plans. Please see the section <a href="#">Forecast Consumption Days</a> on page 5-45 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. Please see the section <a href="#">Forecast Consumption Days</a> on page 5-45 for more details.
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, check this option to calculate pegging so that supplies are pegged to demands in demand priority order (as defined by you in a priority rule) within the time period set by the profile option MSC: Peg by Demand Priority. For more information, please see <a href="#">Peg Supplies by Demand Priority</a> on page 5-77.
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

Plan Options (tps:JM1)

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

Main Aggregation Organizations Constraints Optimization Decision Rules

Plan Start Date **06-JAN-2006** Plan End Date **04-JUL-2006**

	Days	Weeks	Periods
Start Date	<b>06-JAN-2006</b>	<b>10-JUL-2006</b>	<b>10-JUL-2006</b>
Buckets	<b>180</b>	<b>0</b>	<b>0</b>
Items	<b>Items</b>	<b>Items</b>	<b>Items</b>
Resources	<b>Individual</b>	<b>Individual</b>	<b>Individual</b>
Routings	<b>Routings</b>	<b>Routings</b>	<b>Routings</b>

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	Number of buckets of this bucket type.
Items	Choose to plan at either the Item level or Product Family level. If you select Items in the first bucket, the other buckets can be set to either Items or Product Family. However, if you select Product Family in the first bucket, the remaining buckets are set to Product Family by default.
Resources	Choose to plan at either the Individual level or Aggregate level. If you select Individual in the first bucket, the other buckets can be set to either Individual or Aggregate. If you select Aggregate in the first bucket, the remaining buckets are set to Aggregate by default.
Routings	Choose to plan at either the Routings or BOR level. Whatever level you select in any of the buckets, all the rest of the buckets are assigned that level by default.

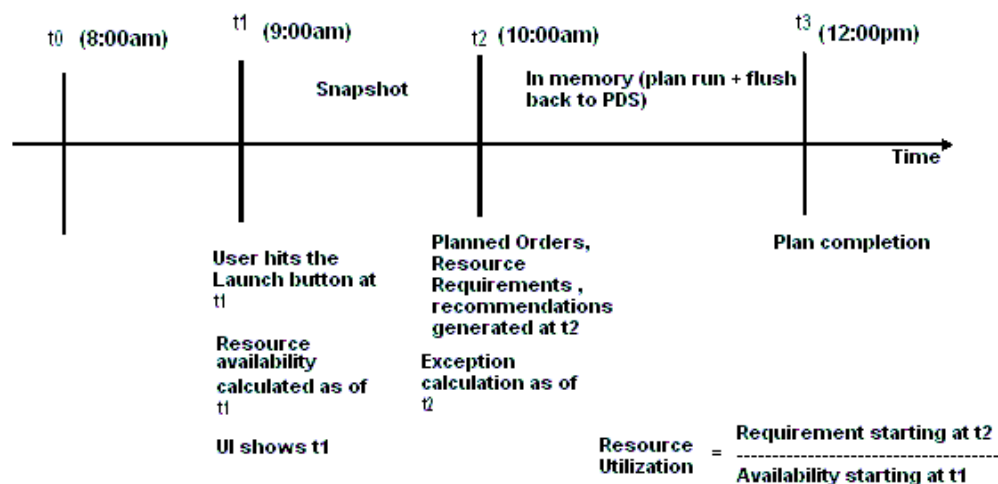
### Resource Utilization Calculation

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

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

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

**Figure 5–7 Calculating Resource Utilization**





The Organizations Tabbed Region

Plan Options (tps:JM1)

Plan

ProdPlan1

Production Plan

Plan Type

Distribution Plan

Main

Aggregation

Organizations

Constraints

Optimization

Decision Rules

Global Demand Schedules

Name	Description	Type	Ship To Consumption Level

Organizations

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"/>

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

Subinventory Netting

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.
Plan Safety Stock	Select to consider plan safety stock demand and supply in the planning demand/supply netting process.
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>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>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>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>If the demand schedule is an Oracle Demand Planning scenario, select a forecast consumption level for the Oracle Demand Planning scenario. The local 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-org</li><li>- Customer ship-to</li><li>- Customer bill-to</li></ul> <p>The choices in the list of values changes depending on the published level of the scenario.</p>
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 (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 on page 11-32, <a href="#">Setting Constraints for Different Plan Types</a> .
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 on page 11-32, <a href="#">Setting Constraints for Different Plan Types</a> .
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.
Supplier Capacity Constraints	Select Yes to consider supplier capacity constraints.
Enforce Purchasing Lead-time Constraints	Select this plan option to instruct the planning engine to constrain the plan by purchased item lead times (item attributes or approved supplier list).  Clear it to instruct the planning engine never to miss a demand due date because of a purchased item lead time.
Minutes Bucket Size (in Days)	Specify the number of minute buckets in the Days bucket type.
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.
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 (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.

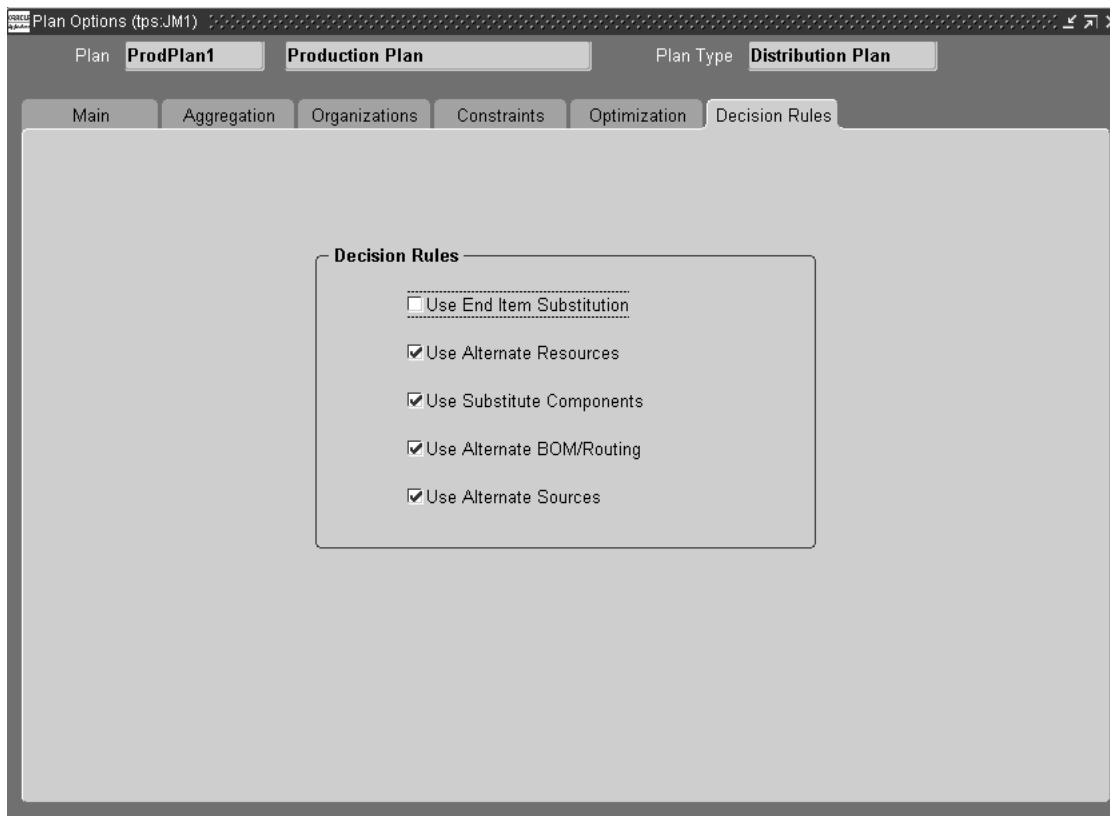
Penalty factors are plan level values that:

- 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.
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



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.

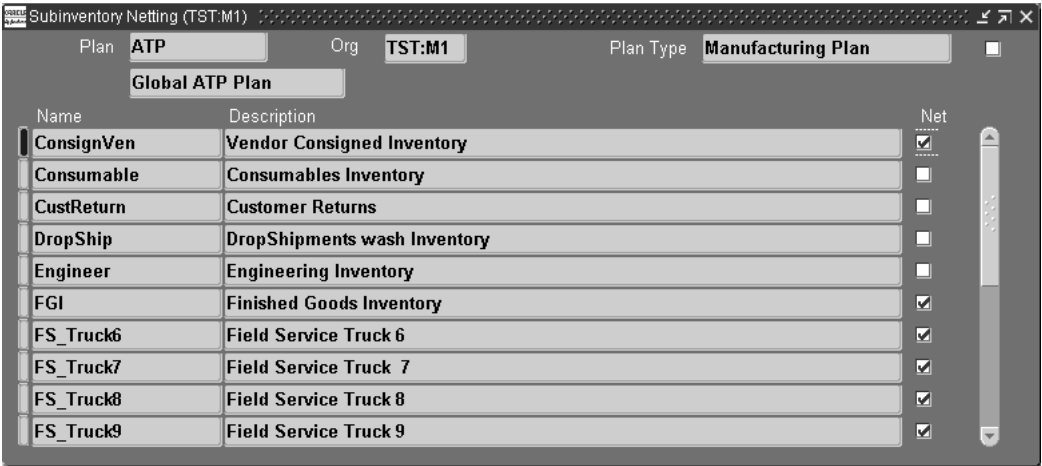
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**Note:** Users can collect forecasts into the APS planning server. Optionally, they can choose to consume forecasts by sales orders when they run ASCP plans. Forecasts are consumed if the Include Sales Order check box in the Organizations tab of the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

---

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

- 1. Choose Supply Chain Plan > Names to create a new plan for the organization that will use an existing plan as a source.  
The Supply Chain Plan Names window appears.
  - 2. Select Plan Options.  
The Plan Options window appears.
  - 3. Choose the Organizations tab.
  - 4. Specify the plan name to be used as a source for the new plan in the Demand Schedule portion of the window.
  - 5. Click Subinventory Netting.
- The Subinventory Netting window appears.



This table describes the fields and options.

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

## 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
SO1	10	June 1
SO 2	25	June 1

For more information, see [Overview of Forecast Consumption](#) in *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.

### 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.

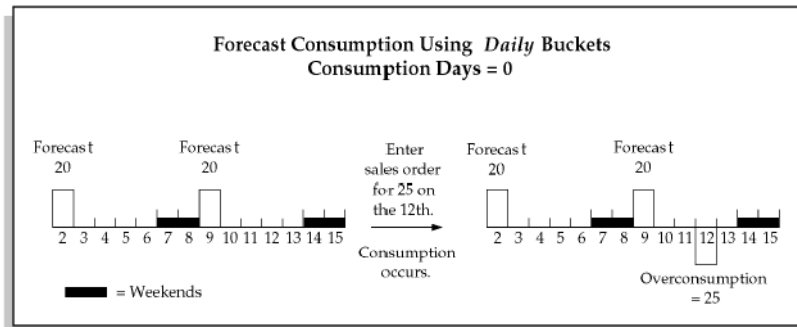
- Your forecast entry quantity is not always sufficient to cover the sales order quantities.

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 over-consumption (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.

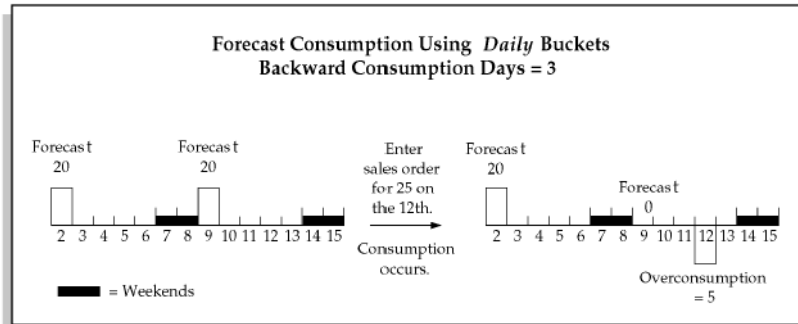
Since there are no forecasts on day 12, the forecast consumption process creates an overconsumption entry on the 12th and the forecasts remain the same.



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

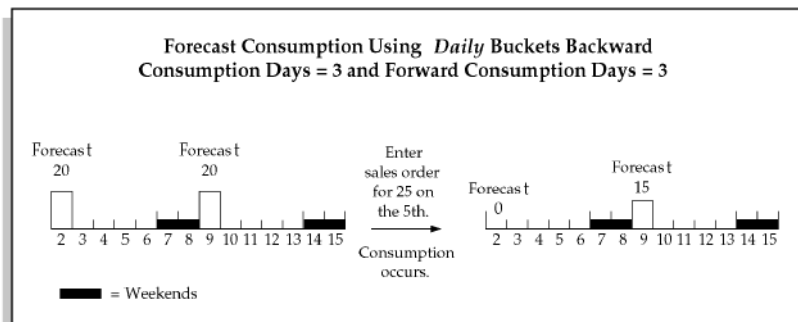


This diagram shows a daily forecast with 3 backward consumption days and 3 forward consumption days. You enter a sales order line for quantity 25 on day 5.

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



## Consumption Options

Consume forecasts either:

- In the source instance: Use this option if you want to view the forecast consumption results in the source instance independent of their use in a planning 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](#) in *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.

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

Collect unconsumed forecasts and use them to drive a plan.

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

### 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
- Collect the Oracle Demand Planning forecast sets and forecasts to the source instance forecast sets and forecasts
- Collect the source instance forecast sets and forecasts to the destination instance and run the plan

For more information, see [Overview of Forecast Consumption](#) in *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's 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 forecast Consumption Options region.

**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**

Consumption occurs when demand classes match between the forecast entry and the sales order line.

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.

### 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

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](#).

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.

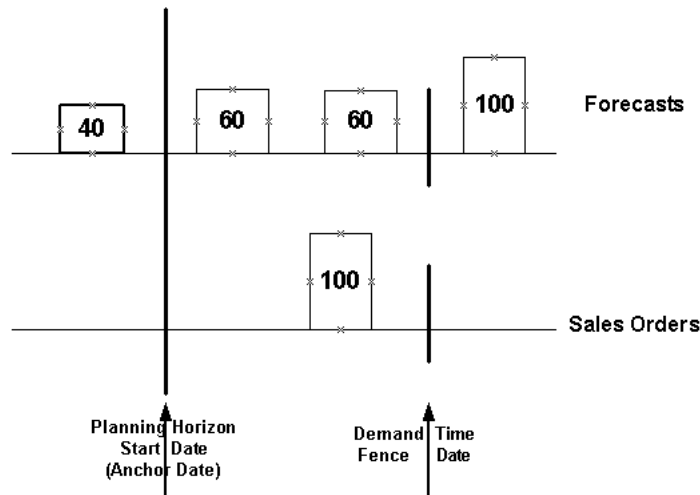
If an item has a demand time fence, the planning engine checks the profile option MSC: Consume forecast within demand time fence and does the following depending on its value:

- 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.

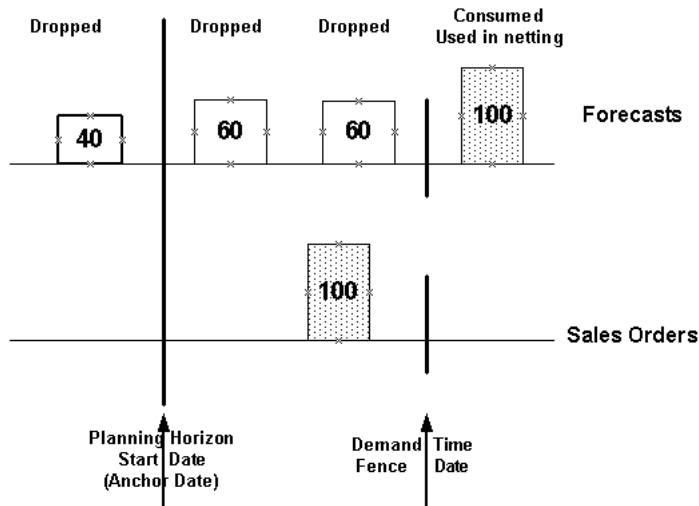


The planning engine checks the profile option MSC: Consume forecast within demand time fence and does the following depending on its value:

- 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.

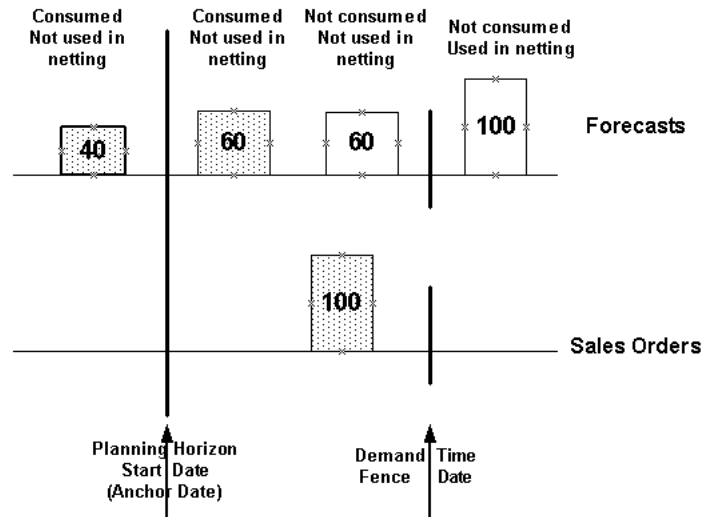
This diagram shows the results of the No profile option using the previous example:



- 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:



## 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 Sales Order order type, 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:

Fcst Qty	Fcst Date	Consumed Qty	SO Date	SO 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:

Fcst Qty	Fcst Date	Consumed Qty	SO Date	SO 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](#).
- 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](#).
- 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](#).

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.

**Table 5–1 Forecast Bucket Consumption Example - Forecast 1**

<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.

**Table 5–2 Forecast Bucket Consumption Example - Forecast 2**

<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.

### **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 Oracle Advanced Supply Chain Planning 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.
- 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.

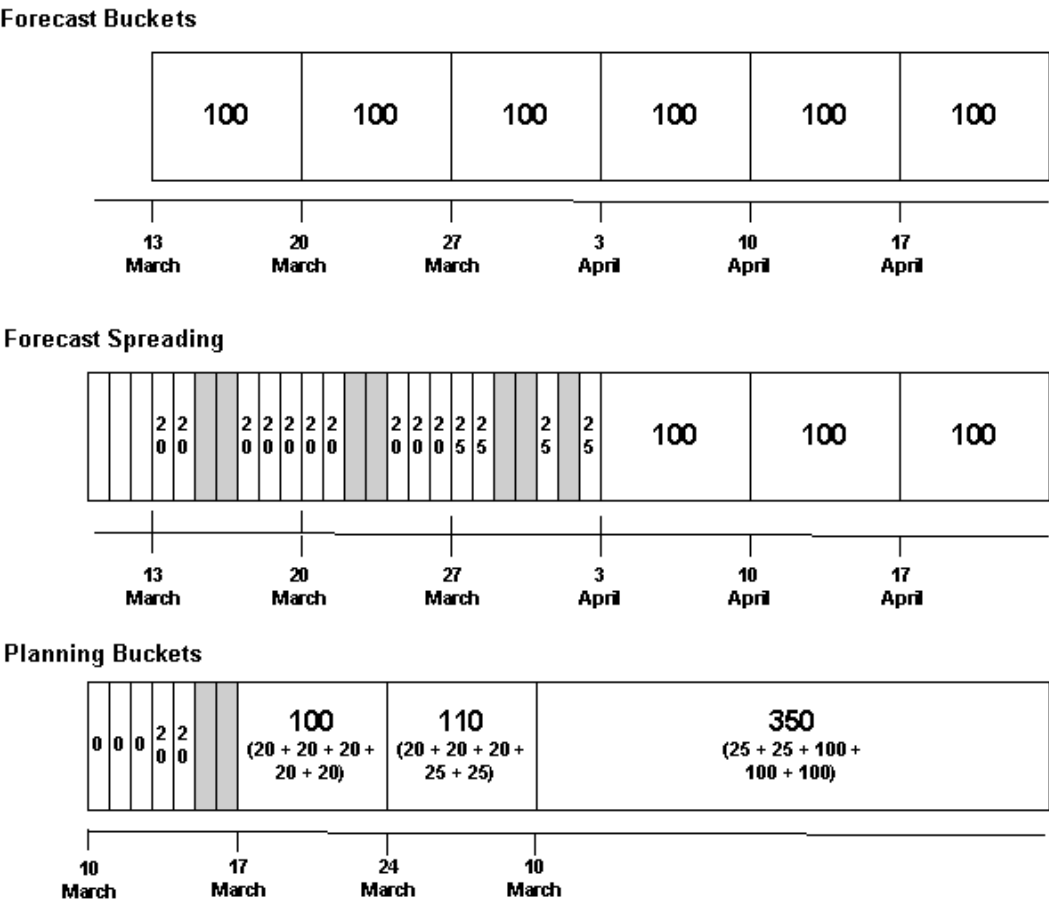
### **Forecast Spreading Example**

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 ( $25 + 25 + 100 + 100 + 100$ ).

Figure 5–8 Forecast Spreading Example



**Forecast Spreading Considerations**

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

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

This table shows an example of 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.

**Table 5–3    Workday Forecast Recalculation from Oracle Demand Planning**

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.

**Table 5–4 Forecast Spreading with Rounding Control Example**

<b>Data or Calculation</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
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. weeks of forecasts.
- 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.

Figure 5–9 Forecast Spreading with Backward and Forward Consumption Days

Forecast Buckets	Week1					Week2					Week3					Week4				
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	Week1					Week2				
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



**Figure 5–10 Forecast Spreading Demand Calculations**

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

	Planning
	Time
	Fence
Plan Run Date	

## Global Forecasting

Use global forecasting if your business has multiple shipping facilities and you do not know the facility that will fulfill the demand as you prepare and analyze your forecasts. Local forecasts apply to a shipping facility (inventory organization) while global forecasts apply to your entire business.

### **Global Forecasts as Demand Schedules**

Global forecasts are Oracle Demand Planning scenarios which you publish to Oracle Advanced Supply Chain Planning. You can instruct the planning engine to consume them during the supply chain planning run.

You cannot create global forecasts in Oracle Master Scheduling/MRP and Oracle Supply Chain Planning. If you use global forecasting, you often do not maintain local forecasts but you can.

To instruct the planning engine to use a global forecast as a demand schedule either to a supply chain plan or an inventory plan, enter it in the Plan Options form, Organizations tabbed region, Global Demand Schedules region.

### **Global Forecast Consumption in the Planning Engine**

Consumption of local forecasts always occurs within a shipping facility; consumption of global forecasts occurs without reference to a shipping facility.

You typically maintain global forecasts with Oracle Demand Planning in a global/marketing organization and place sales orders against inventory organizations. In global forecast consumption, sales orders in inventory organizations consume global forecasts with reference to a ship-to entity, for example, zone, customer site, demand class.

If you want your global forecasts consumed, you must state the ship to—item, customer, zone, customer zone, customer site, or demand class. You can set the forecast level using the plan option Ship to Consumption Level; the choices depend on the dimension on which the scenario is published (item, demand class, geography).

For sales orders, the planning engine infers ship to from the values for customer, customer site, customer zone, and zone. It ignores the source organization on the sales order line and redetermines it; see Shipping Facility Selection in this section.

The planning engine consumes a global forecast with sales orders having the same ship to and ship from.

For local forecasts that you maintain, the ship to is the forecast set level

### **Global Forecast Processing**

If you instruct the planning engine in Oracle Demand Planning to perform global forecast consumption, it occurs against forecast entries with a ship to. For the following situations:

- If you mark an Oracle Demand Planning forecast to publish at a specific organization, the planning engine treats it as a local forecast and publishes planned order demand rather than forecast demand.
- If you enter an Oracle Demand Planning scenario in the plan options as a local demand schedule, the planning engine treats it as a local forecast.

The planning process distributes the forecast entries to inventory organizations (sourcing the forecasts). It may distribute components of a configured item to multiple inventory organizations. To avoid the planning engine's sourcing forecast entries with fractional demand, select item attribute Round Order Quantity. To decide on the distribution, the planning engine, in:

- Unconstrained plans and constrained plans without decision rules, uses global sourcing rules rank and sourcing percentage. Global sourcing rules are sourcing rules, bills of distribution, and assignment sets in the global/marketing organization. For constrained plans, if it does not find any capacity in any of the sources, it distributes based on the planned split percentage of the highest rank in the source.
- Constrained plans with decision rules, uses rank and material, resource, and transportation constraints. If it does not find any capacity in any of the sources, it distributes based on the planned split percentage of the highest rank in the source.
- Optimized plans, the planning engine uses cost of producing an item; resource costs; carrying costs; plan objectives; and material, resource and transportation constraints. You can instruct it to enforce the global sourcing rule split.

The planning process plans for each inventory organization to satisfy its sales order lines and global consumed forecast entries.

## Shipping Facility Selection

You can manually select a shipping facility on a sales order line at order entry time based on order promising or a preferred facility. However, the facility that you choose may not be the best one at shipment time due to the evolving global supply and demand picture.

The planning process can select a facility for sourcing the material (sourcing the sales order), based on global supply availability, supply chain constraints, procurement costs, and production costs. It can publish suggested source organization, ship method, and due date information to the sales orders within the following parameters:

- It sets the due date in the date field that you specify in plan option Schedule By.
- For configured items, it only suggests changes to the configuration item. The planning engine suggest different sources for each configuration in a supply chain plan based on its sourcing rules.
- For ship method, it suggests within the interlocation transit times alternate ship methods. Optimized plans may consider the cost of each ship method.

The planning engine only sources sales order lines:

- In constrained plans with decision rules and optimized plans
- That are scheduled
- That are not firm
- That are not marked ship model complete

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.

To avoid the planning engine's sourcing sales order lines with fractional demand, select item attribute Round Order Quantity.

In constrained plans with decision rules, the planning engine sources sales orders as follows:

- If the organization with the higher sourcing percentage has enough capacity, place entire sales order line there. If the organization with the higher sourcing percentage does not have enough capacity, split the sales order line; use all capacity of the organization with the higher sourcing percentage and source the remaining from the other organizations.
- If the plan enforces sourcing splits, split the sales order line and source according to the sourcing percentages. If any organization does not have enough capacity, source its remaining from the other organizations according to their availability.

In optimized plans, the planning engine sources sales orders based on sources on capacity, cost of production, and plan objectives.

You release the recommendations to Oracle Order Management using the Planner Workbench. To do this, set the Planner Workbench to include sales orders. However:

- You cannot release recommendations that require a sales order line split.

- You cannot auto-release these recommendations

You can also send a workflow notification to the sales representative; select Notifications for the plan.

## 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 DRP, 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.

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

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

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

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

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

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

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

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

**Overwrite None, Append Planned Orders**

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

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

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

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

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

Schedule Date	Quantity	Order Status
05-FEB	110	Planned



Schedule Date	Quantity	Order Status
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

Schedule Date	Quantity
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 on-line 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).

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**Note:** Intelligent selection of alternates occurs in optimized plans only. Constrained 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.

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- Pegging of supplies (on-hands, scheduled receipts, and planned order supplies) to demands
- Detailed scheduling of individual operation steps on resources

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

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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.

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.

**Figure 5–11 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.
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

1. 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](#) on page 5-25 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 default priority rule (if you do not specify one in the Demand Priority Rule field in the Plan Options form) is Schedule Date. Thus, by default, demands are prioritized 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](#) on page 10-88.

## 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.

## Product Aggregation Levels

In 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, Material, or Distribution 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. The first is to employ the following resource aggregation levels:

- individual
- aggregate

The second is to employ the following routing aggregation levels:

- 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).

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 BOR, Oracle ASCP generates resource requirements during planning only for those items or product families that have defined BORs.



- When using the routing aggregation level BOR, operation sequencing information from the routings that are used to generate the BOR is lost. The BOR aggregation level is for use with the weekly and period buckets for an approximate rough-cut capacity planning. When using BOR's, constraint-based planning is not recommended because the resource sequencing and interdependence is not considered. BOR Aggregation is not compatible with routing aggregation in the same plan, and BOR 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 BOR's 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 BOR 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 BOR aggregation level is for use with the weekly and period buckets for an approximate rough-cut capacity planning. When using BOR's, constraint-based planning is not recommended because the resource sequencing and interdependence is not considered. BOR aggregation is not compatible with routing aggregation in the same plan, and BOR 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 tradeoffs 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:

$$\text{inventory carrying cost} = (\text{average inventory per bucket}) * (\text{carrying cost percent}) * (\text{item cost})$$

## 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

$$\begin{aligned} \text{margin percentage} &= (\text{plan revenue}) - (\text{plan cost}) \\ \text{plan revenue} &= \{(\text{sales order line price}) * (\text{sales order quantity})\} + \{(\text{item list price}) * (\text{item discount}) * (\text{forecast quantity})\} \end{aligned}$$

Plan revenue is calculated and summed up for all items with independent demand in all time buckets.

$$\text{plan cost} = \text{item cost} + \text{transportation cost} + \text{inventory carrying cost}$$

Plan cost is calculated and summed up for all items, resources, and ship methods in all time buckets.

$$\text{item cost} = (\text{resource cost} * \text{resource quantity used}) + (\text{buy item cost} * \text{buy item quantity}) + (\text{process cost} * \text{quantity using process})$$
$$\text{transportation cost} = (\text{transfer quantity} * \text{item weight} * \text{shipping cost per unit weight}) + (\text{buy quantity} * \text{item weight} * \text{shipping cost per unit weight})$$
$$\text{inventory carrying cost} = \text{average inventory per bucket} * \text{carrying cost percent} * \text{item cost}$$

Margin percentage is the most aggregate of objectives in the sense that it combines multiple costs.

## Ontime Delivery Objective

The calculation for ontime delivery objective is

$$\text{ontime delivery} = \text{penalty cost for late demand}$$

Ontime delivery is calculated and summed up for all items with independent demand in all time buckets.

$$\begin{aligned} \text{penalty cost for late demand} = & (\text{penalty cost factor for late demand in} \\ & \$/\text{unit}/\text{day} * \text{days late} * \text{quantity of late demand}) + (\text{penalty cost factor for} \\ & \text{unmet demand in } \$/\text{unit}/\text{day} * \text{days late} * \text{quantity of unmet demand}) \end{aligned}$$

Ontime 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

Oracle ASCP 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, Oracle ASCP considers late demand cost in its planning decision-making.

## Factors Affecting Objectives

Implicit and explicit objectives are affected by several factors and rules. The following two tables presents the relationship of these objectives to costs, prices, priority rules, and sourcing ranks. These tables also provide you with the minimum data requirements for optimized plans based on different objectives.

Cost-Price/Objectives	Inventory Turns	Ontime Delivery	Plan Profit
Resource Cost	n/a	n/a	yes
Item Standard Cost	yes	n/a	yes
Carrying Cost Percentage	yes	n/a	yes
Late Demand Penalty Factor	n/a	yes	n/a
List Price and Selling Price	n/a	yes	n/a
Transportation Cost	n/a	n/a	yes

Yes means cost/factor affects the objective.

Factor	Penalty Cost for Late Demand	Penalty Cost for Resource Capacity Violation	Penalty Cost for Transport Capacity Violation	Penalty Cost for Material Capacity Violation	Penalty Cost for Safety Stock Violation
Resource Cost	n/a	yes	n/a	n/a	n/a
Item Standard Cost	n/a	n/a	n/a	yes	yes
Carrying Cost Percentage	n/a	n/a	n/a	n/a	n/a

<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>
Exceeding Item Capacity Penalty Factor	n/a	n/a	n/a	yes	n/a
Exceeding Resource Capacity Penalty Factor	n/a	yes	n/a	n/a	n/a
Exceeding Transport Capacity Penalty Factor	n/a	n/a	yes	n/a	n/a
Late Demand Penalty Factor	yes	n/a	n/a	n/a	n/a
List Price and Selling Price	yes	n/a	n/a	n/a	n/a
Transportation Cost	n/a	n/a	yes	n/a	n/a

yes means cost/ factor affects the objective.

<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	n/a	n/a	yes	n/a	n/a
Item Standard Cost	yes	yes	n/a	yes	yes
Carrying Cost Percentage	n/a	n/a	n/a	n/a	yes
Sourcing Rank	yes	n/a	n/a	n/a	n/a
Substitute Item Priority	n/a	n/a	n/a	yes	n/a
BOM/Routing Priority	n/a	yes	n/a	n/a	n/a
Alternate Resource Priority	n/a	n/a	yes	n/a	n/a

yes means cost/ factor affects the objective.

## Computational Burden Considerations

At all levels of optimization except for unconstrained plan (see [Choosing Plan Classes](#) on page 5-21), 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 Aggregation Levels](#) on page 5-79).

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

<b>Item B</b>	<b>Current</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Scheduled Receipts	0	0	0	0	0	0
Project On-Hand	25	0	0	0	-50	0
Net Requirements	0	0	0	0	50	0
Planned Order Due Date	0	0	0	0	50	0
Planned Order Start Date	0	50	0	0	0	0

Now suppose that the demand for A on day 2 decreases by 5 units. Revised planned orders are shown in the two tables below.

<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

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



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# Supply Chain Modeling

This chapter includes:

- [Overview of Supply Chain Modeling](#) on page 6-2
- [Setting up the Supply Chain](#) on page 6-3
- [Setting Supplier Capacity](#) on page 6-5
- [Setting Up Routings](#) on page 6-22
- [Lead Time and the Planning Time Fence](#) on page 6-35
- [Planned Inventory Points](#) on page 6-91
- [Setting Up Batch Resources](#) on page 6-99
- [Allocating Demand to Suppliers](#) on page 6-104
- [Sourcing Example](#) on page 6-106
- [Enforce Sourcing Splits](#) on page 6-116
- [Viewing the Supply Chain](#) on page 6-122
- [Performing Tasks on the Planning Server](#) on page 6-124
- [Audit Statements Report](#) on page 6-125

## 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 distribution requirements plans (DRPs) as input for your material plans.

You can combine centralized distribution and material planning for items with significant inter-organization supply or demand. You can perform subset planning where you prefer autonomous local planning. Output from the central plan can go into plant-level material plans and vice versa.

Oracle ASCP gives you a transparent view of the virtual enterprise, where all inventory locations participate in the planning process.



## Setting up the Supply Chain

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 say “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.

For more information on defining sourcing rules, see “Defining Sourcing Rules.” 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” on page 6-122.

### 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” 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” on page 6-122.

## 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
- 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.” 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”](#) on page 6-122.

## 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”](#) on page 6-122.

## 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**

You can specify the valid delivery dates for each of your suppliers or supplier/item combinations. The reception schedule defines the dates an organization is able to

receive an item from each vendor. Planning adjusts planned orders so that deliveries are planned for valid dates.

**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.

**Table 6–1 Supplier Capacity Accumulation from Supplier 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
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.

**Table 6–2 Supplier Capacity Accumulation from Supplier 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
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.

**Table 6–3 Supplier Capacity Accumulation: Constrain New Orders Only**

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.

**Table 6–4 Supplies for Supplier 1, Supplier Site 1, Item A from Your Unconstrained Plan**

Order Type	Order Number	Order Line	Quantity	Need by Date	Promise Date	Dock Date
Purchase order	1	1	20	29 April	29 April	29 April
Purchase order	1	2	100	1 May	3 May	3 May
Purchase order	2	1	10	6 May	-	6 May
Purchase order	3	1	100	29 April	-	29 April
Purchase requisition	100	1	200	13 May	-	13 May
Purchase requisition	101	1	200	10 May	-	10 May

**Table 6–4   Supplies for Supplier 1, Supplier Site 1, Item A from Your Unconstrained Plan**

Order Type	Order Number	Order Line	Quantity	Need by Date	Promise Date	Dock Date
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.

**Table 6–5   Forecast for Supplier 1, Supplier Site 1, Item A from Your Unconstrained Plan**

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
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.

**Table 6–6 Demands and Supplies for Supplier 1, Supplier Site 1, Item A from Supplier 1 Constrained Plan**

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
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

**Table 6–6 Demands and Supplies for Supplier 1, Supplier Site 1, Item A from Supplier 1 Constrained Plan**

Order Type	Order Number	Order Line	Quantity	Date
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.

**Table 6–7 Supplies Pegged to Forecast for Supplier 1, Supplier Site 1, Item A from Supplier 1 Constrained Plan**

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.

**Table 6–8 Supply Commit for Supplier 1, Supplier Site 1, Item A from Supplier 1**

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.

**Table 6–9 Supplies to Schedule for Supplier 1, Supplier Site 1, Item A in Your Constrained Plan**

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.

**Table 6–10 Supplier Capacity Consumption Scheme for Supplier 1, Supplier Site 1, Item A, Purchase Orders 2 and 3 in Your Constrained Plan**

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.

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**Note:** The methods you use to set capacity by time period vary depending on which version of Oracle Applications you are using.

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### **If you are using version 11i, 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.

**Figure 6–1 The Supplier Item Attributes window**

The screenshot shows the Oracle Supplier Item Attributes window. The 'Planning Constraints' tab is selected. The 'Capacity' section contains a table with the following data:

From Date	To Date	Capacity per Day
12/MAR/2001	01/APR/2001	0
02/APR/2001	06/APR/2001	200
07/APR/2001	08/APR/2001	0
09/APR/2001	13/APR/2001	200

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%.

**If you are using version 11.0, to set capacity by time period**

1. Choose Collection > Workbench.
2. Locate the Item/Supplier combination.
3. [Right-click] the Item/Supplier combination. Select Supplier Capacity.



**Figure 6–2 The Supplier Capacity window**

Oracle Applications - scpst11i

File Edit View Folder Tools Plan Actions Window Help

Supplier Capacity (tps.JM1)

Supplier	Item	Buyer	Planner	Standard Cost
RTJL1	MISC		J. Smith	200

Supplier Capacity Supplier Flexfences

From	To	Capacity

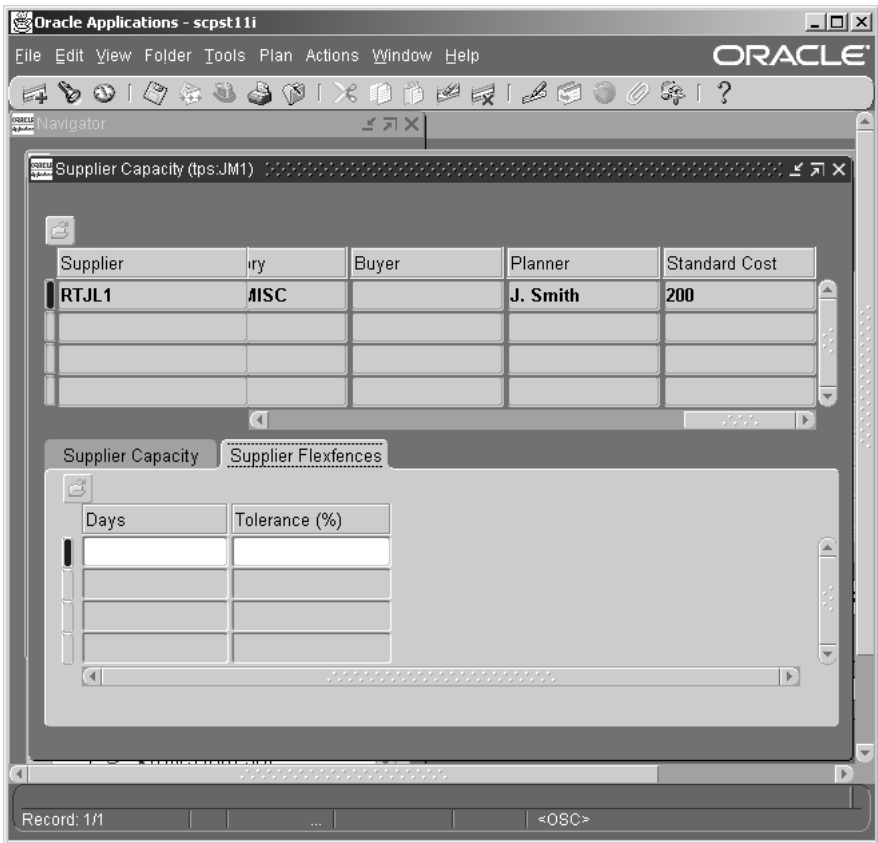
Record: 1/1 <OSC>

4. Enter your supplier capacities by time period.

**If you are using version 11.0, to set supplier flexfences**

1. Choose Collection > Workbench.
2. Locate the Item/Supplier combination.
3. [Right-click] the Item/Supplier combination. Select Supplier Flexfences.

Figure 6–3 The Supplier Flexfences window



Setting Supplier Specific Planning Constraints

To set a supplier specific lead time

Enter a value in the Processing Lead Time field.

Using Delivery and Reception Frequency Calendars

You can specify delivery dates for each supplier or supplier/item combinations and create a schedule to define the dates an organization is able to receive items. The planning engine adjusts planned orders so deliveries are scheduled for the dates the receiving organization is available. You can define the delivery calendar just like a

regular manufacturing calendar and you can define valid delivery dates and choose the calendar when you associate an item to a supplier site when defining the approved supplier list. The Delivery Calendar is independent of your workday calendar.

### **To set a delivery and reception frequency calendar**

Choose the value for the delivery/reception calendars.

### **Using Supplier Specific Order Modifiers**

Order modifiers can be specified at the supplier site level, this overrides item level order modifiers. Two order modifiers can be specified:

- Minimum Order Quantity to specify minimum quantities that can be placed on a single order to a particular supplier site.
- Fixed Lot Multiple to specify order lot sizes that must be considered when ordering from a particular supplier. For example, if the Fixed Lot Multiple is 100 units, a planning order requirement for 125 units will result in a recommended order to the supplier for 200 units.

### **To set an order modifier**

Enter the order modifier value for Minimum Order Quantity or Fixed Lot Multiplier.

## 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.

#### **To model the resource schedule**

1. Sign on using the Manufacturing and Distribution Manager responsibility.
2. From the Navigator, select Bill of Material > Routings > Routings.  
The Routings screen appears.
3. Select Operation Resources.  
Operation Resources screen appears.

**Figure 6–4 Operation Resources**

Operation Resources (M1) - 10

Item **SB68415** Alternate

Sequence **10** Effective Date **09-APR-1997**

**Resources**

Main **Scheduling** Costing

Seq	Resource	UOM	Basis	Usage	Inverse
10	LBR-ASSY	HR	Item	.166666666666666666	

Alternate

- 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*.

## Minimum Transfer Quantity (MTQ)

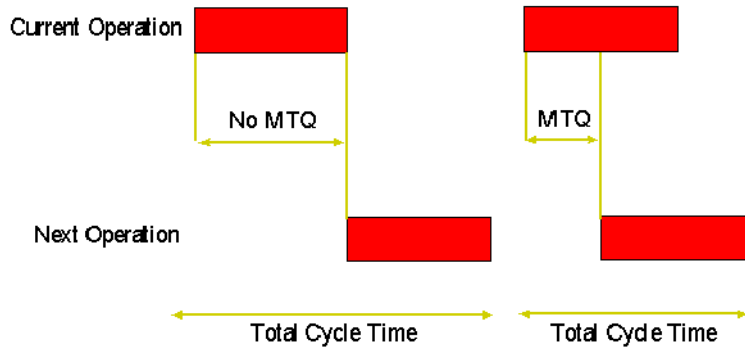
Oracle ASCP allows you to specify a Minimum Transfer Quantity (MTQ), which is the minimum amount that an operation must be completed in order to trigger the start of the next operation.

MTQ 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 ASCP respects Minimum Transfer Quantity while scheduling operations.

In the process of scheduling an operation, Oracle ASCP 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.

The following diagram shows how MTQ is used:

**Figure 6–5 MTQ Example**



### Capability

You can specify Minimum Transfer Quantities between routings and between operations. Oracle ASCP schedules operations with respect to Minimum Transfer Quantity.

#### To set up the Minimum Transfer Quantity

1. Sign on using the Manufacturing and Distribution Manager responsibility.
2. From the Navigator, choose Bill of Materials > Routings > Routings.

**Figure 6–6 Routings**

The screenshot shows the 'Routings (M1)' form. At the top, the 'Item' field is 'AS54888' and the description is 'Sentinel Standard Desktop'. The 'UOM' is 'Ea'. There is a checkbox for 'Capable To Promise'. The 'Revision' is 'A' and the 'Date' is '04-JAN-2002'. The 'Display' dropdown is set to 'Future and Current'. Below this is the 'Operations' section with tabs for 'Main', 'WIP', and 'Description'. The 'WIP' tab is active, showing a table of operations. The table has columns for 'Seq', 'Code', 'Count Point', 'Autocharge', 'Backflush', and 'Min Transfer Qty'. There are five rows of operations: 10 SDAS, 20 SBAS, 30 SFAS, 40 STST, and 50 DSAS. Each row has checkboxes for 'Count Point', 'Autocharge', and 'Backflush', and a text field for 'Min Transfer Qty' with the value '0'. At the bottom of the form are three buttons: 'Routing Details', 'Routing Revisions', and 'Operation Resources'.

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

3. Define Routing.
4. Define Routing Operations.
5. Select the WIP tab.
6. Specify Minimum Transfer Quantity in the Routing form.

### Interrouting Minimum Transfer Batch Size

You can specify Minimum Transfer Quantity between routings by using the Minimum Transfer Quantity field in the WIP region of the Routings form. The interrouting MTQ is specified for the last operation of the upstream routing.

### Intrarouting Minimum Transfer Batch Size

You can specify Minimum Transfer Quantity between operations by using the Minimum Transfer Quantity field in the WIP region of the Routings form. The intrarouting MTQ (between operations) is specified for the current operation.

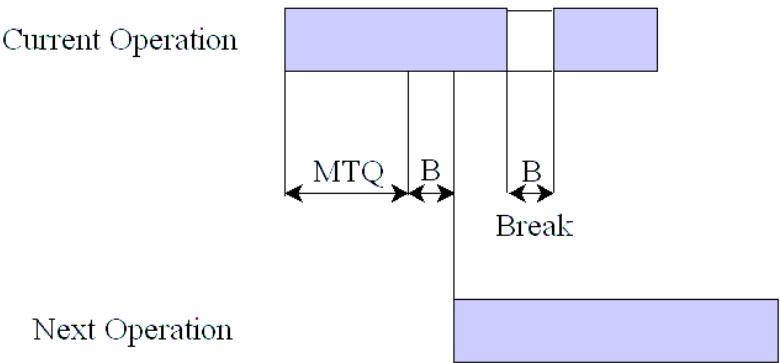
**Consideration of Resource Breaks**

When resource breaks are present, then ASCP will manipulate the start time of the next operation relative to the start time of the current operation so as to both respect MTQ constraints and avoid starvation of the next operation. This behavior is illustrated through the examples below.

**Advanced Example 1 - Resource Break in the Current Operation, No Resource Break in the Next Operation: First Variation**

The figure below illustrates that MTQ is available before the break. Considering the no starvation rule, the second operation starts after MTQ Production Time plus Break. The break postpones the start of the second operation.

**Figure 6–7 MTQ - Example 1**

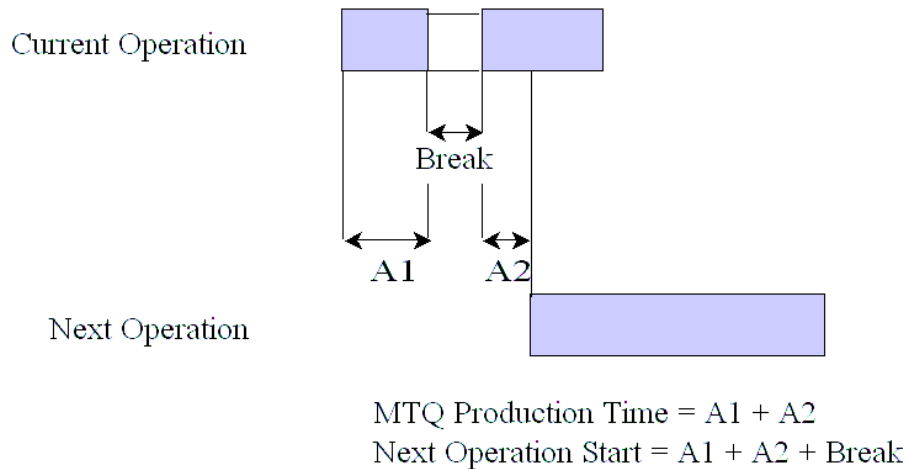


$$\text{Next Operation Start} = \text{MTQ Production Time} + \text{Break}$$

**Advanced Example 2 - Resource Break in the Current Operation, No Resource Break in the Next Operation: Second Variation**

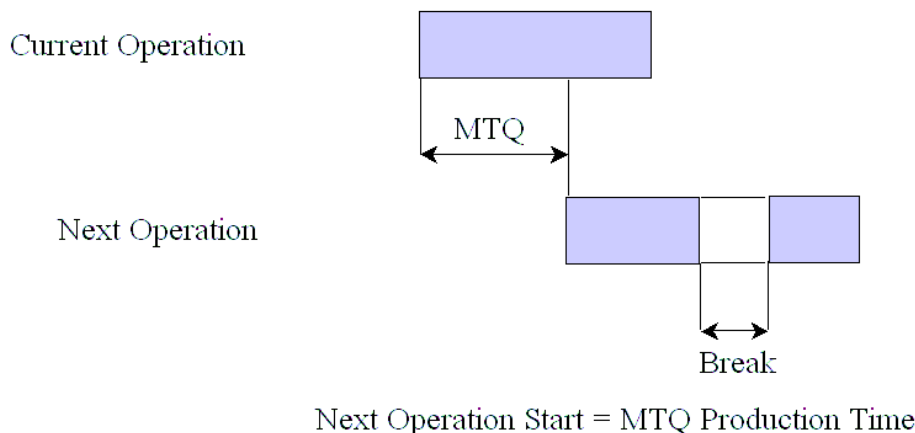
The figure below illustrates that MTQ is available after the break. The break delays the start of the downstream operation by delaying the time at which MTQ units are completed by the first operation.



**Figure 6–8 MTQ - Example 2**

**Advanced Example 3 - No Resource Break in the Current Operation, Resource Break in the Next Operation**

The figure below illustrates that the break in the second operation does not affect when material is initially required at the second operation, so the second operation starts exactly after MTQ units are completed at the first operation

**Figure 6–9 MTQ - Example 3**


---

**Note:** You should not model MTQ in your production process if the production shift of the downstream operation is inconsistent with the production shift of the upstream operation (example: upstream operation shift = 16 hours, downstream operation shift = 24 hours). The shift inconsistency may result in starvation of the downstream operation.

---

## 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).

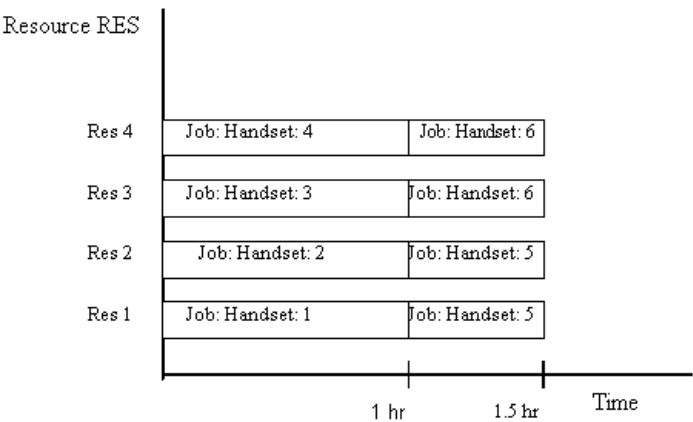
A manufacturing house is assembling telephone handsets. The handset assembly job consists of one assembly operation that takes one hour. The manufacturing house has one resource called RES. The resource RES has 4 resource units which are 4 assemblers (Res 1, Res 2, Res 3, Res 4). Please note that within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

Figure 6–10 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

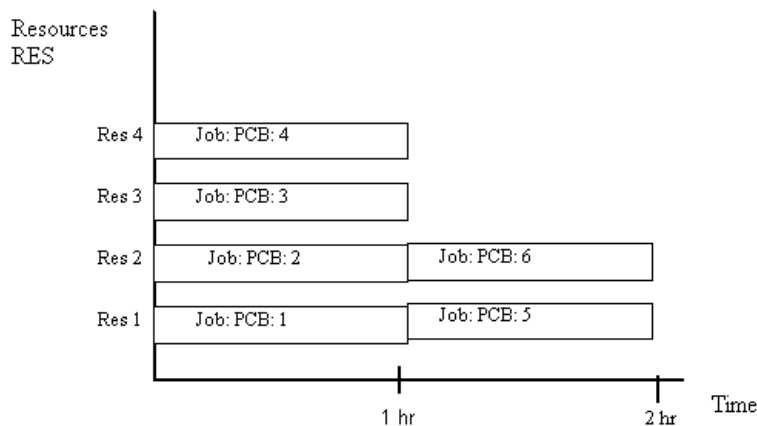
The following figure shows how resource unit allocation should be performed in this situation.

---

**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).

---

**Figure 6–11 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.

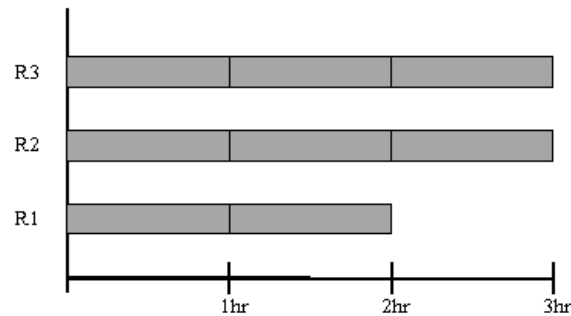
### **Example 3**

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.

**Figure 6–12 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**

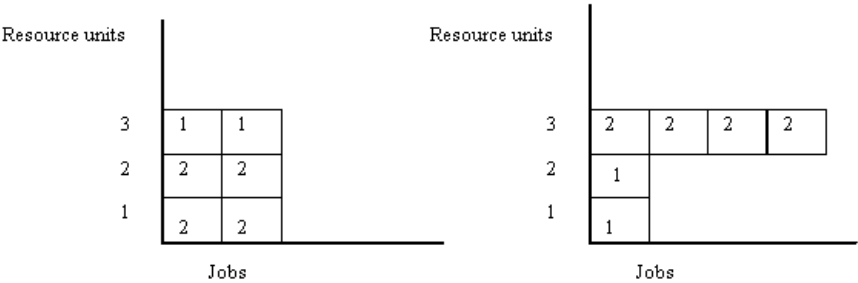
Since Oracle ASCP treats the capacity of multiple units of a single resource as a large bucket (instead of as independent buckets for each resource unit), certain detailed scheduling decisions will be approximate and may not be locally optimal. For example, in the situation below:

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.

**Figure 6–13 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

**Figure 6–14 Lead Time**

Organization Item (M1)

Organization: M1 Seattle Manufacturing

Item: AS72111

Description: Envoy Deluxe Laptop

Display Attributes: ☐ Master ☒ Org ☐ All

General Planning MPS/MRP Planning **Lead Times** Work In Process Order Management Invoicing Service

Preprocessing	
Processing	2
Postprocessing	0
Fixed	.5
Variable	.003315
Cumulative Manufacturing	3
Cumulative Total	33.9996
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.

This figure shows the lead time attributes and the dates that their boundaries define.

**Figure 6–15 Relationship of Lead Time Attributes to Calculated Dates**



**Lead Time Item Attributes and Lead Time Calculation Concurrent Processes**

If you run the following Oracle Bills of Material concurrent processes, they can update lead time values that you may have manually set:

- Calculate Manufacturing Lead Time
- Calculate Cumulative Lead Time
- Rollup Cumulative Lead Time

These concurrent processes update the following lead time item attribute fields:

- Fixed: Oracle Bills of Material concurrent process Calculate Manufacturing Lead Time calculates this time and update your manual entry for make items. It sums the values in field Usage for lot-based, scheduled resources.
- Variable: Oracle Bills of Material concurrent process Calculate Manufacturing Lead Times calculates this time and update your manual entry for make items. It sums the values in field Usage for item-based, scheduled resources.
- Processing: The Oracle Bills of Material lead time concurrent process Calculate Manufacturing Lead Time calculates this time and replaces your manual entry for make items. It uses calculation Fixed + (Variable \* Lead Time Lot Size); if Lead Time Lot Size does not have a value, it uses 1.
- Cumulative Manufacturing: The Oracle Bills of Material lead time concurrent processes Calculate Cumulative Lead Time and Rollup Cumulative Lead Time calculates this time and replace your manual entry. For an assembly, they take each component’s cumulative lead time and subtract its operation lead time offset in the assembly’s routing. Then, they take the manufacturing lead time of the assembly and add the largest adjusted cumulative manufacturing lead time of its components.
- Cumulative Total: The Oracle Bills of Material lead time concurrent processes Calculate Cumulative Lead Time and Rollup Cumulative Lead Time calculate this time and replace your manual entry. For an assembly, they take each

component's cumulative lead time and subtract its operation lead time offset in the assembly's routing. Then, they take the manufacturing lead time of the assembly, add the largest adjusted cumulative manufacturing lead time of its components, and add the longest buy part lead time of its components.

Decimal lead time quantities denote times less 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.

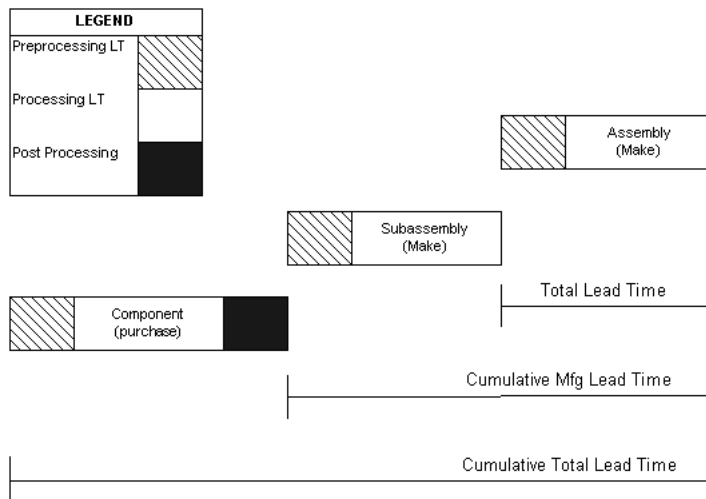
Total lead time is not an item attribute. The planning engine calculates it in unconstrained plans to determine an order's Order Date. It:

- 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.

**Figure 6–16 Calculations of Cumulative Lead Time Attributes**



### Calculated Supply Dates

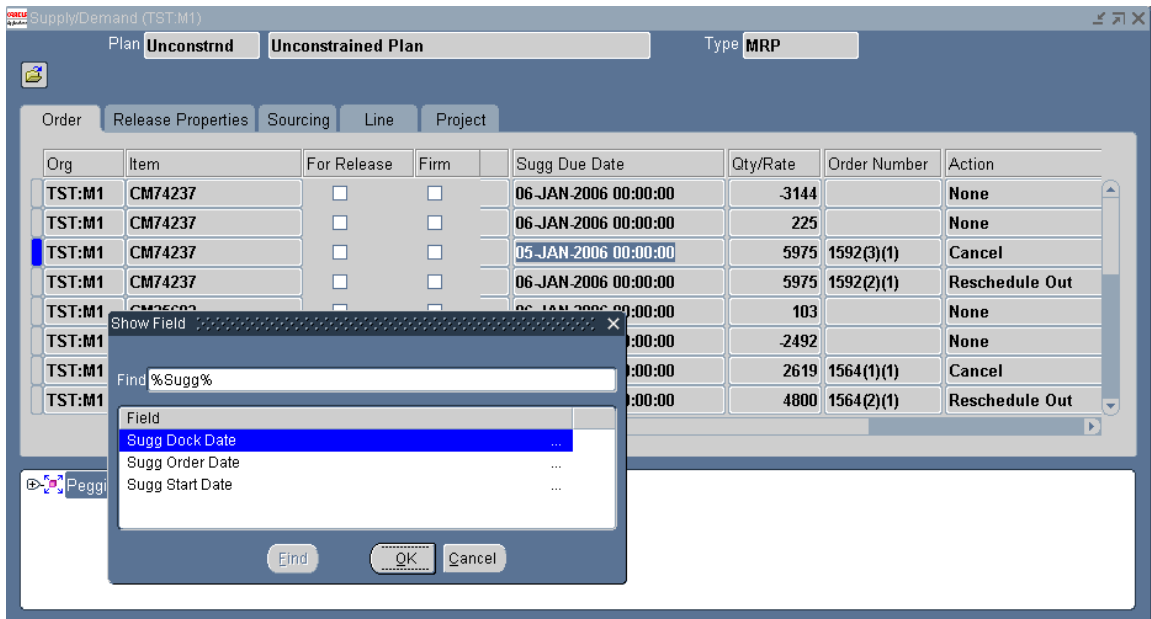
For all plan types, the planning engine schedules planned orders and scheduled receipts based on Demand Due Date of the demand that the supply is pegged to. It calculates these dates:

- **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 start the process of creating the supply.

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.



## Dates Calculated 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.

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 day upon which work order paperwork should begin.

This diagram shows dates calculated for manufacturing supplies.

**Figure 6–17    Dates Calculated for Manufacturing Supplies**



**Dates Calculated 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 (dmtM1)

Plan: CR\_DSNC2A EDD Plan Plan Type: Manufacturing Plan

Main Aggregation Organizations Constraints Optimization Decision Rules

Planned Items: Demand schedule ...

Material Scheduling Method: Operation Start Date

End Item Substitution Set: Order Start Date

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

☒ Lgt 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

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 (TST:M1)

Plan: RS-Test2    Type: DRP    Test: 1

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

Supplier Capacity    Supplier Flexences

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:

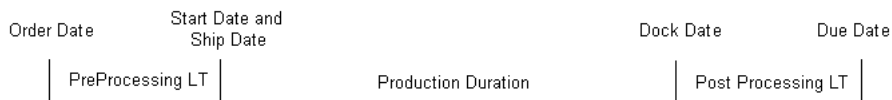
- If the purchased supply item has an Approved Supplier List Supplier Processing lead time: Approved Supplier List Supplier Processing lead time
- If the purchased supply item does not have an Approved Supplier List Supplier Processing lead time: Item attribute Processing

Suggested Start Date: Ship Date

Suggested Order Date: Start Date - Preprocessing

This diagram shows the calculations for purchased supplies.

**Figure 6–18 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):

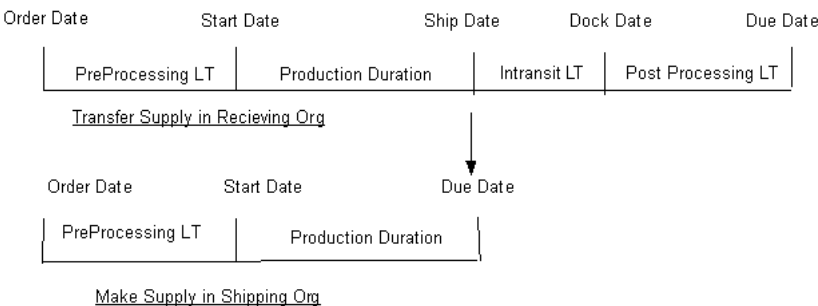
- Unconstrained plans: Ship Date - Processing
- Constrained plans: Ship Date. The planning engine does not consider a build time because the supply may be on-hand.

Suggested Order Date (receiving organization calendar):

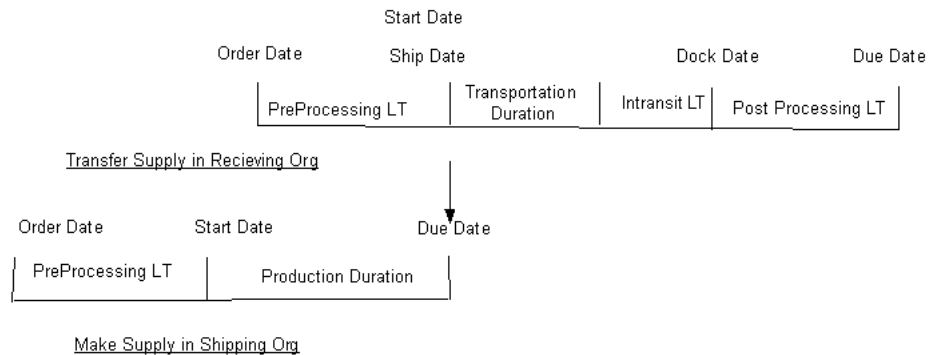
- Unconstrained plans: Planned order Start Date - Preprocessing
- Constrained plans: Ship date in the receiving organization, if the shipping organization is a planned organization. The constrained plan uses material material and resource constraints in the shipping organization.

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.

**Figure 6–19   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.

**Figure 6–20 Calculated Dates for Transfer Supplies, Constrained Plan**

## Planning Time Fence Control

### Planning Time Fence Control Introduction

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

### Setting Planning Time Fence

Specify a planning time fence time for an item in an organization using the item attributes Planning Time Fence and Planning Time Fence Days.

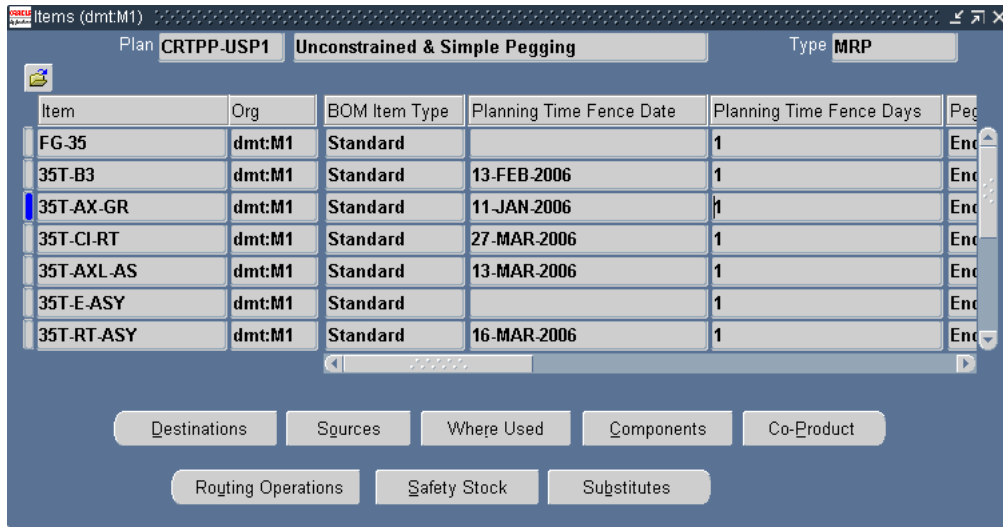
To enable planning time fence control in a plan, select plan option Planning Time Fence Control.

The screenshot shows the 'Plan Options (dmt:M1)' window. At the top, the 'Plan' is 'CR\_DSNC2A' and the 'Plan Type' is 'Manufacturing Plan'. The 'Main' tab is selected, showing various configuration options. On the left, 'Planned Items' is set to 'Demand schedule ...', 'Material Scheduling Method' is 'Operation Start Date', and 'End Item Substitution Set' is empty. On the right, 'Assignment Set' is 'dmt:DSNC-AS1', 'Demand Priority Rule' is 'DSNC-PR1', 'Overwrite' is 'All', and 'Demand Class' is empty. Below these, there are checkboxes for 'Demand Time Fence Control' (unchecked), 'Planning Time Fence Control' (checked), and 'Display Key Performance Indicators' (checked). On the right side of this section, there are checkboxes for 'Append Planned Orders' (checked), 'Move Jobs to PIP' (unchecked), and 'Lgt for Lot' (checked). A section titled 'Forecast Allocation and Consumption' contains radio buttons for 'Do Not Spread Forecast' (selected) and 'Spread Forecast Evenly' (unselected), a checkbox for 'Consume by Forecast Bucket' (unchecked), and input fields for 'Backward Days' and 'Forward Days'. At the bottom, there is a checkbox for 'Enable Pegging' (checked), a checkbox for 'Peg Supplies by Demand Priority' (unchecked), and dropdown menus for 'Reservation Level' (set to 'None') and 'Hard Pegging Level' (set to '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.



The screenshot shows the SAP 'Items (dmt:M1)' window. At the top, the 'Plan' is 'CRTPP-USP1' and the 'Type' is 'MRP'. The window is set to 'Unconstrained & Simple Pegging'. Below the title bar is a table with the following columns: Item, Org, BOM Item Type, Planning Time Fence Date, Planning Time Fence Days, and Peg. The table contains the following data:

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

Below the table are several buttons: Destinations, Sources, Where Used, Components, Co-Product, Routing Operations, Safety Stock, and Substitutes.

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](#) on page A-2.

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 earliest 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 earliest 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 earliest 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.

**Table 6–11    *Planner Workbench Demand Dates***

<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

**Table 6–11 Planner Workbench Demand Dates**

<b>Demand Date</b>	<b>Independent Demand Meaning</b>	<b>Dependent Demand Meaning</b>
Promised Ship Date	For sales order demand, see note after table. For other demand, blank.	Blank
Promised Arrival Date	For sales order demand, see note after table. For other demand, blank.	Blank
Suggested Due Date	<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>
Material Available Date	Date when the total demanded quantity is available.	Blank
Suggested Ship Date	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	<p>For sales orders only, the customer order date type from the customer or the customer site definition.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> <li>- Ship Date</li> <li>- Arrival Date</li> </ul>	Blank

**Table 6–11   *Planner Workbench Demand Dates***

<b>Demand Date</b>	<b>Independent Demand Meaning</b>	<b>Dependent Demand Meaning</b>
Days Late	<p>For an end demand, the planning engine calculates the days late based on the difference between suggested sue date and the demand satisfied date.</p> <p>If positive, the demand is satisfied late; if negative, the demand is satisfied early</p>	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.

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.

The scheduled ship date and the scheduled arrival date are from the sales order fields with the same name.

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.

**Table 6–12   Planner Workbench Supply Dates**

Supply Date	Pegged to Independent Demand Meaning	Pegged to Dependent Demand Meaning
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, <math>\text{Due Date} - [\text{Fixed} + (\text{Variable} * \text{Quantity})]</math>. If the supply is due at the beginning of another operation of a discrete job, <math>\text{Due Date} - [\text{Fixed} + (\text{Variable} * \text{Quantity})] + \text{Lead Time \% from assembly's routing}</math>.</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>
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>	<p>Same as the pegged to independent demand meaning.</p>



**Table 6–12 Planner Workbench Supply Dates**

<b>Supply Date</b>	<b>Pegged to Independent Demand Meaning</b>	<b>Pegged to Dependent Demand Meaning</b>
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>
Old Dock Date	<p>Only applies to buy items with rescheduled supplies.</p> <p>Sugg Dock Date of the supply before the reschedule.</p>	<p>Only applies to buy items if the dependent supply itself is rescheduled.</p> <p>Sugg Dock Date of the supply before the reschedule.</p>
Sugg Ship Date	<p>For suppliers, this is used only for transfer orders. It is determined by the final scheduling phase of the planning engine.</p> <p>The Ship Date is offset from the Sugg Due Date by the intransit lead time and respects the shipping calendars.</p> <p>For transfer planned orders, this is the same as the pegged to independent demand Suggested Ship Date meaning.</p>	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.

**Table 6–13    Organization Calendar - ORG1**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6NW	7NW
8	9	10	11	12	13NW	14NW
15	16	17	18	19	20NW	21NW
22	23	24	25	26	27NW	28NW
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.

**Table 6–14 Organization Calendar - ORG2**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7NW
8	9	10	11	12	13	14NW
15	16	17	18	19	20	21NW
22	23	24	25	26	27	28NW
29	30	31	32	33	34	35NW
36	37	38	39	40	41	42NW

This is the delivery calendar from the approved supplier list for the supplier that supplies the purchased component.

**Table 6–15 Delivery Calendar for Purchased Component Supplier**

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
- $\text{Suggested Due Date} - ((\text{Fixed} + (\text{Variable} * \text{Supply quantity})) = \text{Day 19} - (3 \text{ days} (0.5 \text{ days} * 8) = \text{Day 19} - 7 \text{ days}$
- Two non-work days: Days 13 and 14

Suggested Order Date: Day 9

- Use ORG1 organization calendar
- $\text{Suggested Start Date} - \text{Preprocessing} = \text{Day 10} - 1 \text{ day}$

### **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
- $\text{Suggested Due Date} - \text{Postprocessing Time} = \text{Day 10} - 1 \text{ day} = \text{Day 9}$
- 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.

**Table 6–16 Lead Time Scenario 1 Summary**

Organization	Item	Order Type	Suggested Due Date	Suggested Dock Date	Suggested Start Date	Suggested Order Date
ORG1	A	Demand	Day 19	n/a	n/a	n/a
ORG1	A	Planned order	Day 19	n/a	Day 10	Day 9
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
- $\text{Suggested Due Date} - ((\text{Fixed} + (\text{Variable} * \text{Supply quantity})) = \text{Day 22} - (3 \text{ days} (0.5 \text{ days} * 8) = \text{Day 22} - 7 \text{ days}$
- Four non-work days: Days 13, 14, 20, and 21

Suggested Order Date: Day 10

- Use ORG1 organization calendar
- $\text{Suggested Start Date} - \text{Preprocessing} = \text{Day 11} - 1 \text{ day}$

**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.

**Table 6–17 Lead Time Scenario 2 Summary**

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
- $\text{Suggested Start Date} - \text{Preprocessing} = \text{Day 22} - 1 \text{ day}$
- 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
- $\text{Suggested Dock Date} + \text{Postprocessing} = \text{Day 22} + 1 = \text{Day 23}$
- 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.

**Table 6–18 Lead Time Scenario 3 Summary**

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
- $\text{Day 1} + \text{Planning Time Fence Days} = \text{Day 1} + 15 \text{ days}$
- 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
- $\text{Suggested Due Date} - \text{Postprocessing Time} = \text{Day 22} - 1 \text{ day} = \text{Day 19}$

- 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.

**Table 6–19 Lead Time Scenario 4 Summary**

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 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.

**Table 6–20 Lead Time Scenario 5 Summary**

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
- $\text{Suggested Due Date} - ((\text{Fixed} + (\text{Variable} * \text{Supply quantity})) = \text{Day 33} - (3 \text{ days} (0.5 \text{ days} * 8) = \text{Day 33} - 7 \text{ days})$
- Two non-work days: Days 27 and 28

Suggested Order Date: Day 23

- Use ORG1 receiving organization calendar
- $\text{Suggested Start Date} - \text{Preprocessing} = \text{Day 24} - 1 \text{ day}$

### **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.

**Table 6–21    Lead Time Scenario 6 Summary**

Organization	Item	Order Type	Sug- gested Due Date	Sug- gested Dock Date	Sug- gested Ship Date	Sug- gested Start Date	Sug- gested 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
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.



**Table 6–22 Lead Time Scenario 6 Summary for Constrained Plan**

Organization	Item	Order Type	Sug- gested Due Date	Sug- gested Dock Date	Sug- gested Ship Date	Sug- gested Start Date	Sug- gested 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
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

**Table 6–23 Lead Time Scenario 7 Summary**

Organization	Item	Order Type	Sug-gested Due Date	Sug-gested Dock Date	Sug-gested Ship Date	Sug-gested Start Date	Sug-gested 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

Table 6–23    *Lead Time Scenario 7 Summary*

Organization	Item	Order Type	Sug- gested Due Date	Sug- gested Dock Date	Sug- gested Ship Date	Sug- gested Start Date	Sug- gested Order Date
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
- $\text{Suggested Start Date} + ((\text{Fixed} + (\text{Variable} * \text{Supply quantity})) = \text{Day 36} + (3 \text{ days} - (0.5 \text{ days} * 8) = \text{Day 36} + 7 \text{ days}$
- 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.

**Table 6–24 Lead Time Scenario 6 Summary**

Organization	Item	Order Type	Sug-gested Due Date	Sug-gested Dock Date	Sug-gested Ship Date	Sug-gested Start Date	Sug-gested Order Date
ORG1	A	Demand	Day 33	n/a	n/a	n/a	n/a
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:

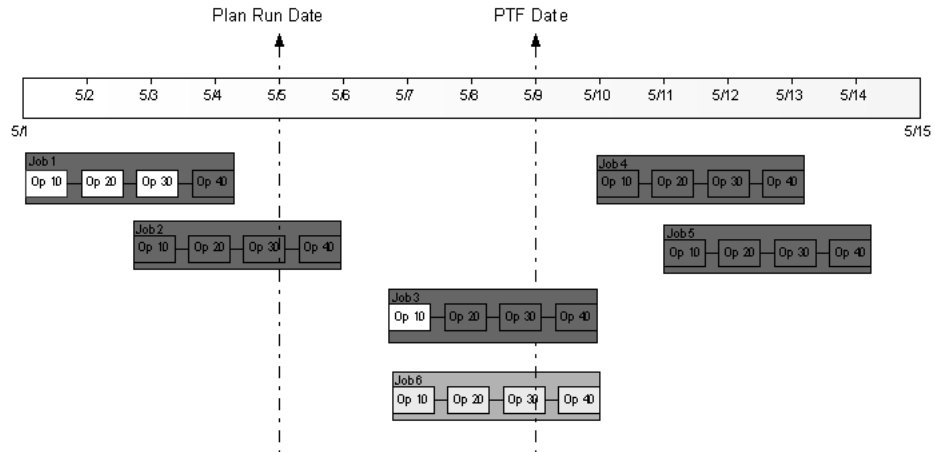
- Run on May 5
- Planning time fence control enabled
- The profile options that create a natural time fence based on existing firmed supplies are disabled.
- Planning Time Fence Date is based on the item attribute (User defined, 4 days) as May 9 and considers working days in the organization. The calendar 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.



**Figure 6–21 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:

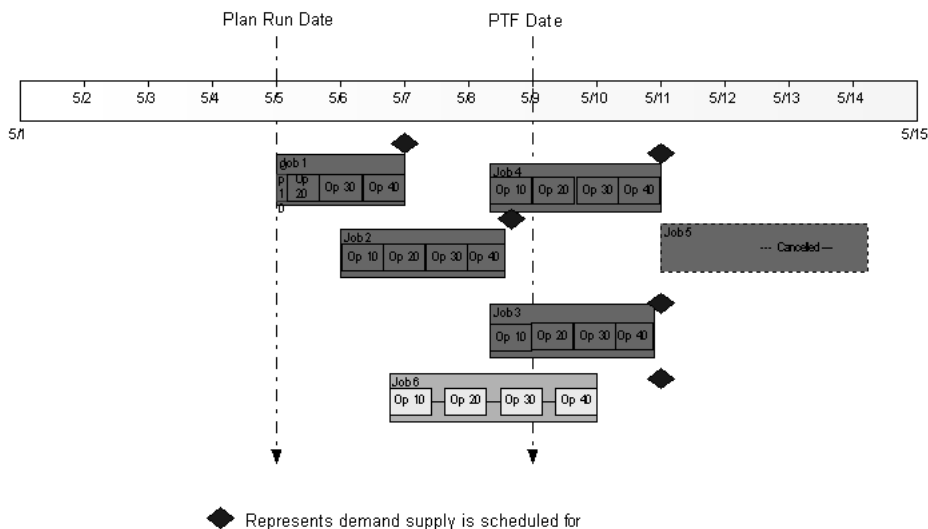
- Job 1: is rescheduled out to meet its demand on time. Operation 10 would have been scheduled to start and complete in the past. These dates are both updated

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.

**Figure 6–22 Discrete Job Scheduling with Planning Time Fence and Firming, Unconstrained Plan**



## **Manufacturing Work Order Scheduling in Constrained - Enforce Capacity Constraints Plans**

For a Constrained - Enforce capacity constraints plan, the planning engine applies the following planning time fence control rules based on the item's Planning Time Fence Date:

- Planned orders: Do not schedule the first operation to start earlier than Planning Time Fence Date.
- Non-firm manufacturing work orders: If an order, operation, or resource has a start date inside the planning time fence, do not rescheduled in. If the job a start date outside of the planning time fence, only reschedule in up to Planning Time Fence Date.
- Firm manufacturing work orders: Never cancel or reschedule. Do not change the completion date or reschedule the operations. Calculate firm work order resource requirements and reduce resource availability by these requirements. Consider the resource loads for firmed jobs prior to scheduling all other supplies.
- Firm planned manufacturing orders: Retained based on the value of plan option Overwrite. If None or Overwrite Outside Planning Time Fence, retain the order and consider Order Due Date firm. Consider the completion date firm; reschedule operations as required. The operation rescheduling may cause compression or violate Planning Time Fence Date because the supply is firmed.

In the operation detailed scheduling, the planning engine calculates Earliest Possible Start Date for each operation. This is never earlier than Planning Time Fence Date, but it may be later.

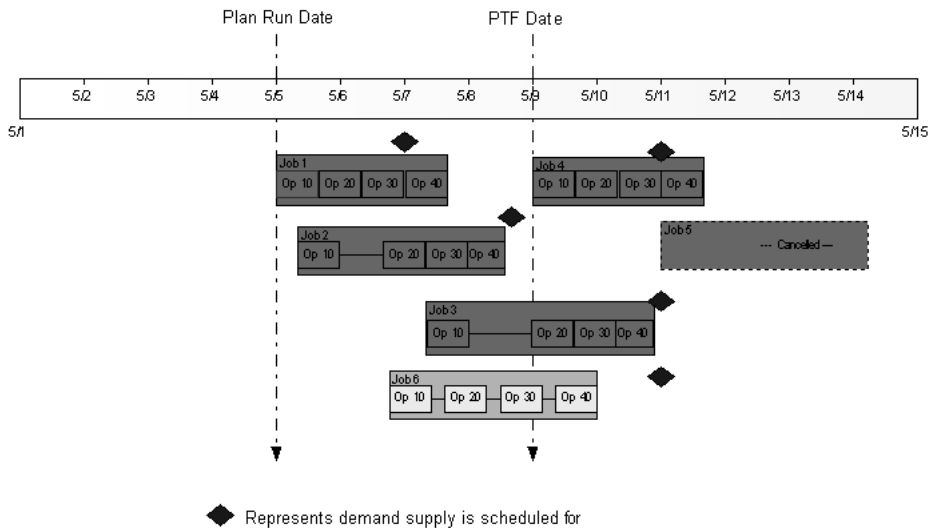
This diagram shows the same manufacturing work orders from topic Manufacturing Work Order Scheduling scheduled in an unconstrained plan:

- Jobs 1, 2, and 3: Rescheduled out based on the required demand dates. All of these jobs had job and operation start dates earlier than Planning Time Fence Date, so their operations would never be rescheduled in. Job 1 cannot be scheduled in time to meet its required demand; the planning engine schedules the operations respecting their minimum lead time and the first operation cannot start prior to the plan run date. The planning engine reschedules Jobs 2 and 3 to meet their demands on time. It schedules all operations to minimize slack between resources except Operation 10 which is scheduled earlier due to a capacity constraint

- Job 4: Rescheduled in based on its demand due date. Since the planning engine cannot reschedule Start Date of the first operation earlier than Planning Time Fence Date, it forward schedules from Planning Time Fence Date.
- Job 5: Canceled because it has no pegged demand and its start date is outside the planning time fence.
- Job 6: Since the work order is firm, the planning engine never cancels it or reschedules its completion date. It does not reschedule the operation start and end dates and loads the resources are based on their requirements on the existing schedule dates.

This diagram shows the effect of Planning Time Fence Date and firming on discrete job scheduling in Constrained - Enforce capacity constraints plans.

**Figure 6–23 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

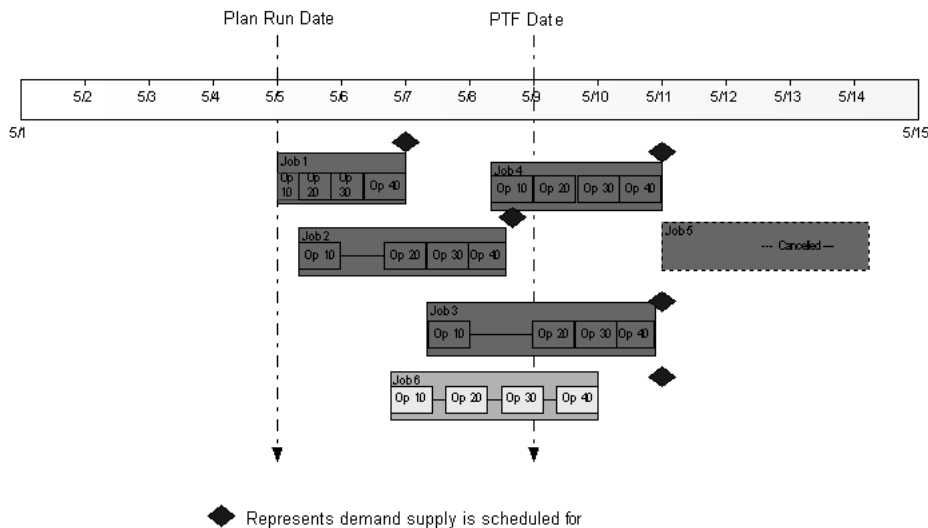
may schedule supplies earlier than Planning Time Fence Date to meet the demand. It may also compress operations.

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.

**Figure 6–24 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:

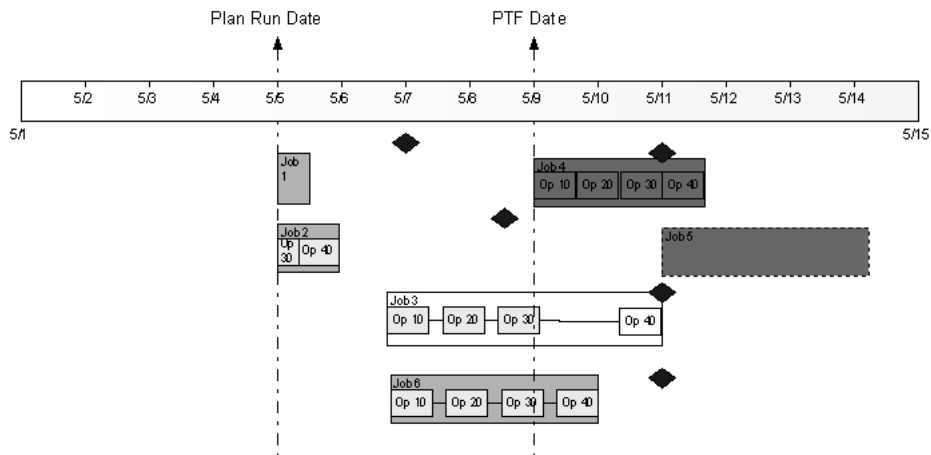
- Consider operations with Start Date earlier than Planning Time Fence Date as firm
- Does not change their schedule dates and loads resources on these schedule dates
- Considers work orders with completion dates earlier than Planning Time Fence Date as firmed
- Does not reschedule their the job completion 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.

**Figure 6–25** *Discrete Job Scheduling with Firm Operations and Orders, Constrained Plans*





## 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 semi-conductor fabrication processes such as Ion Implantation, Defusion, 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. If you are using the 11i version of the transaction system, you can choose the PIP Attribute for an item at Item-Organization level.

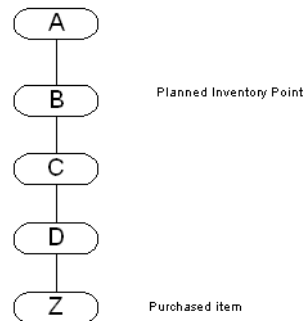
If you are using the 11.0 version of the transaction system, you can choose the attribute in the flex field at the item attributes form. The name of the flex field is Inventory Point and the possible values are Yes or No.

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.

**Figure 6–26 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**

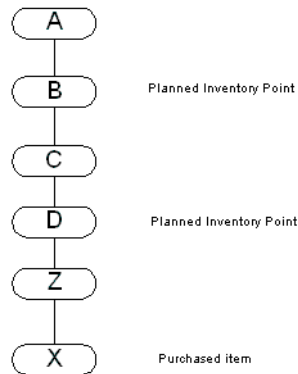
You may have jobs opened at two or more levels that peg to each other. In such cases, the amount of fictitious demand added is equal to the maximum quantity of the jobs that needs to be moved to PIPs. The fictitious demand is not just a sum total of all the open unpegged jobs. For example, using [Figure 6–26](#) 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:

**Figure 6–27 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.



## Setting Up Batch Resources

Batch operations can process multiple items simultaneously. Typical examples of batch operations are heat treatment, sand blasting, electro-plating, 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.

### To set up Resource Batching

1. Sign on using the Manufacturing and Distribution Manager responsibility.
2. From the Navigator, select Bills of Materials > Routings > Departments.

**Figure 6–28 Departments**

Departments (M1)

Department

Description

Class

Location

Project Expenditure Org

Inactive On

3. Select the Department field and use the flashlight icon to select a Department.
4. Select Resources.

The Department Resources form appears.

Figure 6–29 Department Resources form

The screenshot shows the 'Resources (M1) - RSBT-D1' window. It has two tabs: 'Main' and 'Planning'. The 'Owned' section is active, showing a table with columns: Resource, Description, Available 24 Hours, Share, UOM, Units, Check CTP, Group, and Schedule by Instance. The first row is filled with 'RSBT-A', 'Batchable Resource A', checkboxes, 'HR', '2', checkboxes, and a dropdown set to '.Y'. Below this are four empty rows. To the right of the table are three buttons: 'Instances', 'Tolerance Fences', and 'Shifts'. The 'Borrowed' section below has columns: Resource, Description, Owning Department, UOM, Units, Check CTP, and Group. It contains five empty rows.

- 5. Select the Planning tab and open the flexfield.  
The Department Resource Information form appears.

Figure 6–30 Department Resources Information

The screenshot shows the 'Department Resource Information' window. It contains several input fields: 'Aggregate Resource' (with a dropdown arrow), 'Batchable Flag' (set to 'Yes'), 'Batching Window' (set to '10.00'), 'Minimum Batch Capacity' (set to '100.00'), 'Maximum Batch Capacity' (set to '250.00'), and 'Batchable Unit of Measure' (set to 'Cubic foot'). To the right of the last field is a 'Volume' label and a slider. At the bottom are four buttons: 'OK', 'Cancel', 'Clear', and 'Help'.

This form contains the setup parameters for a batchable resource.

- 6. Specify a resource as a batch type resource at the department resource level by setting the Batchable Flag to Yes.
- 7. Specify a window to batch orders.
- 8. Specify minimum and maximum batch quantities for batch type resources.
- 9. Specify a unit of measure (volume or weight) at the resource level.

**Batching Window**

Oracle ASCP allows you to specify a window to batch orders. You can 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.

**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.

**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 =  $3 + 3 = 6$

# Allocating Demand to Suppliers

For more information on the following topics, see “Sourcing Rules and Bills of Distribution” in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User’s 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 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 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	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 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	7/16/98 (Wed)
S1	0	0	0	0	10



Source	7/10/98 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	7/16/98 (Wed)
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 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	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 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/16/98 (Tues)	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 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	7/16/98 (Wed)
S1	0	0	0	60	66
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.", the values for S2 come from "Step 4: Respect Order Modifiers If They Exist.", and the values for S3 come from "Step 7: Respect Order Modifiers If They Exist.".

## 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 a 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.

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

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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 post-processing 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 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	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 post-processing 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 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	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 post-processing 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.
- Post-processing = 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 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	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 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	7/16/98 (Wed)
S1	0	0	288 (180 + 108)	0	0
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.
  - a. Sign on using the Advanced Supply Chain Planner responsibility.
  - b. From the Navigator, choose Sourcing > Sourcing Rules.

The Sourcing Rule screen appears.

Figure 6–31 Sourcing Rule screen

Sourcing Rule (c11:M1)

Name: **ALLIED**      ☐ All Orgs      ☒ Planning Active  
Description: **Allied Mfg - San Jose**      ☐ Org     

Effective Date

From Date: **04-JAN-2001**      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			

- c. Specify the sourcing Allocation Percentages in the Sourcing Rule form using the Allocation % field.
- 2. Specify Sourcing Allocation Window.
  - a. Sign on using the System Administrator responsibility.
  - b. From the Navigator, choose Profile > System.

The Find System Profile Values screen appears.
  - c. 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).
  - d. Select the Find button.

The System Profile Values screen appears.

Figure 6–32 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 Tolerz				
MSC:Sourcing Rule Category S	Product Family			
MSO: Sourcing Allocation Wind				
PO: Automatic Document Sourc				
Start Date Offset for Sourcing H0				

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.

- a. Sign on using the Advanced Supply Chain Planner responsibility.
- b. From the Navigator, choose Supply Chain Plan > Options.

The Plan Options screen appears.

- c. 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.

<b>Demand/Supply/Sourcing Allocation</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 4</b>
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.

**Inter-Organization 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.

## 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”](#) 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”](#) 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”](#) and [“Viewing Bills of Distribution”](#) 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”](#) 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

## Audit Statements Report

The ASCP 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 ASCP to render 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.

Oracle ASCP provides a tool to validate the data it uses in the planning process. 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 Other > Request.

The Find Requests window appears.

3. Select Submit a New Request.

The Submit a New Request window appears.

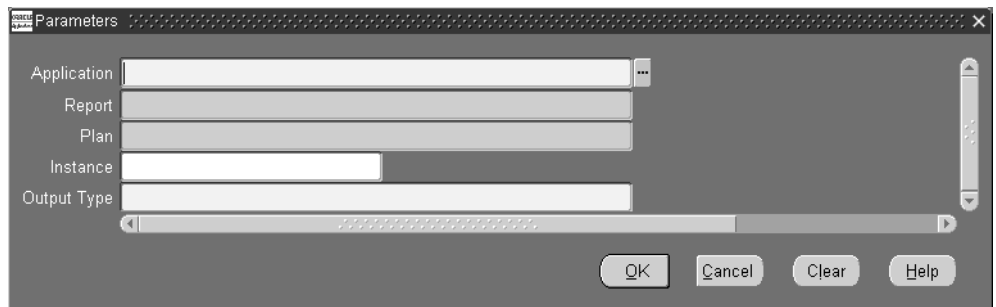
4. Select Single Request, then click OK.

The Submit Request window appears.

5. From the List of Values for the Name field, select Audit Statements Report.

The Parameters window appears.

**Figure 6–33** *Parameters window*



6. Fill out the parameters window as described in Steps 7 through Step 13 below.
7. Choose Advanced Supply Chain Planner from the following applications listed in the table below.

Application	Use
Global Order Promising	for order promising related audit statements
Inventory Optimization	for inventory optimization related audit statements
Advanced Supply Chain Planner	for supply chain planning related audit statements
Demand Planning	for demand planning related audit statements

8. Choose one of the following reports listed in the table below:

Report	Description
Audit Collections Setup	Select this to audit data setups related to collections
Audit Planning Data	Select this to audit data setups related to the planning engine
Audit UI Data	Select this to audit data setups related to the user interface; for example, to check the validity of materialized views and profile options that control the display of plan data

9. Choose the plan for which you want to validate setup data.
10. Choose the source instance for which you want to validate setup data.
11. Choose one of the following output types listed in the table below:

Output Type	Description
Summary Report	Select this if you do not want to look at details of the errors and warnings.
Detail report – Errors Only	Select this if you want audit details of the errors only.
Detail Report – Errors and Warnings	Select this if you want audit details of both the errors and warnings. Warnings are not fatal to the planning process, but could cause erroneous output.

Output Type	Description
Detail Report - Complete	Select this if you want the summary as well as errors and warnings in your audit report.

**12.** Select OK.

The Parameters window disappears.

**13.** 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.

The figure below is a sample Audit report.

**Figure 6–34 Sample Data Setup Audit Report for ASCP**

**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.

---

# Simulations

This chapter includes:

- [Overview of Simulations](#) on page 7-2
- [Simulation Scenarios](#) on page 7-3
- [Simulation Modes](#) on page 7-5
- [Running Net Change Replan Simulations](#) on page 7-7
- [Using Undo to Reverse Actions or Make Changes](#) on page 7-11
- [Comparing Scenarios Quantitatively](#) on page 7-15

## Overview of Simulations

Oracle ASCP provides online interactive 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. When running net change replan you can run either batch mode replan or online planner.

#### 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 replan
- Online replan

### Running Batch Replan

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**Note:** Save and make a copy of your baseline plan before running batch replan (make modifications only to the copy). Otherwise, you will lose visibility to your baseline plan. See Using Undo to Reverse Actions or Changes on page 7-11.

---

---

#### 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

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---

**Note:** Save and make a copy of your baseline plan before running online replan (make modifications only 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.

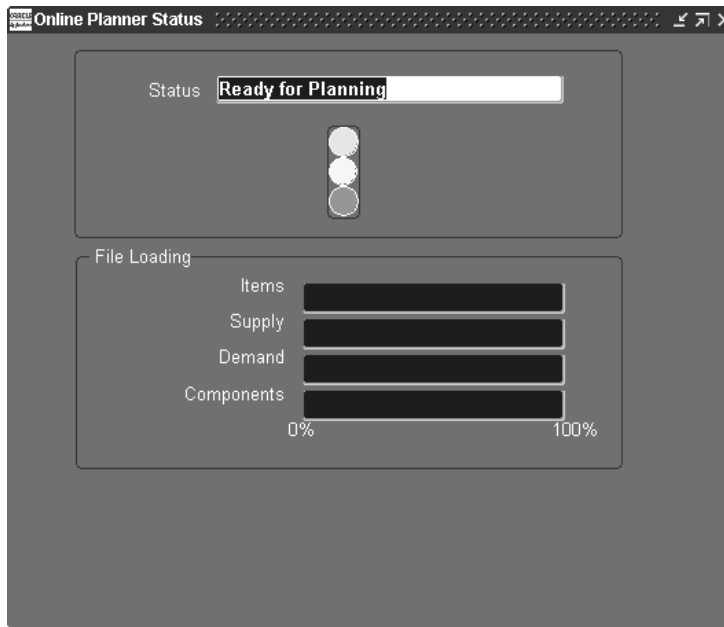
4. When the status window informs you that the session is ready for planning, close the window to return to the Planner Workbench. Your online planner session is now active.
5. Make the desired changes to your plan.
6. Save the plan.
7. Choose Plan > Online Replan.

### To check the status of an online planner session

Choose Plan > Online Planner Status.

The Online Planner Status window appears.

**Figure 7–1 The Online Planner Status window**



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**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 planning 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 resource (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**

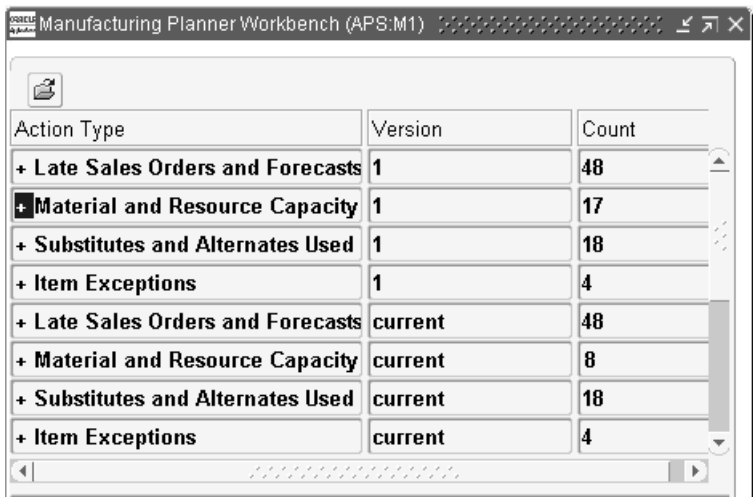
1. Choose Plan > Save actions.

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.

Figure 7-2 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:

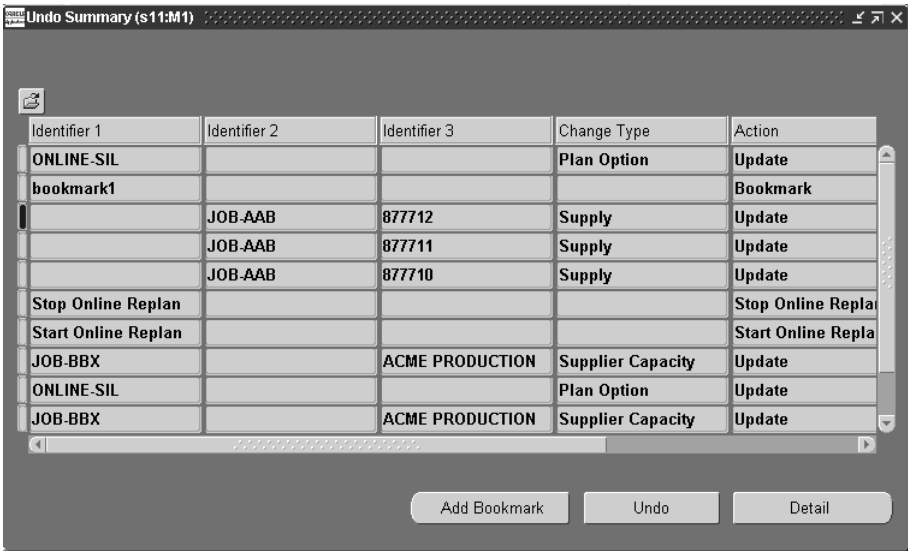
- You can undo your changes in any order, as long as the record you are undoing has not had subsequent changes made to it.
- You can undo changes until the plan is rerun in batch mode.
- You can view online planning changes using Undo Summary.
- You can view all of the changes that have been made since 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.

Figure 7–3 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 contains several rows of data. 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 Repla
Start Online Replan				Start Online Repla
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.

**Figure 7–4** The Undo Detail window

Undo Detail (s11:M1)

Item **JOB-BBX**

Supplier

Supplier Site **ACME PRODUCTION**

Column Changed	Old Value	New Value
<b>Capacity</b>	<b>7</b>	<b>5</b>

### 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 7–3).

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
- Ontime 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.

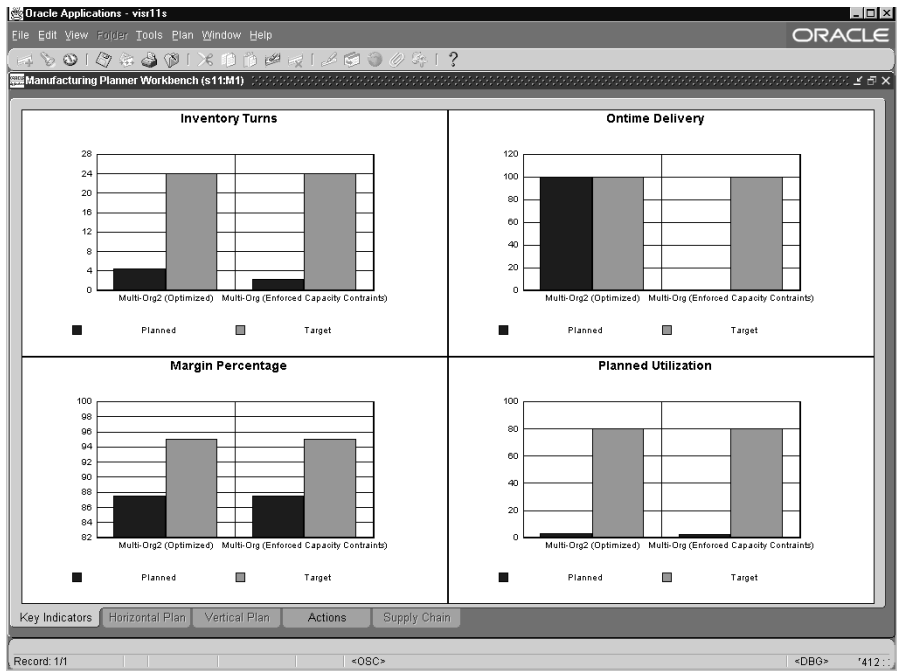
You can also compare the differences in exception messages between two plans in the Plan Comparison Report; see [Identifying Differences Between Plans](#) on page 9-154.

### **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.

Figure 7–5 The Multiple Plans Comparison



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# Optimization

This chapter includes:

- [Overview of Optimization](#) on page 8-2
- [Optimization Objectives](#) on page 8-3
- [Setting Penalty Factors](#) on page 8-5
- [Comparing Different Optimization Runs](#) on page 8-21

## 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 differ from unconstrained plans and constrained plans without optimization in that optimized plans make more choices automatically. Specifically, optimized plans automatically choose (on the basis of minimizing plan objective cost) the following:

- alternative bills of material
- alternative routings
- alternative resources

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.



## 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 [Chapter 5, “Defining Plans.”](#)

**Figure 8–1 The 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 %	

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.

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**CAUTION:** 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.

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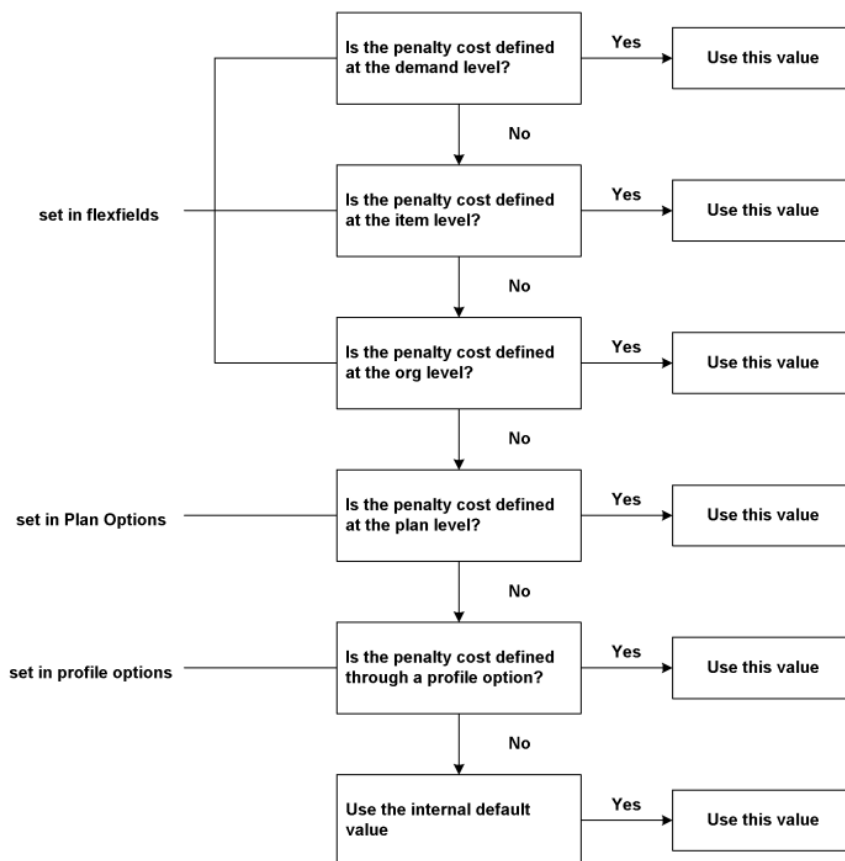
For all of the steps related to setting penalty factors, please log in as Manufacturing and Distribution Manager, unless otherwise noted. You must run the Create Planning Flexfields program beforehand for the flexfields used for setting penalty factors to be operational. Please see [Appendix B, Oracle ASCP Flexfields](#) for additional details. Finally, please refer to on page 5-84, [Choosing an Objective Function](#) for help with setting actual penalty costs.

For more information on setting penalty factors, see [Appendix A, Profile Options](#) and [Appendix B, Oracle ASCP Flexfields](#).

## 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



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.

**Figure 8–2 Item Forecast Entries**

Item Forecast Entries (M1)

Forecast Set: FCSET2-1 PRODUCTION PLANNING Inactive On: ☐

Forecast: FNAME22 PRODUCTION PLANNING Inactive On: ☐

Item	Bucket	Date	End Date	Number of Buckets	Quantity
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:

2. Select a forecast.
3. Select the flexfield.

The MRP Forecast Dates window appears.

**Figure 8–3 MRP Forecast Dates window**

MRP FORECAST DATES

Late Forecasts Penalty: 10

Context Value:

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.

**Figure 8–4 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**

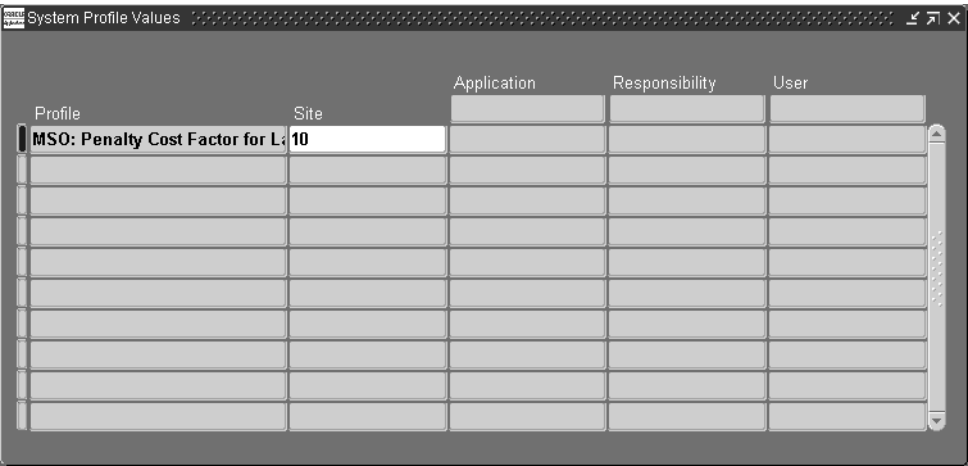
Exceeding material capacity %		Exceeding resource capacity %	
Exceeding transportation capacity %		Demand lateness %	

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.

Figure 8–5 System Profile Values



Profile	Site	Application	Responsibility	User
MSO: Penalty Cost Factor for L	10			

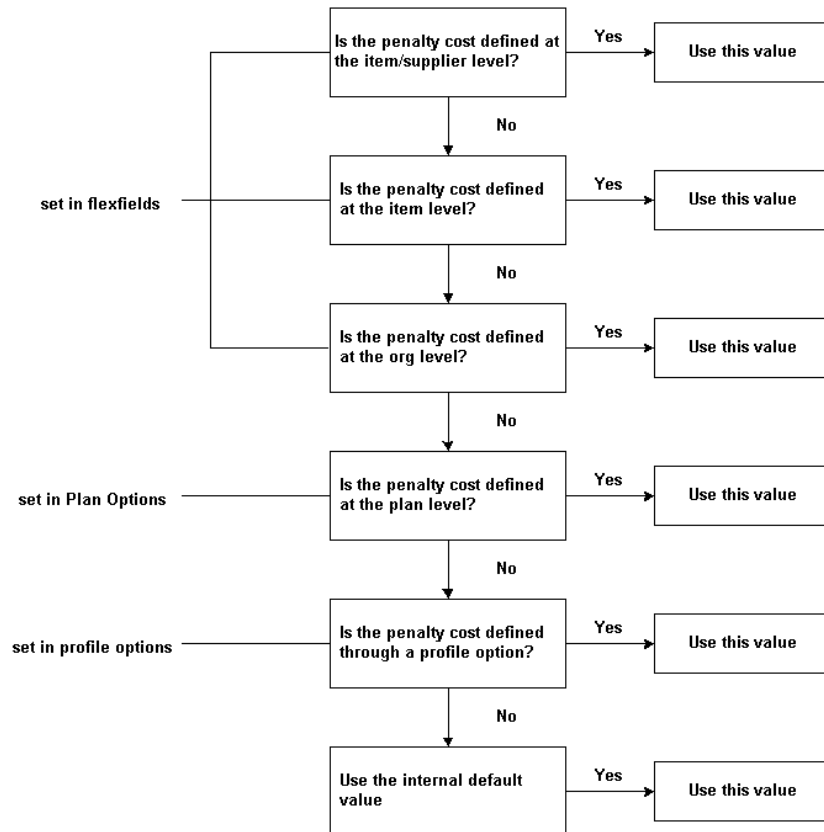
- 4. Enter the penalty factor in the Site column.

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



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.

**Figure 8–6 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 %	

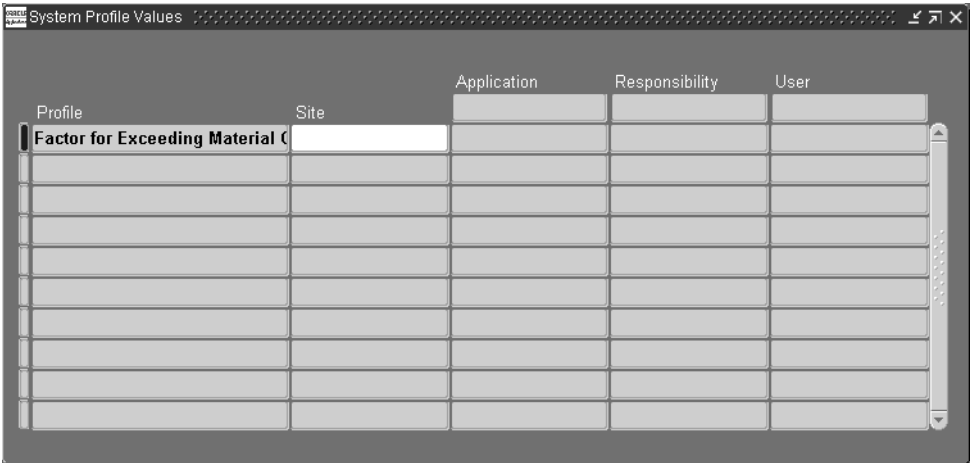
5. Enter the penalty factor in the Exceeding material capacity field.

### 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.

Figure 8–7 System Profile Values



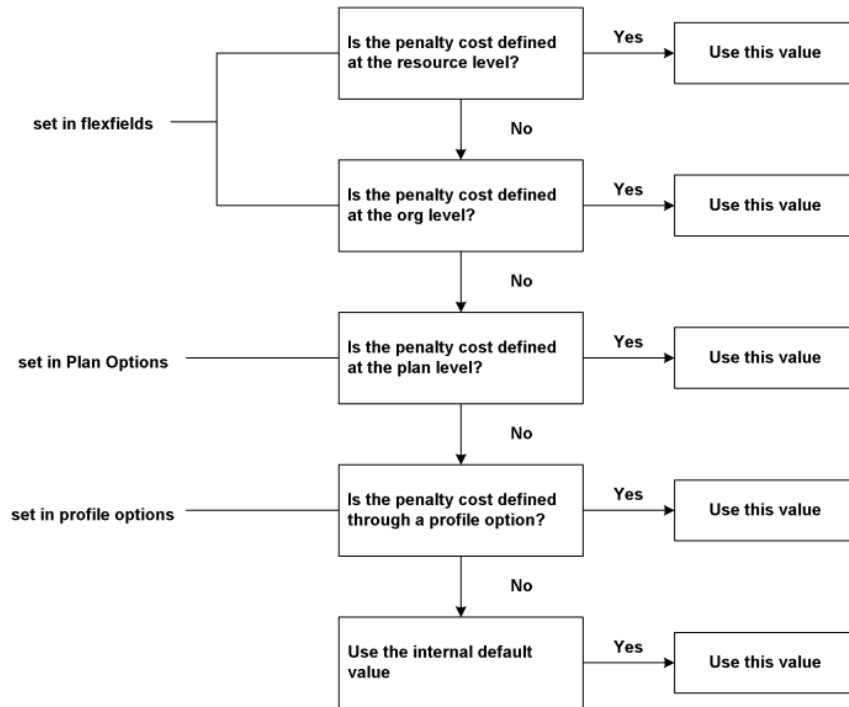
Profile	Site	Application	Responsibility	User
Factor for Exceeding Material C				

- 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



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.

**Figure 8–8 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**

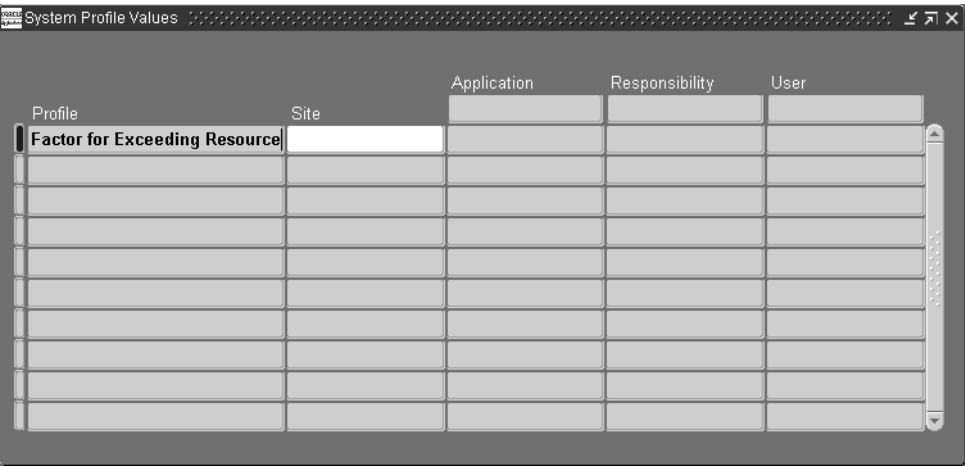
Exceeding material capacity %		Exceeding resource capacity %	
Exceeding transportation capacity %		Demand lateness %	

5. Enter the penalty factor in the 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.

Figure 8–9 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 [Chapter 5, “Defining Plans.”](#)

- 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:

$$(\text{penalty factor for exceeding transportation capacity}) \times (\text{transportation cost})$$

**Penalty Cost for Exceeding Resource Capacity**

The penalty cost for exceeding resource capacity is equal to:

$$(\text{penalty factor for exceeding resource capacity}) \times (\text{resource cost})$$

---

**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 [Appendix A](#), Profile Options.

---

**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 [Chapter 7, “Simulations.”](#) For more information on evaluating plan performance and comparing multiple plans, see [Chapter 9, Exception Messages.”](#)



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# Exception Messages

This chapter includes:

- [Overview of Exception Messages](#) on page 9-2
- [Viewing Exceptions](#) on page 9-9
- [Understanding Exceptions](#) on page 9-17
- [Exception Diagnosis and Resolution](#) on page 9-114

## 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.

**Figure 9–1 Planning Exception Sets**

The screenshot shows a window titled "Planning Exception Sets (M1)". At the top, there is a "Name" field with the value "ASCP". Below this, the window is divided into two main sections: "Sensitivity Controls" and "Exception Time Periods".

**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

# Viewing Exceptions

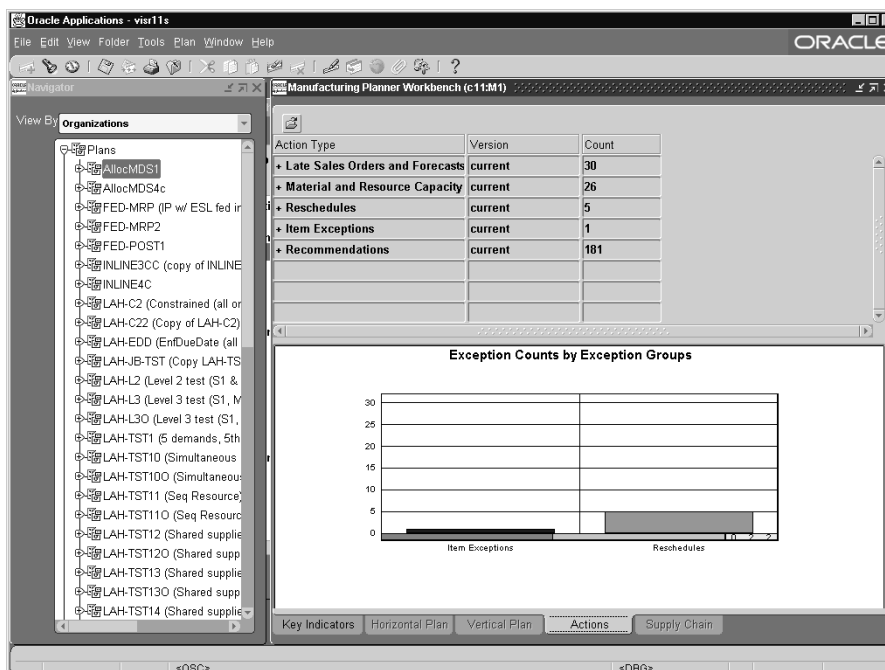
## Overview

View exception messages in the Planner Workbench. For more information, see [Overview of Planner Workbench](#).

## 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.

**Figure 9–2 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.

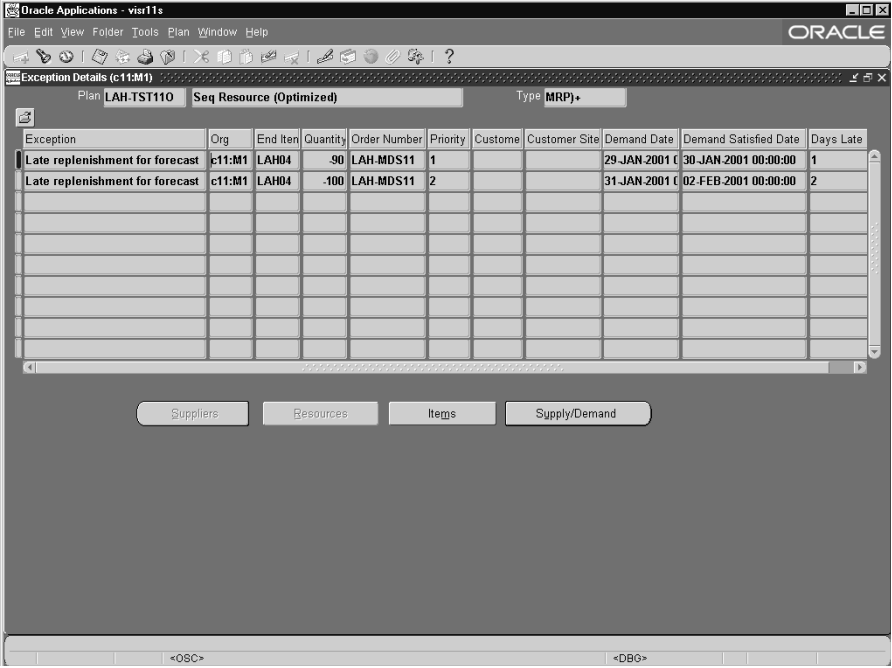
## **To sort exceptions**

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.

### Figure 9-3 Exception Details



## Exception Details Window

The Exception Details window displays information about each exception. If you select one exception type, the window displays information in a folder for that exception type. If you select multiple exception types, the window displays the generic default folder.

Days Late applies to the Late replenishment for forecast and Late replenishment for sales order exception messages.

Quantity Satisfied By Due Date is the portion of a demand that can be satisfied by the due date.

## Buttons

On the Exception Details window, you can obtain additional information about certain exceptions by clicking buttons on the bottom. The buttons that appear are unique to the exception.

### **Right Mouse Options**

From the Exception Details window, you can obtain additional information by right-clicking on the exception. The choices in the pop-up menu are unique to the exception. Some choices are:

- Supply
- Demand
- Resource Availability
- Resource Requirements
- Sources
- Destinations
- Related Exceptions
- Gantt Chart
- Horizontal Plan
- Vertical Plan
- End Item Supplies
- End Pegged Supplies
- Critical Activities

### **Related Exceptions**

If you are working in a constrained or optimized plan, you can use the right mouse option Related Exceptions to obtain further cause and effect information, for example:

- Is an order late because of a resource, material, or transportation resource constraint.
- Does a material, resource, or transportation resource issue cause late orders?

From a resource, material, or transportation resource constraint exception message, you drill down to Late replenishment for sales order and Late replenishment for forecast exception messages that the constraint affects.

### **Exception Message Filters**

Use exception message filters to view only the exception messages that you want to. You can create and save queries that specify certain exception messages and certain

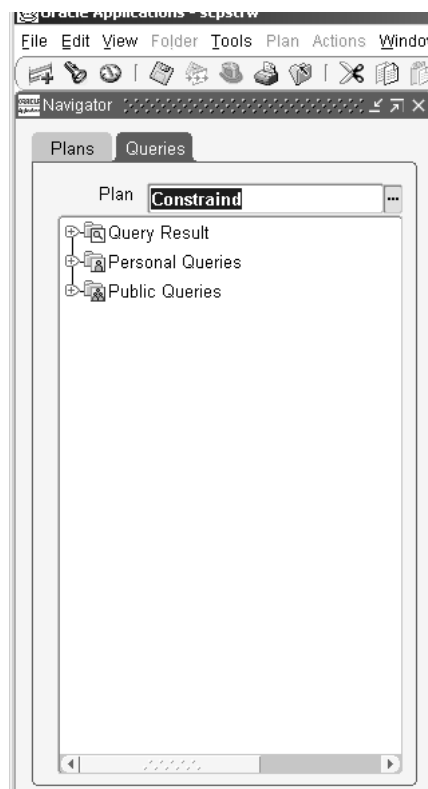


criteria. When you execute this query, the planning engine displays the exception messages that meet your criteria.

For example, you may want to view the Late replenishment for sales order and Late replenishment for forecast exception messages if the shipment of item A from organization M1 is delayed by more than two days.

### To filter exception messages

1. In the Planner Workbench, click the Queries tabbed region.



2. In Plan, select the plan that you want to query.
3. To create a query for you to use (personal query), right-click Personal Queries and select Create Query. To create a query for you and others to use (public query), right-click Public Queries and select Create Query.

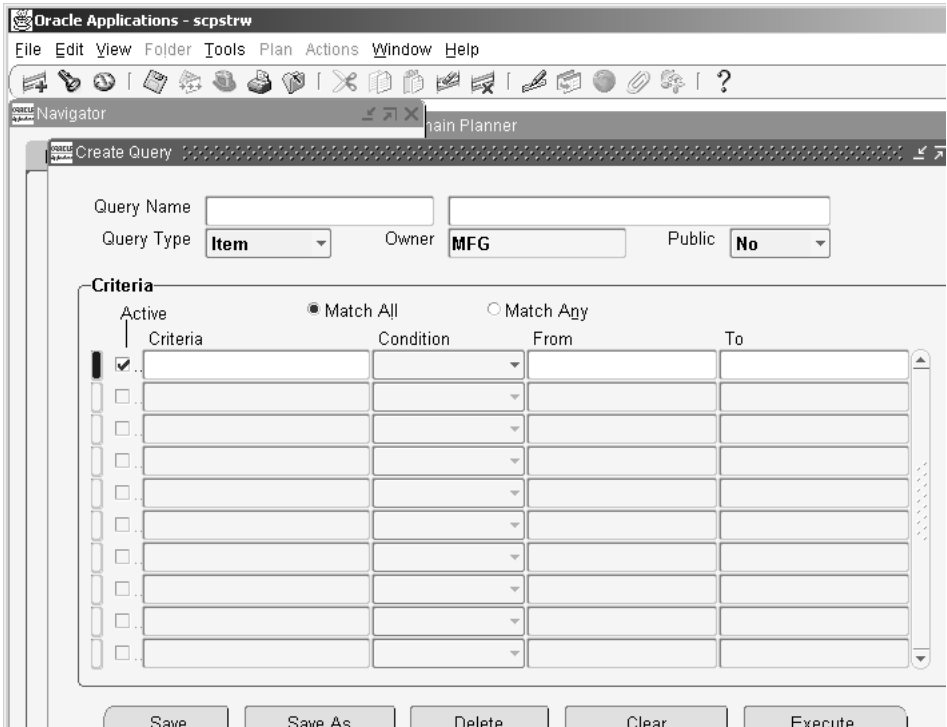
You can also right-click Personal Queries or Public Queries and then click the Create Query icon.

- 4. In the Create Query window:

Specify the Query Name.

In Query Type, select Exceptions. You can use the other choices to create queries that filter item, resource, and supplier information.

If the query is personal and you want to make it public, in Public, select Yes. If the query is public and you want to make it personal, in Public, select No.



- 5. In the Exceptions region, select the exception messages that you want to view.

You can select any 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.

The screenshot shows the 'Create Query' dialog box in the Oracle Applications - scpsrw interface. The dialog has a menu bar (File, Edit, View, Folder, Tools, Plan, Actions, Window, Help) and a toolbar. The 'Query Name' field is 'Test1', 'Query Type' is 'Exceptions', 'Owner' is 'MFG', and 'Public' is 'No'. The 'Exceptions' section has a list of exception messages with arrows on the right for rearranging. The 'Criteria' section has radio buttons for 'Match All' and 'Match Any', and a 'Group By' section. Below these is a table with columns: Criteria, Condition, From, To, and a checkbox for 'Group By'.

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"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

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.



## 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.

**Table 9–1 Exception Availability for Exception Group Late Sales Orders and Forecasts**

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	No	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
6: Early replenishment for sales order	No	Yes	Yes	Yes	No
7: Early replenishment for forecast	No	Yes	Yes	Yes	No

### 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](#) on 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.

## 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.

**Table 9–2 Exception Availability for Exception Group Late Sales Orders and Forecasts**

Exception Message	Available In Uncon- strained Plans	Available In Con- strained Plans with Enforce Demand Dates	Available In Con- strained Plans with Enforce Capacity Constraints	Available In Opti- mized Plans	Available In Inventory Optimization
1: Sales order/forecast at risk due to resource shortage	Yes	No	No	No	No
2: Sales order/forecast at risk due to material shortage	Yes	No	No	No	No
3: Requirement causes resource overload	No	Yes	Yes	Yes	No
4: Order causes supplier capacity overload	No	Yes	Yes	Yes	No
5: Order causes transportation weight capacity overload	No	Yes	Yes	Yes	No
6: Order causes transportation volume capacity overload	No	Yes	Yes	Yes	No
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

**Table 9–2   Exception Availability for Exception Group Late Sales Orders and Forecasts**

Exception Message	Available In Uncon- strained Plans	Available In Con- strained Plans with Enforce Demand Dates	Available In Con- strained Plans with Enforce Capacity Constraints	Available In Opti- mized Plans	Available In Inventory Optimization
12: Late supply pegged to forecast	No	Yes	Yes	Yes	Yes
13: Late supply pegged to sales order	No	Yes	Yes	Yes	Yes
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

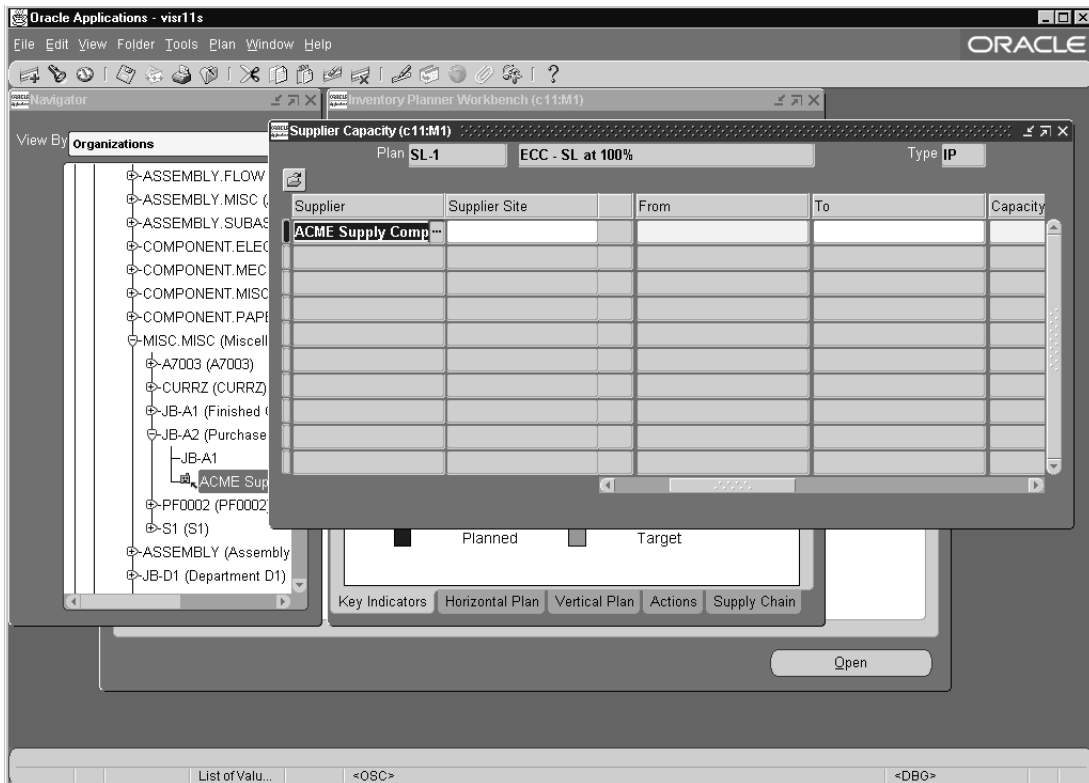
Some of the information fields for this exception message could be blank; this is normal behavior.

**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.

**Figure 9–4 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

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.

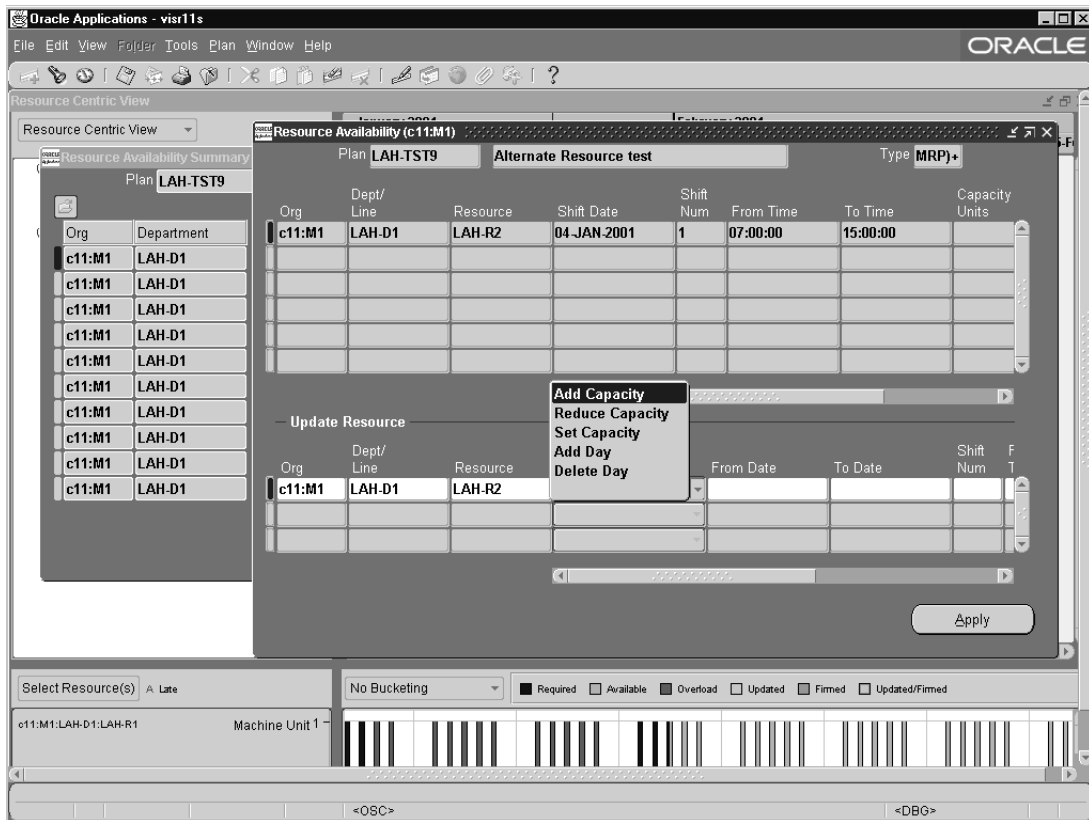
### Resolution Suggestions

Consider:

- Adjusting the top level independent demand date

- Increasing resource availability:
  - Hours available
  - Resource units assigned to the operation
  - Work and non-work days

**Figure 9–5 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.

The planning engine does not observe exception set Overutilization % when deciding if there is an overload but does observe it when deciding whether to issue an exception message. If you have an exception set for the resource and have specified an Overutilization %, the planning engine finds the overload but may not issue an exception message if the overloaded quantity falls below the Overutilization %.

#### **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.

### **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**

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:

- **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 overloadThe 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
- 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: For make orders, the completion time and, for buy and transfer orders, the due date.
- Minimum Lead Time: Based on the maximum assigned units in the routing.
- Minimum Start Time

### **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 within a window whose size is less than the minimum duration of the resource requirement.

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
- Item
- Organization
- Order Type
- Op-Seq: Operation sequence in the routing.
- Res-Seq: Resource sequence in the routing.
- Resource
- Start Time: Of the resource requirement.
- Completion Time: Of the resource requirement.
- Minimum Processing Time: Based on the maximum assigned units in the routing.
- Minimum Start Time: Of the 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

**9: Order lead time constraint****Explanation**

This exception message appears in the same circumstances as exception message Order with insufficient lead time.

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
- Item
- Organization
- Order Type
- 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: For make orders, the completion time and, for buy and transfer orders, the due date.
- Minimum Lead Time: Based on the maximum assigned units in the routing.
- Minimum Start Time

### **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 message appears in the same circumstances as exception message Requirement with insufficient lead time.

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
- Item
- Organization
- Order Type
- Op-Seq: Operation sequence in the routing.
- Res-Seq: Resource sequence in the routing.
- Resource
- Required Start Time: Of the resource requirement.
- Required Completion Time: Of the resource requirement.
- Minimum Duration: Based on the maximum assigned units in the routing.
- Minimum Start Time: Of the 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

**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
- Organization
- Demand Quantity
- Demand Order Type
- 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)

**Table 9–3 Item A Late Supply Pegged to Sales Order Planning Scenario**

<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	-	-	-
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 Suggestions**

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.

**Table 9–4 Exception Availability for Exception Group Material and Resource Capacity**

<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

## 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.

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.

## 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.

**Table 9–5 Exception Availability for Exception Group Transportation and Distribution**

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
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  $\text{Shipment quantity} * \text{Item weight}$
- 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  $\text{Shipment quantity} * \text{Item volume}$
- 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.

**Table 9–6 Exceptions for Exception Group Shortages and Excess**

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 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.

**Table 9–7 Item A1 Items With a Shortage Planning 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.

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.

**Table 9–8 Item A Items Below Safety Stock Planning Scenario**

<b>Schedule Entity</b>	<b>Past</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
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.

**Table 9–9 Item A1 Items With Excess Inventory Planning 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 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.

**Table 9–10 Exception Availability for Exception Group Reschedules**

<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: 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
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

**Table 9–10   Exception Availability for Exception Group Reschedules**

<b>Exception Mes- sage</b>	<b>Avail- able In Uncon- strained Plans</b>	<b>Available In Con- strained Plans with Enforce Demand Dates</b>	<b>Available In Con- strained Plans with Enforce Capacity Constraints</b>	<b>Available In Opti- mized Plans</b>	<b>Available In Inventory Optimization</b>
11: Shared supply scheduled late	No	No	Yes	Yes	Yes

The planning engine follows these rules when it recommends rescheduling purchase orders and purchase requisitions:

- Purchase orders, reschedule out: The planning engine may not reschedule out purchase orders because of lead time constraints, of insufficient capacity between plan start date and the dock date, or the order date or start date is past due. It may reschedule out purchase orders that are pegged to demands whose due dates have moved out.
- Purchase orders, reschedule in: The planning engine may not reschedule in purchase orders within supplier lead time or that are past due. It may reschedule in purchase orders outside supplier lead time but the new order date must not be past due. The planning engine does not consider capacity.
- Purchase requisitions, reschedule out: The planning engine may reschedule out purchase requisitions because of lead time constraints, of insufficient capacity between plan start date and the dock date, the order date or start date is past due, or pegging to demands whose due dates have moved out.
- Purchase requisitions, reschedule in: The planning engine may not reschedule in purchase requisition within supplier lead time or are past due. It may reschedule in purchase orders outside supplier lead time but the new order date must not be past due and the requisition must have sufficient accumulated capacity.

The planning engine must compress the lead time for subsequent supplies and may recommend rescheduling in Constrained - Enforce demand due date plans or when a requirement for this item results from a firmed supply.

## 1: Past due orders

### Explanation

This exception message appears when the planning engine detects supply orders and planned orders which have order (start) dates and due dates in the past (before the planning horizon start date).

For non-firmed supply orders, the planning engine also issues an Orders to be rescheduled out exception message.

The planning engine schedules all operations of a past due order beyond the planning horizon start date. If the order is firm, the planning engine retains the order's firmed duration as it schedules all its operations beyond the planning horizon start date.

There may be dependent demand resulting from past due orders. If you clear plan option Lot for Lot, the planning engine groups the demand which results by item and creates one planned order per item (or more depending on the plan options) to meet it. If you select it, the planning engine creates one planned order for each dependent demand.

### Information Displayed

The information displayed for this exception message is:

- Organization
- Item
- Order Number
- Old Date: The current due date
- Date: The suggested due date. It is usually the planning horizon start date but it can be later if the schedules receipt is not firm and is not needed until a later planning time bucket.
- Quantity

### 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

### **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.

**Table 9–11 Item A Orders To Be Canceled Planning Scenario**

Schedule Entity	1	2	3	4	5	6	7	8
Org M1: Sales orders	-	-	100	-	-	-	-	-
Org M1: Forecasts	-	-	-	100	-	-	-	-

**Table 9–11 Item A Orders To Be Canceled Planning Scenario**

<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: Supply orders	150	-	-	-	50	-	-	100

**Information Displayed**

The information displayed for this exception message is:

- Org
- Item
- Order Number
- Date: The due date
- Quantity

**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.

**Table 9–12 Item A Orders To Be Rescheduled In Planning Scenario**

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

### **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

### **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.

**Table 9–13** *Item A Orders Scheduled To Next Inventory Point Planning Scenario*

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

### Resolution Suggestions

This exception message is for information.

## 7: Order is firmed late

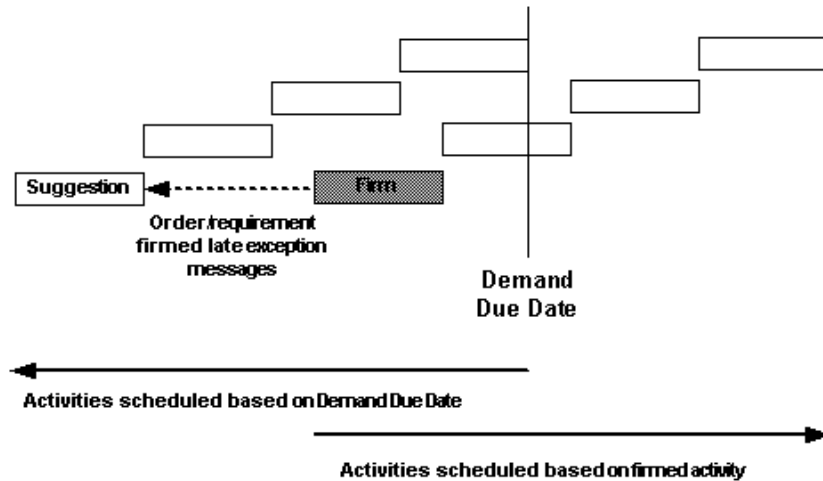
### Explanation

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.

**Figure 9–6 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.

**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 firming late****Explanation**

This exception message appears in the same circumstances as exception message Order is firming 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.

### **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.

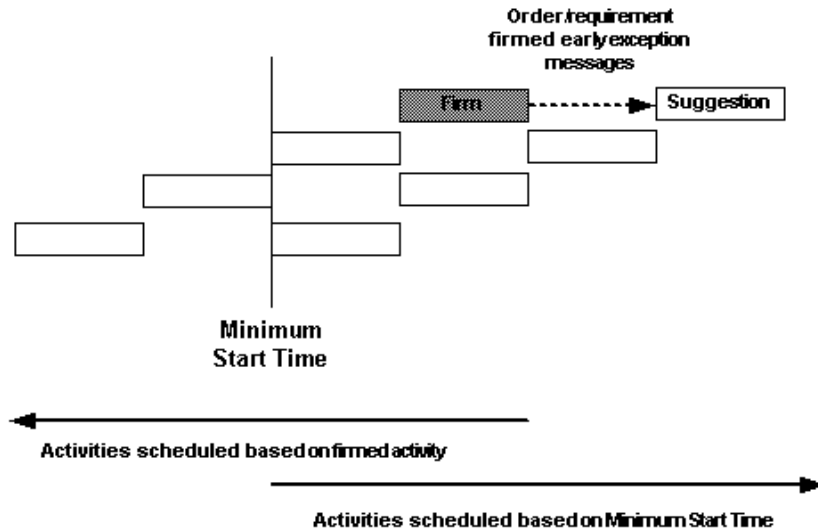
## **9: Order is firmed early**

### **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.



**Figure 9–7 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.

### **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 firming early**

### **Explanation**

This exception message appears in the same circumstances as exception message Order is firming 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.
- 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.

### **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](#) on page 11-46.

### **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

Days Late: The number of days by which the shared supply is late according to the ULPCT calculation.

### **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 firms a planned order and chooses an alternate bill of material and routing.

**Table 9–14 Exception Availability for Exception Group Substitutes and Alternates Used**

<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: 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
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](#).

The planning engine calculates the quantity of the substitute using the information in the Item Relationships form. 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.

**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.

**Table 9–15** *Exception Availability for Exception Group Projects/Tasks*

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.

**Table 9–16 Exception Availability for Exception Group Item Exceptions**

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

### 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 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 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.

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.

**Table 9–17 Item A1 Supplier Split Percentages Violated Planning Scenario**

Schedule Entity	3 January	4 January	5 January	6 January	7 January
Supplier 1 capacity	60	60	0	0	0
Supplier 2 capacity	40	40	0	0	0
Planned orders using supplier 1	60	60	0	0	0
Planned orders using supplier 2	40	40	0	0	0
Demand	0	0	0	0	200
Total supply	100	100	0	0	0
Projected available balance	100	200	200	200	0

The planning engine issues this Sourcing split percentage violated exception message from 3 January to 4 January with a percent variation of 10%.

### Information Displayed

The information displayed for this exception message is:

- 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

## 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.

**Table 9–18 Exception Availability for Exception Group Recommendations**

<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>
Batches	Yes	Yes	Yes	Yes	Yes
Discrete Jobs	Yes	Yes	Yes	Yes	Yes
Flow Schedules	Yes	Yes	Yes	Yes	Yes
Jobs	Yes	Yes	Yes	Yes	Yes
Purchase Requisitions	Yes	Yes	Yes	Yes	Yes

### Explanation

Recommendations are suggestions to the planner to release planned orders. The planned orders become:

- Batches: Oracle Process Manufacturing
- Discrete jobs: Oracle Work in Process
- Flow schedules: Oracle Flow Manufacturing
- Jobs: Oracle Project Manufacturing, Oracle Shopfloor Management (OSFM)
- Purchase requisitions: Oracle Purchasing

### Information Displayed

The information displayed in the Supply/Demand window is:

- Org
- Item
- For Release: Checkbox for releasing the planned order
- Firm: Checkbox for firming the planned order

- Order Type
- Sugg Due Date
- Orig Qty
- Order Number
- Action: The recommendation
- New Date: New firm date specified by planner
- New Qty: New firm quantity specified by planner

If you right click the exception, you can view other key information; calculations for some key terms are:

- Suggested Due Date = Date material is needed in inventory
- Suggested Dock Date = Due date – Postprocessing lead Time
- Suggested Start Date = Dock date – Processing Lead Time
- Suggested Order date = Start date – Preprocessing Lead time. The earliest Suggested Order Date allowed is the current day and no compression days are allowed.

### **Resolution Suggestions**

Consider firming or releasing the planned order. For more information, see [Implementing Planning Recommendation](#) on page 10-184.

## 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](#).

## Exception Information

The section [Understanding Exceptions](#) describes the circumstances under which the planning engine issues the exceptions and the information that it displays.

The section [Viewing Exceptions](#) 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 firmed late
- Order is firmed early
- Requirement is firmed late
- Requirement is firmed early
- Order causes transportation weight capacity overload
- Order causes transportation volume capacity overload
- Order with insufficient lead time
- Requirement with insufficient lead time

The following exception messages relate to the exception message Late replenishments for sales orders/forecasts:

- Resource constraint
- Material constraint
- Order is firmed late
- Order is firmed early
- Requirement is firmed late
- Requirement is firmed early
- Transportation weight constraint
- Transportation volume constraint
- Order lead time constraint
- Requirement lead time constraint
- Demand quantity not satisfied
- Shared supply scheduled late

## Identifying Root Causes of Late Demand

This section explains:

- Late demands: The planning engine process for identifying and scheduling late demands
- Late demand root cause information: Information you need to know to research the causes of late demands

- Viewing late demand information: The windows that you can use to see late demand information

### **Late Demands**

The exception messages that are critical relative to late demands in constrained and optimized plans with enforce capacity constraints are:

- Late replenishment for sales order
- Late replenishment for forecasts

The process that the planning engine uses that can result in these exception messages is:

- Start from the demand due date, backward schedule the operations for the demand to determine the latest time that activities should start to meet the demand on time. This is the latest possible start time (LPST).
- If the LPST is in the past, find the earliest possible start time (EPST) for the first operation and forward schedule the operations for the demand to determine the earliest possible completion time (EPCT) for the demand.

The LPST and EPCT depend on resource availability, resource precedence constraints, planning time fence restrictions, and item lead times.

- Start from the EPCT, backward schedule the operations for the demand to minimize work in process and inventory.

### **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.

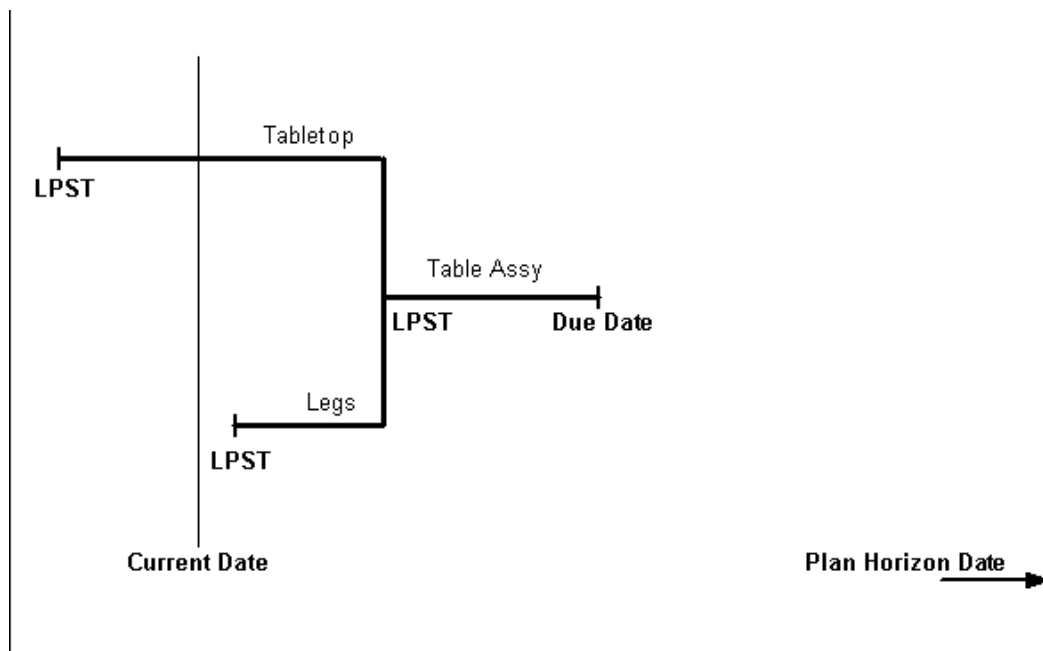
The descriptions in this section use a manufactured table as an example. The table consists of four legs and a top, each of which have operations.

### 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.

**Figure 9–8 Latest Possible Start Date Example**



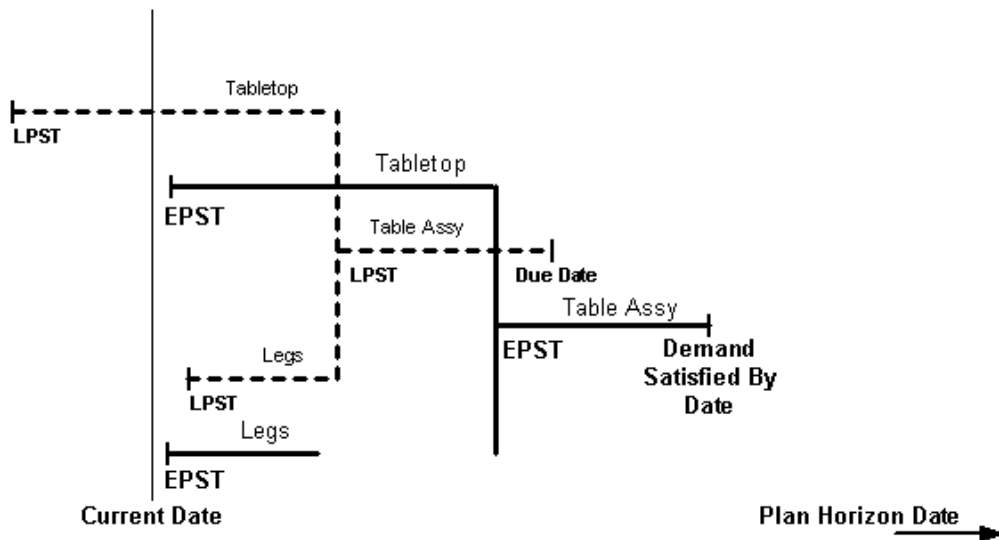
### Earliest Dates

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.

**Figure 9–9 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

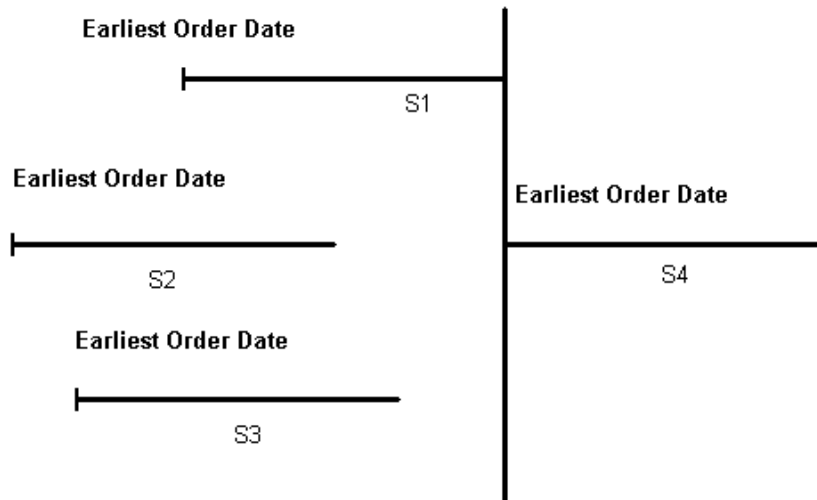
- Buy order: Suggested dock date
- Transfer order: Suggested ship date

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

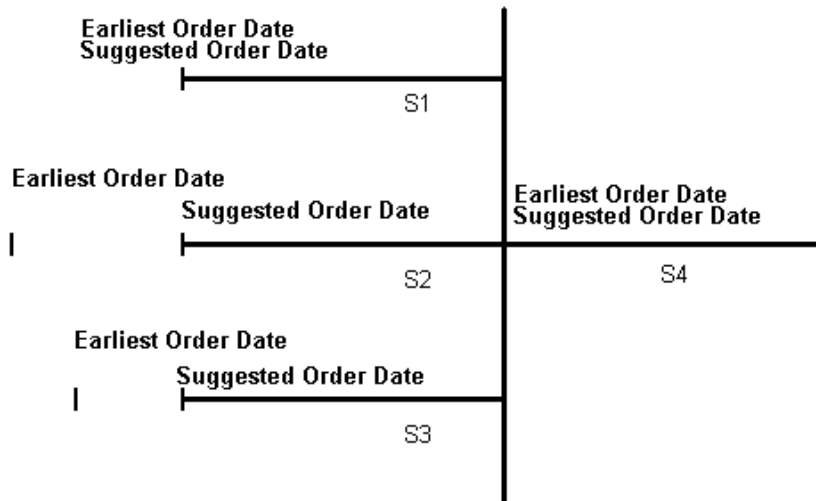
**Figure 9–10 Earliest Order Date Example**



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.

**Figure 9–11 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.

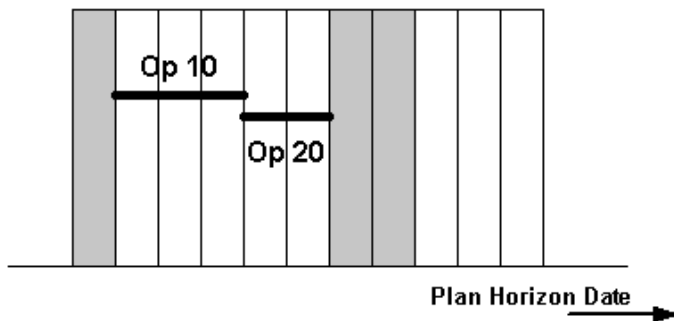
If suggested order date is the same as earliest order date, then the field suggested due date is the same as earliest completion date.

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.

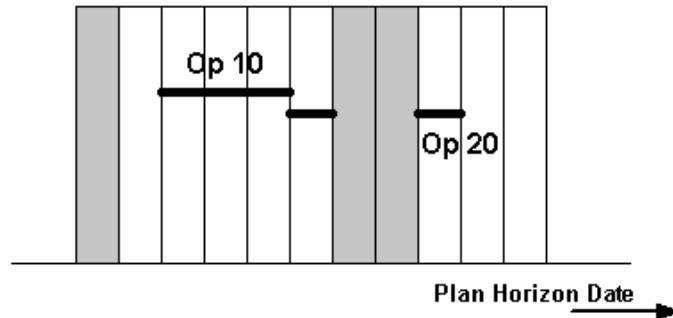
**Figure 9–12 Earliest Possible Times Example**



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:

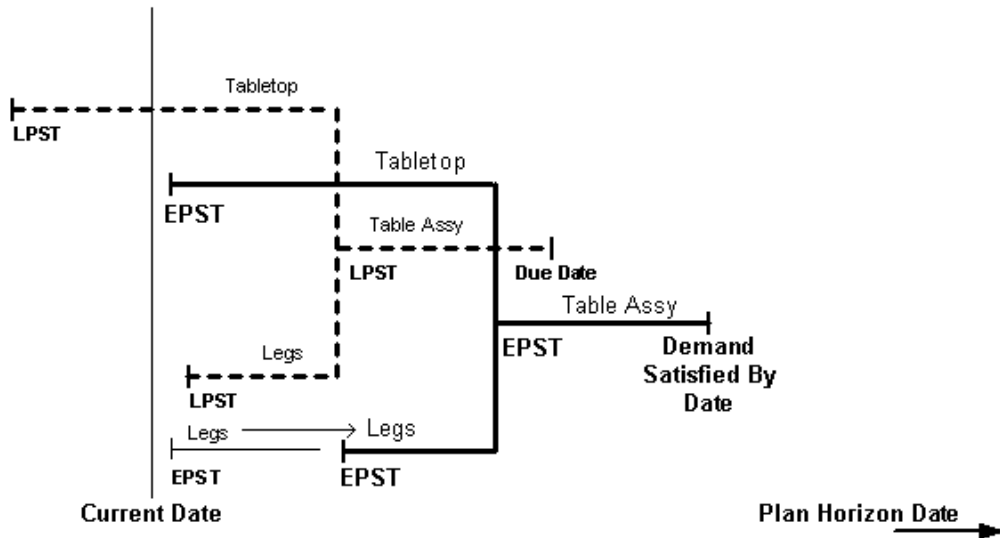
- The difference between suggested order date and earliest order date is one day
- The difference between suggested due date and earliest completion date is three days



**Figure 9–13 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.

**Figure 9–14 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.

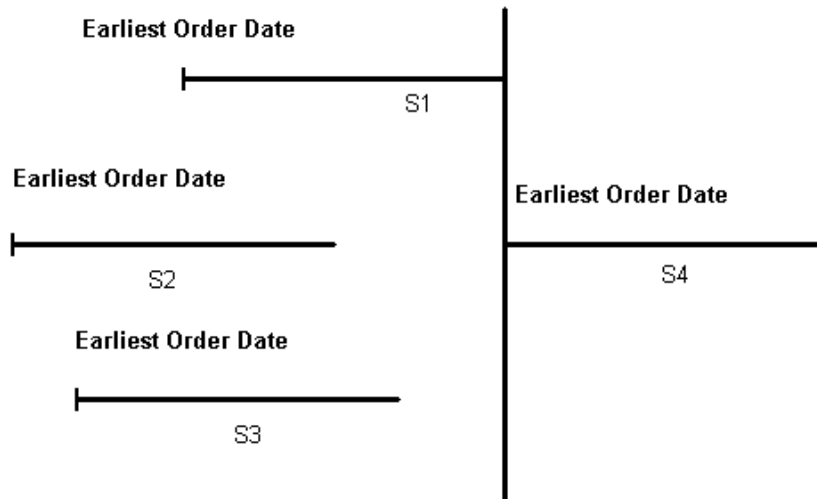
- The most constraining at its level. The most constraining activity is the one that most restricts the lower (earliest) bound of the earliest order date of the next highest level supply.

It can be a:

- Specific activity of a resource
- Buy supply
- Transfer supply

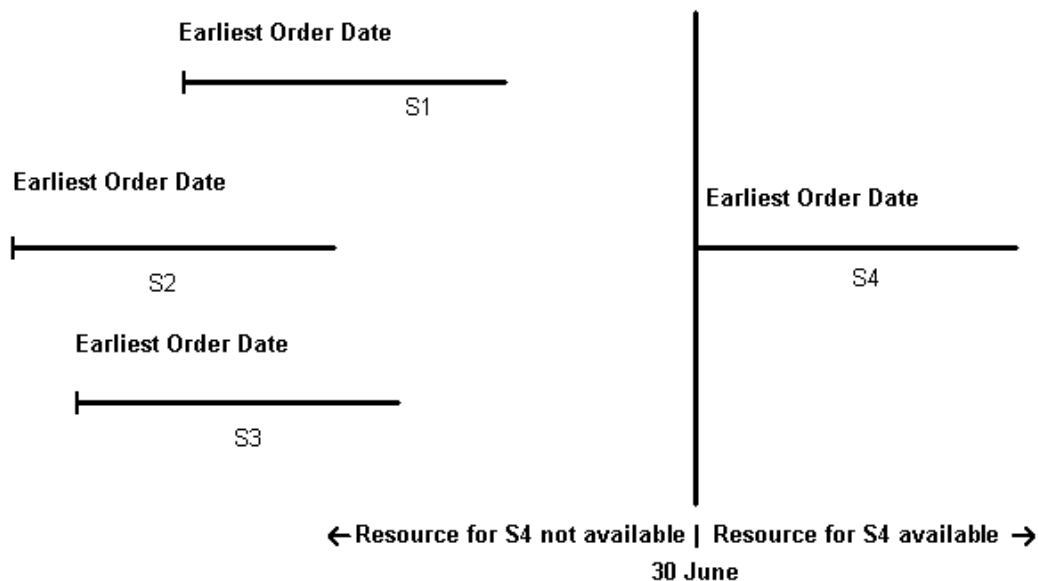
This diagram shows three supplies (S1, S2, and S3) pegged to supply S4. The planning engine forward scheduled the supplies. Among the subassemblies, S1 is the critical supply since it determines the earliest order date of supply S4 (the next highest level supply).

**Figure 9–15 Critical Activity Example**

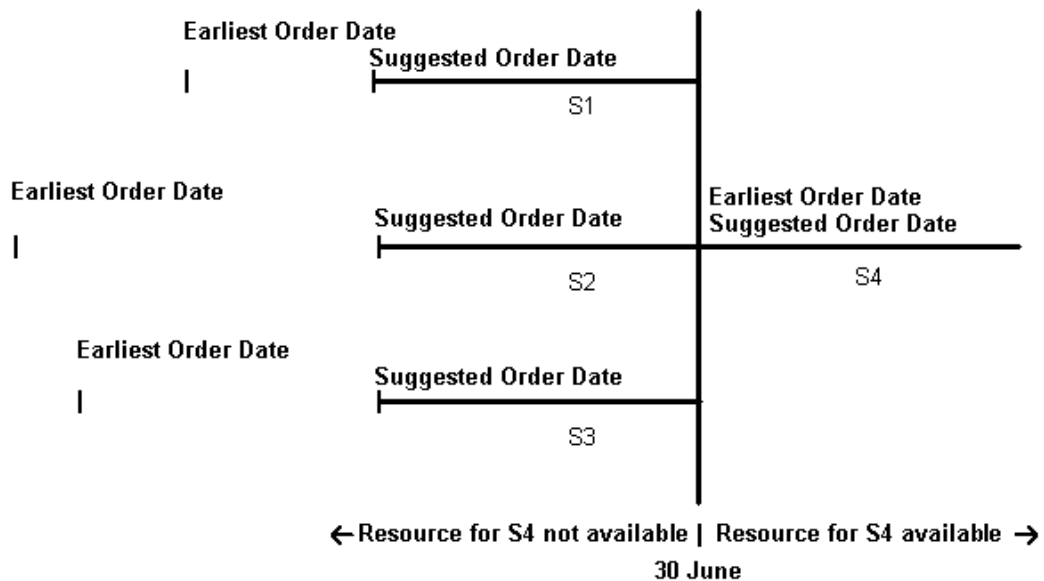


The critical supply does not always have to have its suggested order date and earliest order date the same. In this diagram, the first resource that supply S4 needs is not available until 30 June. Therefore, this resource, rather than supply S1 is the critical activity that determines the earliest order date for supply S4.

**Figure 9–16 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.

**Figure 9–17 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 by priority—orders with the same, higher, and lower priority than the one you are researching

## **Constrained Times**

Constrained Earliest and Actual Times represent the earliest that an activity can start considering resource capacity constraints, supplier capacity constraints, and resource precedence constraints (the earliest that an activity can start is dependent of the earliest time that the previous activity can complete).

## **Resource Precedence Constraints**

Resource precedent constraints are constraints that cause an activity associated with the late demand to wait for a resource when it is otherwise ready to be worked on. They cause the earliest possible completion time to be later and delay satisfaction of the late demand.

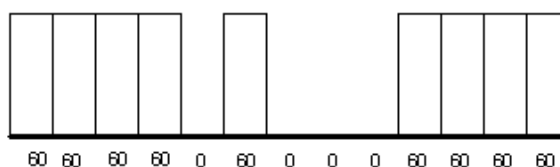
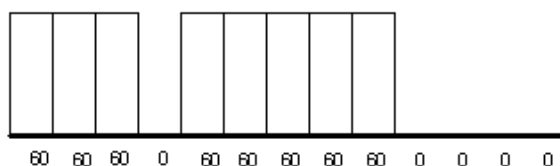
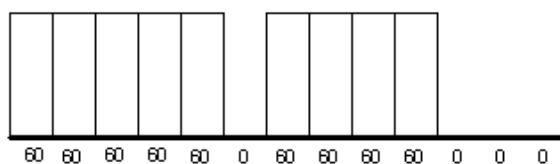
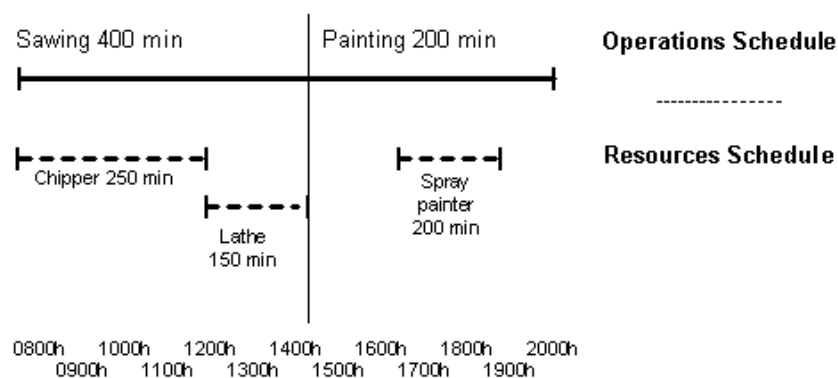
Use the resource utilization profile information to identify resource precedent constraints on the late demand:

- All the levels of resources and operations that satisfy the late demand and their precedence relationships
- Availability of the upstream resources; if one upstream resource has low availability, it will tend to make all downstream operations later
- Availability of the downstream resource; since the planning engine backward schedules late demand operations to be just-in-time, a downstream activity that is late because of resource unavailability results in late scheduled upstream operations.

Demands constrained by resources also receive a Resource constraint exception message and you use that exception message to find addition information about the resources.

This diagram shows the operations and resource schedule for a tabletop. Operation 10 Sawing takes 400 minutes and uses resources Chipper for 250 minutes and Lathe for 150 minutes. Operation 20 Painting takes 200 minutes and uses resource Spray painter. The capacity consumption profiles for the resources show that the resources are not always available. Therefore, the:

- Schedule for this supply is delayed while waiting for the resource Spray painter
- Due date of the supply is later than it would be if the resource was available when the tabletop assembly was ready for it

**Figure 9–18 Precedence Constraints and Resource Availability****Tabletop Planned Order**

### **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 leadtime 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 leadtime 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 Late Demand View:** A graphical interface of the late demand with critical activities pegged to it, calculated and actual start and end times, and relative priorities of 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.

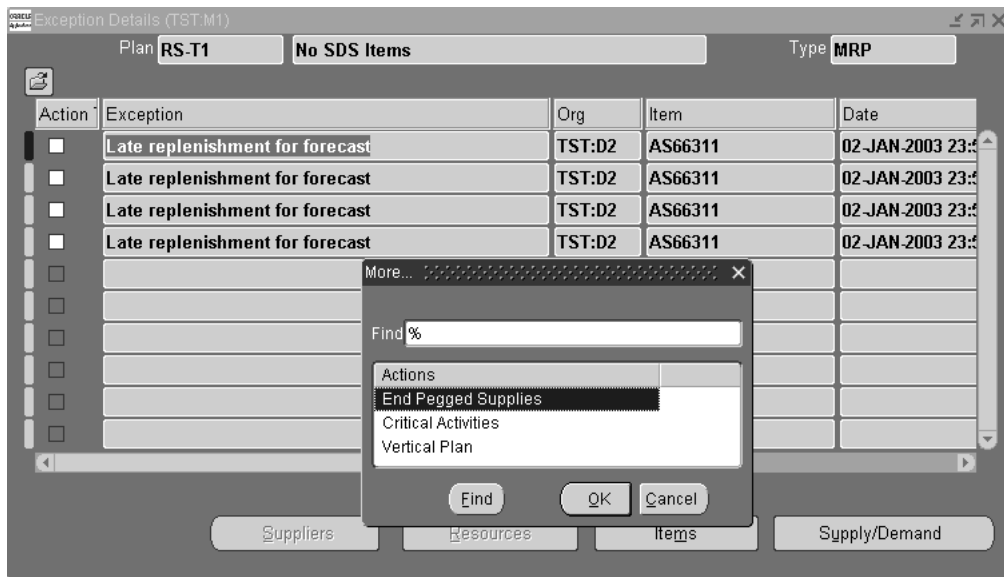
## To access root cause information

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, Late Demand View, select Gantt Chart, then select Late Demand View.

For the End Pegged Supplies, select More, then select End Pegged Supplies. If you select End Pegged Supplies from the Supply/Demand window, the Planner Workbench displays the information in the already open Supply/Demand window.

For the Critical Activities, select More, then select Critical Activities.



### **Gantt Chart Late Demand View**

The Gantt Chart late demand view displays a late demand and:

- The due date and the late demand satisfied date
- The list of activities that are pegged to it with the critical activities in red
- For each activity, the earliest and latest possible start and end times contrasted with the actual start and end times
- The relative priority of the various activities that are contending for limited resource or supplier capacity

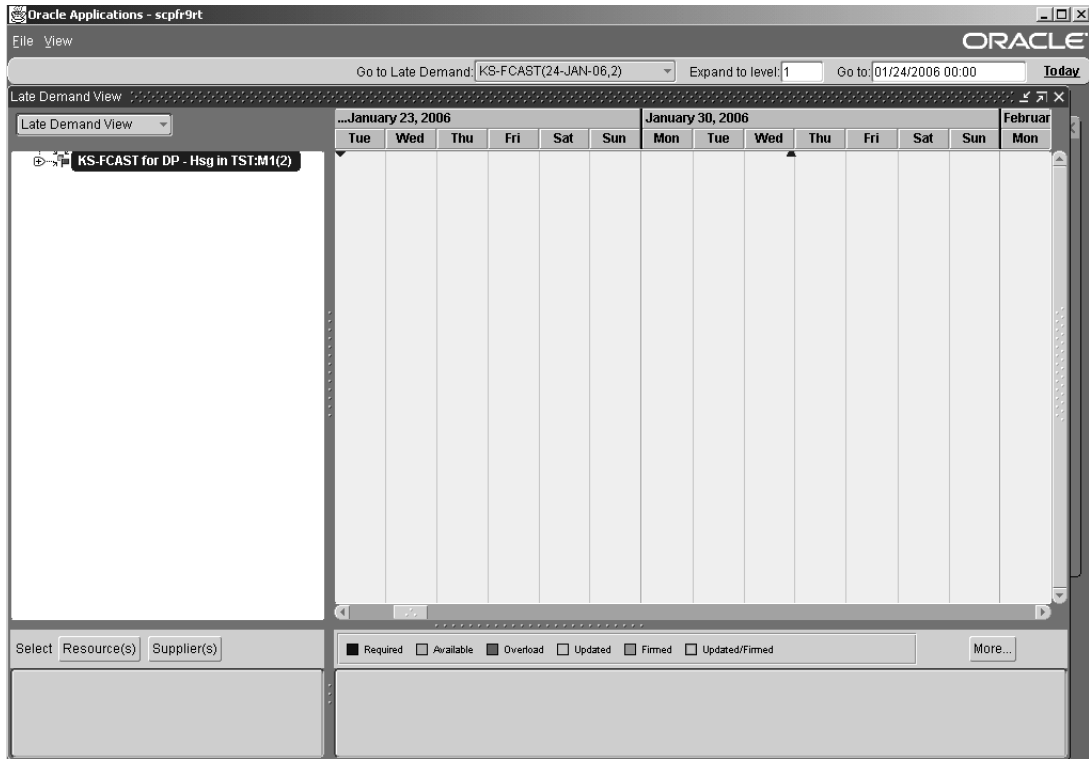
To see the same information in tabular format rather than graphical format, access the End Pegged Supplies Window.

You can only access this view for a late demand (a demand with a Late replenishment for sales order or Late replenishment for forecasts exception message). You cannot reschedule from this view.

To exit the Gantt Chart Late Demand View, click File > Close.

Changes made in the Gantt Chart Order View and Gantt Chart Resource View do not appear in this view until after the next planning run (concurrent, online, or regenerative).

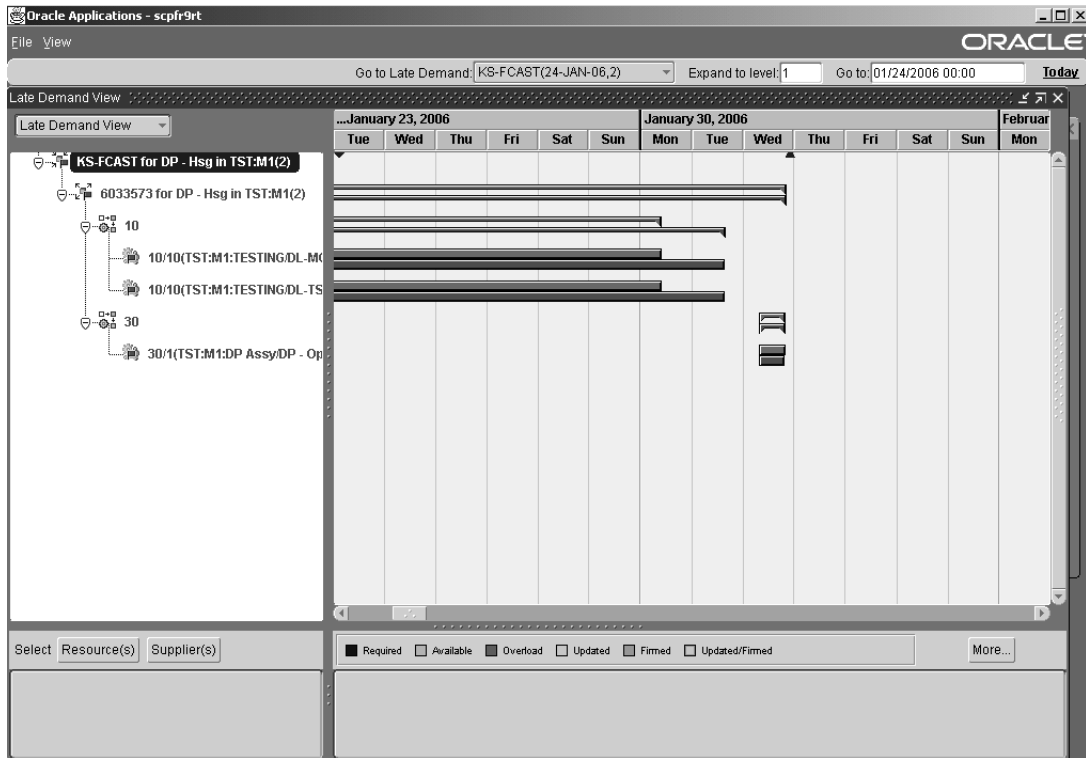
This screen shot shows the Gantt Chart Late Demand View.



For general information about operating the Gantt Chart, see [Interactive Scheduling Using the Gantt Chart](#) on page 10-188.

### Display Features

This screen shot shows the left pane expanded and the right upper pane.



The top element in the left pane pegging tree is the demand that is late. The view shows the supplies pegged to the end demand but does not show dependent demands. In addition:

- To change the number of pegging levels that the left pane shows, change the number in Expand to level. Expand to level refers to pegging level relative to the late demand and not to bill of material level.
- Make, buy, transfer, on -hand, and scheduled receipt nodes have different icons and the words make, buy, and transfer may appear in the text of the node for those types.
- Operations and resources have different icons.
- Critical activities show in red text and with a red flag over the icon.

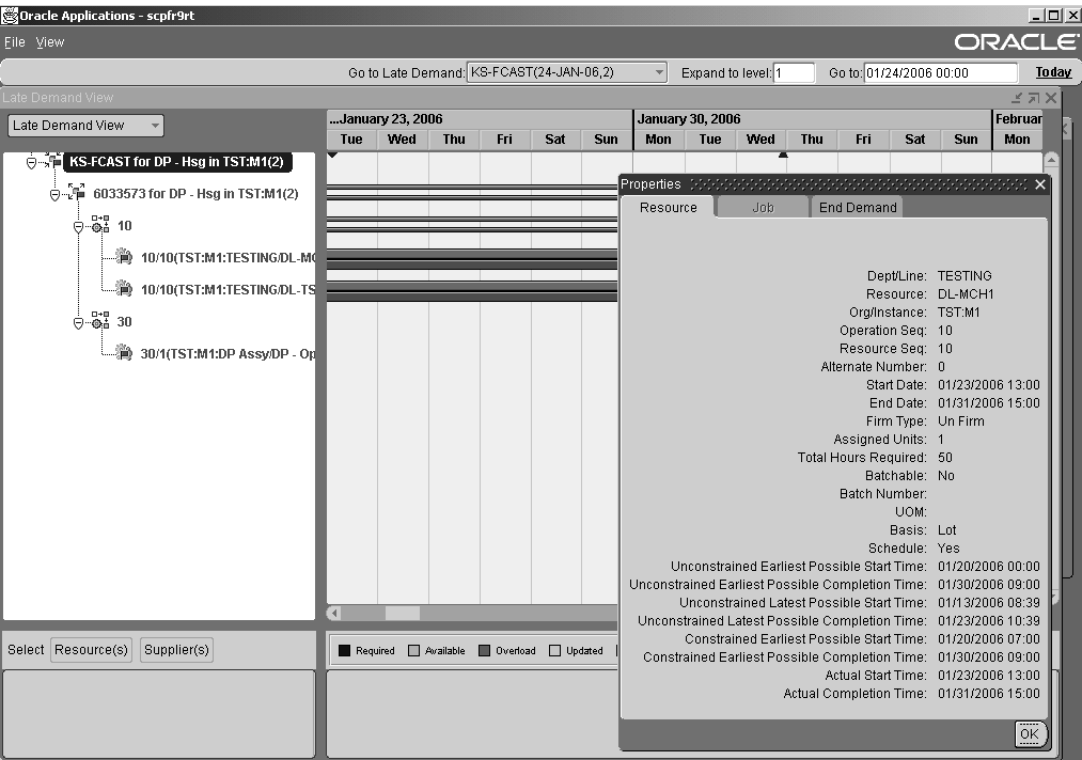
In the right upper pane:

- The time shown is from one day before the plan start date to the demand satisfied date.
- To see more detailed or more aggregate time periods in the right pane, right-click in the time bar, select Zoom, then select a time option.
- Icons under the date bars indicate the demand due date (blue inverted triangle) and demand satisfied date (blue triangle).
- The earliest start and completion times for operations show as light gray bars with light gray inverted triangles. Constrained earliest start and completion times show as pink bars with pink inverted triangles.
- The latest start and completion times for operations show as dark gray bars with dark gray inverted triangles.
- Actual start and completion times for operations show as black or red (for critical) bars with black or red (for critical) inverted triangles.
- Firm supplies (both critical and non-critical) have green borders.
- Supplies with no duration, for example, on-hand items, make items with no routings and lead times, and buy items with no post-processing time, show as clear triangles on the date that they are available for processing.
- The earliest start and completion times for resources show as light gray bars.
- The latest start and completion times for resources show as dark gray bars.
- Actual start and completion times for resources show as blue or red (for critical) bars.
- Firm resource requirements (both critical and non-critical) have green borders.
- Constrained activities (those with minimum start time) show as orange bars.
- Arrows connect entities to show precedence relationships between supplies and resources within an operation. Use the View menu to enable and disable the arrows (View > Show/Hide Arrows).
- To see a complete legend of the icons and colors, click More... in the right lower pane.

To see properties for an entity, do either of the following:

- Double-click or right-click and select Properties from the right upper pane
- Right-click and select Properties from the left pane

This screen shot shows the resource properties.



This screen shot shows the job properties.

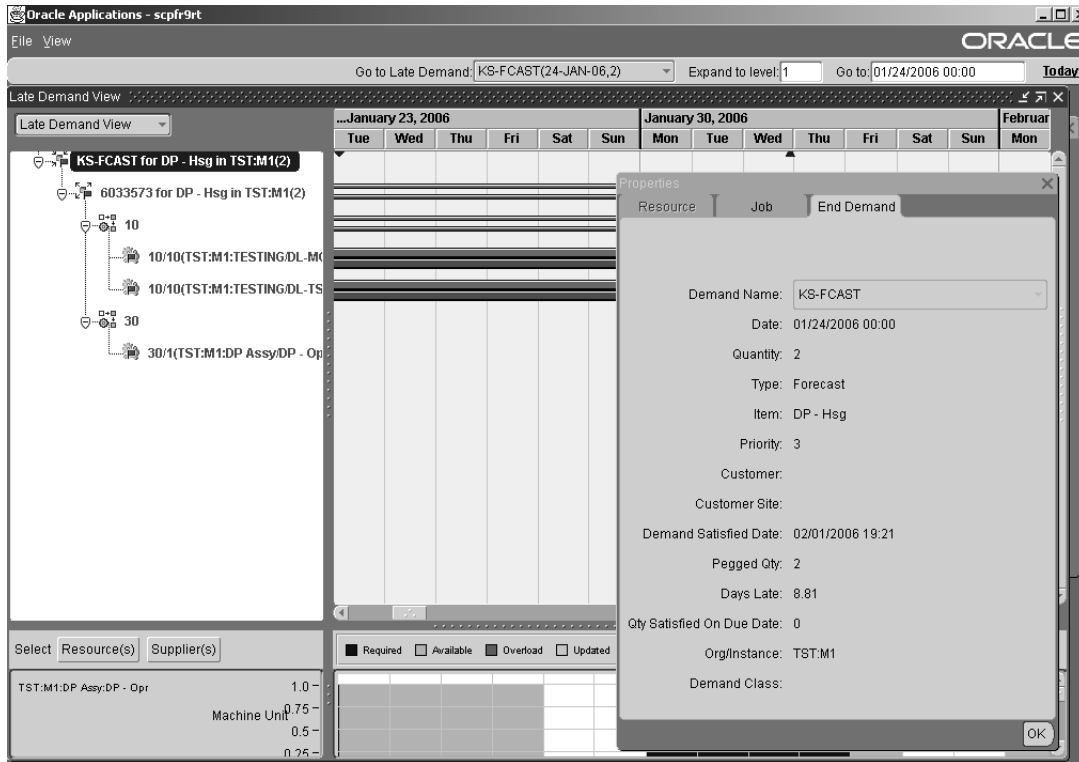


The screenshot displays the Oracle Applications interface for 'scpf9rt'. The main window is titled 'Late Demand View' and shows a hierarchical tree structure on the left. The tree includes 'KS-FCAST for DP - Hsg in TST:M1(2)' and '6033573 for DP - Hsg in TST:M1(2)'. Below the tree, there are buttons for 'Select', 'Resource(s)', and 'Supplier(s)'. A calendar view for January 23, 2006, is visible in the background. A 'Properties' dialog box is open, showing the 'End Demand' tab. The dialog contains the following information:

Properties		
Resource	Job	End Demand
Job Number: 6033573		
Order Type: Planned order		
Item: DP - Hsg		
Firm: No		
Quantity: 2		
New Date:		
Suggested Due Date: 02/01/2006 19:21		
Need By Date: 01/24/2006 00:00		
Unit Number:		
Project:		
Task:		
Alternate BOM/Routing:		
Time Fence: 01/20/2006 00:00		
Type: Make		
Item Description: Housing Assembly		
Allocated Quantity: 2		
Excess Quantity: 0		
Supplier: TST:M1		
Source Org:		
Ship Method:		
Shared supply: No		
Unconstrained Earliest Possible Start Time: 01/20/2006 00:00		
Unconstrained Earliest Possible Completion Time: 01/30/2006 21:21		
Unconstrained Latest Possible Start Time: 01/13/2006 08:39		
Unconstrained Latest Possible Completion Time: 01/23/2006 23:00		
Constrained Earliest Possible Start Time: 01/20/2006 07:00		
Constrained Earliest Possible Completion Time: 02/01/2006 19:21		
Actual Start Time: 01/23/2006 13:00		
Actual Completion Time: 02/01/2006 19:21		

At the bottom of the dialog, there is an 'OK' button.

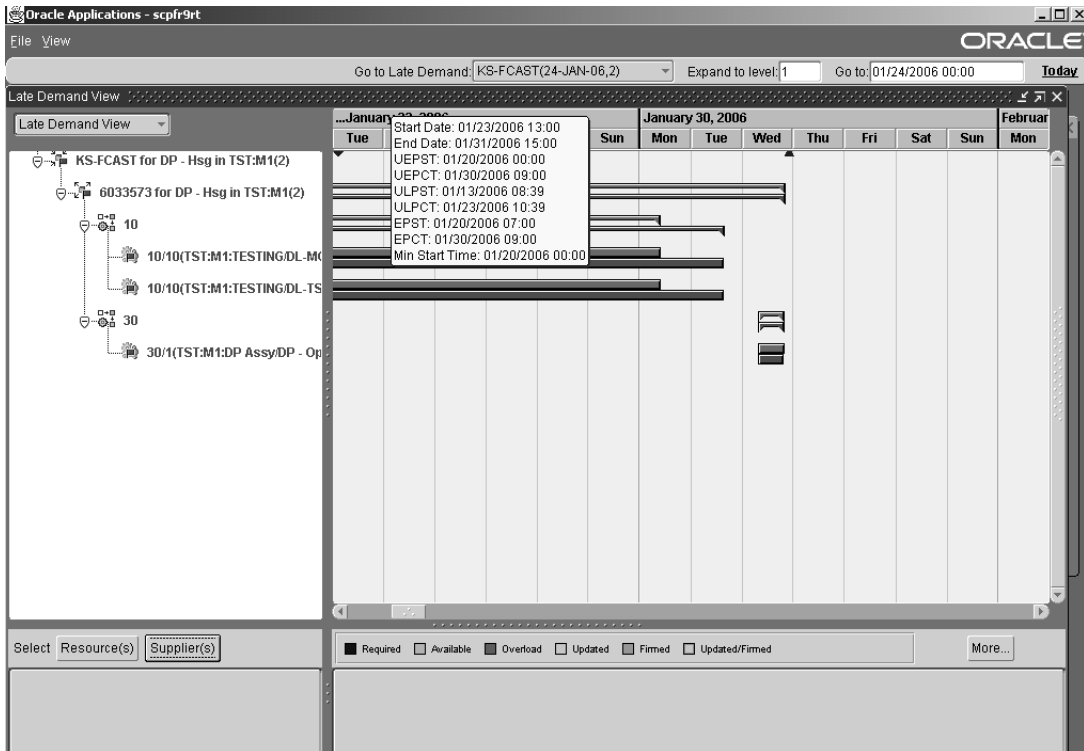
This screen shot shows the end demand properties.



For the following entities, roll the mouse over the icon to see the date:

- Earliest Start and Completion Times
- Actual Start and Completion Times
- Demand Due Date and Demand Satisfied Date

This screen shot shows the roll-over properties.

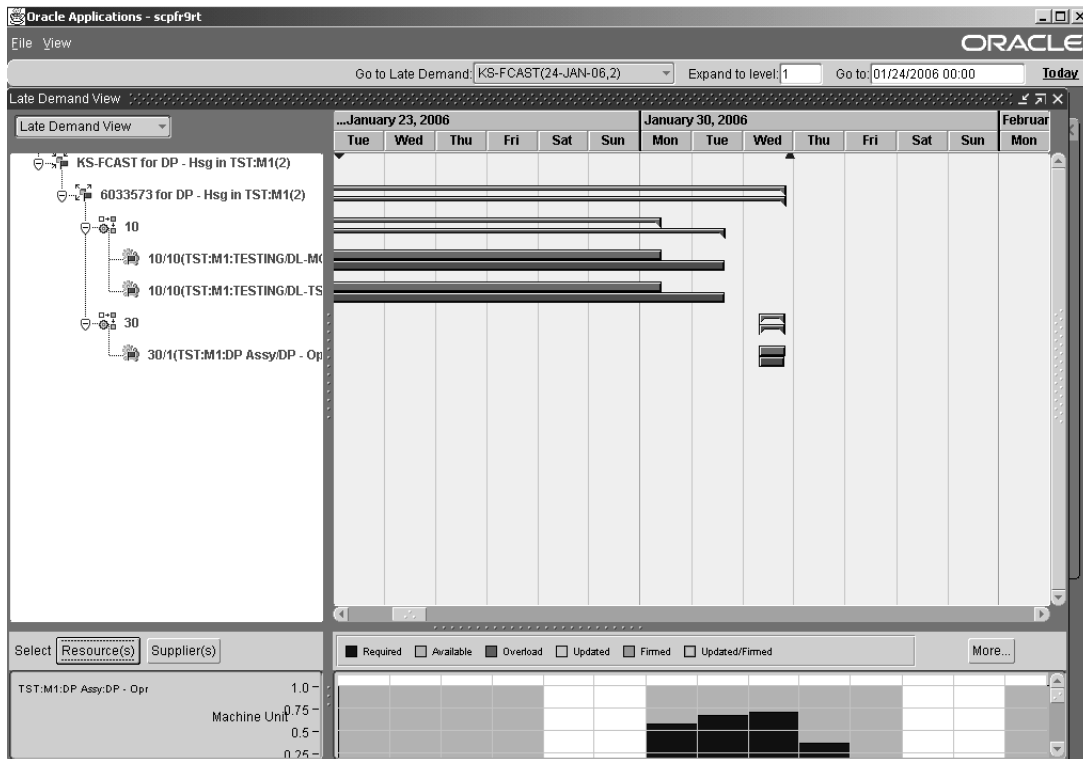


The right lower pane shows the resource profile or the supplier capacity profile:

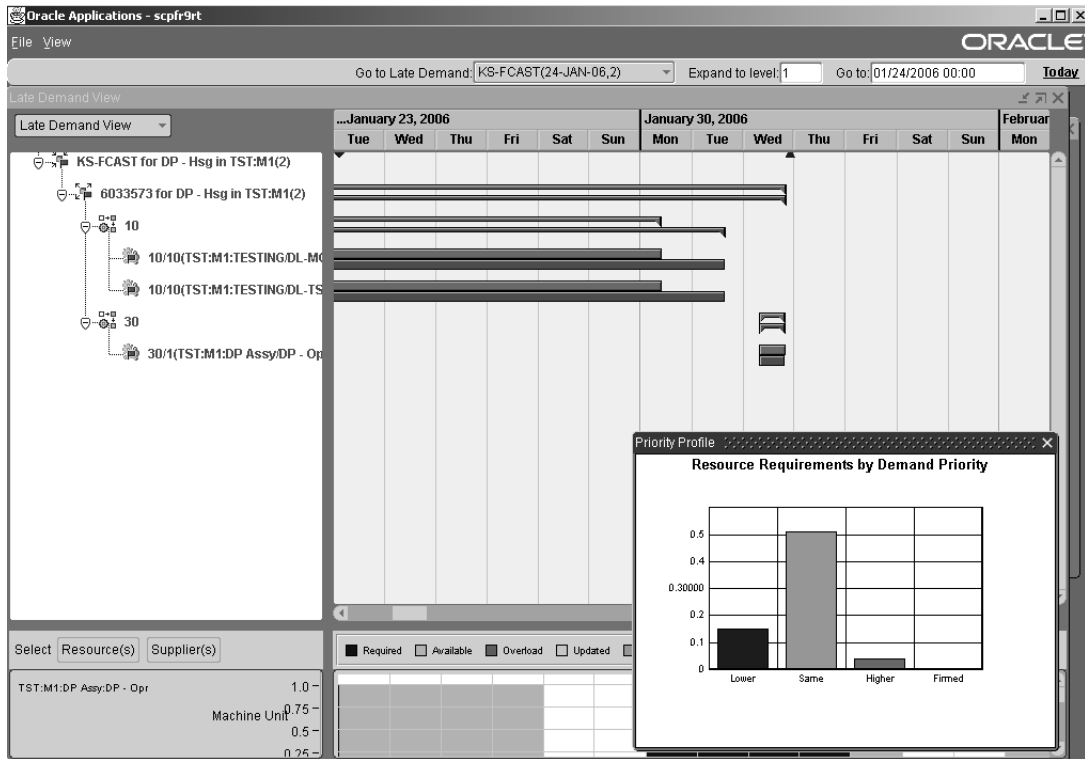
- Available capacity shows as light blue.  
For supplier capacity, the availability represents cumulative supplier capacity. For example, if supplier capacity is 100 units per day, the supplier capacity profile shows 300 units available on day 3.  
Supplier capacity begins to accumulate either on the plan start date or the processing lead time date depending on profile option MSC: Supplier Capacity Accumulation (multiplier).
- Required capacity within available capacity shows as dark blue.  
Purchase orders do not consume supplier capacity. The planning engine assumes that capacity was available when the purchase order was created.
- Required capacity outside of available capacity (overload) shows as red.

- Double-click or right-click on the profile to see the priority split graph. It shows:
  - The capacity used by non-firm orders of the same priority in yellow
  - The capacity used by non-firm orders of a higher priority in orange
  - The capacity used by non-firm orders of a lower priority in green
  - The capacity used by firm orders in black

This screen shot shows the capacity profile.



This screen shot shows the priority split graph.



You can split and restore the display using these View menu options:

- Vertical Split/Merge: Splits the right upper and lower panes into two duplicate sets of panes. You can view each of the pane sets separately.
- Horizontal Split/Merge: Splits the left pane and right upper pane into two duplicate sets of panes. You can view each of the pane sets separately.

## Settings

You can select information to see in the Late Demand View. Select menu bar View, then select from among the following options:

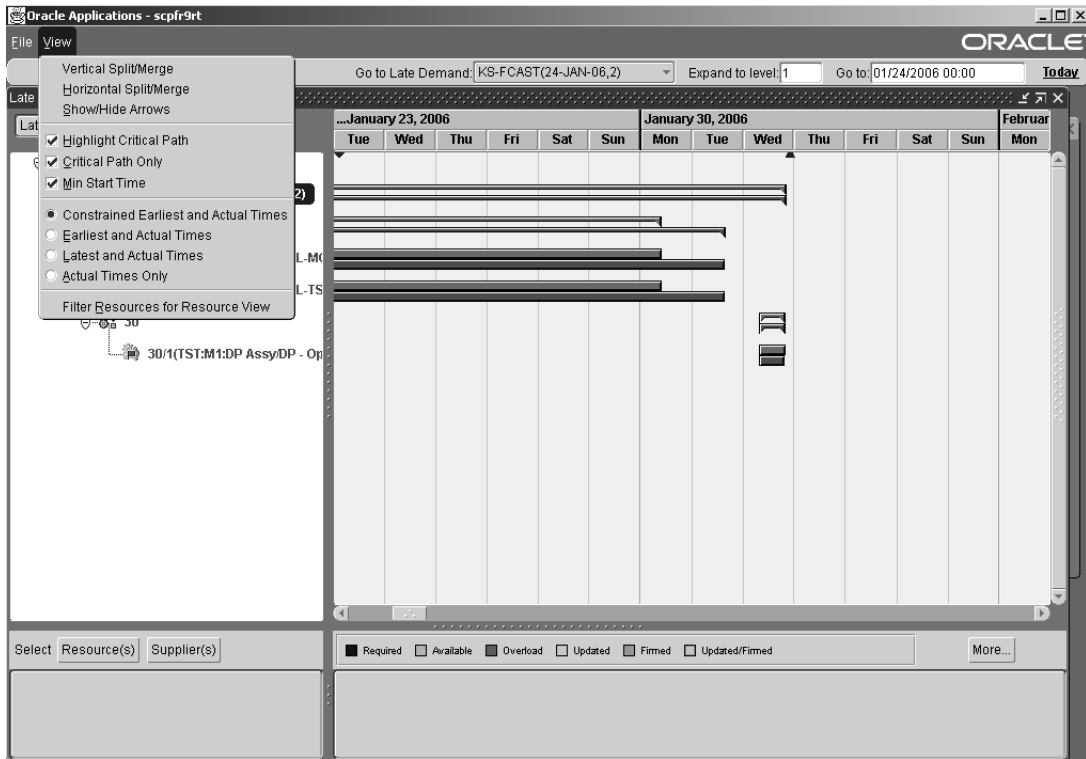
- Highlight Critical Path: See critical supplies or resource requirements highlighted. To see this display, you must set profile option MSO: Heuristic type to Look Ahead.

- Critical Path Only: See only the critical activities.
- Min Start Time: See activities that are constrained by pre-processing times and planning time fences highlighted. These activities cannot start on the plan start date regardless of resource availability.

You can select the types of scheduling information to see in the right upper pane. Select menu bar View, then select one of the following options:

- Actual Times Only: See only the actual start and completion times for each activity.
- Latest and Actual Times: See the actual times plus the latest possible start and end times as black bars. These times represent the latest times that activities can start and end. The planning engine calculates them backwards from the demand due date without considering resource and material constraints but considering the activity minimum durations.
- Earliest and Actual Times: See the actual times plus the earliest possible start and end times as gray bars. These times represent the earliest times that activities can start. That planning engine calculates them forward from the plan start date without considering resource and material constraints but considering the activity minimum durations. If the earliest times are greater than the latest times, not enough lead time is one of the causes for the late demand.
- Constrained Earliest and Actual Times: See the actual times plus the constrained earliest start and completion times. These times represent the earliest that an activity can start considering capacity constraints.

This screen shot shows the View menu.



## Performing Research

To perform critical path analysis, examine the gaps between the constrained earliest start times of two successive activities.

To research an operation:

- **Select Resources.** From the Resources(s) window, view the Available Resources. To see the resource profile for a resource, move it from Available Resources to Selected Resources and click OK. The resource profile appears in the right lower pane.
- To analyze all of the tasks planned on the resource in relation to your task, double-click the resource profile. The Priority Profile window shows all of the tasks assigned to the resource grouped by demand priority. The Same cell shows the total requirements placed on the resource by demands with the same demand priority as your late demand. Requirements from demands with lower

priority than yours show in the Lower cell, requirements from demands with higher priority than yours show in the Higher cell, and requirements from firmed supplies show in the Firmed cell.

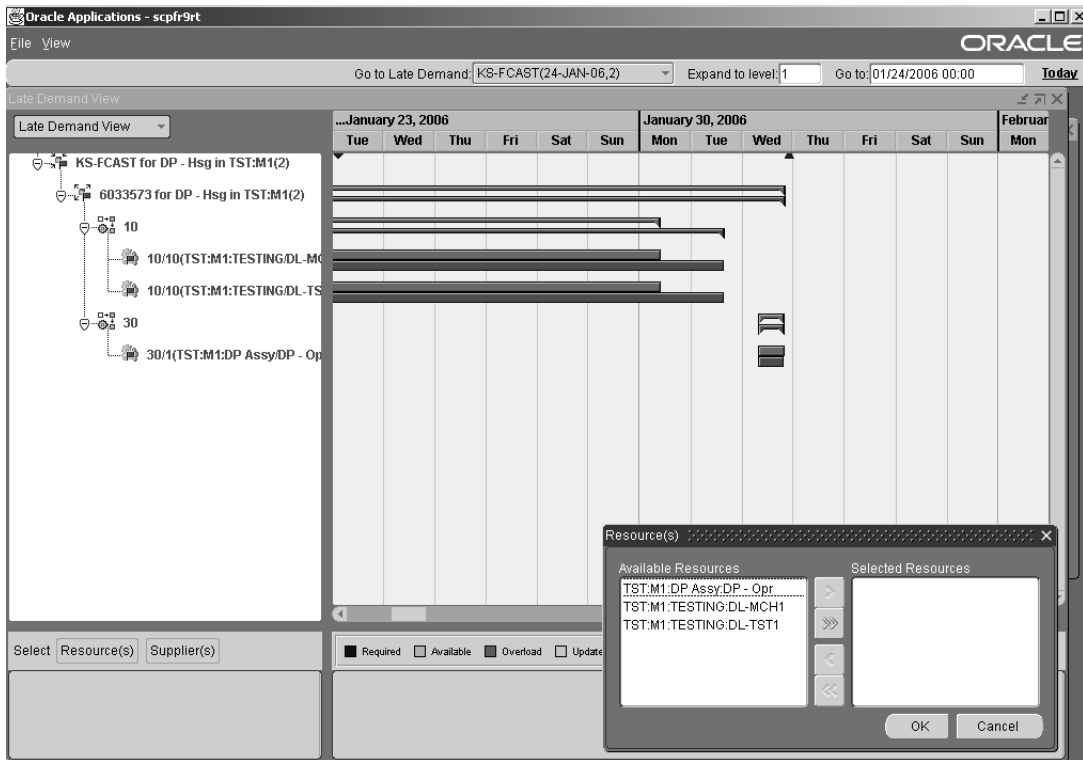
- To see more information about a resource, highlight the resource and select Resource View in place of Late Demand View. You can only move to resources that are pre-selected; use menu bar View > Filter Resources for Resource View....
- Right-click a resource in the left pane or in the right upper pane and select Horizontal Plan to see the horizontal plan for the resource.
- Right-click a resource in the left pane and select Exception Details, Resource Requirements, Resource Availability, or Resources to see more details.

To research material:

- Select Suppliers. From the Supplier(s) window, view the Available Resources. To see the supplier capacity profile for a resource, move it from Available Resources to Selected Resources and click OK. The supplier capacity profile appears in the right lower pane.
- Right-click a supply in the left pane or in the right upper pane and select End Pegged Demands to see the other demands that the supply pegs to.
- Right-click a supply in the left pane or in the right upper pane and select Horizontal Plan to see the horizontal plan for its item.
- To see more information about the other late demands for the same item, select one at a time from Go to Late demand.
- Right-click a supply in the left pane and select Supply or Exception Details to see more details.

This screen shot shows the Resource(s) window.



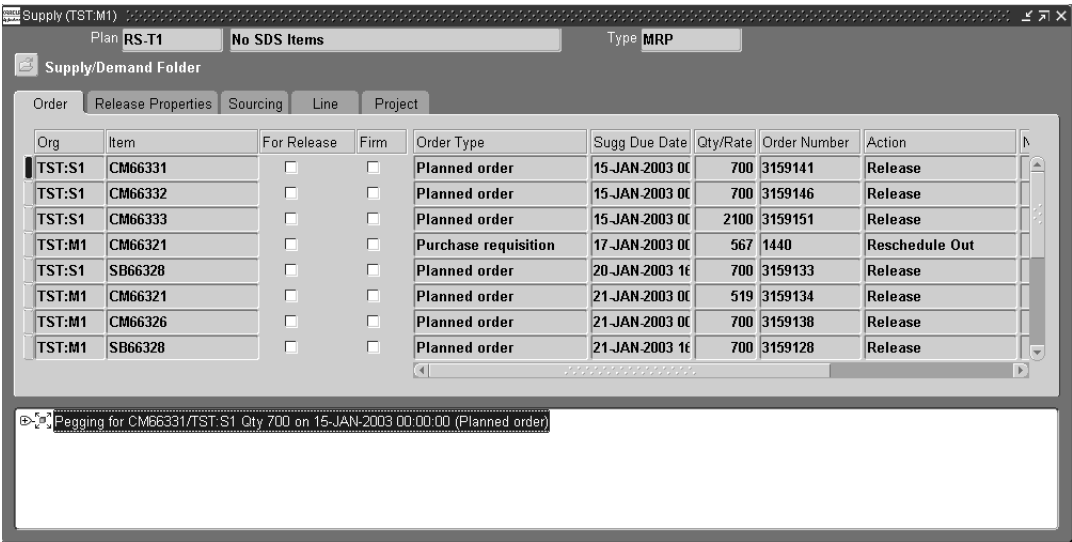


## End Pegged Supplies Window

The End Pegged Supplies window displays the supplies that are pegged to the late demand. For each supply, you can see:

- All of the information that is typically available in the Supply window
- Additional fields on the Orders tabbed region that are pertinent to expediting supplies related to late demands:
  - Earliest Order Date
  - Earliest Completion Date
  - Min Possible Days Late
  - Planning Level
- The pegging tree that is available in the Supply/Demand window

This screen shot shows the End Pegged Supplies window.

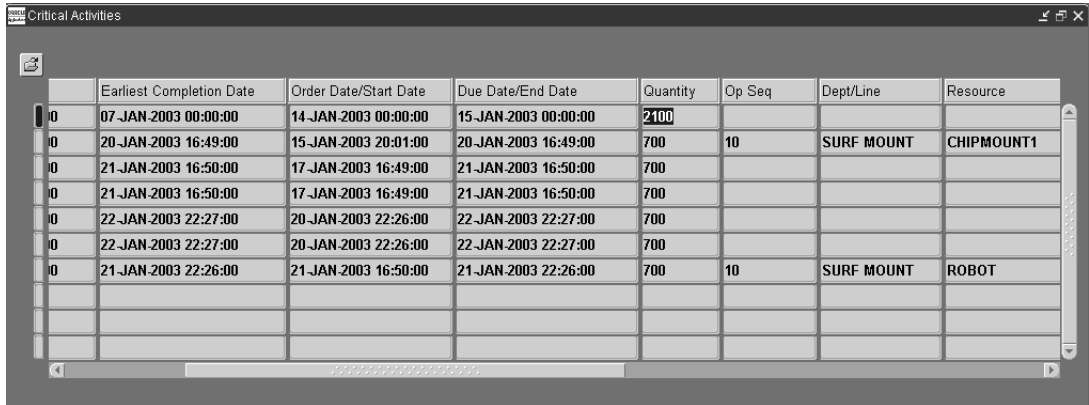


Critical Activities Window

In the Critical Activities window, you can see the specific issues which result in a late replenishment exception message.

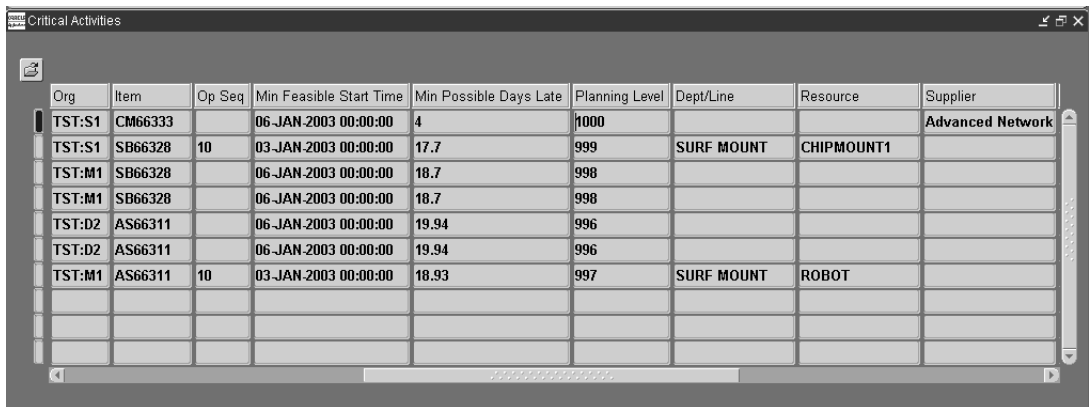
These screen shots show the specific issues that result in a late replenishment exception message against item AS66311. In instance:organization TST:S1, there are two critical activities:

- A resource constraint on item SB66328, operation 10, resource CHIPMOUNT1 (department SURF MOUNT) which could be at least 4 days late.
- A supplier capacity constraint on item CM66333 from Advanced Networking which could be at least 17.7 days late.



The screenshot shows the 'Critical Activities' window with a table containing the following data:

	Earliest Completion Date	Order Date/Start Date	Due Date/End Date	Quantity	Op Seq	Dept/Line	Resource
0	07-JAN-2003 00:00:00	14-JAN-2003 00:00:00	15-JAN-2003 00:00:00	2100			
0	20-JAN-2003 16:49:00	15-JAN-2003 20:01:00	20-JAN-2003 16:49:00	700	10	SURF MOUNT	CHIPMOUNT1
0	21-JAN-2003 16:50:00	17-JAN-2003 16:49:00	21-JAN-2003 16:50:00	700			
0	21-JAN-2003 16:50:00	17-JAN-2003 16:49:00	21-JAN-2003 16:50:00	700			
0	22-JAN-2003 22:27:00	20-JAN-2003 22:26:00	22-JAN-2003 22:27:00	700			
0	22-JAN-2003 22:27:00	20-JAN-2003 22:26:00	22-JAN-2003 22:27:00	700			
0	21-JAN-2003 22:26:00	21-JAN-2003 16:50:00	21-JAN-2003 22:26:00	700	10	SURF MOUNT	ROBOT



The screenshot shows the 'Critical Activities' window with a table containing the following data:

Org	Item	Op Seq	Min Feasible Start Time	Min Possible Days Late	Planning Level	Dept/Line	Resource	Supplier
TST:S1	CM66333		06-JAN-2003 00:00:00	4	1000			Advanced Network
TST:S1	SB66328	10	03-JAN-2003 00:00:00	17.7	999	SURF MOUNT	CHIPMOUNT1	
TST:M1	SB66328		06-JAN-2003 00:00:00	18.7	998			
TST:M1	SB66328		06-JAN-2003 00:00:00	18.7	998			
TST:D2	AS66311		06-JAN-2003 00:00:00	19.94	996			
TST:D2	AS66311		06-JAN-2003 00:00:00	19.94	996			
TST:M1	AS66311	10	03-JAN-2003 00:00:00	18.93	997	SURF MOUNT	ROBOT	

### Critical Activities Window Information

The Critical Activities window displays the following information for activities in the critical path of the late demand only:

- Dept/Line: For resource requirements
- Resource: For resource requirements
- Org: For resource requirements, the resource organization; for buy supplies, the source organization; and for transfer supplies, the destination organization.

- Firm Type: Indicates whether the resource requirements or supplies are firmed.
- Order Date/Start Date: For resource requirements, the start date; for supplies, the order (start)
- Due Date/End Date: For resource requirements, the end date; for supplies, the due date
- Supply Order Number
- Item
- Supplier: For buy supplies
- Supplier Site: For buy supplies
- Source Org: For transfer supplies
- Resource Hours: For resource requirements
- Quantity: Of the supply order
- Earliest Order Date: For resource requirements and supply orders
- Earliest Completion Date: For resource requirements and supply orders
- Order Date/Start Date
- Due Date/End Date
- Min Feasible Start Time: The earliest point in time at which the planning engine can schedule the supply based on item lead times and planning time fences. It does not consider resource and material constraints as it does for Earliest Order Date.

The calculation varies by order type:

- Buy with supplier: The greater of planning time fence date or (Plan start date + Preprocessing lead time + Supplier lead time)
- Buy without supplier and Transfer: The greater of planning time fence date or (Plan start date + Preprocessing lead time + Item lead time (fixed + variable))
- Make: The greater of planning time fence date or (Plan start date + Preprocessing lead time)

## 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 off-load 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 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

#### 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.

**Figure 9–19 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

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

**Figure 9–20 Preference Set Search Page (Bottom)**

☒ Projects/Tasks  
☒ Transportation resource constraint  
☒ Items with a shortage in a project/task  
☒ Items with excess inventory in a project  
☒ Items allocated across projects/tasks

**Plan Options**  
 Please specify whether or not to display plan options.  
 Plan Options ☐ No ☒ Yes

**Preference Set**  
 Edit/save your preference set.  
☒ Make this my default Preference Set  
☐ Delete Plan Comparison Preference Set  
 Make Plan Comparison Preference Set ☒ Private ☐ Public  
 Save Plan Comparison Preference Set As

[Plan Comparison](#) | [Comparison Settings](#) | [Return to Portal](#) | [Logout](#) | [Preferences](#) | [Help](#) | [Email](#)  
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2. To navigate to the Plan Comparison screen, select the Cancel button.
3. To save the preference set, click Save.
4. To change the preference set, select the preference set name and click Go .
5. To display a plan comparison report using the preference criteria, click Display Report. The Exception Group Summary page appears.

## 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.

**Figure 9–21 Filter Criteria Page**

ORACLE® Advanced Planning

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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.

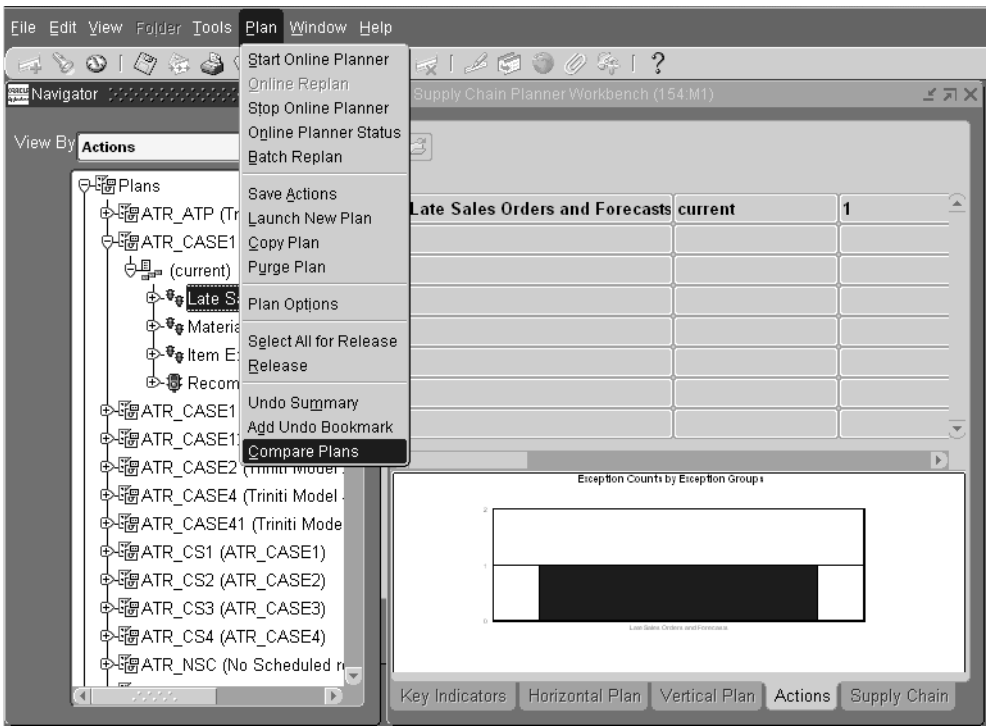
Viewing Plan Comparison

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.

Figure 9–22 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.

**Figure 9–23 Plan Comparison Page**

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**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](#)

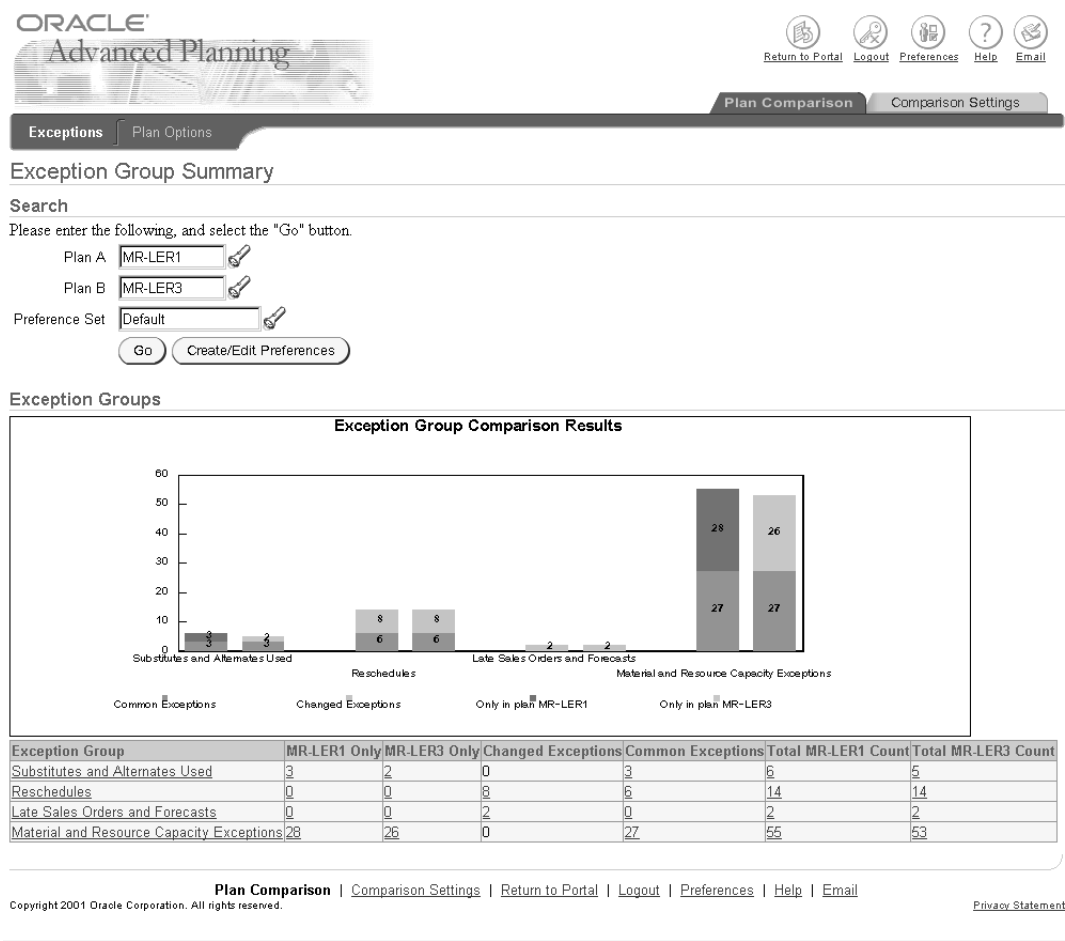
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## To compare two plans

1. Access the Plan Comparison page from the Planner Workbench or from the Navigator.
2. In the Exceptions tab, enter or select the plan names in Plan A and Plan B.
3. Enter or select the preference set.  
To create or edit a preference set, click Create/Edit Preferences.
4. Click Go.

The comparison appears in the lower part of the page.

Figure 9–24 Exception Group Summary Page



The page shows the exception count for the exception groups for the two plans according to the preference set.

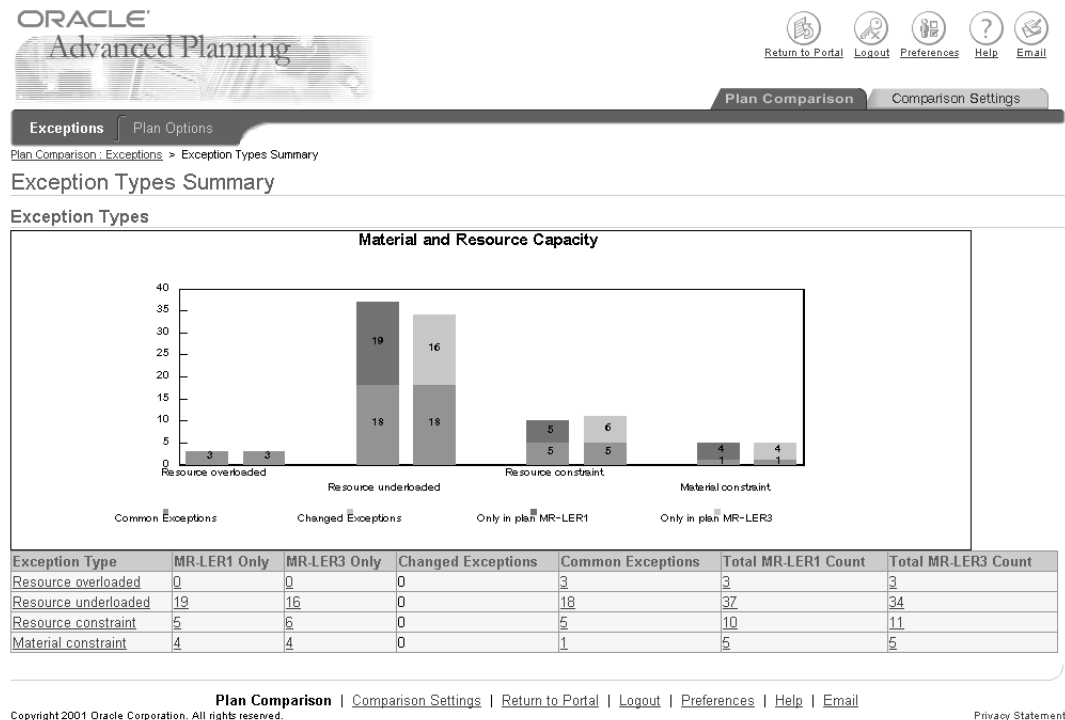
You can select any exception group link and view the exception type plan comparison for that exception group. You can select any exception type link and view the exception details.

## To drill down in the plan comparison

1. From the Exception Group Summary page, click a link in the Exception Group column.

The Exception Types Summary page appears.

**Figure 9–25 Exception Types Summary Page**

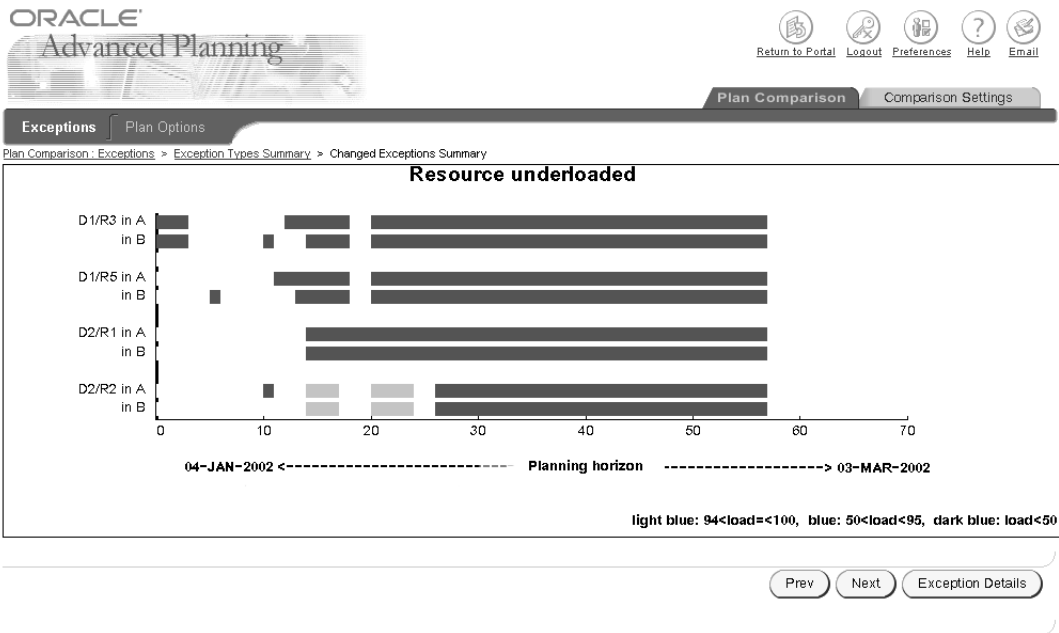


This screen shows the exception count allocated to each exception type in the exception group.

2. From the Exception Types Summary page, click a link in the Exception Type column.

The exception details graph appears.

Figure 9–26 Exception Details Page (Graphical)



- 3. To view corresponding tabular data, click Exception Details.  
The Exception Details page appears.

**Figure 9–27 Exception Details Page (Tabular)**

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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.

Figure 9–28 Plan Options Page

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Plan Comparison

Comparison Settings

Exceptions

Plan Options

Main

Aggregation

Organization

Constraints

Optimization

Decision Rules

Plan Options

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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

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Plan Comparison

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- 2. To view plan options information about the two plans, click the links at the bottom of the page (Main, Aggregation, Organization, Constraints, Optimization, Decision Rules).



## Implementing Plan Changes

Based on the results of your analysis, online simulations, and plan comparisons, you can implement changes in the execution system:

- If you use an Oracle Applications Release 11*i* source instance, make changes there.
- If you use Oracle Applications Release 11.0, make changes in the destination instance (planning server), Collections Workbench since you can only define capacity there.
- Make cross-instance planning sourcing rule changes in the destination instance.
- Make sourcing rule (defined in the source) changes in the source instance.



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## Planner Workbench

This chapter includes:

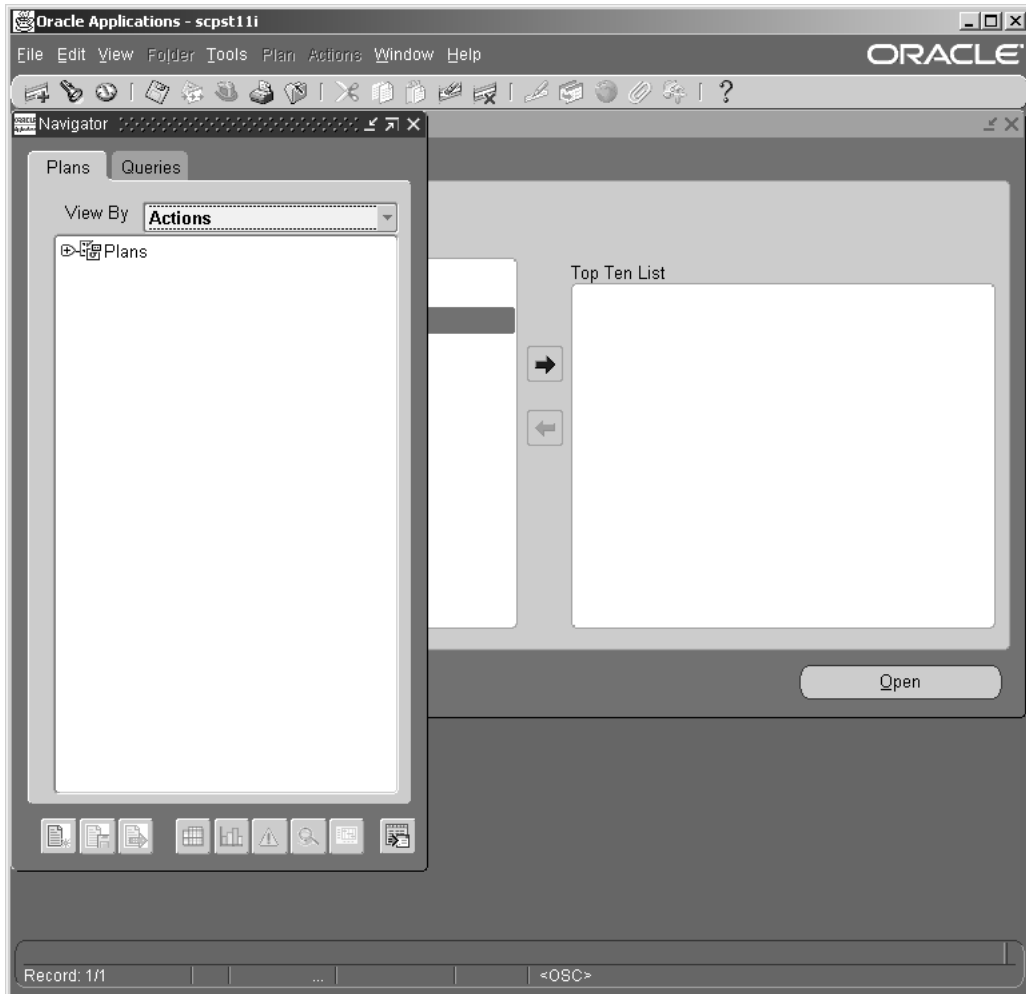
- [Overview of Planner Workbench](#) on page 10-2
- [Tailoring the User Interface](#) on page 10-51
- [Using the Context Windows](#) on page 10-58
- [Implementing Planning Recommendation](#) on page 10-184
- [Interactive Scheduling Using the Gantt Chart](#) on page 10-188
- [Planning Detail Report](#) on page 10-210
- [Accessing Planner Workbench From Oracle Collaborative Planning](#) on page 10-216

## 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.

## General Navigation

*Figure 10–1 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.

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**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.

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## Navigating Using Icons

You can use the icons in the Navigator to view detailed information about the element you select.



**Figure 10–2 Planner Workbench: Icons**

You can use these icons to:

**Figure 10–3 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.

**Figure 10–4 Planner Workbench: Horizontal Plan icon**

- View the horizontal plan.

**Figure 10–5 Planner Workbench: Supply/Demand icon**

- View the supply and demand details.

**Figure 10–6 Planner Workbench: Exceptions icon**



- View the exception messages related to the plan or the element.

**Figure 10–7 Planner Workbench: Items icon**



- View the items related to the plan or the element.

**Figure 10–8 Planner Workbench: Gantt Chart icon**



- View the Gantt chart.

**Figure 10–9 Planner Workbench: More icon**

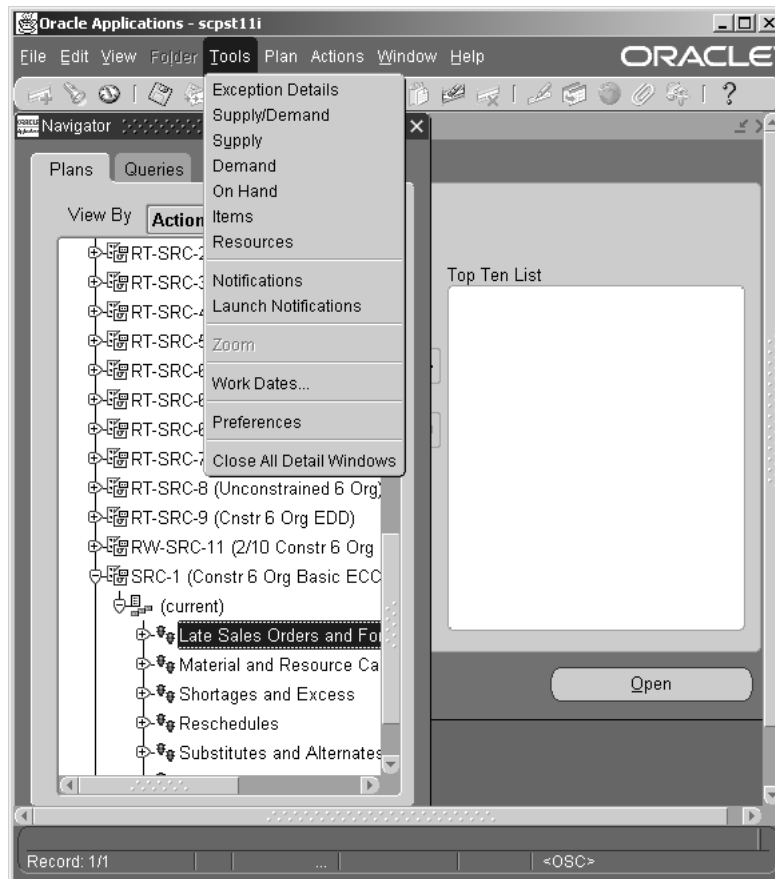


- View additional details such as key indicators, process effectivity, and resources.

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.

**Figure 10–10 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:

**Table 10–1    *Right-click Menu Options For Various Node Types in View By Actions***

Node Type	Right-click Menu Options
Plan	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply /Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply /Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key IndicatorsOptionsRefresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> PropertiesDeleteHelp

**Table 10–1    Right-click Menu Options For Various Node Types in View By Actions**

Node Type	Right-click Menu Options
Versions / Exceptions Group / Exceptions	Exceptions > submenu:
	- Summary
	- Details
	Supply/Demand > submenu:
	- Supply
	- Demand
	- Supply/Demand
	- Onhand
	Items > submenu:
	- Items
	Resources > submenu:
	- Resources
	Refresh > submenu:
	- All
	- Only Selected
	Properties
	Delete
	Help

**Table 10–1    Right-click Menu Options For Various Node Types in View By Actions**

Node Type	Right-click Menu Options
Organization	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key Indicators
	Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> Properties
	Delete
	Help

**Table 10–1 Right-click Menu Options For Various Node Types in View By Actions**

<b>Node Type</b>	<b>Right-click Menu Options</b>
Items	<p>Exceptions &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Summary</li> <li>- Details</li> </ul> <p>Horizontal Plan &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Default</li> </ul> <p>Vertical Plan</p> <p>Supply/Demand &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Supply</li> <li>- Demand</li> <li>- Supply/Demand</li> <li>- Onhand</li> </ul> <p>Items &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Items</li> <li>- Substitutes</li> </ul> <p>Resources &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Resources</li> </ul> <p>Supply Chain &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Sources</li> <li>- Supply Chain Bill</li> <li>- Destinations</li> </ul> <p>BOM/Routings &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Components</li> <li>- Routing Operations</li> <li>- Where Used</li> <li>- Process Effectivity</li> <li>- Co-Products</li> </ul> <p>Key Indicators</p> <p>Refresh &gt;submenu includes All and Only Selected</p> <p>Properties</p> <p>Delete</p> <p>Help</p>

**Table 10–2    *Right-click Menu Options For Various Node Types in View By Items***

Node Type	Right-click Menu Options
Plan	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply /Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply /Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key IndicatorsOptionsRefresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> PropertiesDeleteHelp



**Table 10–2    *Right-click Menu Options For Various Node Types in View By Items***

Node Type	Right-click Menu Options
Categories	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key Indicators
	Expand Partial
	Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul>
	Properties
	Delete
	Help

**Table 10–2    Right-click Menu Options For Various Node Types in View By Items**

Node Type	Right-click Menu Options
Items / Organizations / Components / Where Used	Exceptions > submenu:
	- Summary
	- Details
	Horizontal Plan > submenu:
	- Default
	Supply/Demand > submenu:
	- Supply
	- Demand
	- Supply/Demand
	- Onhand
	Items > submenu:
	- Items
	Resources > submenu:
	- Resources
	Supply Chain > submenu:
	- Sources
	- Supply Chain Bill
	- Destinations
	BOM/Routings > submenu:
	- Components
	- Routing Operations
	- Where Used
	- Process Effectivity
	- Co-Products
	Key Indicators
	Refresh > submenu:
	- All
	- Only Selected
	Properties
	Delete
	Help

**Table 10–3 Right-click Menu Options For Various Node Types in View By Organizations**

Node Type	Right-click Menu Options
Plans	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key Indicators
	Options
	Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul>
	Properties
	Delete
	Help

**Table 10–3   Right-click Menu Options For Various Node Types in View By Organizations**

Node Type	Right-click Menu Options
Organizations	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key Indicators
	Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> Properties
	Delete
	Help

**Table 10–3 Right-click Menu Options For Various Node Types in View By Organizations**

Node Type	Right-click Menu Options
Categories	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key Indicators
	Expand Partial
	Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul>
	Properties
	Delete
	Help

**Table 10–3   Right-click Menu Options For Various Node Types in View By Organizations**

Node Type	Right-click Menu Options
Items	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Horizontal Plan > submenu: <ul style="list-style-type: none"><li>- Default</li></ul> Vertical PlanSupply /Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li><li>- Substitutes</li></ul> Resources > submenu includes ResourcesSupply Chain > submenu: <ul style="list-style-type: none"><li>- Sources</li><li>- Supply Chain Bill</li><li>- Destinations</li></ul> BOM/Routings > submenu: <ul style="list-style-type: none"><li>- Components</li><li>- Routing Operations</li><li>- Where Used</li><li>- Process Effectivity</li><li>- Co-Products</li></ul> Key IndicatorsRefresh > submenu includes All and Only SelectedPropertiesDeleteHelp

**Table 10–3 Right-click Menu Options For Various Node Types in View By Organizations**

Node Type	Right-click Menu Options
Departments / Resources / Transportation Resources	<p>Exceptions &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Summary</li> <li>- Details</li> </ul> <p>Supply/Demand &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Supply</li> <li>- Demand</li> <li>- Supply/Demand</li> <li>- Onhand</li> </ul> <p>Items &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Items</li> </ul> <p>Resources &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Resources</li> <li>- Resource Availability</li> <li>- Resource Requirements</li> <li>- Gantt Chart</li> </ul> <p>Key Indicators</p> <p>Refresh &gt; submenu:</p> <ul style="list-style-type: none"> <li>- All</li> <li>- Only Selected</li> </ul> <p>Properties</p> <p>Delete</p> <p>Help</p>

**Table 10–4    Right-click Menu Options For Various Node Types in View By Projects**

Node Type	Right-click Menu Options
Plans	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key IndicatorsOptionsRefresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> PropertiesDeleteHelp



**Table 10–4    *Right-click Menu Options For Various Node Types in View By Projects***

Node Type	Right-click Menu Options
Organizations	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key Indicators Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> Properties Delete Help

**Table 10–4    Right-click Menu Options For Various Node Types in View By Projects**

Node Type	Right-click Menu Options
Planning Groups / Projects / Tasks	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Key Indicators
	Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> Properties
	Delete
	Help

**Table 10–4 Right-click Menu Options For Various Node Types in View By Projects**

<b>Node Type</b>	<b>Right-click Menu Options</b>
Items	<p>Exceptions &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Summary</li> <li>- Details</li> </ul> <p>Horizontal Plan &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Default</li> </ul> <p>Vertical Plan</p> <p>Supply/Demand &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Supply</li> <li>- Demand</li> <li>- Supply/Demand</li> <li>- Onhand</li> </ul> <p>Items &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Items</li> <li>- Substitutes</li> </ul> <p>Supply Chain &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Sources</li> <li>- Supply Chain Bill</li> <li>- Destinations</li> </ul> <p>BOM/Routings &gt; submenu:</p> <ul style="list-style-type: none"> <li>- Components</li> <li>- Routing Operations</li> <li>- Where Used</li> <li>- Process Effectivity</li> <li>- Co-Products</li> </ul> <p>Key Indicators</p> <p>Refresh &gt; submenu:</p> <ul style="list-style-type: none"> <li>- All</li> <li>- Only Selected</li> </ul> <p>Properties</p> <p>Delete</p> <p>Help</p>

**Table 10–5    *Right-click Menu Options For Various Node Types in View By Resources***

Node Type	Right-click Menu Options
Plans	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply /Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply /Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key IndicatorsOptionsRefresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> PropertiesDeleteHelp

**Table 10–5    *Right-click Menu Options For Various Node Types in View By Resources***

Node Type	Right-click Menu Options
Organizations	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key IndicatorsRefresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> PropertiesDeleteHelp

**Table 10–5    Right-click Menu Options For Various Node Types in View By Resources**

Node Type	Right-click Menu Options
Department Classes / Departments	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li><li>- Resource Availability</li><li>- Resource Requirements</li><li>- Gantt Chart</li></ul> Key Indicators
	Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> Properties
	Delete
	Help

**Table 10–5    Right-click Menu Options For Various Node Types in View By Resources**

Node Type	Right-click Menu Options
Resources / Resource Groups / Transportation Groups	Exceptions > submenu:
	- Summary
	- Details
	Supply/Demand > submenu:
	- Supply
	- Demand
	- Supply/Demand
	- Onhand
	Items > submenu:
	- Items
	Resources > submenu:
	- Resources
	- Resource Availability
	- Resource Requirements
	- Gantt Chart
	Key Indicators
	Refresh > submenu:
	- All
	- Only Selected
	Properties
	Delete
	Help

**Table 10–5    *Right-click Menu Options For Various Node Types in View By Resources***

Node Type	Right-click Menu Options
Items	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Horizontal Plan > submenu: <ul style="list-style-type: none"><li>- Default</li></ul> Vertical PlanSupply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li><li>- Substitutes</li></ul> Supply Chain > submenu: <ul style="list-style-type: none"><li>- Sources</li><li>- Supply Chain Bill</li><li>- Destinations</li></ul> BOM/Routings > submenu: <ul style="list-style-type: none"><li>- Components</li><li>- Routing Operations</li><li>- Where Used</li><li>- Process Effectivity</li><li>- Co-Products</li></ul> Key IndicatorsRefresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> PropertiesDeleteHelp



**Table 10–6    *Right-click Menu Options For Various Node Types in View By Suppliers***

Node Type	Right-click Menu Options
Plans / Organizations	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key Indicators
	Options
	Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul>
	Properties
	Delete
	Help

**Table 10–6    Right-click Menu Options For Various Node Types in View By Suppliers**

Node Type	Right-click Menu Options
Approved Suppliers	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Key Indicators
	Refresh > submenu: <ul style="list-style-type: none"><li>- Only Selected</li></ul> Properties
	Delete
	Help

**Table 10–6    *Right-click Menu Options For Various Node Types in View By Suppliers***

Node Type	Right-click Menu Options
Categories	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key Indicators
	Expand Partial
	Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul>
	Properties
	Delete
	Help

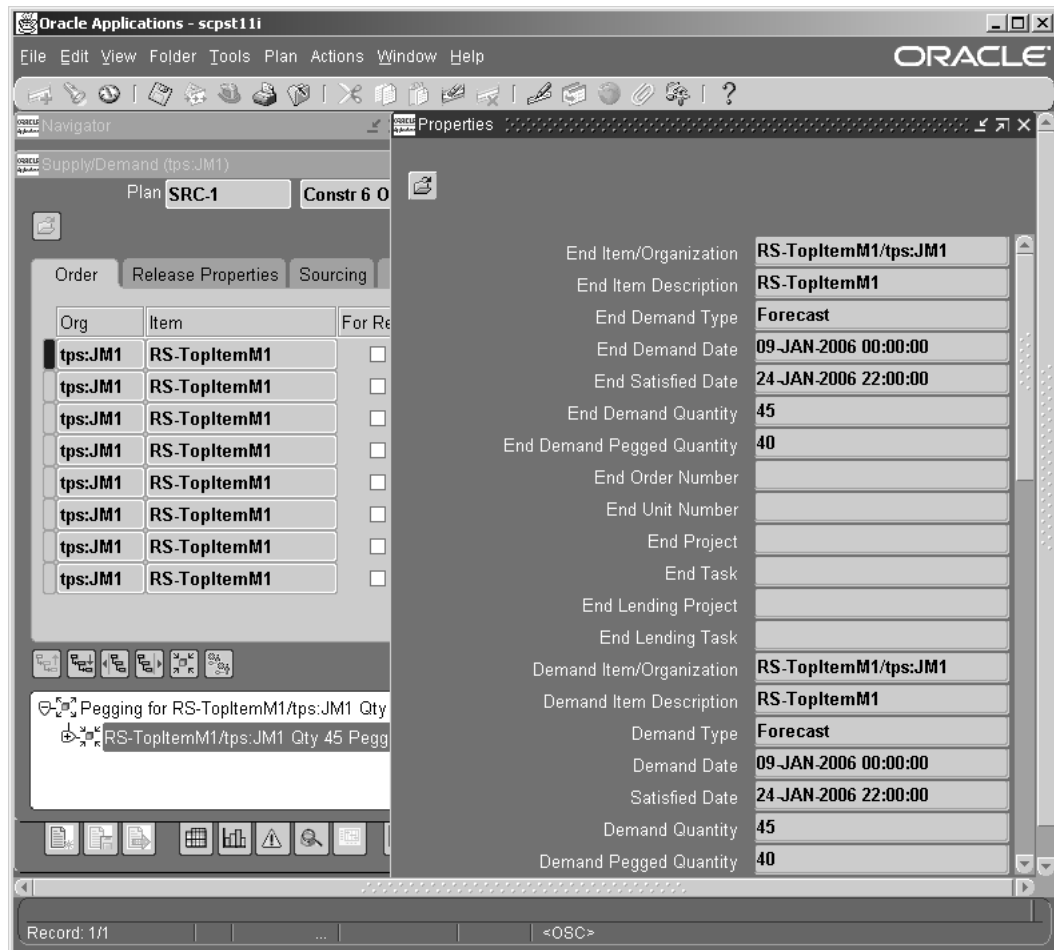
**Table 10–6    Right-click Menu Options For Various Node Types in View By Suppliers**

Node Type	Right-click Menu Options
Items	Exceptions > submenu: <ul style="list-style-type: none"><li>- Summary</li><li>- Details</li></ul> Horizontal Plan > submenu: <ul style="list-style-type: none"><li>- Default</li></ul> Supply/Demand > submenu: <ul style="list-style-type: none"><li>- Supply</li><li>- Demand</li><li>- Supply/Demand</li><li>- Onhand</li></ul> Items > submenu: <ul style="list-style-type: none"><li>- Items</li></ul> Resources > submenu: <ul style="list-style-type: none"><li>- Resources</li></ul> Key Indicators Supplier Information Refresh > submenu: <ul style="list-style-type: none"><li>- All</li><li>- Only Selected</li></ul> Properties Delete Help

**Properties Window**

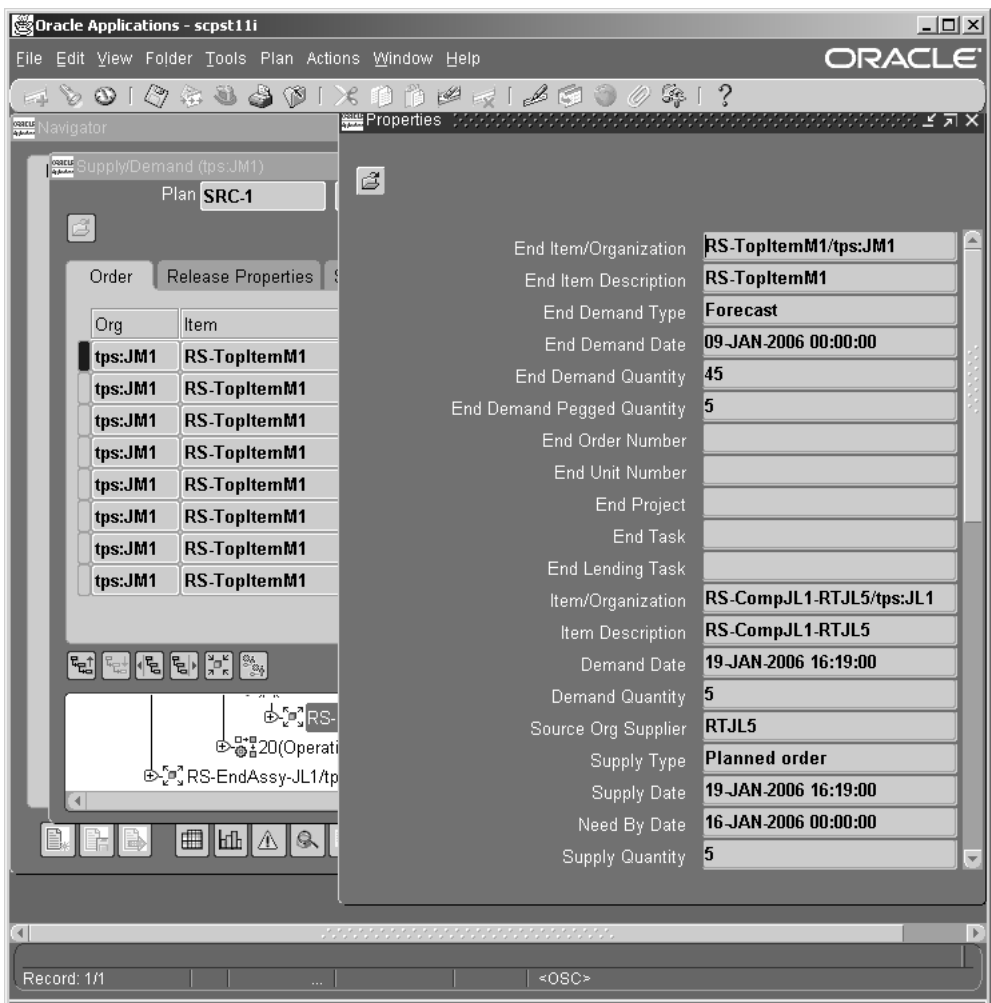
You can view properties for any node in the Navigator or pegging tree by selecting the node, then choosing [right-click] > Properties.

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.

**Figure 10–11** *Displaying Properties for a Planned Order Demand in the Pegging Tree*

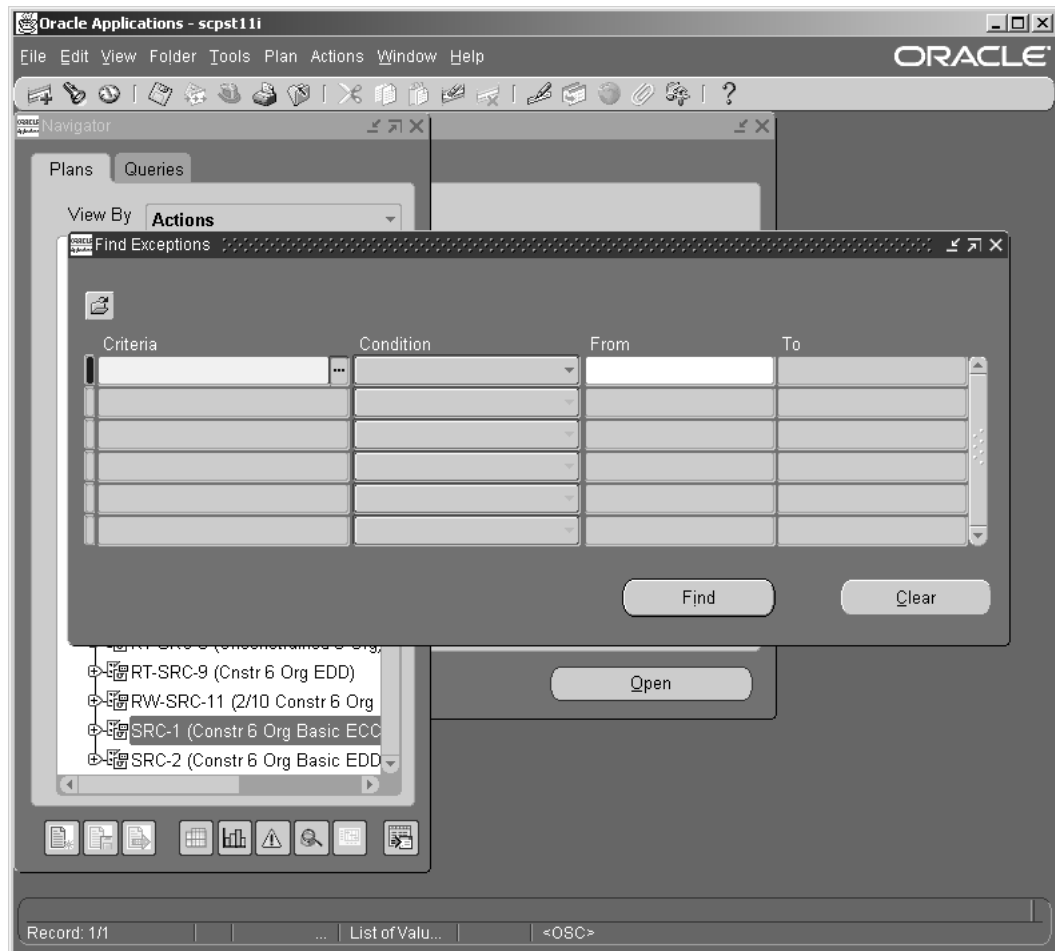
The Properties window displays different views depending on whether you navigate from a demand or a supply. The following displays the properties for a supply in the pegging tree.

Figure 10–12 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.

**Figure 10-13 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
  - 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**

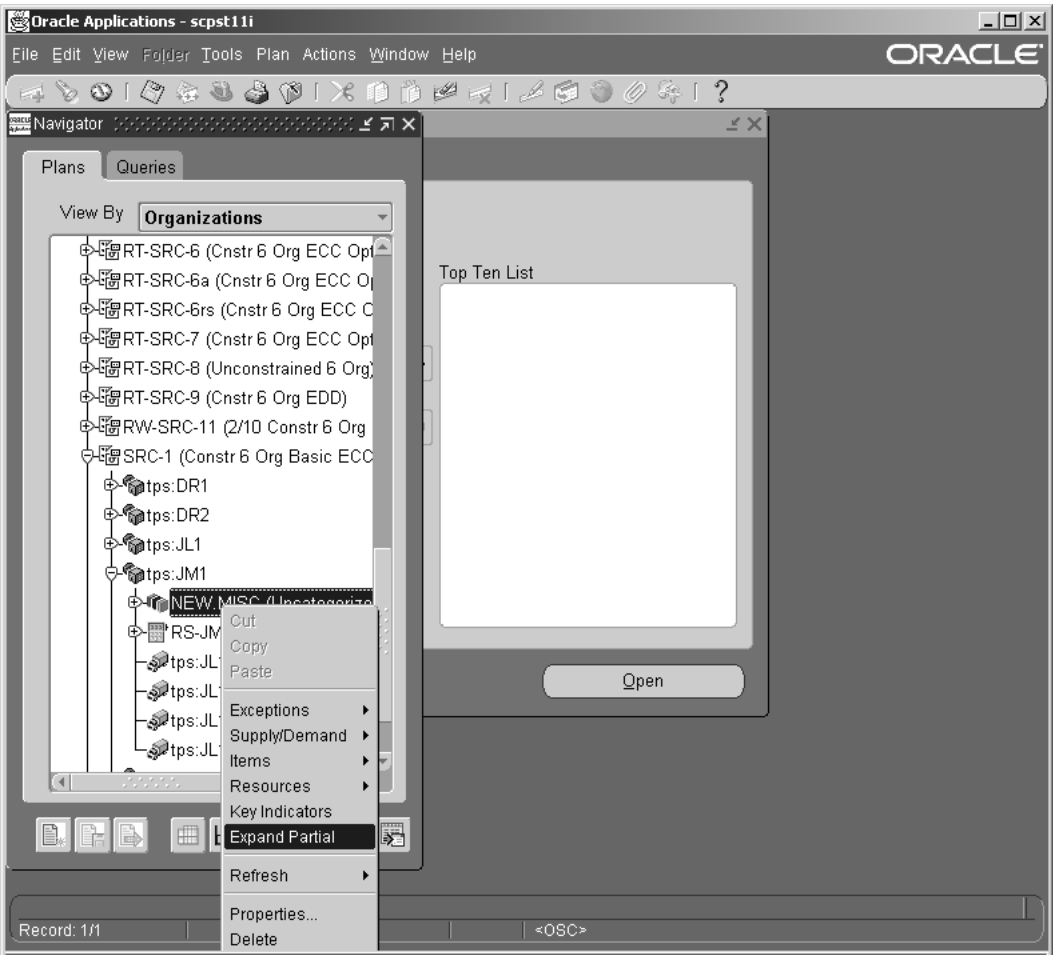
Use Expand Partial to search for item(s) in the tree in the Planner Workbench and Collection Workbench. You can enter either the complete item name or a partial name with a wildcard.

### **To use Expand Partial**

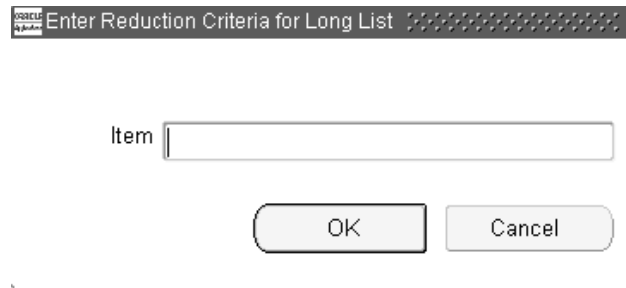
1. From Planner Workbench, select a plan name from the Navigator.
2. Select a category node, such as Organizations or Items.
3. Right-click on an item in the Navigator.

A menu appears.

Figure 10–14 Right-Click menu



- 4. Select Expand Partial.
- The Enter Reduction Criteria for Long List form appears.

**Figure 10–15 Enter Reduction Criteria**

5. Enter either a complete item name or a partial item name with a wildcard and select OK. This search is not case sensitive.

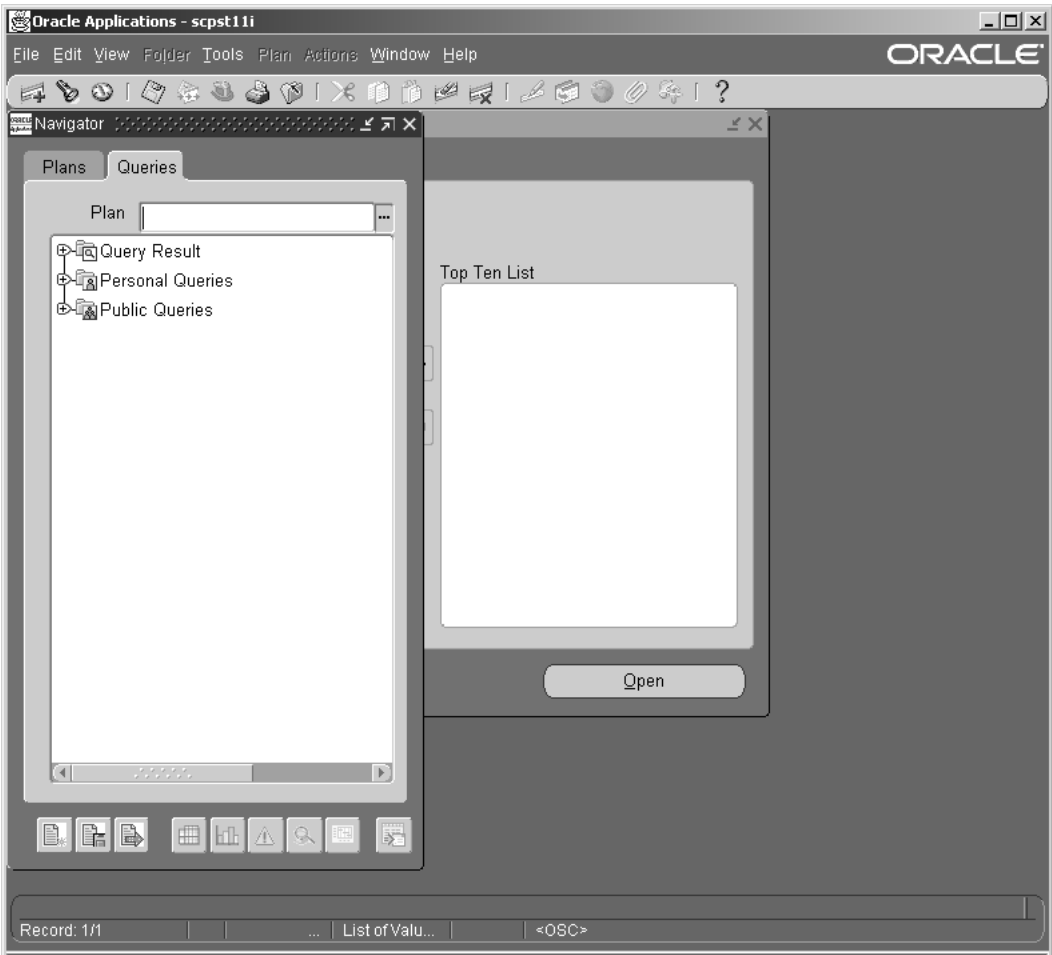
Matching results (up to 500 in number at a time) are displayed in the left pane. If there are no matching items, a message appears in the status bar.

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.

Figure 10–16 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.

Figure 10–17 Query Icons in the Navigator



Table 10–7 Query Icons in Navigator

Icon	Description
Create Query	First icon in the Navigator.
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

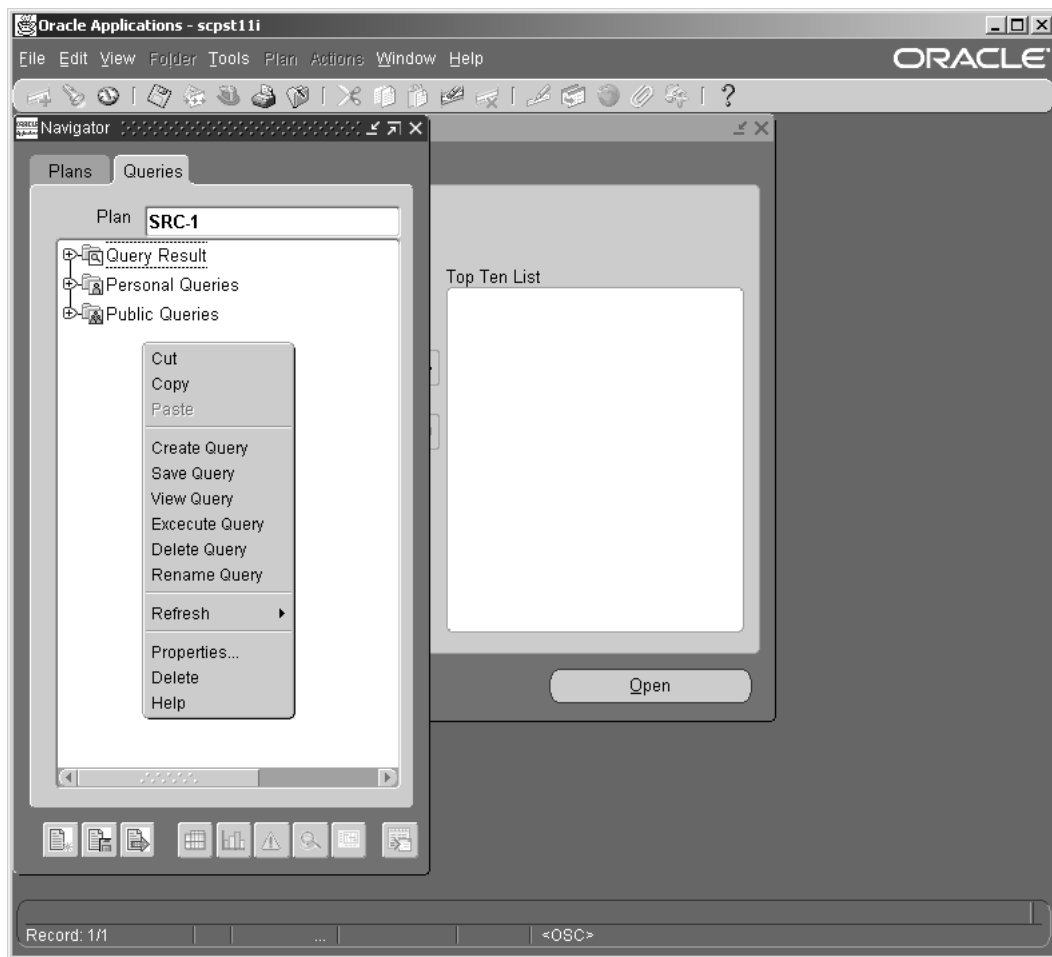
comprises of Item, Resource, Exception, and Supplier. You can create and save various types of queries such as items, resources, exception messages, and suppliers within the Public Queries node. For example, if you want to create a public query to filter exception messages associated with a plan, navigate 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.

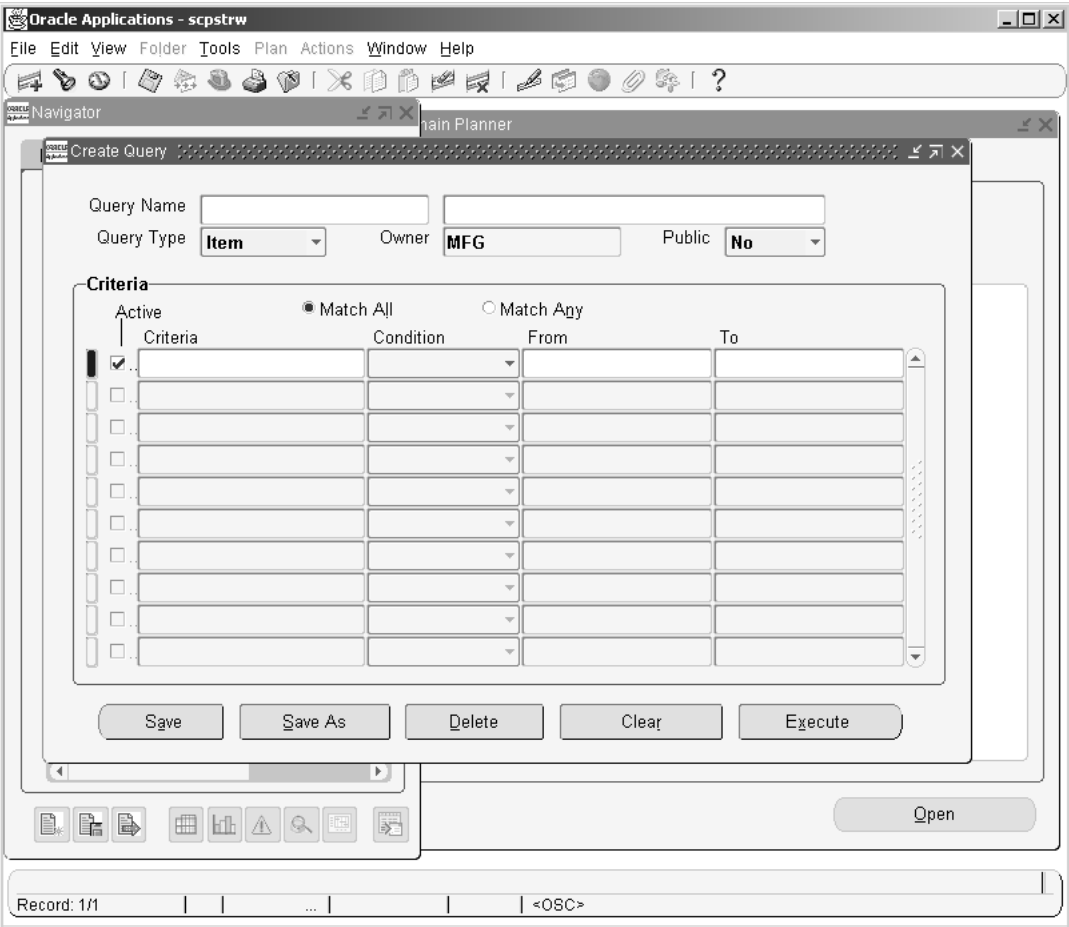
**Figure 10–18** *Queries tabbed pane: Right-click menu*

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.

Figure 10–19 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](#) on 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.

**Table 10–8   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

**Table 10–8   Criteria for Querying Items, Resources, and Suppliers**

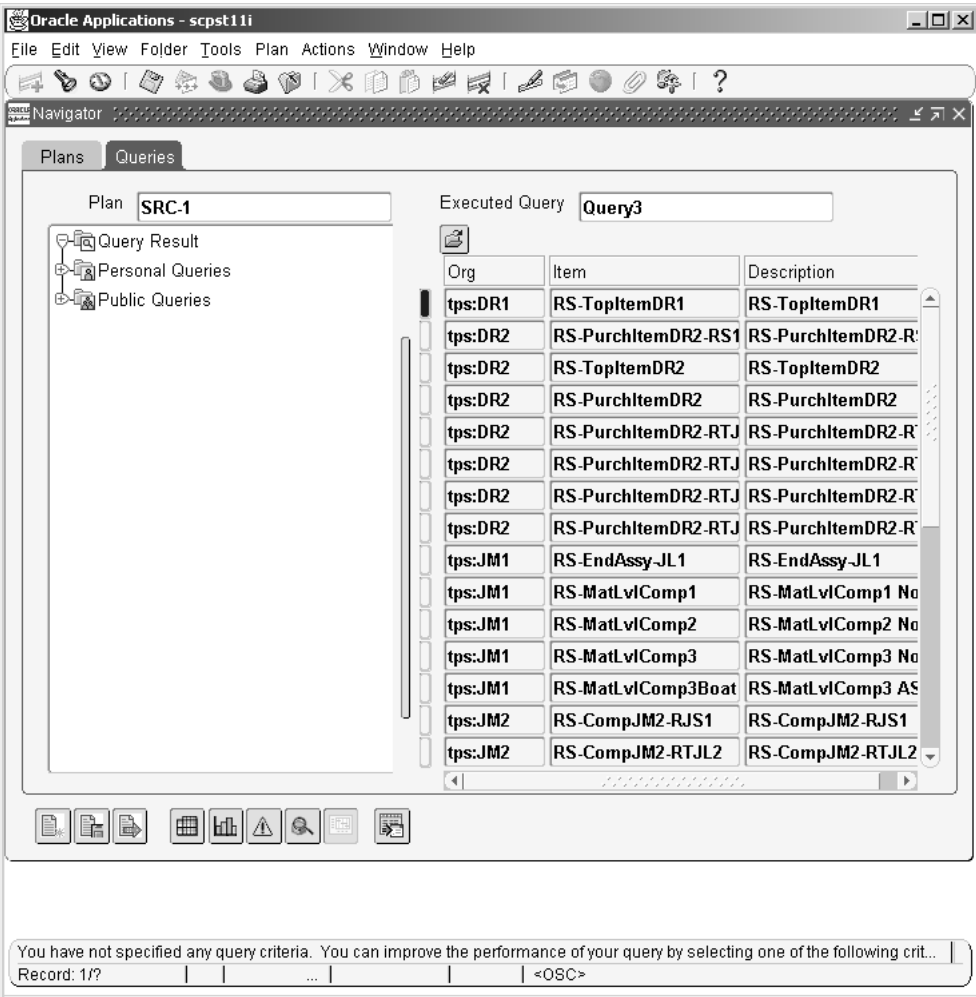
Query Type	Criteria
Resources	Department Class
	Department Line
	Maximum Rate
	Minimum Rate
	Organization
	Owning Department
	Resource
	Resource Group
	Resource Type
Suppliers	Approved Supplier
	Supplier Site
	Buyer
	Category
	Item
	Organization
	Planner
	Standard Cost

- 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.

Figure 10–20 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.

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**Note:** To execute a query for a particular plan, you can specify the name of the plan in the Plan field.

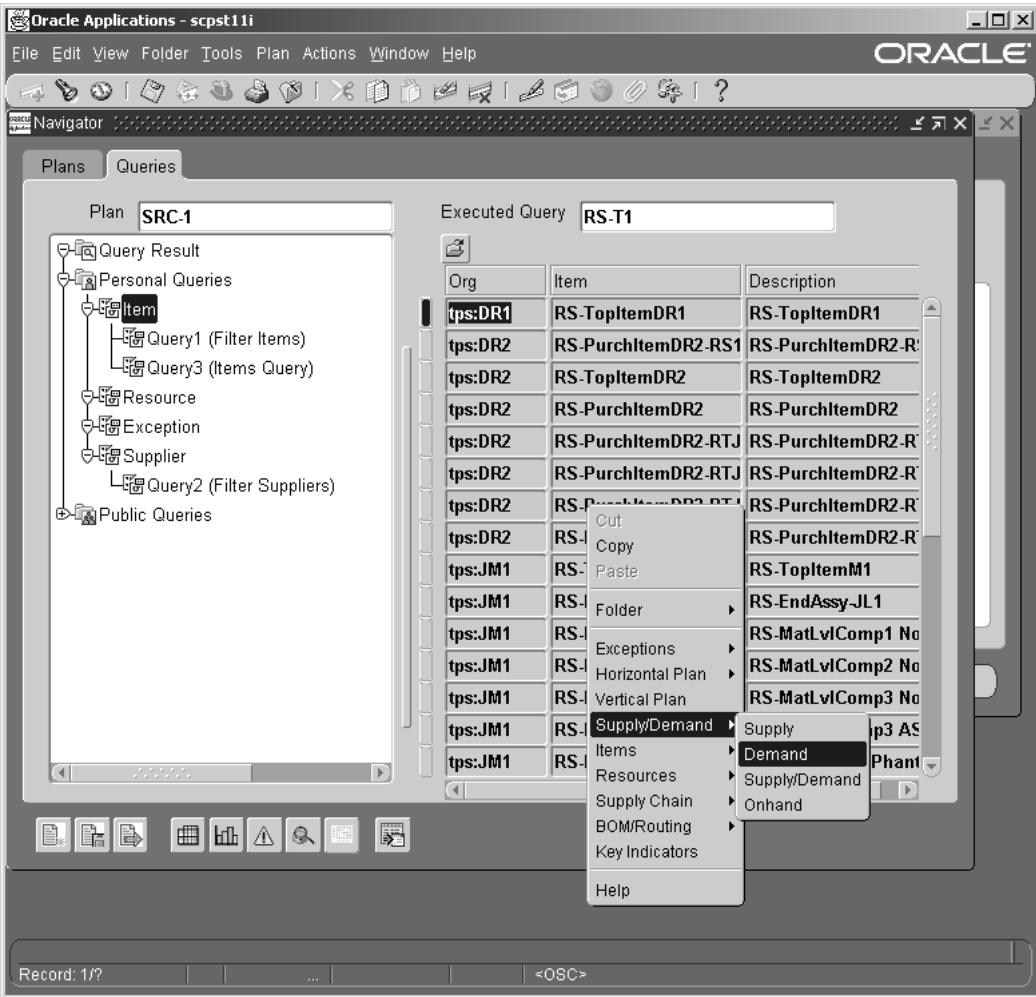
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**Multi-select Items in Query Results window** You can multi-select specific records or items in the Query Results window.

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.

Figure 10–21 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.

Menu	Menu Option	Description
File	Export	Export the plan information to Microsoft Excel.
Edit	Duplicate	Duplicate a record.
Edit	Clear	Edit the current field.
Edit	Delete	Delete the current field.
Edit	Preferences	Set a user profile.
View	Show Navigator	Display Navigator window.
View	Find	Find a record.
View	Find All	Find all records.
View	Query by Example	Run queries for certain information.
View	Record	View a record.
View	Requests	Review requests.
Tools	Exception Details	View exception details for your plan.
Tools	Supply/Demand	View supply and demand information.
Tools	Supply	View supply information.
Tools	Demand	View demand information.
Tools	On-Hand	View on-hand quantities.
Tools	Items	View items information.
Tools	Resources	View resources information.
Tools	Notifications	View notifications.
Tools	Launch Notifications	Launch notifications.
Tools	Work Dates	View work dates for your plan.
Tools	Preferences	Set preferences. For more information, see <a href="#">Defining Display Preferences</a> .

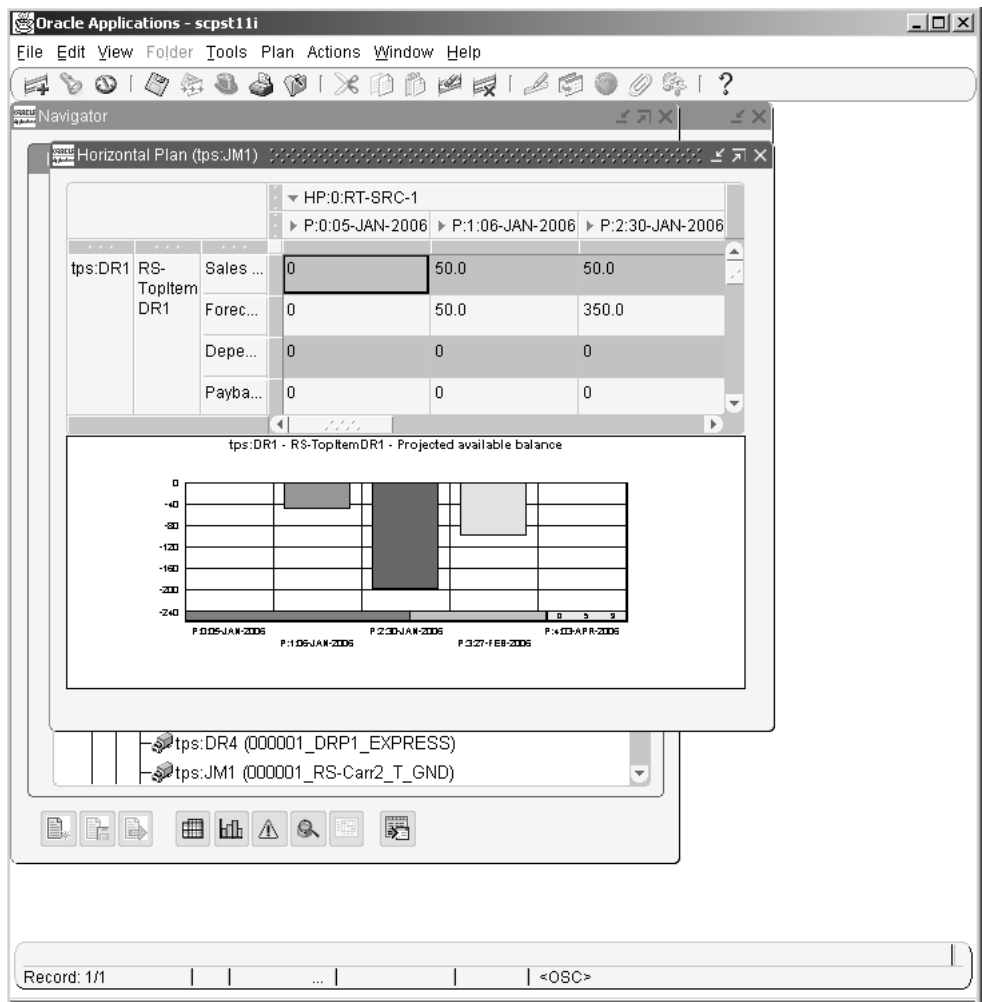
Menu	Menu Option	Description
Tools	Close All Detail Windows	Close all context windows that are open in the Planner Workbench.
Plan	Start Online Planner	Start online planner.
Plan	Online Replan	Run replan.
Plan	Stop Online Planner	Stop online planner
Plan	Online Planner Status	View online plan status.
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.
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.

Figure 10-22 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

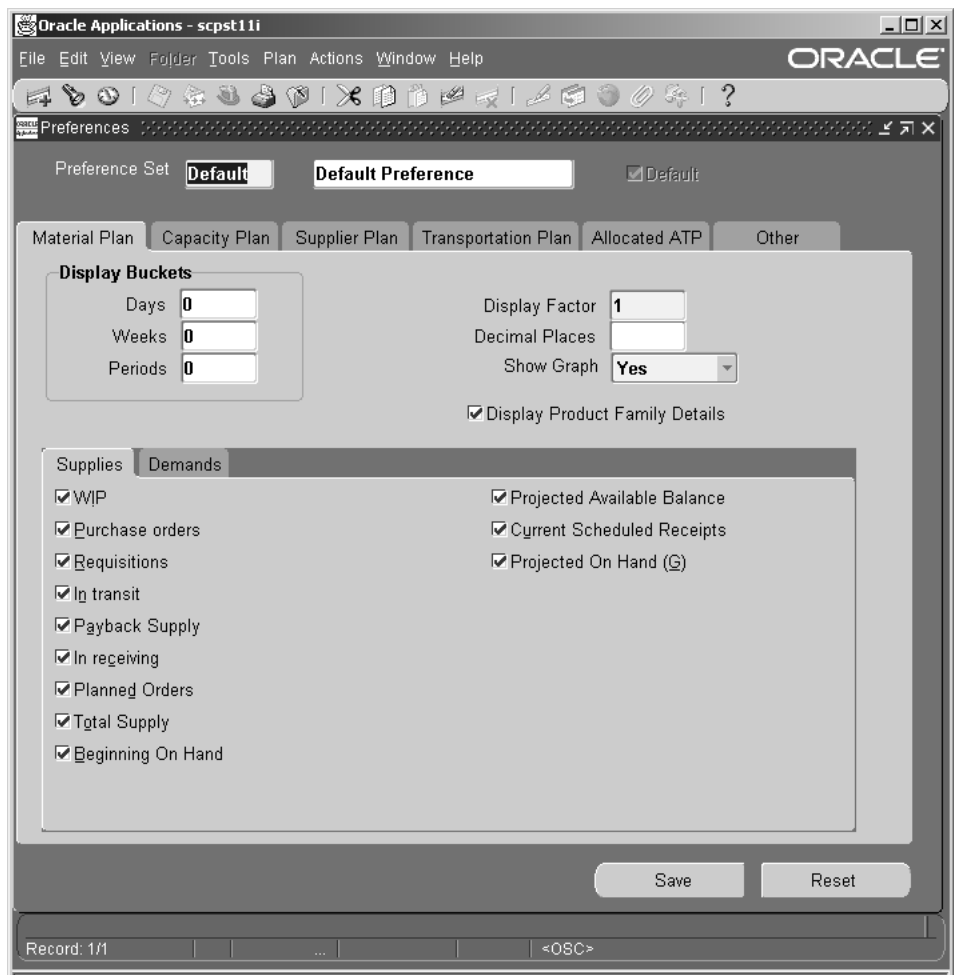
Display preferences control what horizontal material planning data, horizontal capacity planning data, supplier planning information, transportation planning information, and supply/demand detail are displayed for each item.

### To define your display preferences

1. Navigate to the Planner Workbench.
2. Choose Tools > Preferences.

The Material Plan tab appears as the default tab.

Figure 10-23 Material Plan Tab



3. Type the name for your preference set.

A preference set is applicable to all types of horizontal plans. You can create and save up to three personal preference sets for viewing a horizontal plan based on your requirements. You may want to create multiple preference sets to view different levels of information for a horizontal plan. For example, you may want to view summary-level information with rows displaying gross requirements, total supply, safety stock, and on-hand quantity to validate whether or not

supply matches demand at a period level. You may also want to view detailed information for each supply type on a daily-level.

Preference sets are unique to the individuals creating it. If you create and apply a specific preference set, it is available only to you.

4. Enter Display Buckets, Display Factor, Decimal Places, Show Graph and check each type of plan information you want to display in your material plan.
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.

**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.

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.**

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**Note:** The parameter Cutoff Date is not supported in Oracle Advanced Planning and Scheduling.

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## 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

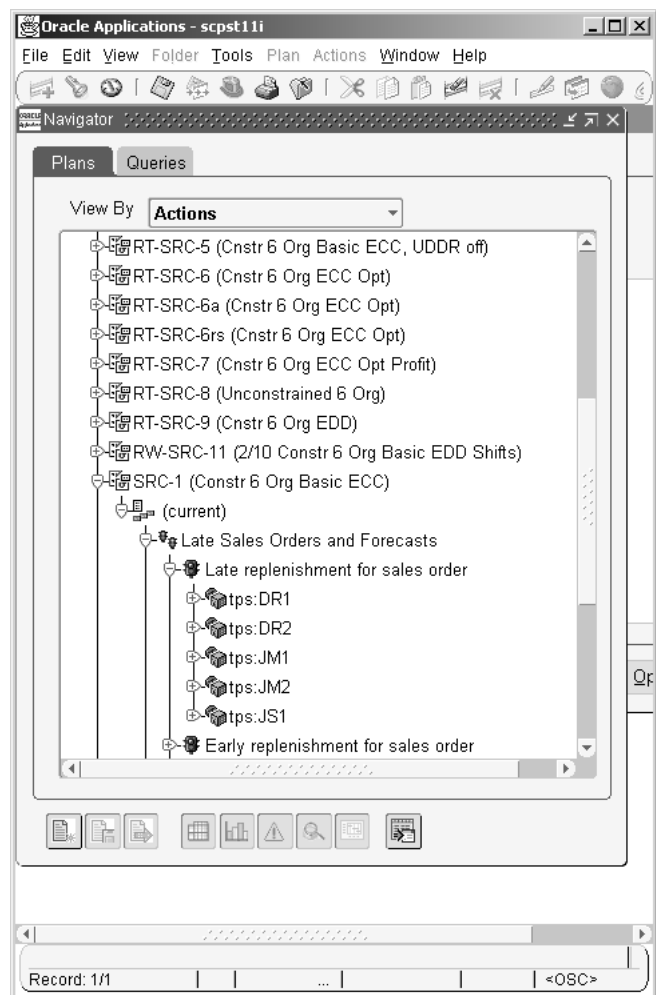
## **Exception Summary Window**

The Exception context window segregates all of the exception messages that require immediate attention.

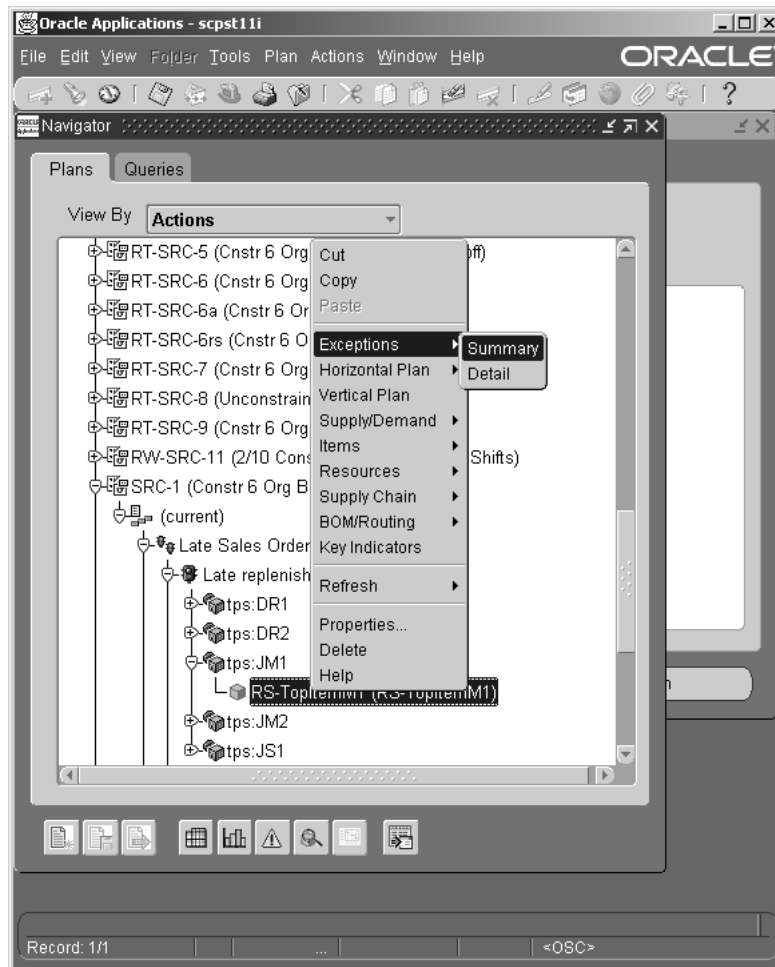
### **To view exceptions**

1. Choose a plan for which to view exception messages. You can view exception messages at the item level by selecting an item.

Figure 10–24 *Planner Workbench: Exceptions*



2. Drill-down to the item level and right-click the item.

**Figure 10–25** *Planner Workbench: Items Right-click pop-up menu*

3. To view the Exceptions Summary window, click Exceptions > Summary.  
The Exceptions Summary window appears.

**Figure 10–26** *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 expanded actions appear.

**Figure 10–28** *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.

**Figure 10–29 Preferences window: Other tabbed pane**

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ORACLE

Preferences

Preference Set **Default** **Default Preference** ☒ Default

Material Plan Capacity Plan Supplier Plan Transportation Plan Allocated ATP **Other**

**Supply/Demand**

☐ Release Phantoms  
☐ Release Configurations  
☐ Firm Jobs  
☐ Include Sales Orders  
☒ Release VMI Items

Cutoff Date **06-SEP-2006**  
Job Status **Unreleased**  
Job Class   
Req Group By

**General**

Category Set **Inv.Items**  
Snapshot Start   
Plan Start   
View Recommendations for (Days from Today): **10**  
Default Plan   
Auto Execute Query   
Default Tab **Plans**  
Default View By **Actions**

☒ Retain find criteria  
☒ Block Zero Res. Requirements  
☐ Expand All Actions

**Gantt Chart**

No. of End Orders to Display in Order View **10**  
No. of Activities to Display in Resource View **100**

Save Reset

Record: 1/1 ... <OSC>

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.

**Figure 10–30 Exception Details Window**

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Navigator

Exception Details (tps:JM1)

Plan **SRC-1** Constr 6 Org Basic ECC Type **Manufacturing**

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"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					

Suppliers Resources Items Mgre Details Supply/Demand

Record: 1/3 ... <OSC>

Exception details display preseeded 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](#).
- Resources: For details on the Resources window, see [Resources Window](#).
- Items: For details on the Items window, see [Items Window](#).
- More Details
- Supply/Demand: For details on the Supply/Demand window, see [Supply/Demand Window](#).

### **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:

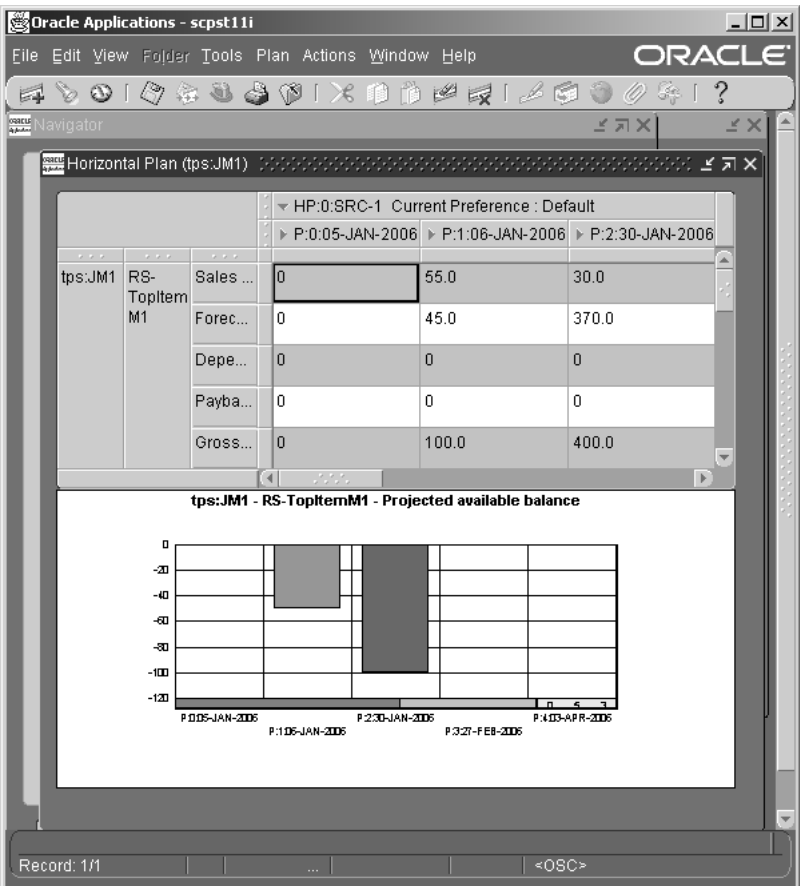
- Supply
- Demand
- Resource Availability
- Resource Requirements
- Sources
- Destinations
- Related Exceptions
- Gantt Chart
- Horizontal Plan
- Vertical Plan

- End Pegged Supplies
- Critical Supplies
- Calendar

Horizontal Plan

You can display your plan information horizontally or vertically.

Figure 10–31 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
Supplier Plan	Required Capacity vs. Available Capacity
Transportation Plan	Weight Capacity Available vs. Weight Capacity Required

**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](#).

**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):

**Table 10–9 Description of Fields in the Horizontal Plan Window (For Items)**

Field	Description
Sales orders	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	This includes the following: <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>
Gross requirements	The planning engine calculates the total demand in the following way:  Sales Orders + Forecasts + Production Forecast + Dependent Demand + Expected Scrap + Payback Demand + Independent Demand

**Table 10–9 Description of Fields in the Horizontal Plan Window (For Items)**

Field	Description
WIP+	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.
In Transit	Inter-organization 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.
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 However, 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.

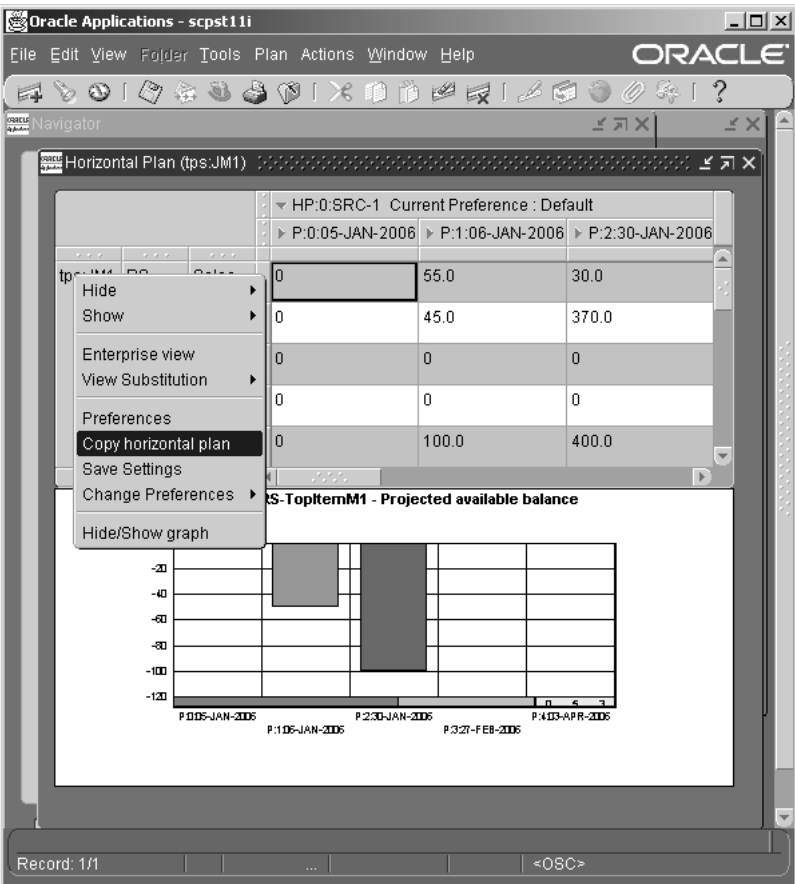
## Exporting the Horizontal Plan

### 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.

**Figure 10–32 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**

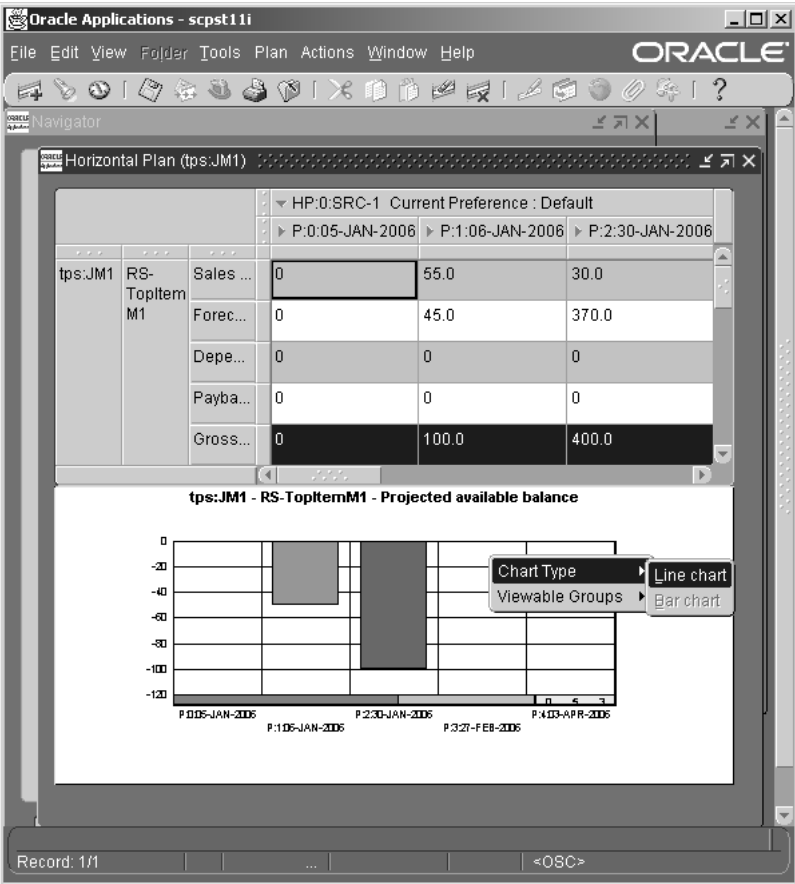
1. Navigate to the Horizontal Plan window.
2. Select the plan parameters you want to graph.

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**

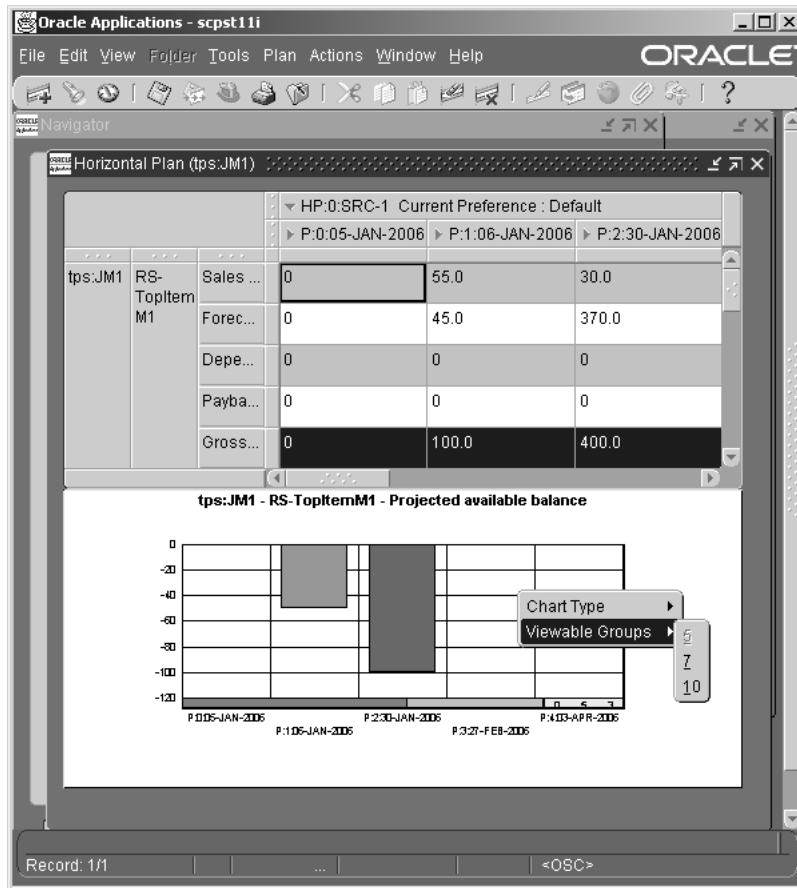
After you have graphed parameters or items, you can change the chart type using the [right-click] menu. For example, if you have displayed a bar chart and you wish to display a line graph, select [right-click] > Line Chart.

Figure 10–33 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.

**Figure 10–34 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:

**Table 10–10   Preferences for a Horizontal Plan**

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.

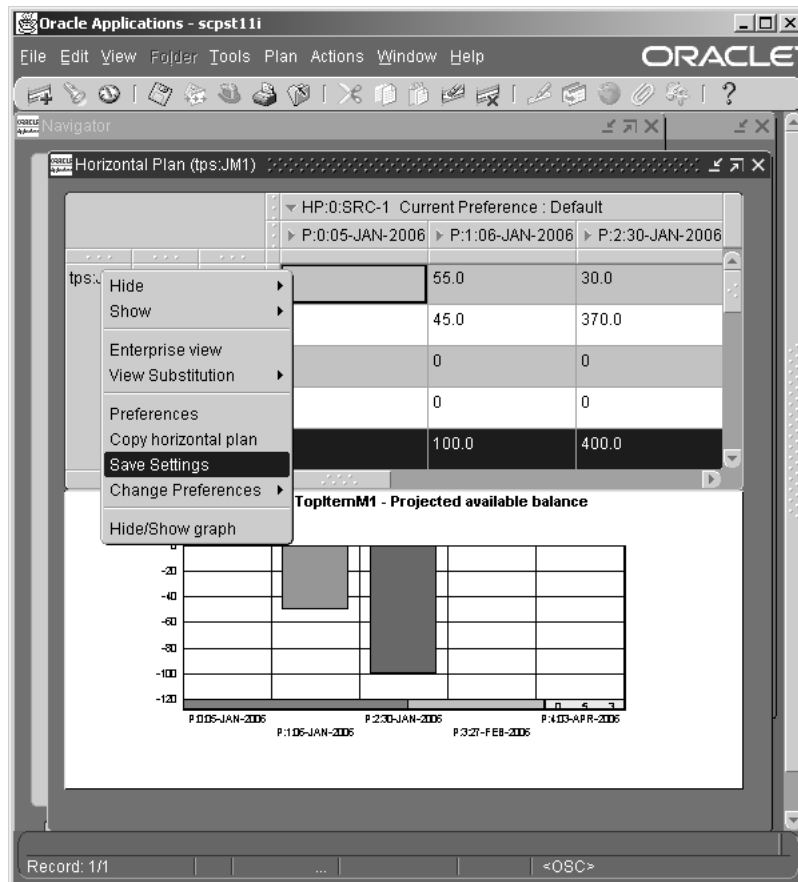
**To save your preferences for a horizontal plan**

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.



**Figure 10–35 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](#).

## 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.

**Figure 10–36** General Preferences

The screenshot shows the 'General Preferences' window in the Oracle Self-service Web Applications. The window has a title bar with 'General Preferences', a help icon, and the Oracle Applications logo. Below the title bar, there is a subtitle 'General Preferences' and a instruction 'Modify your preferences and then click on the Apply button'. The main area contains several preference settings, each with a label and a corresponding input field or dropdown menu. The settings are: 'Known As' with a text field containing 'Pat Stock'; 'Language' with a dropdown menu set to 'American English'; 'Timezone' with a dropdown menu set to '(GMT -08:00) Pacific Time'; 'Client Character Encoding' with a dropdown menu set to 'Western European (Windows)'; 'Date Format' with a dropdown menu set to '31-DEC-2000'; 'Number Format' with a dropdown menu set to '10,000.00'; 'Territory' with a dropdown menu set to 'United States'; 'Send me electronic mail notifications' with a dropdown menu set to 'Do not send me mail'; 'Document Home Node' with a dropdown menu set to 'E-Business Suite'; 'Old Password' with a text field; 'Password' with a text field; and 'Repeat Password' with a text field. At the bottom of the window, there are two buttons: 'Cancel' and 'Apply'.

Preference	Value
Known As	Pat Stock
Language	American English
Timezone	(GMT -08:00) Pacific Time
Client Character Encoding	Western European (Windows)
Date Format	31-DEC-2000
Number Format	10,000.00
Territory	United States
Send me electronic mail notifications	Do not send me mail
Document Home Node	E-Business Suite
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.

Figure 10–37 Supply/Demand window: Right-click Menu Options for Forecast



If you want to view consumption details, you can select [right-click] > Consumption Details option.

**Figure 10–38 Consumption Details window**

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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:

**Table 10–11 Description of Fields in the Consumption Details Window**

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.

**Table 10–11    Description of Fields in the Consumption Details Window**

Field	Description
Promise Date	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Request Date	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
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**

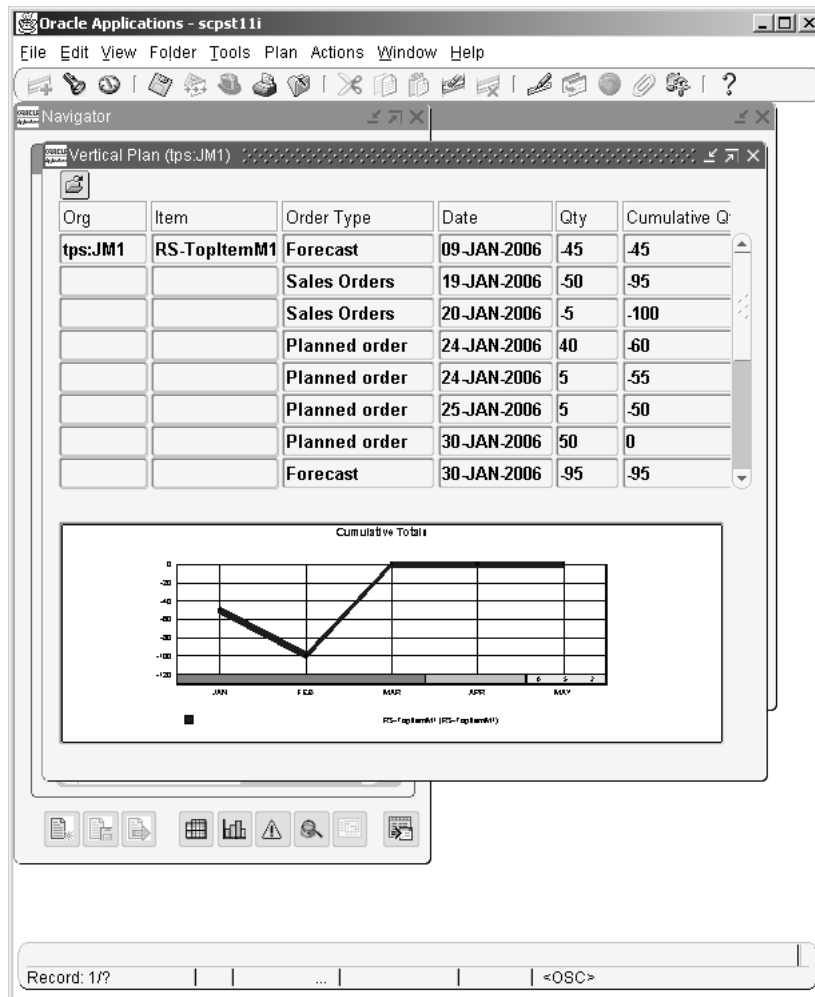
The following drill-downs are supported from the global forecasting section in the horizontal plan:

- 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.

**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).



**Figure 10–39 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 Period. 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.

### **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.

**Figure 10-40 Supply/Demand window**

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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.

**Order Tabbed Pane**

The following table provides a description of the fields displayed in the Order tabbed pane:

**Table 10–12    Description of Fields 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.
Sugg Due Date	The planning engine populates this for demands and supplies. For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Qty/Rate	Supply, demand quantity, or rate.
Order Number	Identifies the supply or the demand record.
Action	This refers to the action recommended by the planning engine. The possible values are:  - None  - Release  - Cancel
New Date	After you firm a supply, you can specify a new date to change an existing planned order, a forecast, an MDS demand, a manual MDS demand, or a sales order.

**Table 10–12 Description of Fields in the Order Tabbed Pane**

<b>Fields</b>	<b>Description</b>
New Qty	After you firm a supply, you can specify the quantity to change an existing planned order, a forecast, an MDS demand, a manual MDS demand, or a sales order.
Order Priority	Indicates the priority of a demand. The planning engine generates this number based on the priority rule used in the plan.
ABC Class	Inventory ABC classification of the item.
Alternate BOM	BOM Alternate bill of material name
Alternate Routing	BOM Alternate routing name
Arrival Set Name	On the sales order, the arrival set name designates lines that should arrive together at the customer site. Oracle Advanced Supply Chain Planning does not consider arrival sets but displays the field for information.
Bucket Type	This refers to the bucket type that a demand falls under, such as Forecasts. The valid values includes day, week, and period.
Build Sequence	This number indicates the order in which the work orders are sequenced.
Category	Category of an item
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 <a href="#">Exception Messages</a> on page 10-1.
Consumed Forecast	For a forecast demand, this field indicates the quantity of the forecast that is consumed by sales orders.
Consumption Backward Days	This indicates the number of days (backward) when a forecast can be consumed by sales orders.
Consumption Forward Days	This indicates the number of days (forward) when a forecast can be consumed by sales orders.
Cube	Total cube of the supply row
Cumulative Probability	Not used in Oracle Advanced Supply Chain Planning.

**Table 10–12 Description of Fields in the Order Tabbed Pane**

<b>Fields</b>	<b>Description</b>
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 table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Demand Class	An attribute of a demand that is used to categorize demand.
Demand Lateness Cost	Penalty cost for a demand
Description	Item description
Destination Org	The destination organization for an internal sales order.
Earliest Allowable Completion Time	The planning engine calculates this to indicate the end of the scheduling window for the supply that allows sufficient time for the upstream activities to be scheduled.
Earliest Possible Completion Time	The planning engine calculates this based on the constrained schedule for upstream supplies. It is the earliest time in which the supply can be completed.
Earliest Possible Start Time	The planning engine calculates the difference between the earliest possible completion time and supply duration to populate this field.
End Date	The end date of a bucketed forecast. This is used only in the Collections workbench. The planning engine does not populate the end date for Oracle Advanced Supply Chain Planning plans.
Expiration Date	This indicates the expiration date for an existing lot.
Expired Demand	The planning engine marks the demand quantity as expired if the demand is not met within specific number of days.
First Unit Completion Date	Indicates the first unit completion date of the repetitive job.
First Unit Start Date	Indicates the first unit start date of the repetitive job.
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.

**Table 10–12 Description of Fields in the Order Tabbed Pane**

<b>Fields</b>	<b>Description</b>
Implement Alternate Routing	An alternate manufacturing process that you can use to produce an assembly.
Implement As	If you select an organization in the Order tabbed pane, you can release the order as a discrete job. If you select a supplier, you can release the order as a purchase order.
Implement Date	Corresponds to the new date that you specify for an order when you release the order.
Implement Demand Class	Demand Class of released order
Implement FUCD	Implement first unit completion date for a repetitive job (editable)
Implement Firm	Implement firm flag status (editable)
Implement Job	Implement job number (not editable)
Implement Line	Implement line for a repetitive job (not editable)
Implement Project	Implement project name (editable)
Implement Source Org	Implement source organization (editable)
Implement Status	Implement work in process status (editable)
Implement Supplier	Implement supplier (editable)
Implement Supplier Site	Implement supplier site (editable)
Implement Task	Implement task identifier (editable)
Implement Unit Number	Implement starting unit number for unit effectivity (not editable)
Implement WIP Class	Implement work in process class (not editable)
Implemented Quantity	Previously implemented order quantities (not editable)
Internal Sales Order	Internal sales order number
Intransit Lead Time	This indicates the transit lead time associated with a transfer order.
Item	Item name
Item From Source Plan	A flag that indicates whether the item is planned in some other plan. For example, when you feed an MPS supply plan to another plan such as MRP, the planning engine sets the flag for the item in the MRP plan.

**Table 10–12 Description of Fields in the Order Tabbed Pane**

<b>Fields</b>	<b>Description</b>
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 table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
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 table 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Old Dock Date	For more information, see table 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Old Due Date	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Order Date Type	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
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 table 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.



**Table 10–12 Description of Fields in the Order Tabbed Pane**

<b>Fields</b>	<b>Description</b>
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 table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Planner	Planner code
Planning Group	The name of the planning group for which the material is being planned.
Planning Level	The identifier assigned to a project in the planning group.
Probability	This is not used in Oracle Advanced Supply Chain Planning.
Process Days	This field indicates the number of days a planned order is scheduled for a repetitive schedule.
Product Family	The product family to which the item belongs.
Project Number	Project number. For more information, see <a href="#">Planning in Mixed Mode Environments</a> on page 12-1.
Promised Ship Date	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Qty by Due Date	This indicates the supply quantity that is available by the demand due date.
Quantity in Process	This field indicates the quantity of a supply that is released.
Recommended	Oracle Shop Flow Manufacturing job information on collection workbench.
Release Errors	This field displays the release validation errors.
Repetitive	Repetitive schedule
Requested Arrival Date	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.

**Table 10–12 Description of Fields in the Order Tabbed Pane**

<b>Fields</b>	<b>Description</b>
Requested Ship Date	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Reschedule Days	This indicates the number of days in or out that a supply order is rescheduled. A negative value indicates that the order is rescheduled to an earlier date.
Rescheduled	This flag indicates that the order is rescheduled.
Schedule Designator	This is the supply schedule name for those supplies that you feed to a plan by using a supply schedule.
Schedule Group	This refers to work in process schedule group.
Schedule Arrival Date	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Schedule Ship Date	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Service Level	Not used in Oracle Advanced Supply Chain Planning.
Shared Supply	A flag to indicate that this supply is shared among multiple demands.
Ship Method	Ship method used for transfers and buy orders.
Ship Set Name	On the sales order, the ship set name designates lines that should ship together. Oracle Advanced Supply Chain Planning does not consider ship sets. However, the field is provided for information.
Ship To	Customer ship to location
Shipment	Not used in Oracle Advanced Supply Chain Planning.
Source Order Priority	This indicates the priority number on the actual demand record. This is different from the priority number calculated by the planning engine.
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 onhand.

**Table 10–12 Description of Fields in the Order Tabbed Pane**

<b>Fields</b>	<b>Description</b>
Substitute Component Rank	BOM substitute component rank
Sugg Dock Date	For more information, see table 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Sugg Order Date	For more information, see table 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Sugg Ship Date	For more information, see tables 6-11 and 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Sugg Start Date	For more information, see table 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Task Number	The identifier assigned to the task in a project.
UOM	This is an item attribute (unit of measurement)
Unconstrained Earliest Possible Completion Time	The planning engine calculates this based on the unconstrained schedule for those upstream supplies that allow minimum durations.
Unconstrained Earliest Possible Start Time	The planning engine calculates the difference between the unconstrained earliest possible completion time and supply duration.
Unconstrained Latest Possible Completion Time	The planning engine calculates this based on the unconstrained schedule for those downstream supplies that allow minimum durations.
Unconstrained Latest Possible Start Time	The planning engine calculates the difference between the unconstrained latest possible completion time and the supply duration.
Unit Number	This refers to the starting unit effectivity number.
Update Need By Date	For more information, see table 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
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>

**Table 10–12 Description of Fields in the Order Tabbed Pane**

<b>Fields</b>	<b>Description</b>
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:

**Table 10–13 Description of Fields 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 discrete job 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)

**Table 10–13 Description of Fields in the Release Properties Tabbed Pane**

Fields	Description
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 table 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.

### Sourcing Tabbed Pane

The following table provides a description of the fields displayed in the Source tabbed pane:

**Table 10–14 Description of Fields in the Sourcing Tabbed Pane**

Fields	Description
Source Org	Name of the source organization
Source Supplier	Name of the supplier
Source Supplier Site	Name of the supplier's site
Company Name	Name of the company
Company Site	Name of the company site
Order Type	Type of order
Quantity/Rate	Quantity supplied by the source org
Suggested Due Date	For more information, see table 6-12 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.

Line Tabbed Pane

The following table provides a description of the fields displayed in the Line tabbed pane:

Table 10–15 Description of Fields in the Line Tabbed Pane

Fields	Description
Line	A group of resources
Schedule Group	This refers to work in process schedule group.
Build Sequence	The sequence number indicating the order in which work orders are sequenced
First Unit Start Date	The date on which the first unit belonging to a line is scheduled.
Last Unit Completion Date	The date on which the last unit belonging to a line is completed
Last Unit Start Date	The date on which the last unit belonging to a line is started
Order Type	Type of order. For example, planned order, sales order.
Process Days	This field indicates the number of days a planned order is scheduled for a repetitive schedule.
Quantity/Rate	This indicates the rate per day for a repetitive schedule.
Repetitive	Repetitive schedule
Suggested Due Date	For more information, see table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
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:

Table 10–16 Description of Fields in the Project Tabbed Pane

Fields	Description
Planning Group	The name of the planning group for which the material is being planned.
Project Number	The identifier assigned to a project in the planning group.

**Table 10–16 Description of Fields in the Project Tabbed Pane**

Fields	Description
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 table 6-11 in <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Unit Number	Unit number

### Right-click Menu Options in the Supply/Demand Region

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 Overview**

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

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 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.

**Table 10–17    Enabling Pegging Modes**

<b>Pegging Mode</b>	<b>Plan Option - Priority Pegging</b>	<b>Profile Option - MSC: Use FIFO Pegging</b>
Standard	Cleared	No
Priority	Selected	No
FIFO	Cleared	Yes
Priority/FIFO	Selected	Yes

## 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
  - a: On-hand
  - b: Receipt shipment, intransit shipment, payback supply (Oracle Project Scheduling)
  - c: Work order (firm), job by-product supply (firm), purchase order (firm), non-standard jobs, non-standard job by-product supply (always considered firm)
  - d: Purchase requisition (firm)
2. Existing supplies
  - a: 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)
  - b: Purchase requisition (non-firm)
3. Planned supplies

a: Planned order (firm), planned order by-product supply (firm). You can raise the pegging priority of firm planned orders by releasing them.

b: 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.

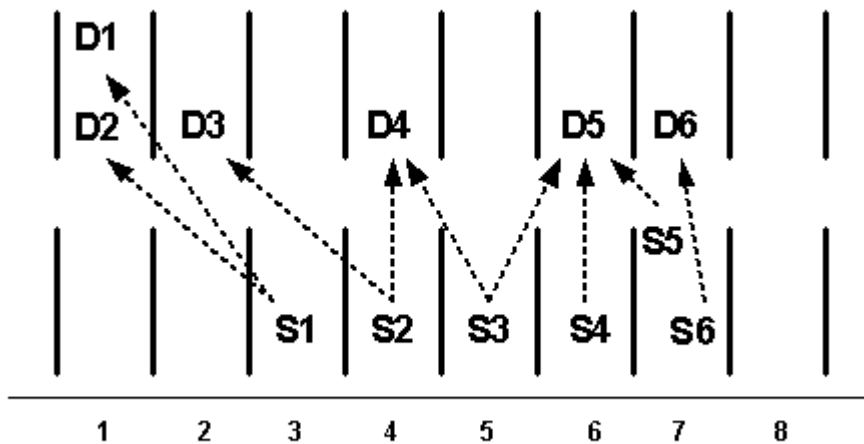
### **Second Pass**

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.



### 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

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	

The diagram illustrates the supply chain pegging process. Arrows show the flow of demand from sales orders to planned orders and on-hand inventory. Specifically, Sales order 1 (100 units on day 4) is pegged to the non-firm planned order of 50 on day 1 and the non-firm planned order of 35 on day 2. Sales order 2 (100 units on day 3) is pegged to the firm planned order of 10 on day 1, the non-firm planned order of 35 on day 2, and the non-firm planned order of 75 on day 3. The on-hand inventory of 25 units on day 1 is also pegged to the non-firm planned order of 35 on day 2.

### **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

Entity	1	2	3	4	5	6
Sales order 1						100 (1)
Sales order 2	200 (2)					
On-hand	10					
Work order (firm)		20				
Purchase requisition (firm)			30			
Work order (non-firm)				40		
Planned order (non-firm)	40	100				60

### 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.

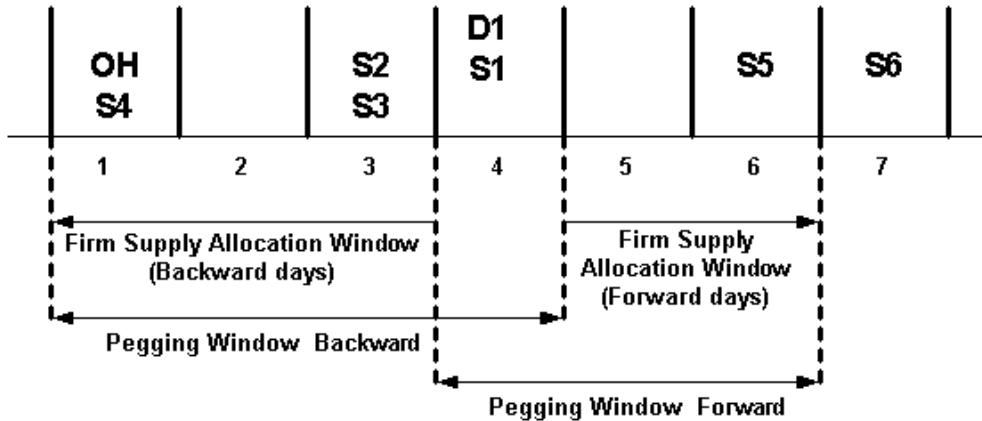
If it cannot find enough firm supply quantity to satisfy the entire demand quantity, it scans forwards the number of days in the site or item-specific firm supply allocation window (profile option MSO: Firm Supply Allocation Window (Forward days)) to find supplies to peg the demand to.

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



**Figure 10–41 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.

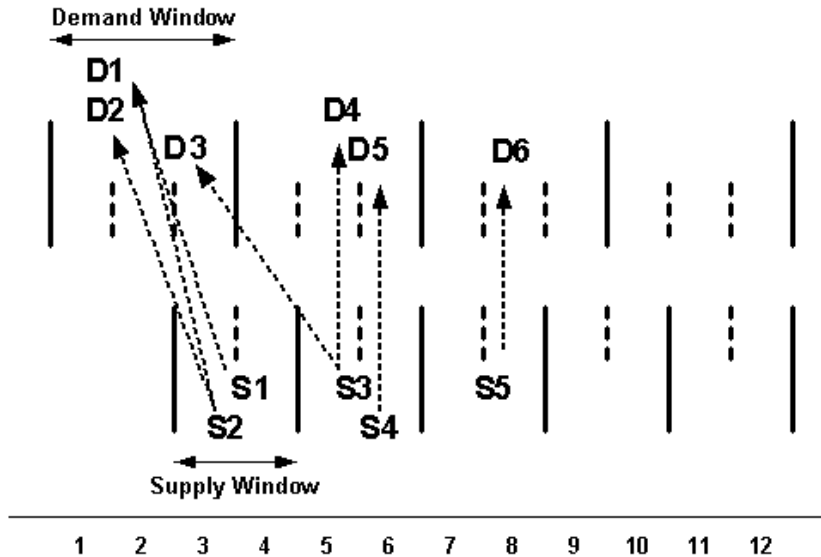
### **Third Pass Example**

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

**Figure 10–42 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.

Entity	1	2	3	4
Sales order 1				100 (1)
Sales order 2			100 (2)	
On-hand	25			

**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.

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.

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



Entity	1	2	3	4	5	6
<b>Sales order 1</b> (100 - 40)						60 (1)
<b>Sales order 2</b> (200 - 30)	170 (2)					
<b>Work order</b> (firm)			30			
<b>Planned order</b> (non-firm)	40	100				60

The diagram illustrates the FIFO pegging process. Dashed arrows with arrowheads show the flow of supply from the Planned order (non-firm) to the Sales order 1 and Sales order 2, and from the Work order (firm) to the Sales order 2. The quantities are as follows:

- Planned order (non-firm) to Sales order 1: 40
- Planned order (non-firm) to Sales order 2: 100
- Work order (firm) to Sales order 2: 30
- Sales order 1 to Sales order 2: 60 (1)

### 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.

Entity	1	3	7	10	20	30
Demand		300	300	500	100	300
Supply	500		100	400	200	300

The diagram illustrates the supply and demand pegging process. It shows a timeline from day 1 to day 30. Supply quantities are: 500 on day 1, 100 on day 7, 400 on day 10, 200 on day 20, and 300 on day 30. Demand quantities are: 300 on day 3, 300 on day 7, 500 on day 10, 100 on day 20, and 300 on day 30. Dashed arrows indicate the flow of quantities from supply to demand: [300] from day 1 supply to day 3 demand, [200] from day 1 supply to day 7 demand, and [100] from day 20 supply to day 10 demand.

**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—including 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)	<div><div></div><div>[10+ 5+ 15]</div><div></div></div>				
Sales order 2					<div><div></div><div></div><div></div></div>	100 (1)
Sales order 3	100 (2)					
Sales order 4						50 (2)
On-hand	10	<div><div></div><div></div><div></div></div>				
Work order (firm)	<div><div></div><div>5</div><div></div></div>	15	30	40	<div><div></div><div></div><div></div></div>	

**Second Pass**

The planning engine pegs:

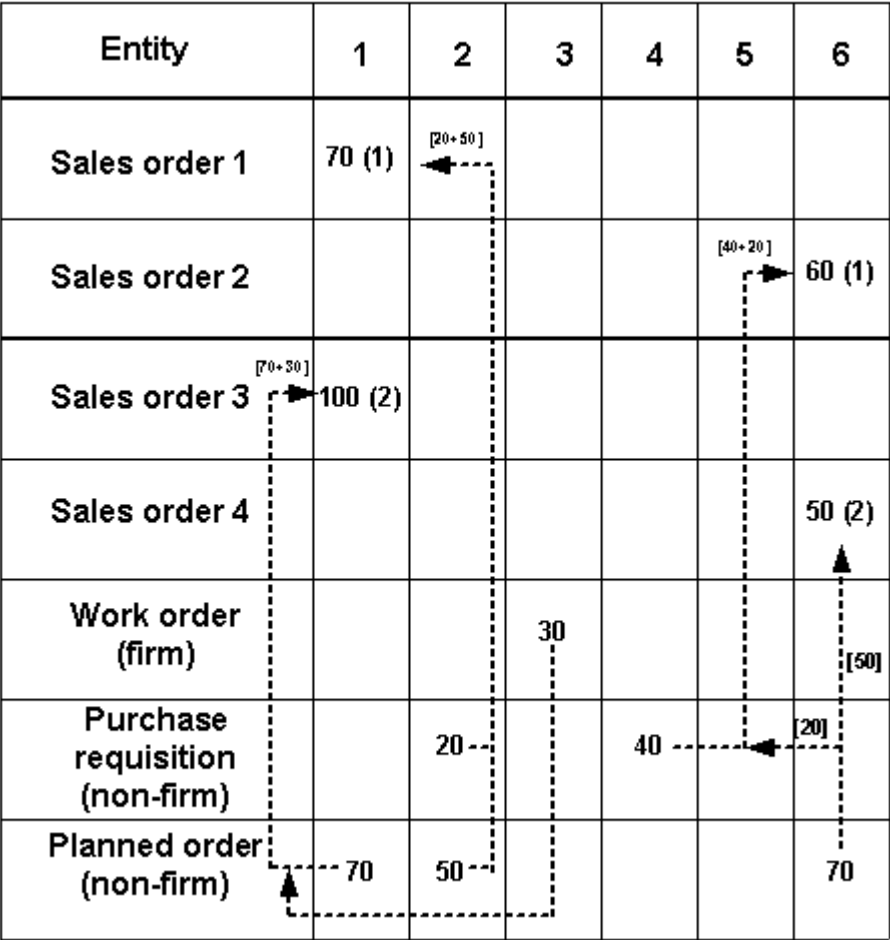
- The demand for quantity 70 on day 1 to the planned order for quantity 70 on day 1.
- The demand for quantity 100 on day 1 to the purchase requisition for quantity 20 on day 2, then to the planned order for quantity 50 on day 2, and then to the work order for quantity 30 on day 3.

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.



## 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.

**Pegging to Safety Stock Supplies**

You might want to increase or decrease the level of your planned safety stock over a period of time based on your requirements. When the required level of safety stock decreases, you can release the supplies that were pegged to the demand created by the safety stock. These released supplies, called safety stock supplies, can be pegged to new demands.

Using Oracle Advanced Supply Chain Planning, you can view a supply that is pegged to the safety stock. For allocating supplies to a future demand, the planning engine considers the change in requirement for the safety stock. If there is a decrease in the safety stock requirement, the planning engine consumes the supply from the safety stock and pegs the consumption to the future demand.

Consider an example depicting how the planning engine allocates supplies from planned orders and pegs the safety stock supplies to forecast demands. In the following table, the negative entries denote demand while the positive entries denote supply. The table provides the demand situation.

**Table 10–18 Demand**

Date	D1	D2	D3	D4	D5
Demand Quantity	-	-	-	-	-10
Safety Stock Quantity	-10	-4	-10	-4	-4
Safety Stock Change	-10	+6	-6	+6	0
Safety Stock Demand Id	SS1	SS2	SS3	SS4	-
Planned Order	+10	-	-	-	+4
Demand Id	-	-	-	-	D1



Based on the demand situation in the demand table, the following table displays the information that will be available in the demand requirements for pegging.

**Table 10–19 Demand Requirements For Pegging**

Date	Demand Id	Demand Type	Demand Quantity	Safety Stock Demand Id
D1	-	Safety Stock	-10	SS1
D3	-	Safety Stock	-6	SS3
D5	DD1	Regular Demand	-10	-

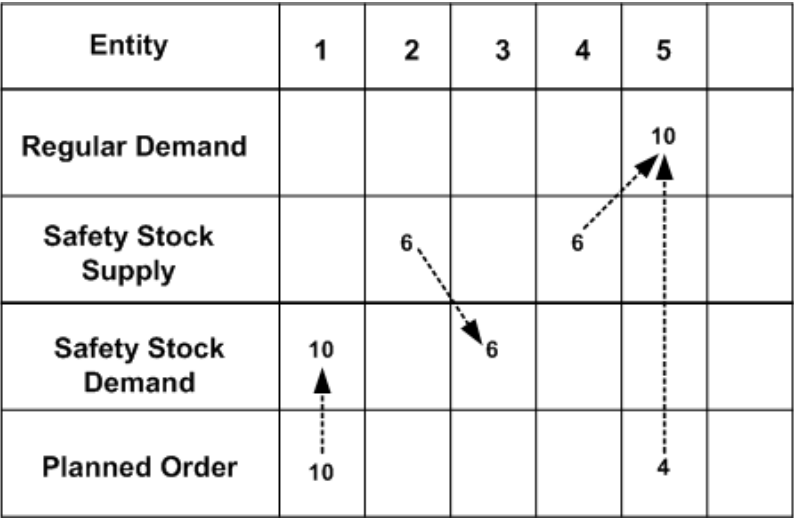
The following table indicates the supply information.

**Table 10–20 Supplies For Pegging**

Date	Supply Type	Supply Quantity	Safety Stock Supply Id
D1	Planned Order	10	-
D2	Safety Stock	6	SS1
D4	Safety Stock	6	SS3
D5	Planned Order	4	-

The following illustration represents how the planning engine pegs demand to the safety stock supplies.

Figure 10–43 Demand and Safety Stock Pegging



- The planning engine pegs the safety stock demand of quantity 10 on day 1 to the planned order supply of quantity 10 on day 1.
- The planning engine pegs the safety stock demand of quantity 6 on day 3 to the safety stock supply of quantity 6 on day 2.
- The planning engine pegs the demand of quantity 10 on day 5 to the safety stock supply of quantity 6 on day 4 and the planned order supply of quantity 4 on day 5.

You can identify and view the supplies released from the safety stock and pegged to a new demand in the Horizontal Plan tabbed region of Planner Workbench. This does not affect Project pegging.

**Safety Stock Demand Pegging**

The following applies to dependant demands:

- Firm supply demands are pegged in the order of demand priority.
- Non-firm supplies are pegged to regular demands (not safety stock demands).
- If there is an existing supply available after exhausting the non-safety stock demands, the safety stock demand is pegged to the existing supply.

- After pegging the regular demands to supplies, the safety stock demands are pegged (with zero quantity) to supplies that satisfy regular demands. To support a safety stock level, a constant supply is required throughout the safety stock requirement period. You can estimate the demand satisfaction date as the due date of the demand in an unconstrained mode added with the number of days specified in the profile option MSO: Supply Reschedule Window Size for Safety Stock Pegging. You can estimate the number of days by which the supply and its associated demand (dependent demand) moves due to constraints and use it to satisfy the safety stock demands till that point in time.

Consider the following illustration that depicts the demand situation on days 1 to 35. The supplies are available on days 1, 5 and 7.

**Figure 10-44 Safety Stock Demand Pegging**

	D1	D2	D3	D4	D5	D6	D7	D..	D31	D33	D35	
<b>Regular Demand</b>	25		15		30		10					
<b>Safety Stock Demand</b>	10	10	10	10	10	10	10		10	10	10	
<b>Supply</b>	40				30		10					

The supply on day 1 satisfies the demand on days 1 and 3. The supply on days 5 and 7 satisfy the demand in the respective buckets. The safety stock is pegged to the supply on day 1 with quantity zero. After day 1, the safety stock demand needs to be satisfied but the supply is exhausted on day 1 (assuming that there are no constraints and therefore, no movement of demands). To support the safety stock demands after day 1, safety stock is pegged to other supplies on days 5 and 7. This leads to excessive projected available balance as the supplies on days 5 and 7 are pulled to day 2.

In addition to pegging the safety stock demand to supply on day 1, the planning engine estimates the amount of demand movement based on the profile option MSO: Supply Reschedule Window Size for Safety Stock Pegging. Assuming that the demand moves out by 30 days as represented by arrows in the illustration, the planning engine pegs the safety stock demands to the supply on day 1. However, it

is assumed that the supply is not exhausted on day 1 but available till day 3. As such, there is no requirement of pegging other supplies (supplies on days 5 and 7) to the safety stock demand. Therefore, the excessive projected available balance also diminishes. However, it might not be possible to satisfy the safety stock demands in all the time buckets. There might be a time period when the projected available balance dips below the safety stocks. However, it recovers at a later point in the horizon.

### **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:

**Table 10–21 Right-click Menu Options in the Pegging Region**

<b>Right-click Menu Option</b>	<b>Available For Demand Line or Supply Line</b>	<b>Description</b>
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**

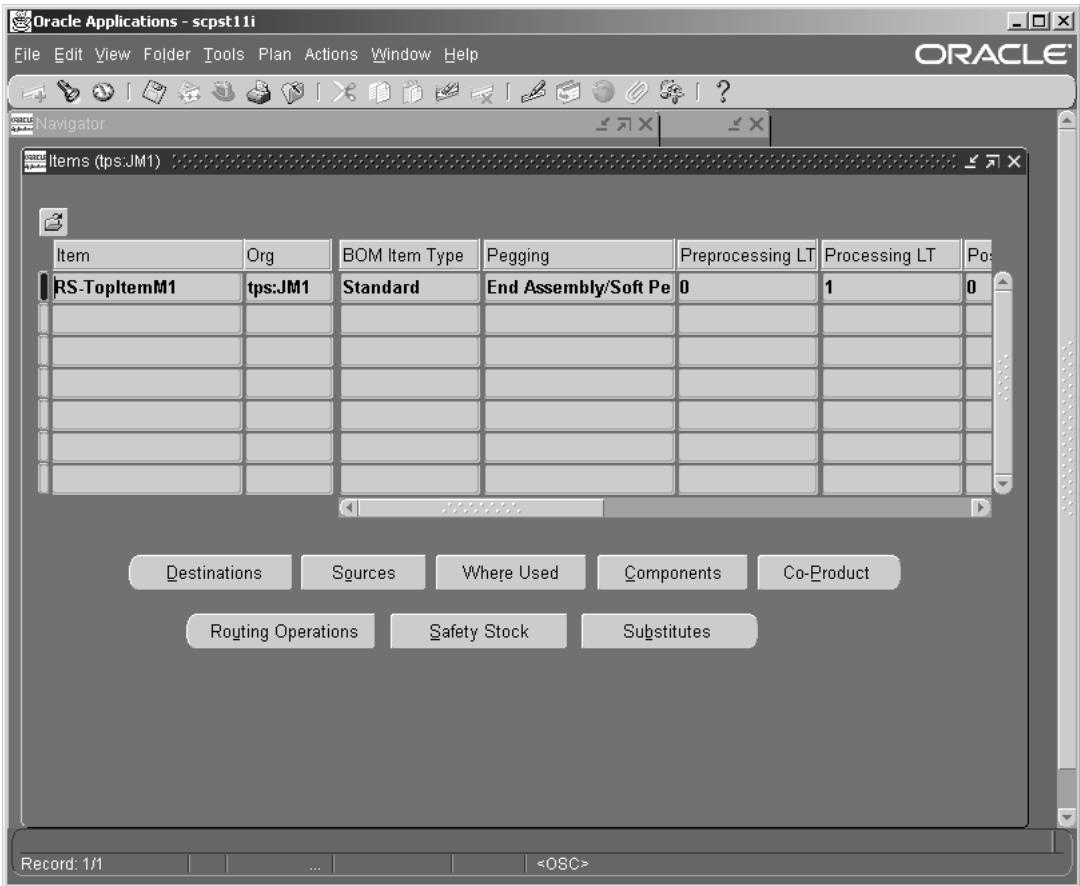
### **View the Items Window**

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.

Figure 10–45 Items window



Information Displayed in the Items Window

The Items window provides detailed information pertaining to items such as:

Table 10–22 Description of Fields in the Items Window

Fields	Description
BOM Item Type	BOM item attribute
Pegging	MPS/MRP planning item attribute



**Table 10–22 Description of Fields in the Items Window**

<b>Fields</b>	<b>Description</b>
Preprocessing LT	Lead times item attribute
Processing LT	Lead times item attribute
Postprocessing LT	Lead times item attribute
Fixed LT	Lead times item attribute
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

**Table 10–22 Description of Fields in the Items Window**

<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
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

**Table 10–22 Description of Fields in the Items Window**

<b>Fields</b>	<b>Description</b>
Non Nettable Qty	Non-nettable inventory quantity
PIP Flag	MPS/MRP planning item attribute
Planner	General Planning item attribute
Planning Method	MPS/MRP planning item attribute
Planning Time Fence Date	The planning engine compares the sum of the plan run date and planning time fence days with the natural time fence. The greater value of the two is used for calculating the planning time fence date. For more information, see <a href="#">Lead Time and the Planning Time Fence</a> on page 6-35.
Planning Time Fence Days	MPS/MRP planning item attribute
Product Family Item	Product family item name (applicable to member items only)
Product Family Item Desc	Product family item description (applicable to member items only)
Repetitive	MPS/MRP planning item attribute
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

**Table 10–22    Description of Fields in the Items Window**

Fields	Description
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:

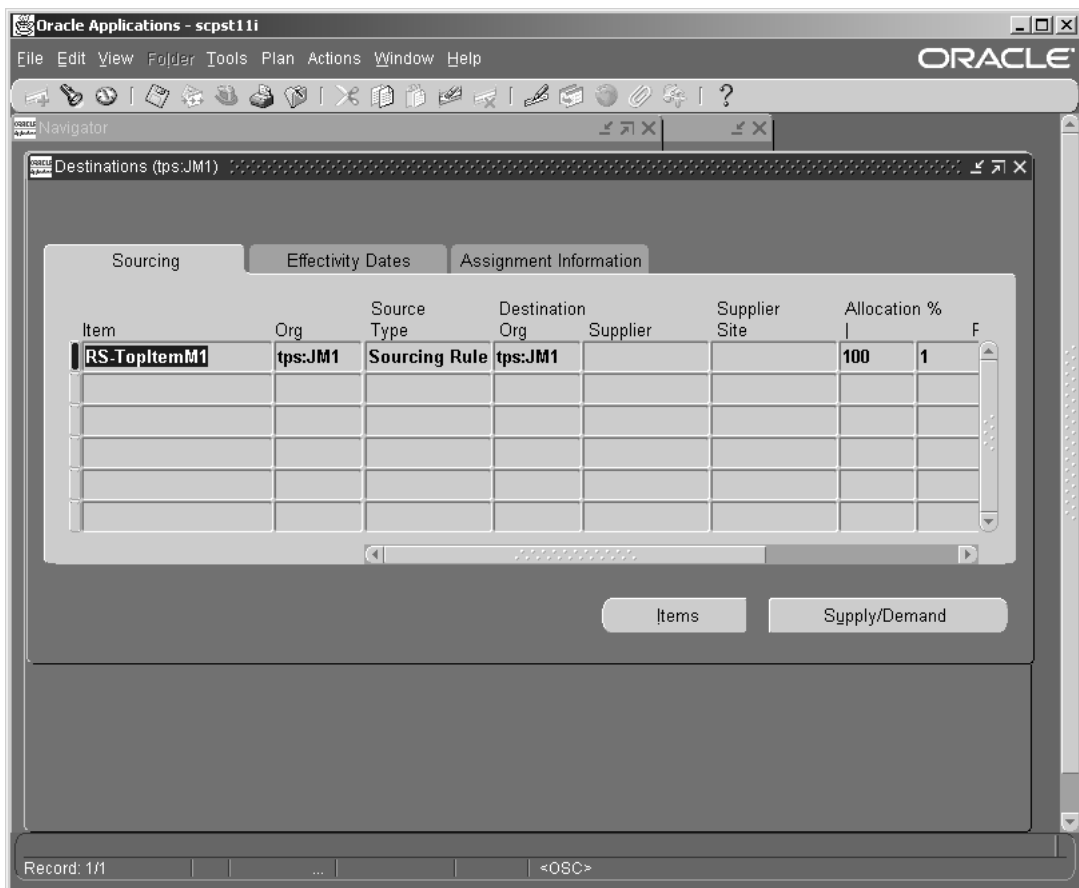
- Supply/Demand
- Supply
- Supplier Information
- Process Effectivity
- Exception Details
- Gantt Chart
- Horizontal Plan
- Vertical Plan

## 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.

**Figure 10–46** Destinations window



### Sourcing Tabbed Pane

The following table provides a description of the fields displayed in the Sourcing tabbed pane:

**Table 10–23** *Description of Fields in the Sourcing Tabbed Pane*

Field	Description
Item	Item
Source Type	Sourcing rule, bill of distribution or item attribute
Destination Org	The receiving organization.
Supplier	Supplier name (not used in the Destinations window)
Supplier Site	Supplier site name (not used in the Destinations window)
Allocation %	Allocation % from the sourcing rule or bill of distribution
Rank	Rank from the sourcing rule or bill of distribution
Shipping Method	Shipping method from the sourcing rule or bill of distribution
Intransit Time	Indicates the intransit time from the sourcing rule or the bill of distribution.

### Effectivity Dates Tabbed Pane

The following table provides a description of the fields displayed in the Effectivity Dates tabbed pane:

**Table 10–24** *Description of Fields 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:

**Table 10–25 Description of Fields 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

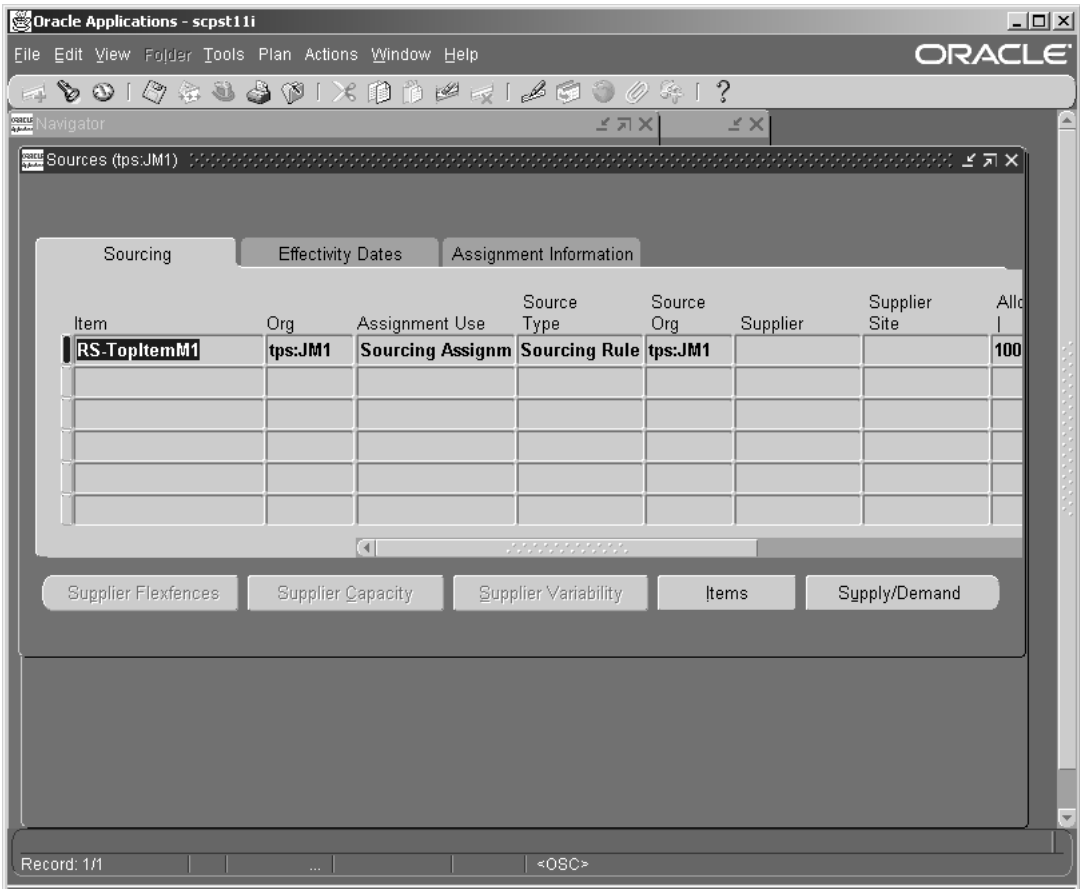
## Sources Window

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.

Figure 10-47 Sources window



Sourcing Tabbed Pane

The following table provides a description of the fields displayed in the Source tabbed pane:

Table 10-26 Description of Fields in the Sourcing Tabbed Pane

Field	Description
Assignment Use	Type of assignment set that uses this rule. For example, Sourcing Assignment or Global Forecast Distribution.



**Table 10–26 Description of Fields in the Sourcing Tabbed Pane**

Field	Description
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
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](#).

### **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](#).

### **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**

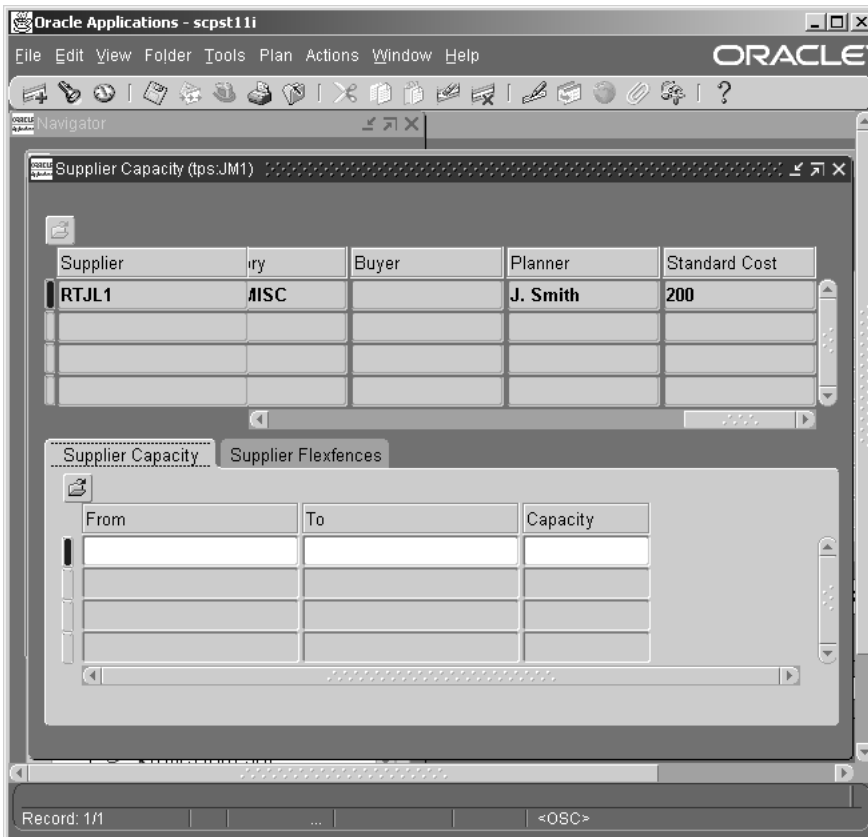
1. In the Navigator, view by supplier.
2. Drill down to highlight an item associated with a supplier or a supplier site.
3. Select [right-click] > Supplier Information.

Alternatively, you can view by any other category and perform the following steps to navigate to the Supplier Capacity window.

1. Highlight a supplier or a supplier site.
2. Navigate to the Items window.
3. In the Items window, click Sources.

4. In the Sources window, click Supplier Capacity.

**Figure 10–48 Supplier Capacity Window**



### Information Displayed in the Supplier Capacity Window

The Supplier Capacity window displays the following information:

**Table 10–27 Description of Fields in the Supplier Capacity Window**

Fields	Description
Supplier	Supplier name

**Table 10–27 Description of Fields in the Supplier Capacity Window**

Fields	Description
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 <a href="#">Supply Chain Modeling</a> on 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 following table provides a description of the fields displayed in the Supplier Capacity tabbed pane:

**Table 10–28 Description of Fields in the Supplier Capacity Tabbed Pane**

Fields	Description
From	Specify the start date.

**Table 10–28 Description of Fields in the Supplier Capacity Tabbed Pane**

Fields	Description
To	Specify the end date.
Capacity	Specify the capacity of the supplier (units per day) for the duration.

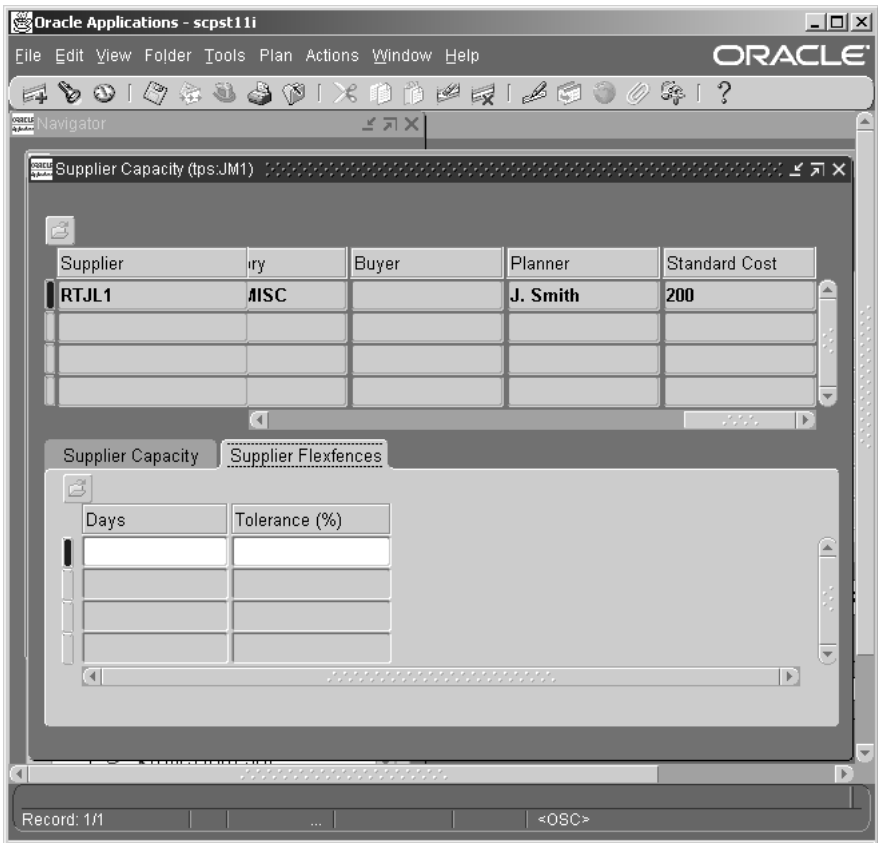
For more information on setting supplier capacity, see [Supply Chain Modeling](#) on page 6-1.

### 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

Figure 10–49 Supplier Flexfences tabbed pane



For more information on setting supplier flexfences, see [Supply Chain Modeling](#) on page 6-1.

### Supplier Variability Window

For information on setting supplier lead time variability, see [Inventory Optimization](#) on page 15-1.

## Safety Stock Window

The Safety Stock window shows time phased safety stock. 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. If the safety stock method for an item is Non-MRP planned, you can also update safety stock levels. If the safety stock method for an item is MRP planned, the information has been calculated by the planning engine and is display only.

The following table lists the information displayed in the Safety Stock window.

**Table 10–29 Description of Fields 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.

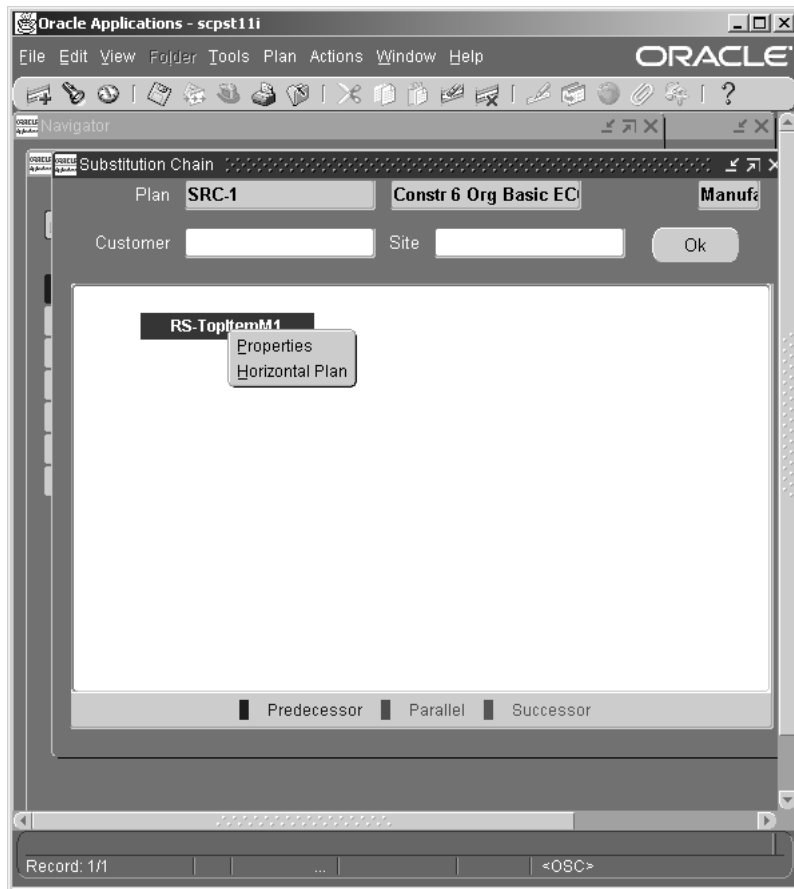
- From the Navigator, right-click an item and select Items > Substitutes.  
You can specify a customer and site to view the substitution chain for the item.

### **Right-click Menu Options**

When you right-click an item in the Substitution Chain window, the following options appear:

- Properties
- Horizontal Plan



**Figure 10–50 Substitution Chain window: Right-click menu options**

For more information about the Substitution Chain window, see [Business Topics](#) on page 16-1.

## Resources Window

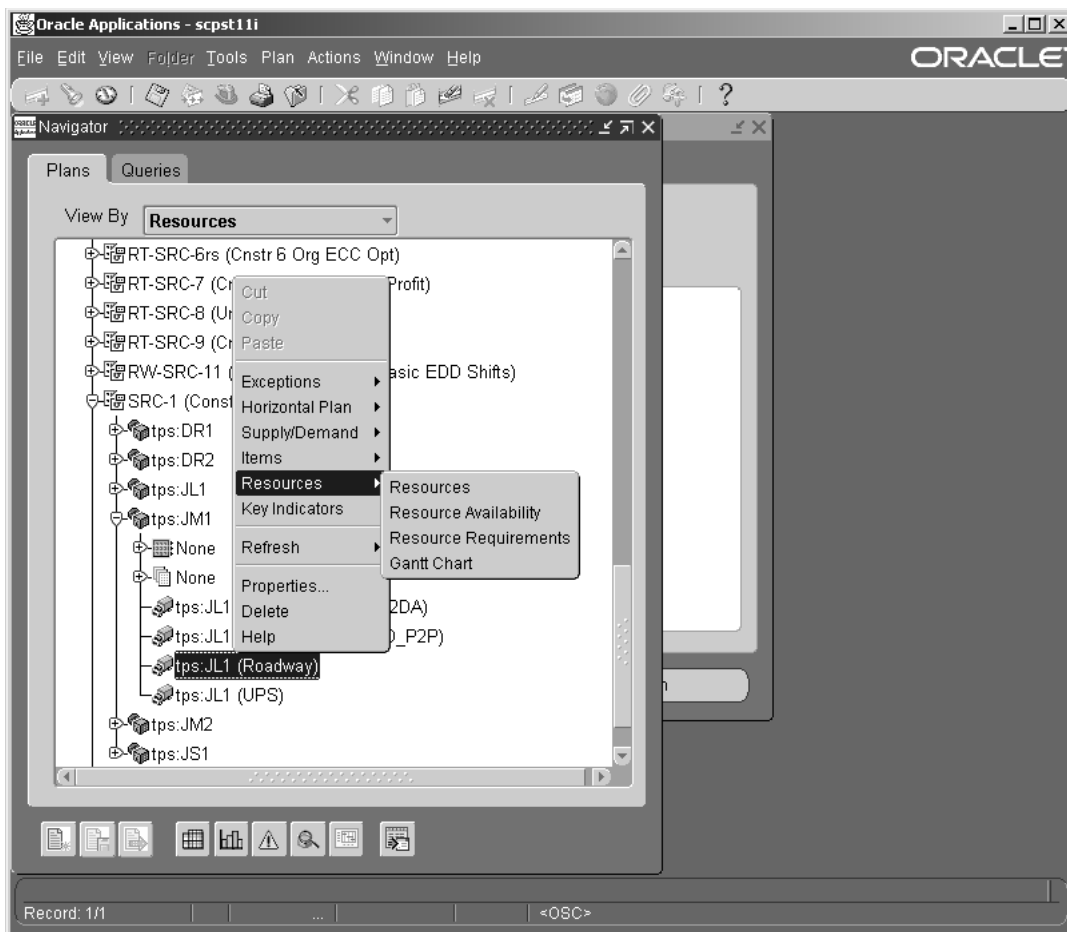
The Resources window displays resource-related information such as ship method, location, and resource cost.

## Viewing the Resources Window

### To navigate to the Resources window

- Select a resource in the Navigator.
- Choose [right-click] > Resources.

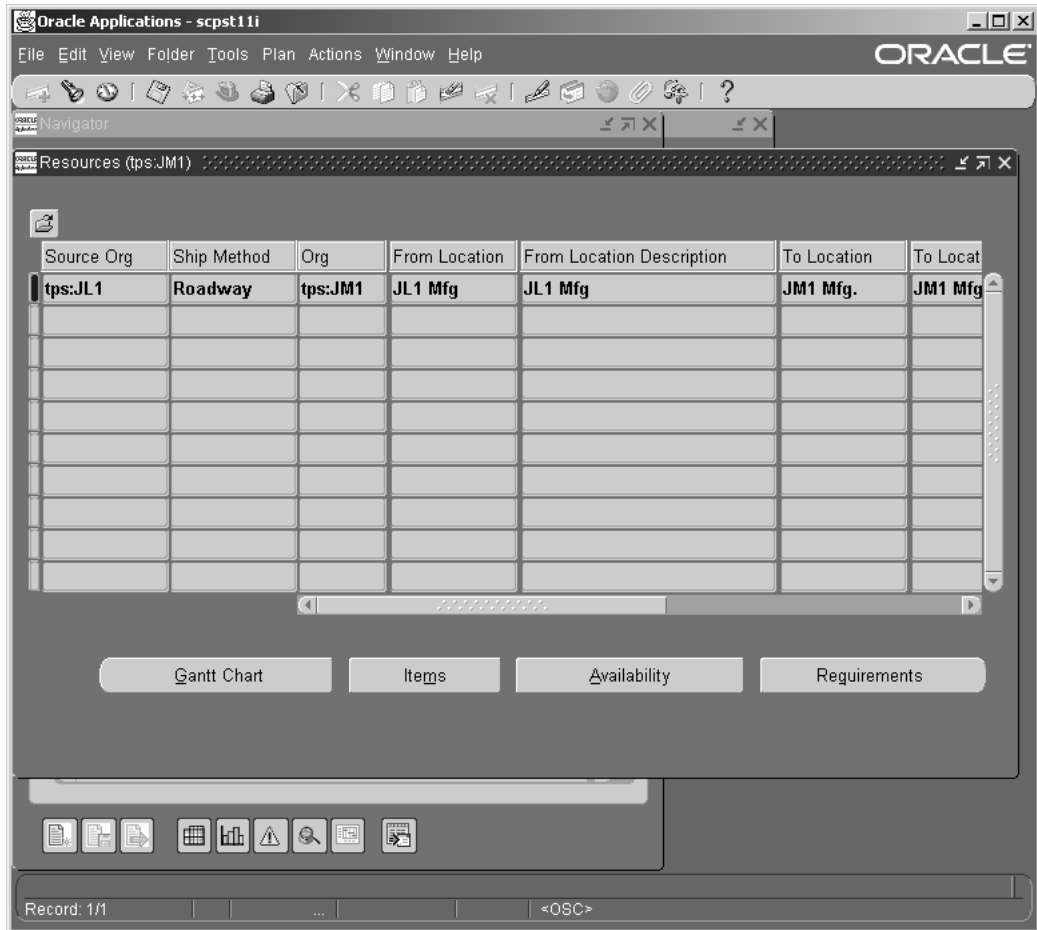
**Figure 10–51** Navigator: Resources Right-click menu



The Resources right-click menu displays four options: Resources, Resource Availability, Resource Requirements, Gantt Chart.

- Select Resources to view the Resources window.  
The Resources window appears.

**Figure 10–52 Resources window**



The Resources window provides detailed information such as:

**Table 10–30 Description of Fields in the Resources Window**

<b>Fields</b>	<b>Description</b>
Dept/Line	Department or line designation
Resource	Resource name
Org	Organization
Owning Dept	Owning department of the resource
Dept Class	Department class to which the resource is assigned
Resource Type	Person, machine or miscellaneous
Resource Group	Bottleneck resource group assignment
Min Rate	Line rate
Max Rate	Line rate
Resource Cost	Resource cost per resource UOM
24 Hours Resource	Yes or No
Aggregate Resource	Yes or No
Base UOM	Resource UOM
Batchable	Resource batchable flag
Batchable UOM	Resource batchable UOM
Batching Window	Resource batching window
Bottleneck Flag	The planning engine calculates this based on the plan options for bottleneck resource groups.
Dept/Line Desc	Description
Efficiency %	Resource efficiency %
Exception Set	Resource exception set
Group Number	Activity group number
Inactive Date	Resource inactive date
Max Capacity	Resource batching maximum capacity
Min Capacity	Resource batching minimum capacity
Offset (%)	Resource offset percent
Resource Desc	Resource description

**Table 10–30** *Description of Fields in the Resources Window*

Fields	Description
Schedule	The valid values for this schedule flag are: <ul style="list-style-type: none"><li>- Yes</li><li>- No</li><li>- Prior</li><li>- Next</li></ul>
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

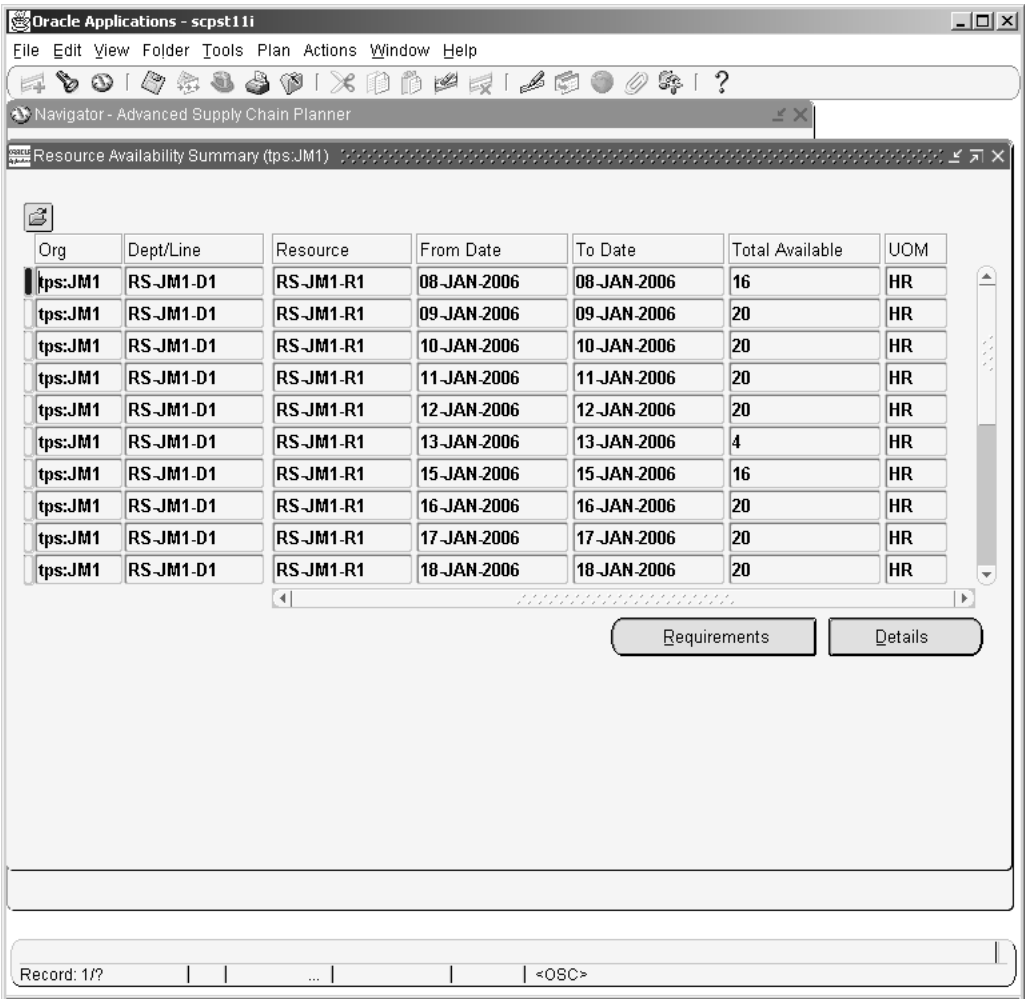
**Resource Availability Summary Window**

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

1. To view the available capacity, choose Resources > Resource Availability.  
The Resource Availability Summary window appears.

Figure 10–53 Resource Availability Summary window



Information in the Resource Availability Summary Window

The following table lists the information displayed in the Resource Availability Summary window.

**Table 10–31 Description of Fields in the Resource Availability Summary Window**

Field	Description
Org	Organization
Dept/Line	Resource Owning Department or Line
Resource	Resource Name
From Date	Start Date for the Total Available
To Date	End Date for the Total Available
Total Available	Quantity based on the Resource UOM
UOM	Resource UOM

### Buttons in the Resource Availability Summary Window

The following buttons are available in the Resources Availability Summary window:

- Requirements: You can navigate to the Resource Requirements window by clicking the Requirements button.
- Details: You can navigate to the Resource Availability window to view the details.

## Resource Availability (Details) Window

When you click the Details button in the Resource Availability Summary window, the Resource Availability window appears. You can view the details of the available capacity in the Resource Availability window.

Figure 10–54 Resource Availability (Details) window

Oracle Applications - scpst11i

File Edit View Folder Tools Plan Actions Window Help

Navigator - Advanced Supply Chain Planner

Resource Availability (tps:JM1)

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	

Update Resource

Org	Dept/ Line	Resource	Update Mode	From Date	To Date	Shift Num	F T
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:



**Table 10–32 Description of Fields in the Resource Availability Details Window**

Field	Description
Org	Organization
Dept/Line	Owning department or line
Resource	Resource name
Shift date	Shift date
Shift Num	Shift id
From Time	Shift start time
To Time	Shift end time
Capacity Units	Number of resources for this shift
Max Rate	Repetitive line max rate

## Update Resource Availability

### To update resource availability

You can make changes to the resource availability in the Update Resource section.

1. Click the Update Mode drop-down menu to specify the mode in which you want to update the resource availability.

The following options appear:

- Add Capacity: Specify the number of units by which the current capacity needs to be increased with effect from a specific date.
- Reduce Capacity: Specify the units by which the current capacity needs to be reduced with effect from a specific date.
- Set Capacity: Specify the exact capacity units and the date from which the capacity change is effective.
- Add Day: Add resource capacity for a non-working day.
- Delete Day: Delete resource capacity for a workday.

Based on your choice, the planning engine prompts you to specify the information.

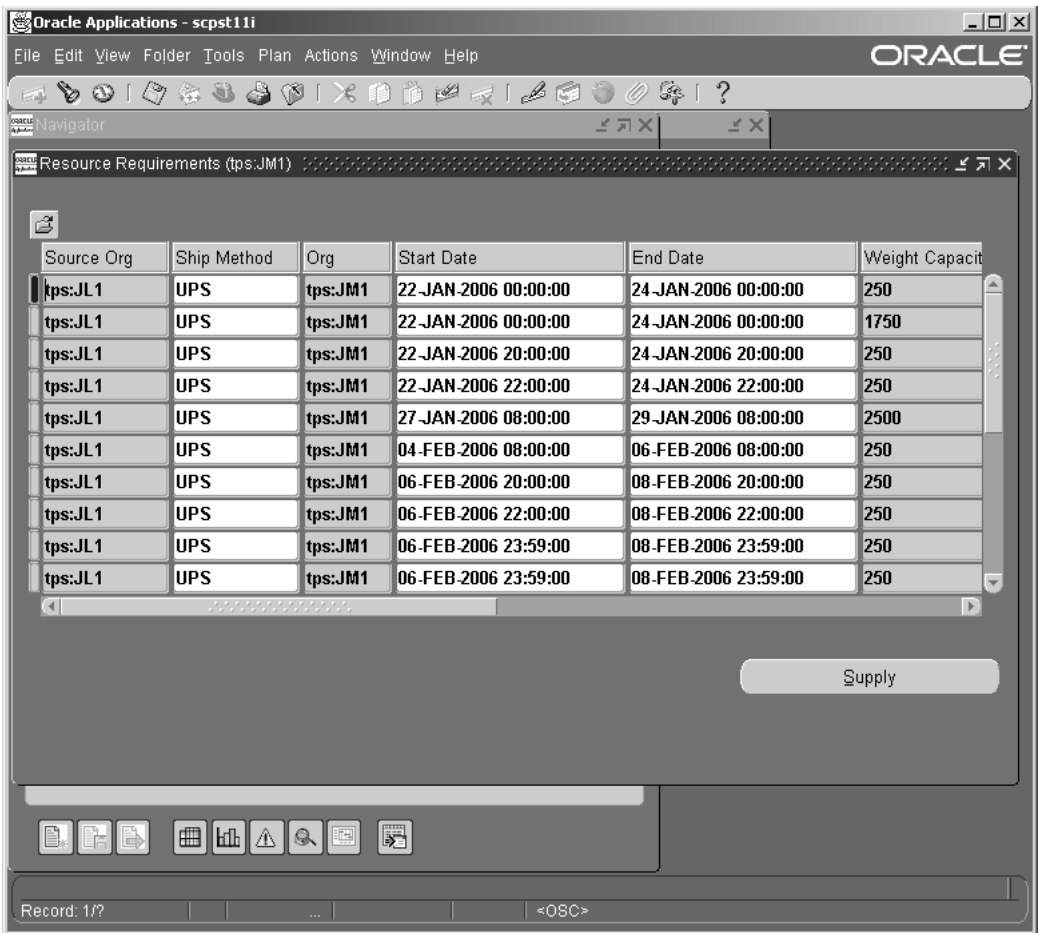
2. After making changes, click Apply.

## Resource Requirements Window

You can navigate to the Resource Requirements window in one of the following ways:

- From the Resources window, click the Requirements button.
- From the Navigator, select a resource and choose Resource Requirements from the Resources right-click popup menu.

**Figure 10–55** *Resource Requirements window*



### Information in the Resource Requirements Window

The following table lists the information displayed in the Resource Requirements window.

**Table 10–33 Description of Fields 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
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: $\text{Resource Hours} / \text{Resource Efficiency \%}$
Adjustable Resource Hours	The planning engine calculates this as follows: $\text{Resource Hours} / (\text{Resource Efficient \%} * \text{Resource Utilization \%})$
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.

**Table 10–33 Description of Fields in the Resource Requirements Window**

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 <a href="#">Network Routing Window</a> .
Recommended	Yes or No
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.

**Table 10–33 Description of Fields in the Resource Requirements Window**

Field	Description
Scheduling Sequence Number	This refers to the sequence dependent setup number.
Source Item	This is used for bills of resources to identify the source item for the resource requirement.
Unconstrained Earliest Possible Completion Time	The planning engine calculates this based on the unconstrained schedule for the upstream activities that allow minimum durations.
Unconstrained Earliest Possible Start Time	The planning engine calculates this based on the difference between the unconstrained earliest possible completion time and supply duration (Unconstrained Earliest Possible Completion Time - Supply Duration).
Unconstrained Latest Possible Completion Time	The planning engine calculates this based on the unconstrained schedule for the downstream activities that allow minimum durations.
Unconstrained Latest Possible Start Time	The planning engine calculates this based on the difference between the unconstrained latest possible completion time and supply duration.
Usage Rate	Indicates the usage rate for discrete and lot-based jobs.
Yield	This indicates the operation yield.

### Buttons in the Resource Requirements Window

The following button is available in this window:

- Supply: Click this if you want to view the pegging information for supplies (Supply window).

## Supply Chain

The tree structure makes it easy to go down levels on a bill of material. When viewing by Organization, you can drill down to go down a level from a department, resource, or item level to the next level down.

The supply chain map also offers the Item/Location View. This view is available only at the item nodes and is the default for these nodes. This view displays a diagrammed flow view of all the sourcing rules and bills of distribution associated with the selected item. This view also serves as the indented bill of materials.

When you right-click an item in the Navigator, the pop-up menu displays the following options:

- Sources: Navigate to the Sources window. For more information, see [Sources Window](#).
- Supply Chain Bill: View the Supply Chain Bill for an item. For more information, see [Supply Chain Bill](#).
- Destinations: Navigate to the Destinations window. For more information, see [Destinations Window](#).

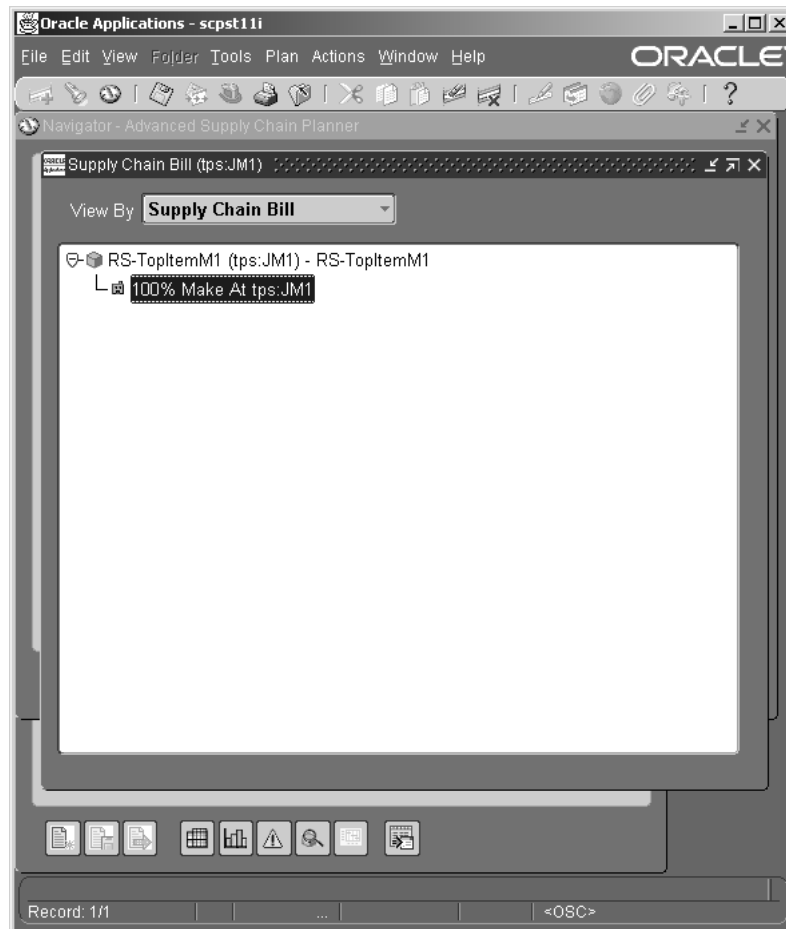
## Supply Chain Bill

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.

**Figure 10–56** *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

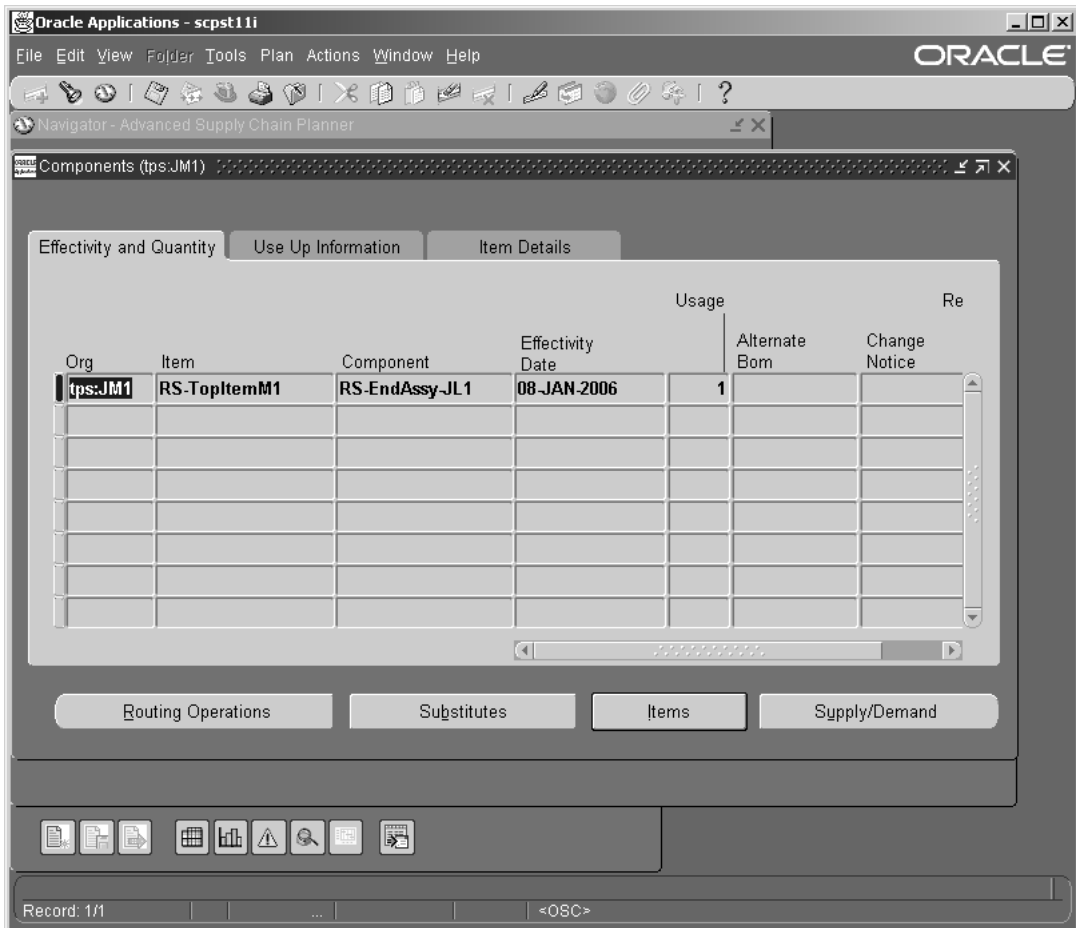
The planning engine provides detailed BOM and routing information associated with an item. Right-click an item in the Navigator, select BOM/Routing. The right-click pop-up menu displays the following options to navigate to windows that display specific information:

- 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.



**Figure 10–57 Components window****Effectivity and Quantity Tabbed Pane**

The following table provides a description of the fields displayed in the Effectivity and Quantity tabbed pane:

**Table 10–34 Description of Fields in the Effectivity and Quantity Tabbed Pane**

Field	Description
Org	Organization
Item	Parent item name
Component	Component name
Effectivity Date	BOM effectivity date
Usage	BOM component usage
Alternate BOM	Alternate BOM name
Change Notice	Engineering change order name
Revision	Engineering change order revision number

### Use Up Information Tabbed Pane

The following table provides a description of the fields displayed in the Use Up Information tabbed pane:

**Table 10–35 Description of Fields 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:

**Table 10–36 Description of Fields in the Item Details Tabbed Pane**

Field	Description
Org	Organization

**Table 10–36 Description of Fields in the Item Details Tabbed Pane**

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:

**Table 10–37 Description of Fields in the Routing Operations Window**

Field	Description
Org	Organization
Item	Components required at the operation sequence

**Table 10–37 Description of Fields in the Routing Operations Window**

<b>Field</b>	<b>Description</b>
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
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:

**Table 10–38** Description of Fields in the Network Routing Window

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:

**Table 10–39** Description of Fields in the Effectivity and Quantity Tabbed Pane

Field	Description
Org	Organization
Item	Component item name
Assembly	Parent item name

**Table 10–39 Description of Fields in the Effectivity and Quantity Tabbed Pane**

Field	Description
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](#) (for Components window).

**Item Details Tabbed Pane**

For more information, see [Item Details Tabbed Pane](#) (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:

**Table 10–40 Description of Fields in the Co-Product Window**

Field	Description
Co-Product	Network routing co-product name
Split (%)	Network routing split (%)

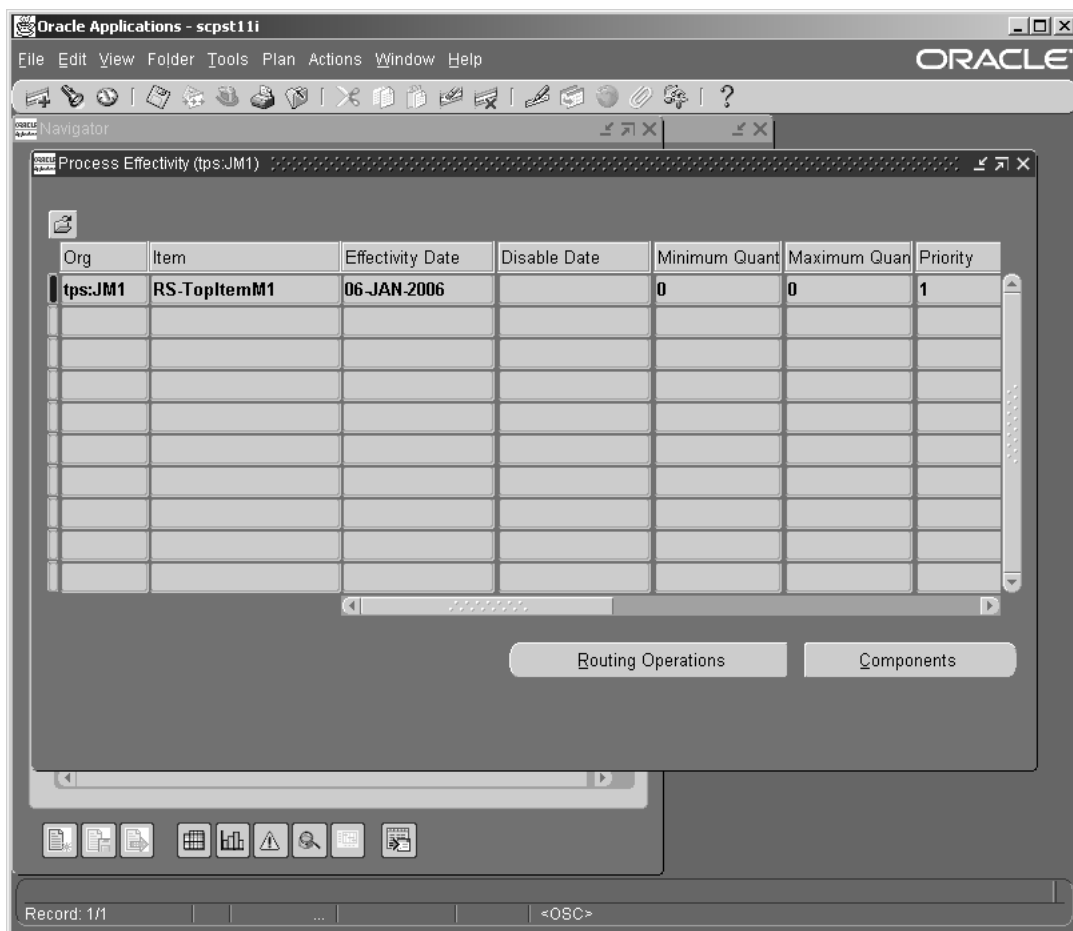
## Process Effectivity

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.

**Figure 10–58** *Process Effectivity window*



### Information Displayed in the Process Effectivity Window

The Process Effectivity window displays the following information:

**Table 10–41 Description of Fields in the Process Effectivity Window**

Field	Description
Org	Organization



**Table 10–41 Description of Fields in the Process Effectivity Window**

Field	Description
Item	Item name
Effectivity Date	Routing effectivity date
Disable Date	Routing disable date
Minimum Quantity	Process manufacturing batch minimum quantity
Maximum Quantity	Process manufacturing batch maximum quantity
Priority	Process batch priority
Alternate Routing	Alternate routing name
Alternate BOM	Alternate BOM name
Total Product Cycle Time	Process Manufacturing product cycle time
Item Processing Cost	Process Manufacturing item processing cost
Line	Process Manufacturing line name
Primary Line	Process Manufacturing primary line flag
Line Rate	Process Manufacturing line rate

### Buttons in the Process Effectivity Window

The following buttons in the Process Effectivity window enables you to navigate to other context windows:

- Routing Operations
- Components

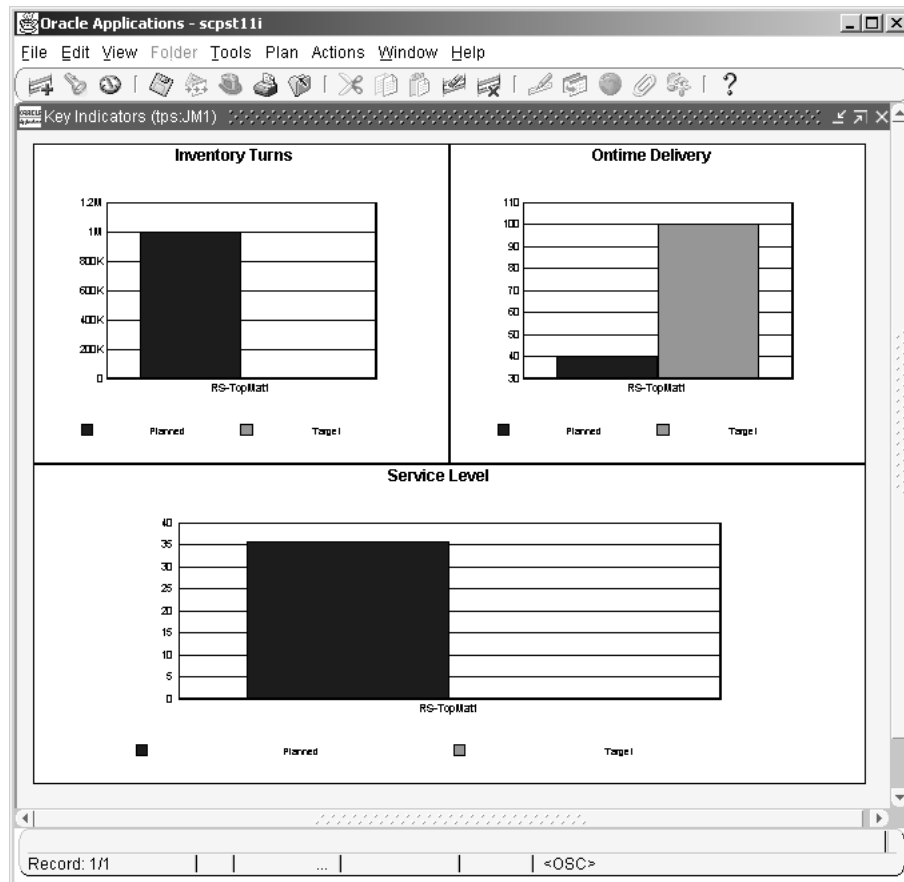
## Key Indicators

The Key Indicators window is a summary chart that provides a graphical display of a plan's Key Performance Indicators (KPIs). At a glance, you can see how the plan performs relative to the following measures:

- Inventory Turns
- Ontime 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](#).

**Figure 10–59 The KPIs Summary Chart in the Planner Workbench**

### Viewing KPIs

You need to perform the following step before navigating to the Key Indicator window:

- Ensure that a KPI is associated with your plan. To associate a KPI with your plan, you need to run the Refresh KPI Summary Data request as a concurrent program. If you do not run this program, the planning engine displays an error message.

### **To view KPIs**

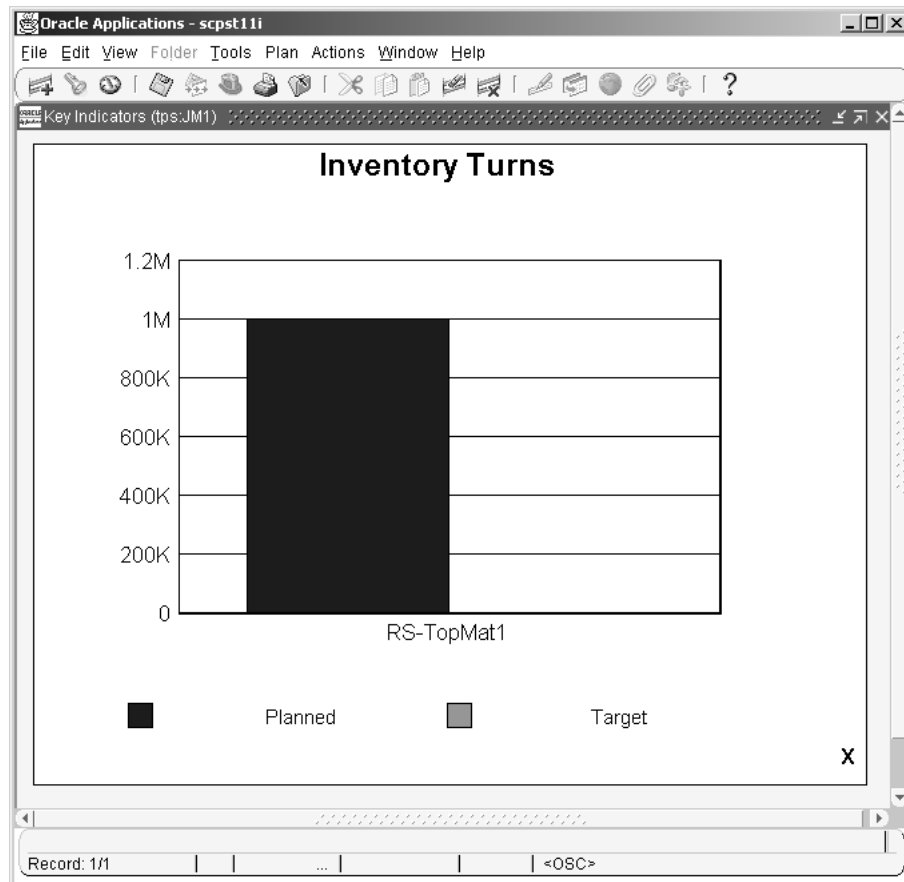
1. Select a Plan, an Item, an Org, or a Product Family from the Navigator.
2. Select Key Indicators in the pop-up menu.

The Key Indicators window displays the KPIs for the selected Plan, Item, Org, or Product Family.

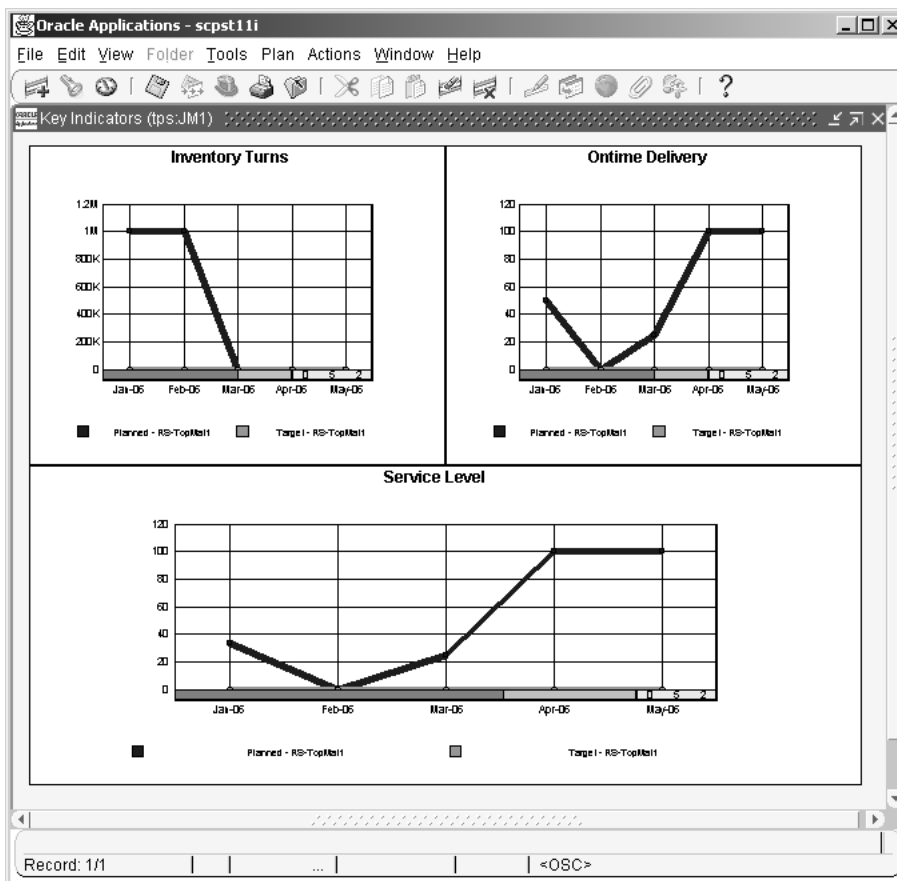
### **To view an enlarged version of a KPI graph**

Double-click on a sub-window to see an enlarged version of a KPI graph.  
Double-click again to return to the normal view.

**Figure 10–60** An Enlarged View of the Ontime 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.

**Figure 10–61 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

### **Ontime Delivery**

The Ontime 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.

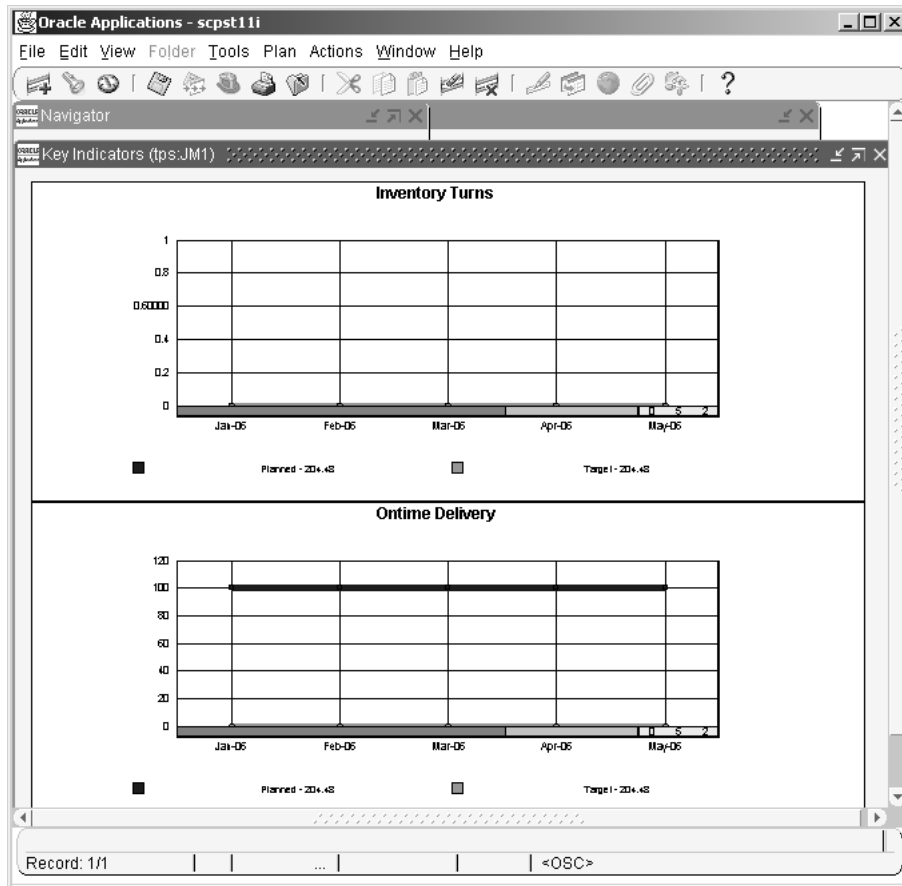
Margin percentage is available at the following nodes:

- 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.

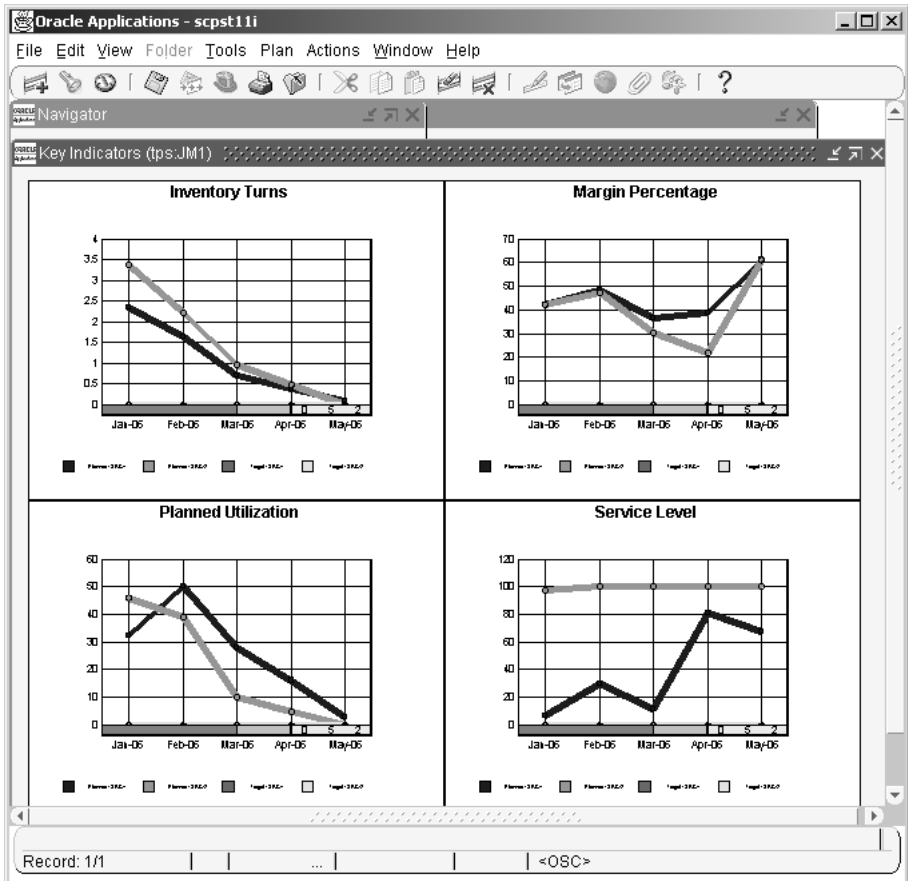


**Figure 10–62 Viewing KPIs at the Item Level**

### 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).

Figure 10–63 Comparing KPIs for Multiple Plans



## Implementing Planning Recommendation

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.

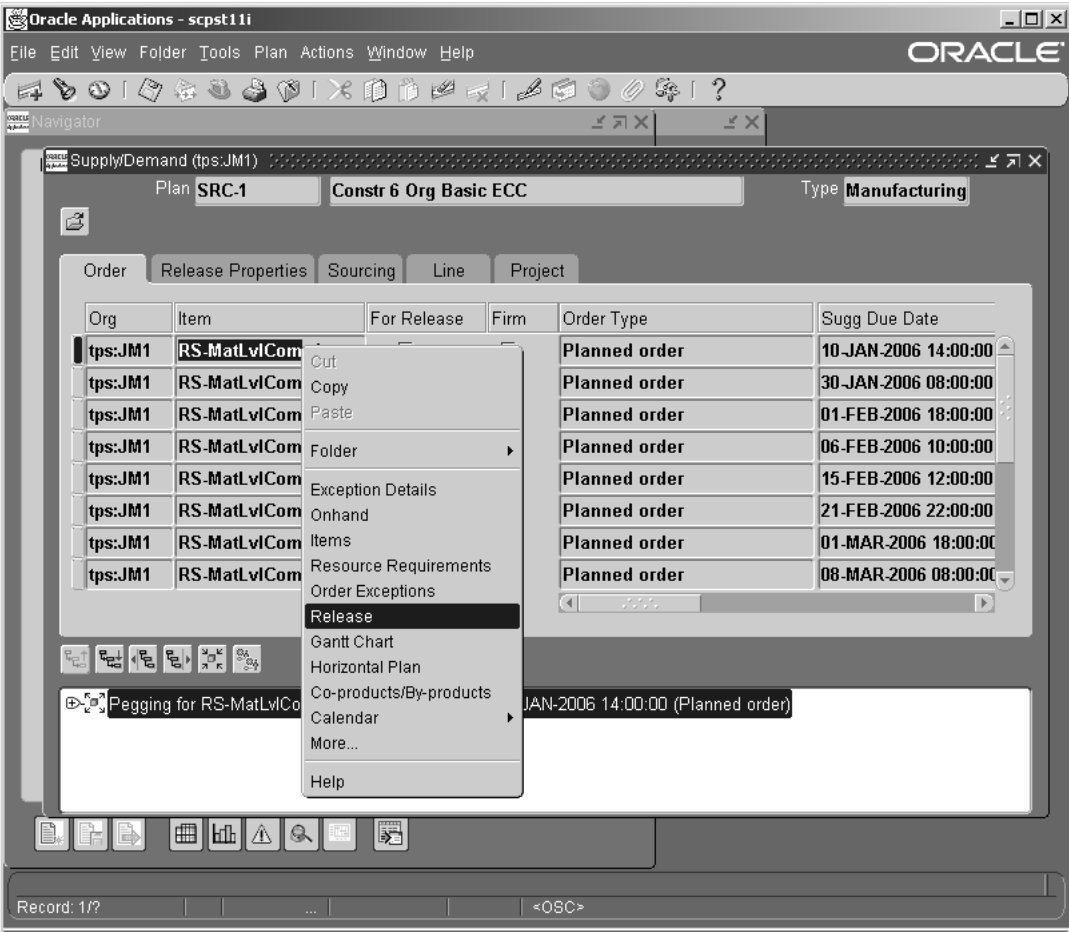
For detailed information about the fields in the Supply/Demand window, see [Supply/Demand Window](#).

## Releasing Recommendations

### To release recommendations

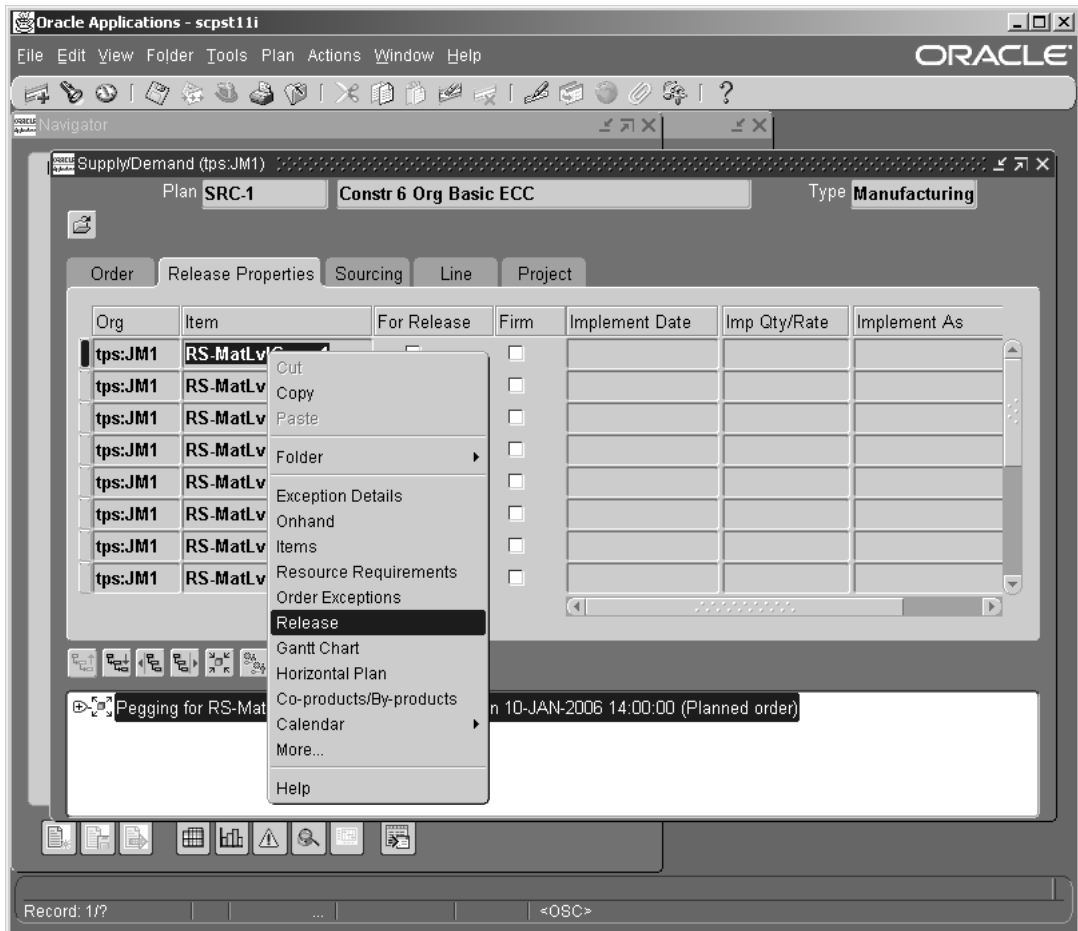
1. In the View By Actions mode, drill down to the Recommendations node.
2. Drill down to items in Purchase Requisitions or Discrete Jobs.
3. Right-click an item, select Supply/Demand > Supply/Demand.
4. In the Supply/Demand window, select the For Release check box to indicate the planned order that you want to release.
5. Select [right-click] > Release to release the record.

Figure 10–64 Supply/Demand window: Releasing Recommendations



**To modify release properties (optional)**

- 1. Drill down to Supply/Demand.
  - 2. Modify release properties on Release Properties tab.
- Press [right-click] > Release to release.

**Figure 10–65 Release Properties tabbed pane: Modifying Release Properties**

## 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.

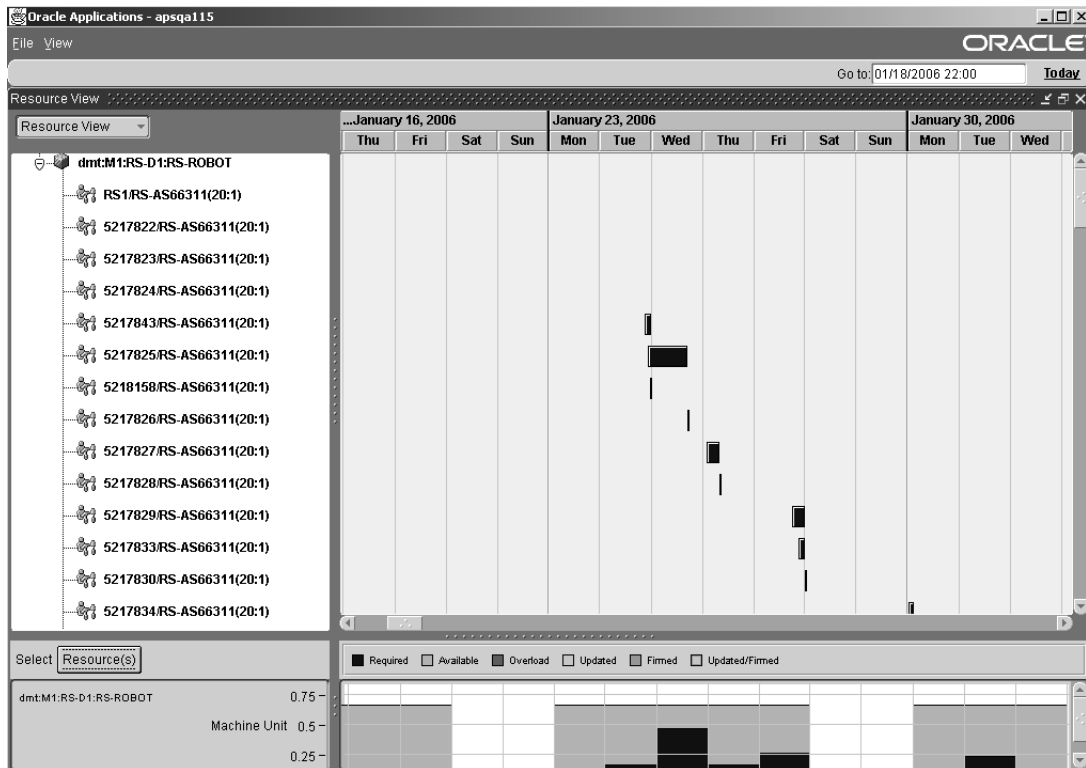
## Interactive Scheduling Using the Gantt Chart

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
Item window	[Select any field] > [right-click] > Gantt Chart
Resources window	Click the Gantt Chart button
Navigator	Select a resource>[right-click]>Gantt Chart

**Figure 10–66 The Gantt Chart**

The left pane displays a tree structure of:

- Resources and their associated operations and orders in the resource view
- Orders and their associated operations and resources in the order view
- A late demand and the list of activities that are pegged to it in the late demand view

To select a view, use the drop down menu in the left pane.

The number of orders displayed in the order-centric view defaults to 10 and the number of activities displayed in the resource-centric view defaults to 100. To see the entities that are found by your query but not displayed, double-click Previous and Next. To change these defaults, see Limiting Left Pane Views.

The right pane has panels:

- The upper panel shows time-phased details of the entities in the left pane. The default time-bucket display is major interval weeks and minor interval days; you can change it, see *Specifying Time Buckets*.
- The lower panel shows resource loads that relate to the information in the upper panel. Its default time-bucket display is the same as the upper panel.

The upper level:

- Uses the manufacturing calendar of the plan owning organization
- Never buckets data in intervals which are smaller than the intervals that the planning engine used to plan the data

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.

---

**Note:** The Gantt Chart shows only the resource requirements that occur in the first horizon (days bucket). For example, if a plan's buckets are 30 days, 10 weeks, and 3 periods, the Gantt Chart shows resource requirements for the first 30 days. You cannot move a job beyond the first planning horizon.

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## The Order-Centric View

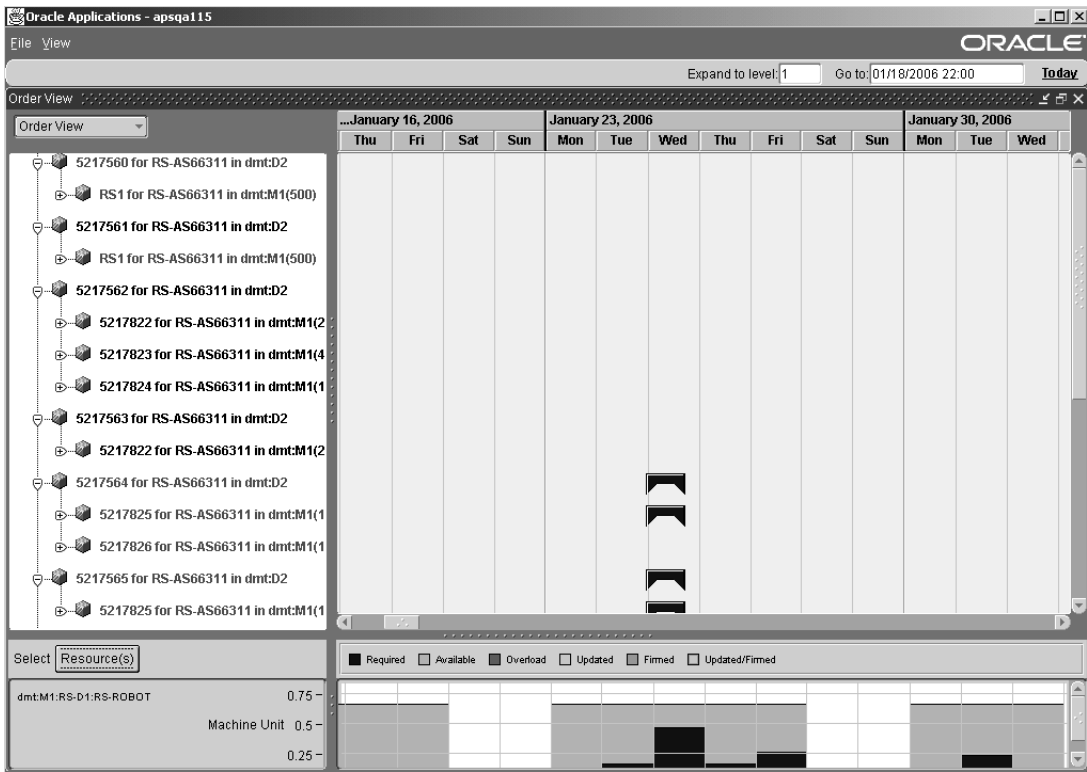
The order centric view displays the selected supplies. This view can be invoked from the Supply or Supply / Demand block of the Planner Workbench. For the selected supply (or supplies), this Gantt Chart displays all the end assemblies first. The end assembly as well as the subassembly and operations are shown as a rolled-up bar to represent collection of activities. This is provided as a tool to view the impact on an entire work order of 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.

Figure 10–67 Order-Centric View



## The Resource-Centric View

This view displays all the activities that are being worked on by the selected resource(s). This view can be accessed from the resource block of the Planner Workbench or by right clicking on selected resource(s) in the left pane of Planner Workbench.

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**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. This makes it easy to navigate to an activity.

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## The Late Demand View

This view displays a late demand and:

- The due date and the late demand satisfied date
- The list of activities that are pegged to it with the critical activities in red
- For each activity, the earliest and latest possible start and end times contrasted with the actual start and end times
- The relative priority of the various activities that are contending for limited resource or supplier capacity

You can only access this view for a late demand (a demand with a Late replenishment for sales order or Late replenishment for forecasts exception message). You cannot reschedule from this view.

Changes made in the Planner Workbench, Gantt Chart Order View, and Gantt Chart Resource View do not appear in this view until after the next planning run (concurrent, online, or regenerative).

For more information, see [Identifying Root Causes of Late Demand](#) on page 9-118.

## Color Codes

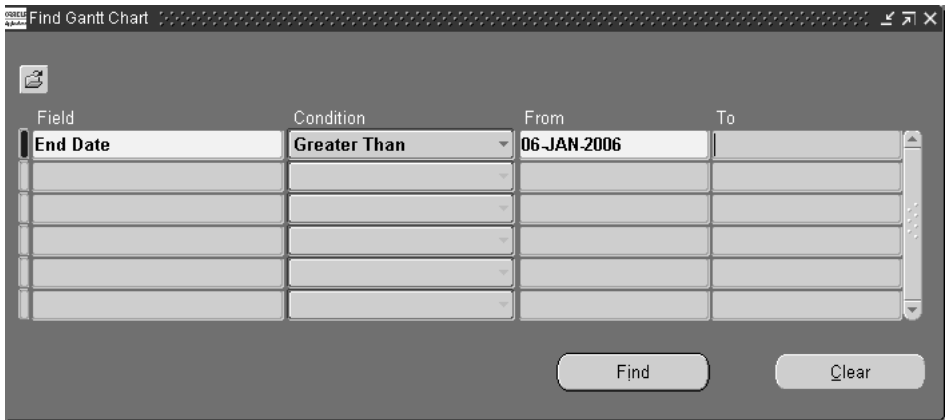
Operations in the Gantt Chart are color-coded according to the following scheme:

## Find Window

The Find window can be used to view subsets of data by selected criteria, such as by time or by parts within the Gantt chart.

To display the Find window, select File>Find.

Figure 10-68 Find Window



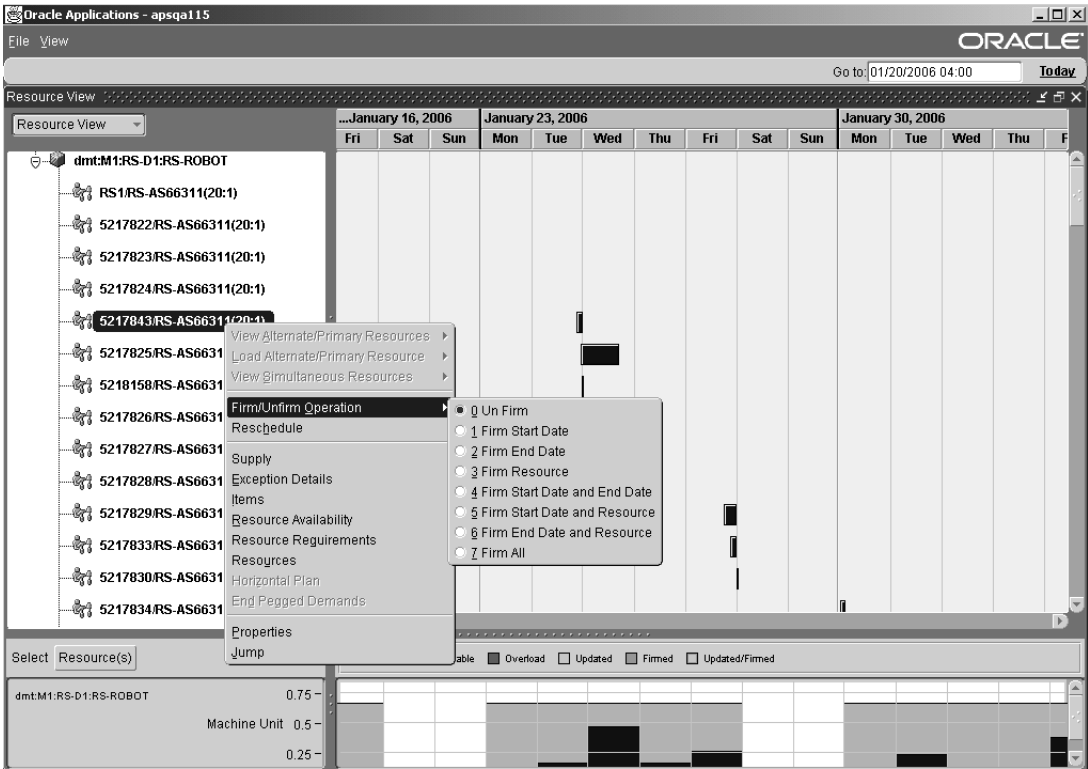
Right-Click Menu Options

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
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
Items	Open the Items window
Resource Availability	Open the Resource Availability window
Resource Requirements	Open the Resource Requirements window

[Right-Click] Menu Options	Description
Resources	Open the Resources window

Figure 10–69 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.

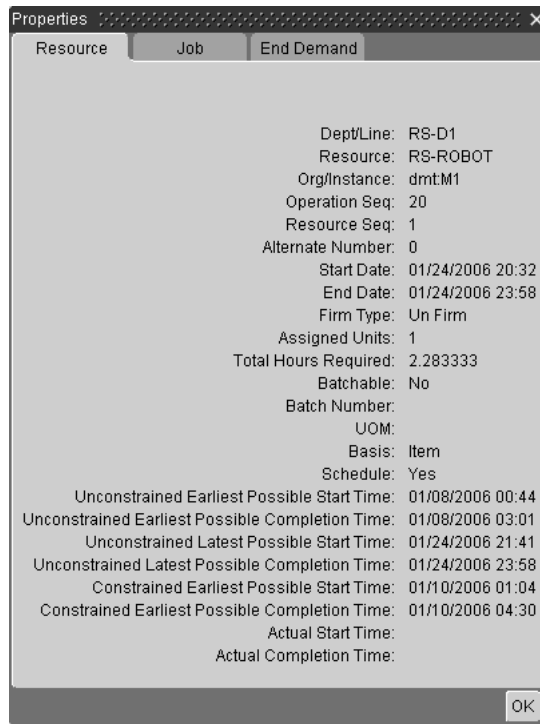
### To display the Properties window

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.

**Figure 10-70 The Property 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

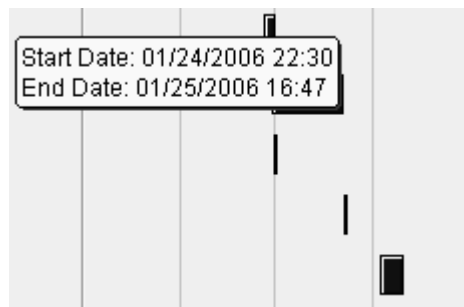
sequence, alternate number, firm type, start time, end time, assigned units, and total hours required.

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.

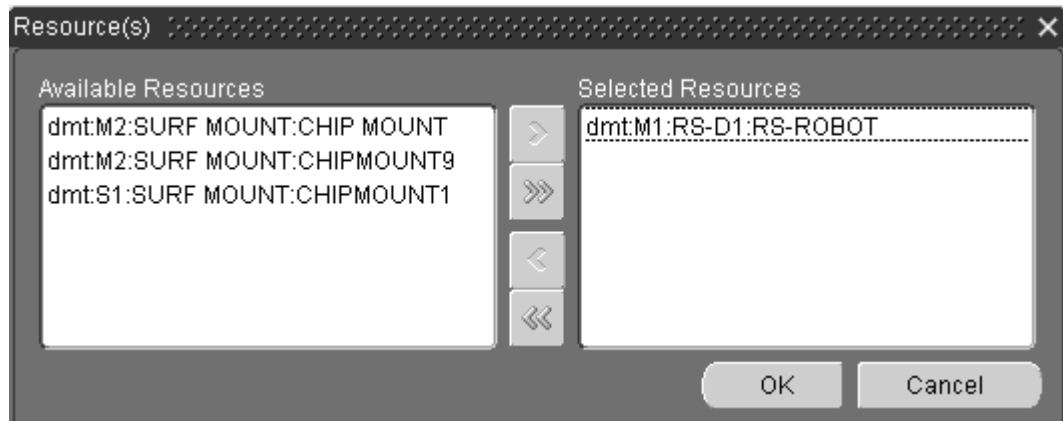
**Figure 10–71 The Resource Tool Tip**



## Specify Resources to Plot in the Lower Pane

### To select resources to plot

1. Click Select Resource(s) in the lower pane.

**Figure 10–72** The *Select Resource(s)* window

2. Move resources between the Available Resources and Selected Resources panes as desired.
3. Click OK.

The selected resources appear in the lower pane.

## Limiting Left Pane Views

You can adjust the number of entities that display in the left pane at one time. Use this feature if your queries return a large number of orders or activities and appear to take a long time to show the results.

### To limit left pane views

1. Navigate to the Preferences window.
2. Move to the Others tabbed region, Gantt Chart region.
3. To limit the number of end orders displayed in the order-centric view, enter a number in No. of end orders to display in order view  
 To limit the number of activities displayed in the resource-centric view, enter a number in No. of activities to display in resource view.
4. To see the entities that are found by your query but not displayed, double-click Previous and Next.

## Specifying Time Buckets

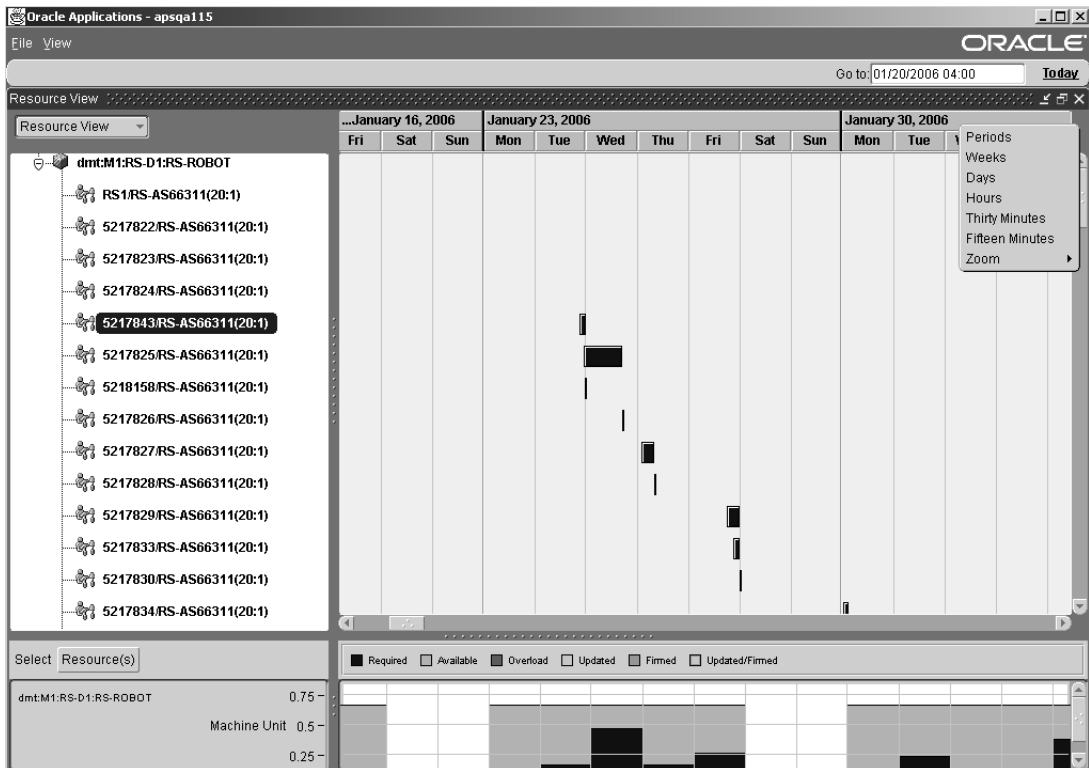
You can specify a new time bucket for the right panel upper and lower panes.

The Gantt chart never buckets data in intervals which are smaller than the intervals that the planning engine used to plan the data.

### To specify a new time bucket for the right pane

1. Right-click on the date in the upper right corner of the right pane.
2. Choose from the following intervals:
  - Periods
  - Weeks
  - Days
  - Hours
  - Thirty Minutes
  - Fifteen Minutes



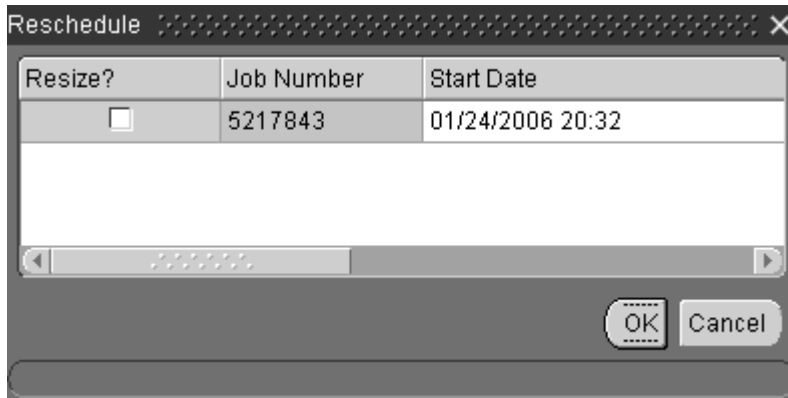
**Figure 10–73 Time Buckets**

## Rescheduling Operations

You can reschedule a job either by using the Reschedule window or by dragging and dropping the bar in the right 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.

**Figure 10-74 The Reschedule window**

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.

As you move the activity, a pop-up window shows the changing start and end date dynamically. 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

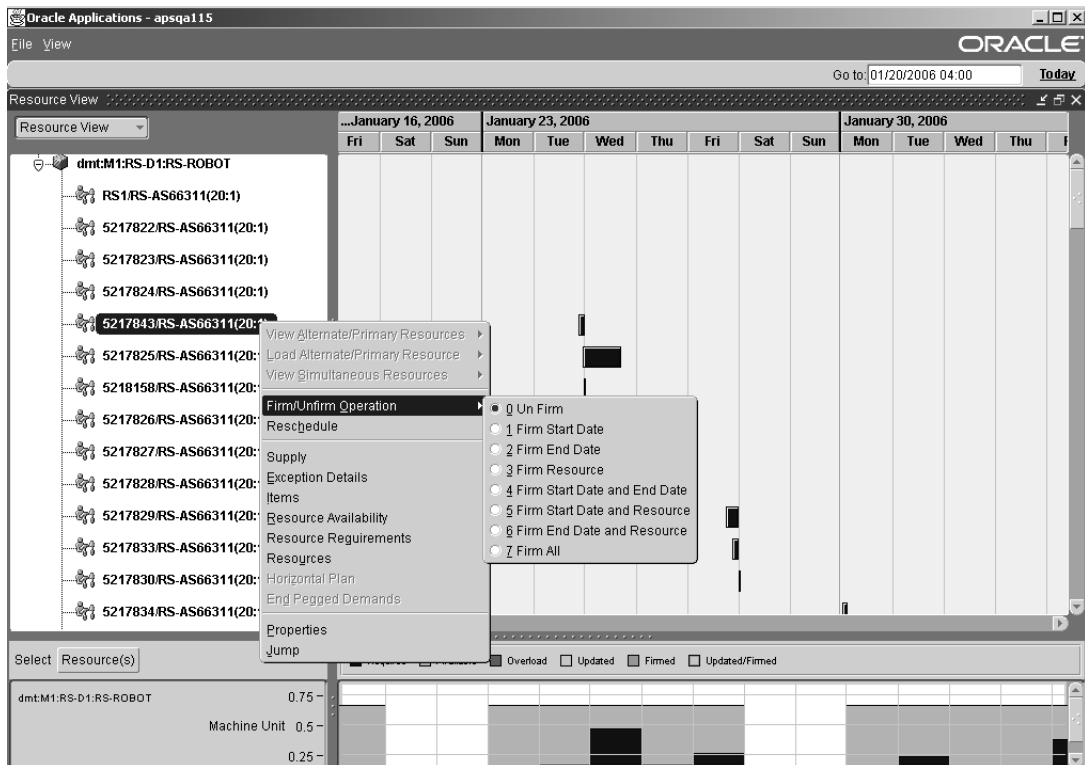
1. Select the activity.
2. Drag the right end of the activity bar to a desired end date. After resizing, the activity can be firmed.

## 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].

**Figure 10–75 Firm Option**



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**Note:** When you move an operation, it is automatically firmed by start date. When you offload an operation, it is automatically firmed by resource.

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## 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 and firmed.

### To add capacity

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**Note:** This functionality is available only in the resource-centric view.

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1. Place your cursor over an operation on the resource for which you wish add capacity.
2. Choose [right-click] > Resource Availability.

The Resource Availability Summary window appears.

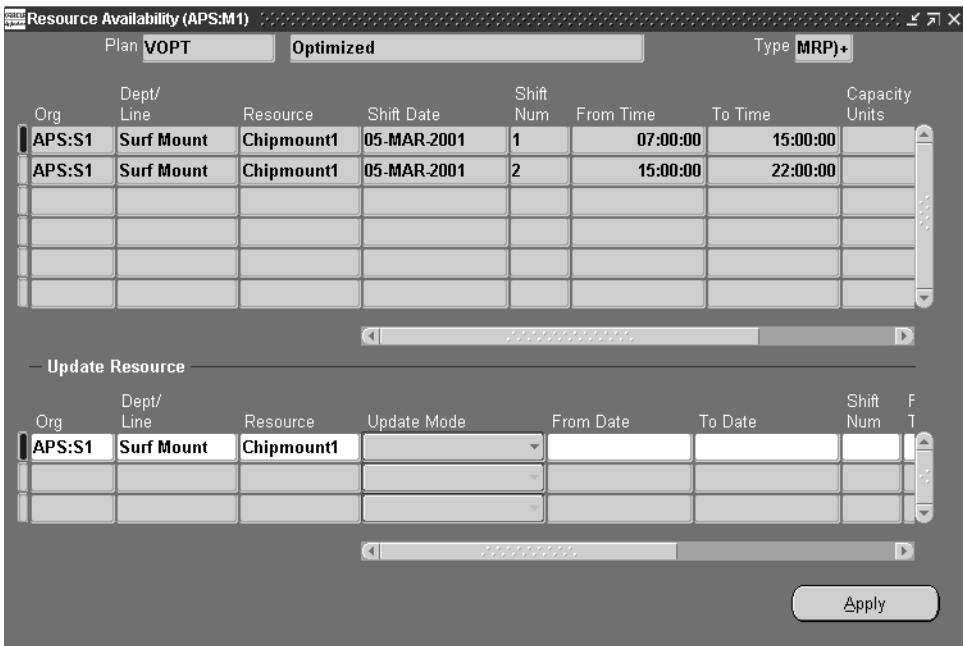
Figure 10–76 The Resource Availability Summary window

Org	Department	Resource	From Date	To Date	Total Available	UOM	Wk
APS:S1	Surf Mount	Chipmount1	05-MAR-2001	05-MAR-2001	15	HR	
APS:S1	Surf Mount	Chipmount1	06-MAR-2001	06-MAR-2001	15	HR	
APS:S1	Surf Mount	Chipmount1	07-MAR-2001	07-MAR-2001	15	HR	
APS:S1	Surf Mount	Chipmount1	08-MAR-2001	08-MAR-2001	15	HR	
APS:S1	Surf Mount	Chipmount1	09-MAR-2001	09-MAR-2001	15	HR	
APS:S1	Surf Mount	Chipmount1	12-MAR-2001	12-MAR-2001	15	HR	
APS:S1	Surf Mount	Chipmount1	13-MAR-2001	13-MAR-2001	15	HR	
APS:S1	Surf Mount	Chipmount1	14-MAR-2001	14-MAR-2001	15	HR	
APS:S1	Surf Mount	Chipmount1	15-MAR-2001	15-MAR-2001	15	HR	
APS:S1	Surf Mount	Chipmount1	16-MAR-2001	16-MAR-2001	15	HR	

- 3. Select a date for which you’d like to add capacity.
- 4. Click Details.

The Resource Availability window appears.

Figure 10–77 The Resource Availability window



- 5. Add capacity for a set duration for a particular shift.
- 6. 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. Increased capacity is shown in the lower panel of this window.

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. Until then, the changes appear either in pink or pink with a green border in the Gantt chart window.

Gantt Chart Menu Options

The following table shows the menu options for the Gantt chart and what happens when a particular menu option is selected.

Main Menu	Submenu	What happens when selected
File	Save	Change is saved to the database.
File	Refresh	The change is rolled back and the Gantt Chart view is refreshed.
File	Find	A find window appears that you can use to fetch data.
File	Exit	Exits the Gantt Chart view. If you try to exit this Gantt Chart view or close this Gantt Chart window without saving the changes, a warning message appears asking you to choose one of the following: commit the changes, ignore the changes, or cancel the exit.

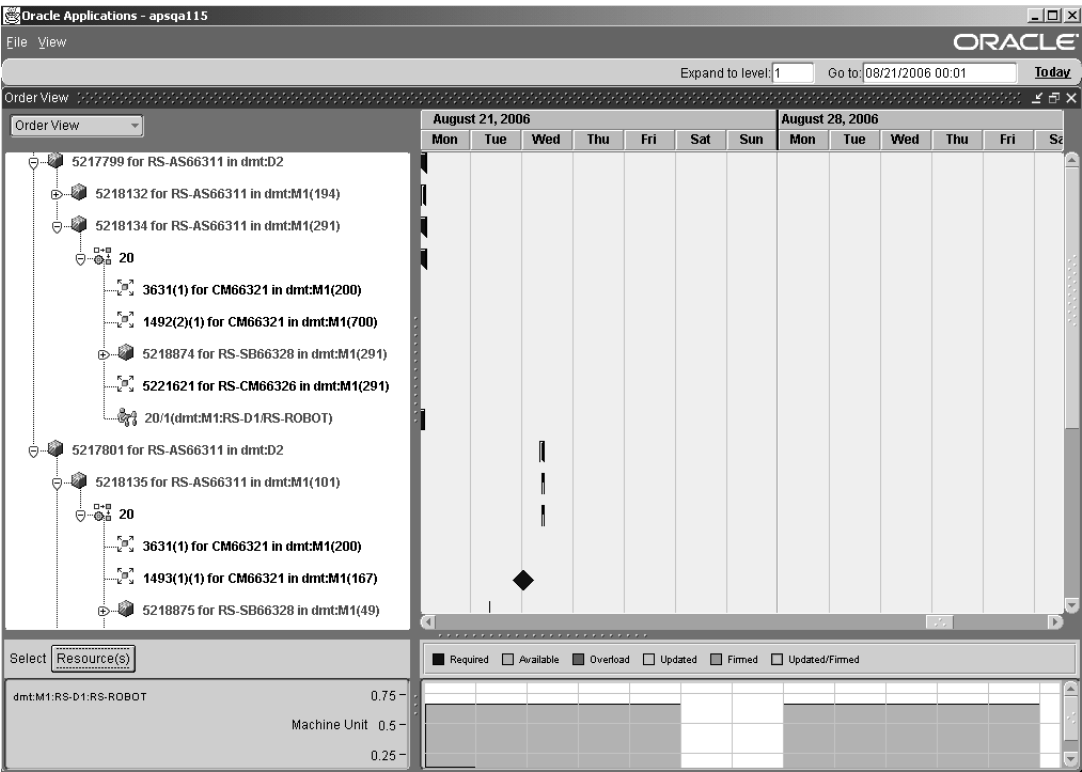
## Gantt Chart Pegging

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/Demand from the drop down menu.  
The Find Supply/Demand window appears.
3. Select Find.
4. Select an item (or items) in the Item column.
5. Right click and select Gantt Chart.  
The Gantt chart appears with the pegging information in the left pane.

Figure10–78 Pegginginformation



Gantt Chart Split Views

Gantt Chart Split Views splits the Gantt Chart into two or four views for the purpose of consolidating information which would otherwise require extensive horizontal or vertical scrolling to compare.

Vertical Split/Merge

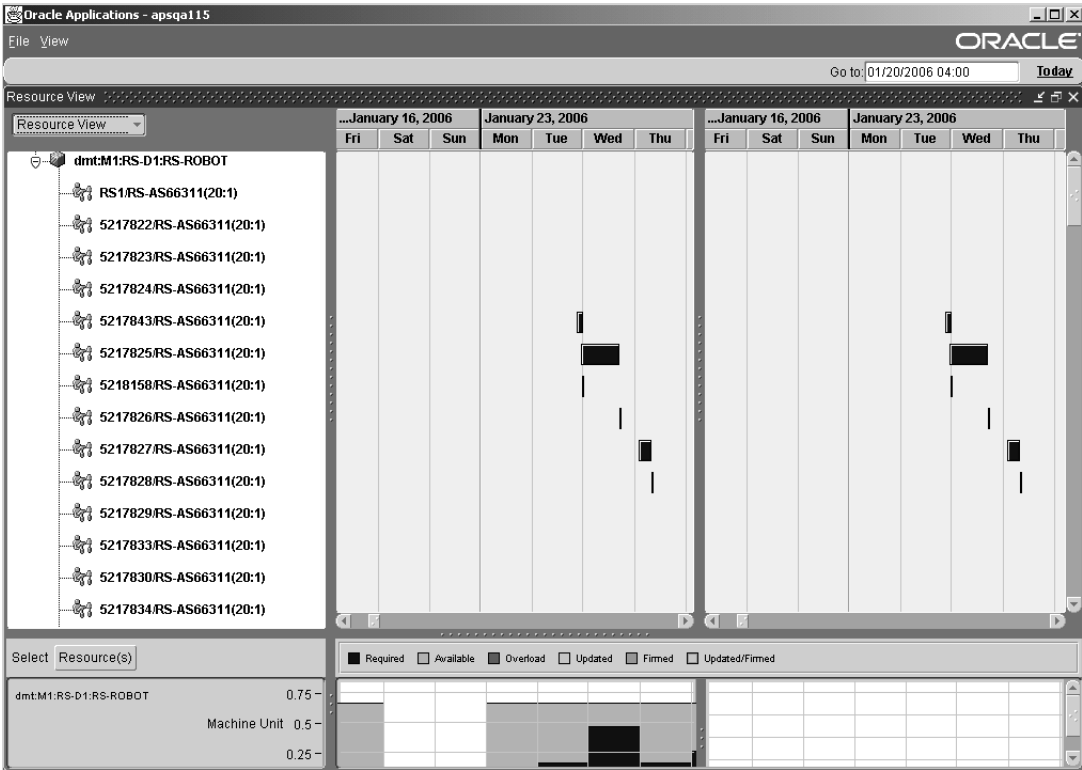
Vertical Split/Merge displays two Gantt Chart views vertically. It is useful for comparing Gantt Chart information that is separated widely on the time scale. Each of the two vertical views has it own independent horizontal scroll bar, and the time scales in each view can be set independently.



**To display a vertical split/merge**

- 1. Navigate to the Gantt chart.  
The Resource-Centric view appears.
- 2. Select View in the Menu bar.  
A drop-down menu appears.
- 3. Select Vertical Split/Merge.  
The information on the right pane is divided vertically.

**Figure 10–79 Vertical Split/Merge**



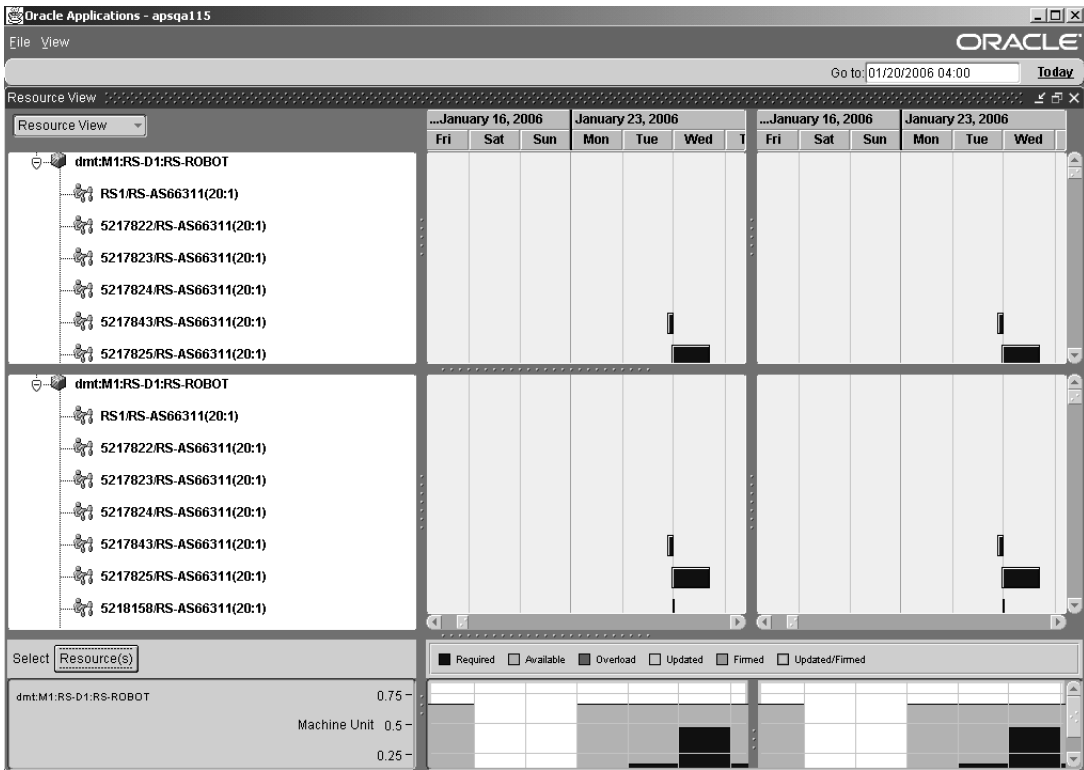
### **Horizontal Split/Merge**

Horizontal Split/Merge displays two Gantt Chart views horizontally. It is useful for comparing resources or operations which would otherwise be separated by a large distance on the Gantt chart vertical axis. Each of the horizontal views has an independent vertical scroll bar.

#### **To display a horizontal split/merge**

1. Navigate to the Gantt chart.  
The Resource-Centric view appears.
2. Select View in the Menu bar.  
A drop-down menu appears.
3. Select Horizontal Split/Merge.  
The information on the right pane is divided horizontally.

Figure 10–80 Horizontal Split/Merge



## Saving Changes

After making changes to a plan in the Gantt Chart you can either save your changes or refresh. Saving changes commits them. Refreshing changes clears them.

## 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.

### Capability

The basic framework of the previous Supply Chain Planning Detail Report has been retained. The report has been implemented in Discoverer 4i, facilitating the manipulation of format. You can invoke the report from a menu and print the worksheets selectively. No additional change or set up in the application is required in order to generate the report. 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 contains six worksheets:

- Plan Details- shows the details of the selected plan from the ASCP plan options screen
- 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. For example, if a report shows material and capacity constraints, you can sort the data on the basis of items or exceptions. 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 other standard Discoverer features which will enable you to flexibly manipulate the reports. For more details on using Discoverer, see the *Oracle Discoverer User's Guide*.

### **To use the Planning Detail Report**

1. Choose the Advanced Supply Chain Planner or the Inventory Planner responsibility.

The Navigator screen appears.

2. Select Reports > Planning Detail Report

The Planning Detail Window appears.

Figure 10–81 Planning Detail Report

Planning Detail Report

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
Among	multiple values are selected	multiple values	n/a

Condition	Definition	From	To
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
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

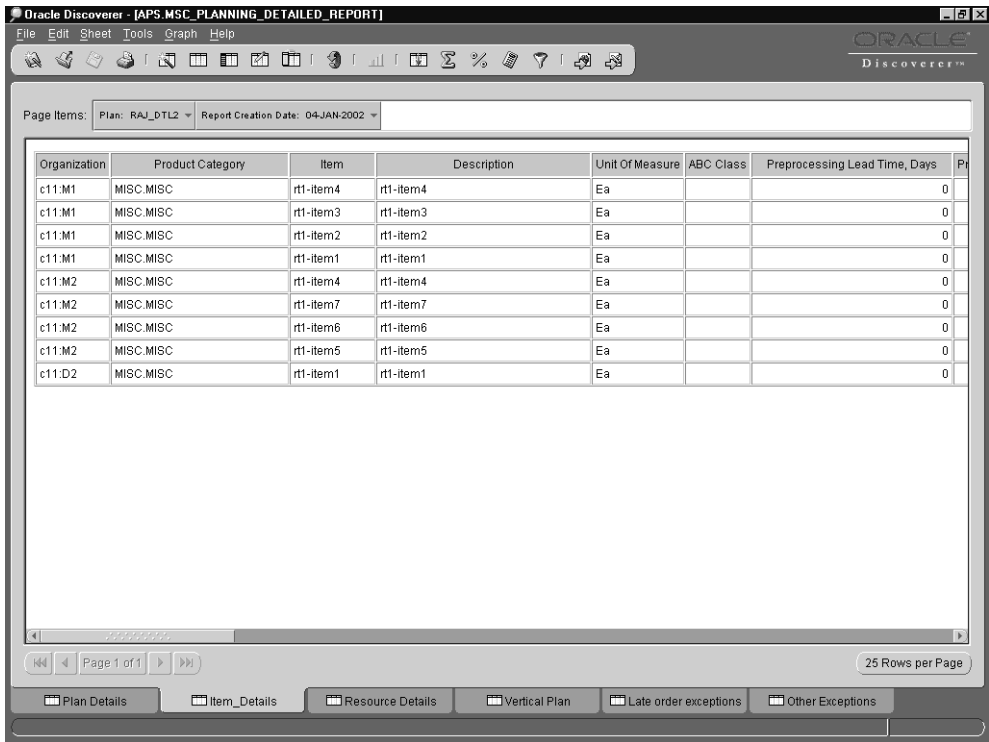
### 3. Select the Go button.

The Planning Detail Report 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.

- 4. Select the Item Details tab to open the Item Details worksheet.

Figure 10–82 Item Details Worksheet

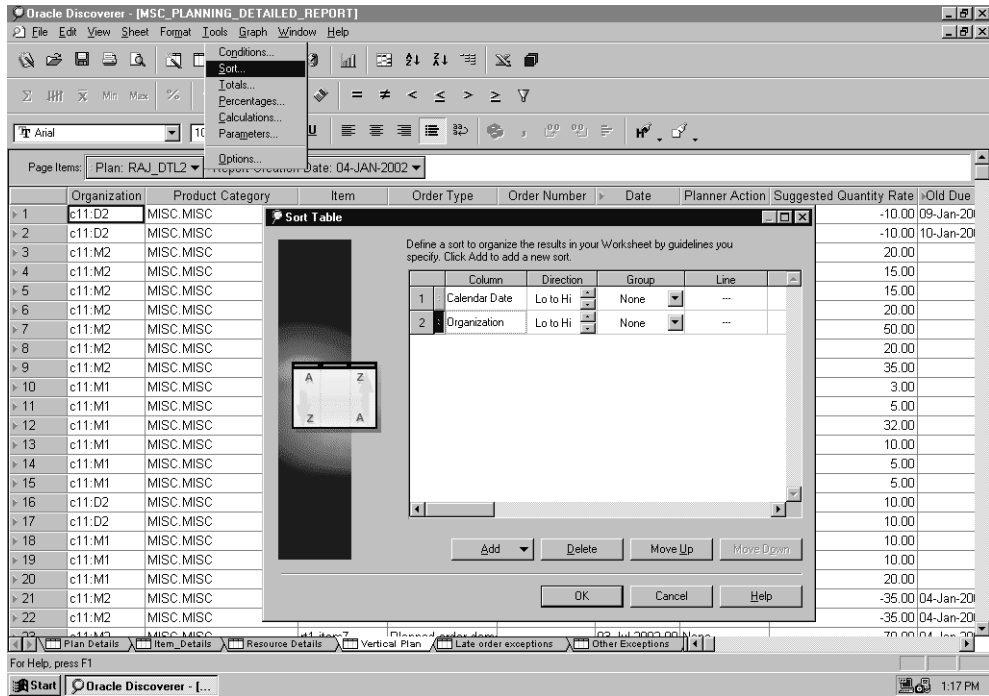


- 5. To sort the data by Organization in Vertical Plan worksheet, select the Vertical Plan tab, then select Tools > Sort

The Sort Table appears. Use this table to change or add the sort parameter and condition.



Figure 10–83 Sort Table



6. To sort the data based on Organizations, select Add and select Organization in the Sort Table.
7. To view the sorted Vertical Plan worksheet, select OK on the Sort Table Window. The sorted Vertical Plan worksheet appears.

Figure 10–84 Vertical Plan worksheet, sorted

	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-item5	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

# 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:

**Table 10–42 Nodes and Tabs Available To Suppliers Modeled as Organizations**

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:

**Table 10–43 Right-Click Menu Options Available to Suppliers Modeled as Organizations**

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
Components	Components

**Table 10–43 Right-Click Menu Options Available to Suppliers Modeled as Organizations**

Function Name	Menu Options
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:

**Table 10–44 Nodes and Tabs Available To Suppliers Modeled as Suppliers**

<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:

**Table 10–45 Right-Click Menu Options Available to Suppliers Modeled as Suppliers**

<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
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



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# Constraint-Based Planning

This chapter includes:

- [Overview of Constraint-Based Planning](#) on page 11-2
- [Constraint Types](#) on page 11-3
- [Enabling and Disabling Constraints](#) on page 11-29
- [Setting Constraints for Different Plan Types](#) on page 11-32
- [Rules Used in Constrained Plans](#) on page 11-33
- [Enforce Demand Due Date Scheduling](#) on page 11-51
- [Engineering Change Orders Use-Up Effectivity](#) on page 11-62
- [Forecast Expiration](#) on page 11-66
- [Sequence Dependent Steps](#) on page 11-71

## 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 and their respective availabilities. This complete picture of the problem provides instant and global visibility to the effects of planning and scheduling decisions throughout the supply chain.

Oracle ASCP supports two types of constraint-based planning: constraint-based planning without optimization and constraint-based planning with 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 [Chapter 8, Optimization](#).



## 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 [Chapter 5, Defining Plans](#) 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
Demands	sales orders/forecasts, demand priority, demand priority rules

## Items

### Bills of Material

You can set effective dates for BOMs. Similarly, you can set effective dates for process effectivity (this is for Oracle OPM only). You will also be able to specify effectivities in the form of effective dates, use ups, model/unit numbers. For more information, see “Effective Date Fields” in the *Oracle Bills of Materials User’s Guide*.

For more information, see “Primary and Alternate Bills of Material” in the *Oracle Bills of Materials User’s Guide*.

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**Note:** Effectivity can be set not only at the date level, but also at the unit number level.

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## 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.

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**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.

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For a pending ECO, you can specify whether to include the engineering changes during the planning process. Set the MRP Active Flag to Yes in the Engineering Change Order window if you want the planning process to consider the engineering changes on the ECO.

Oracle ASCP considers engineering changes when generating component requirements for planned orders and suggested repetitive schedules. The quantity specified by an engineering change order is considered if the scheduled effective date of the ECO is before the suggested start date of the order. For additional information, see [Engineering Change Orders Use-Up Effectivity](#) on page 11-62.

## 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” 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.

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**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.

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## 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*.

## Safety Stock

Safety stock is a quantity of stock you plan to remain in inventory to protect against fluctuations in demand or supply. Safety stock is sometimes referred to as overplanning, forecast, or a market hedge. In the context of master scheduling, safety stock refers to additional inventory planned as protection against forecast errors or short term changes in the backlog. You can specify safety stock days together with safety stock percent as item attributes in Oracle Inventory.

You can establish the default use of safety stock calculation when you define your planning parameters. You can override this option for individual material plans when you generate an MRP or MPS using the Launch window.

When launching the planning process, you can choose whether to calculate safety stock when generating suggested planned orders and repetitive schedules in the Plan Options window. If you choose to run the planning process with the safety stock option, Oracle ASCP looks at each item to determine the method of safety stock calculation. You can define safety stock methods for each item using Oracle Inventory.

For additional information, please see on page 5-24, [Setting Plan Options](#).

**MRP Planned Percent** If you choose a safety stock method of MRP planned percent for an item, safety stock is dynamically calculated during the planning process. For discretely manufactured items, the safety stock quantity is dynamically calculated by multiplying the safety stock percentage you define by the average of gross requirements for a period of time defined by the safety stock days. For repetitively manufactured items, the planning process multiplies the percentage you define by the average daily demand for a given repetitive planning period.

The planning process recalculates the safety stock quantity for each repetitive period in the planning horizon.

**Inventory Methods** Oracle Inventory provides several different methods for calculating safety stock.

The following methods are available within Oracle Inventory for calculating safety stock and are used during the planning process if your safety stock method is Non-MRP planned:

- Mean absolute deviation (MAD)  
Calculate safety stock using the 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 is a user input.
- User-defined percentage  
Calculate safety stock using the percentage you define times the average monthly demand.
- User-defined quantity  
Use a fixed safety stock quantity you define.

Safety stock quantities generated in Oracle Inventory according to effectivity dates are included in planning. Instead of manually changing the user-defined safety stock quantity each time a change is needed, you can now set effectivity dates for when a change in quantity takes place.

## 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.

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**Note:** The planning process ignores order modifiers for items that have a phantom supply type.

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**Note:** Order modifiers for supplied items may be defined by their suppliers.

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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 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.

**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.

**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.

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**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.

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### 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
- Coproduct 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 (M1)**

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.	Include In Cost Rollup	Type	Status
10	1	CM33132	100	1	Up	<input checked="" type="checkbox"/>	Purchased item	Active
20	1	CM33243	100	1	Down	<input checked="" type="checkbox"/>	Purchased item	Active
						<input type="checkbox"/>		
						<input type="checkbox"/>		
						<input type="checkbox"/>		

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:

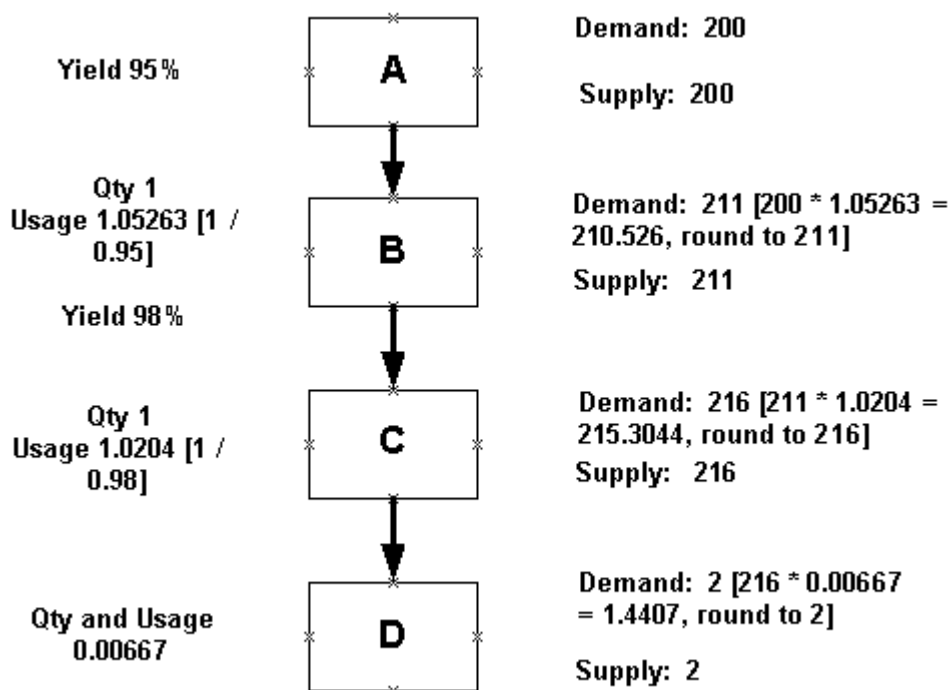
- Material requirement plan, master production schedule, and distribution requirement plan
- Unconstrained, constrained, and optimized plan
- Netting with reservation levels of Projects/Seiban and Planning Groups

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.





### Lead Times

Enter in-transit 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.

For more information, see *Routings in Oracle Bills of Material User's Guide*.

### 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.

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

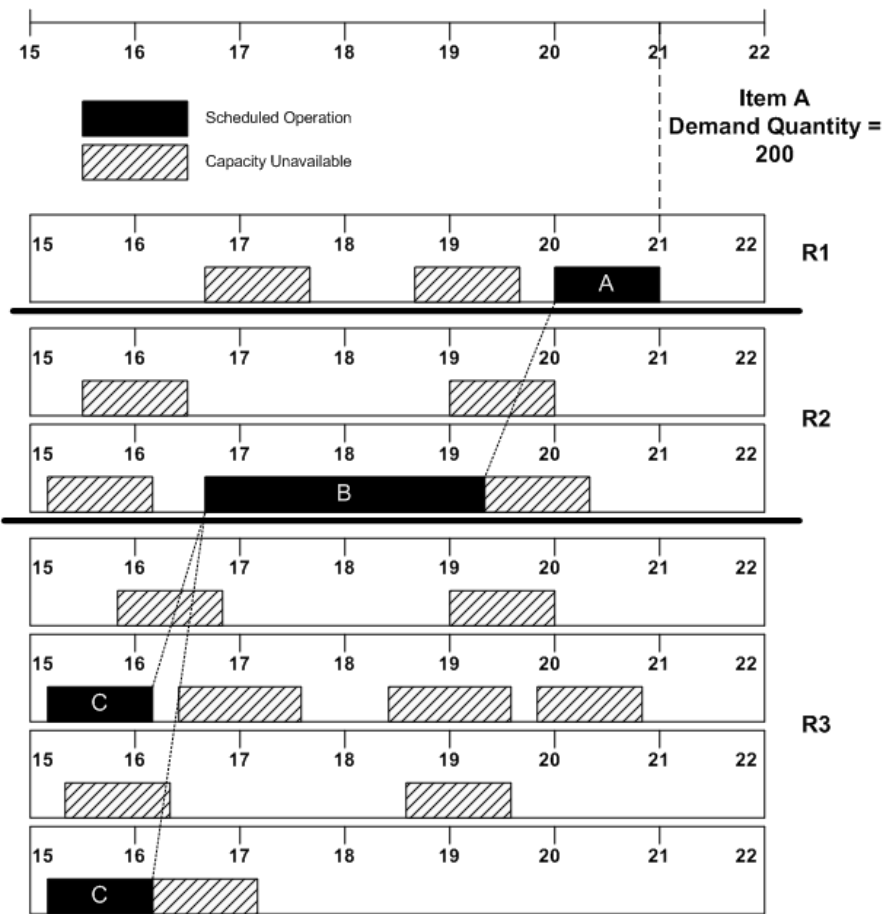
Make C

- 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.

Figure 11–1 Impact on Backward Scheduling With Value Variable

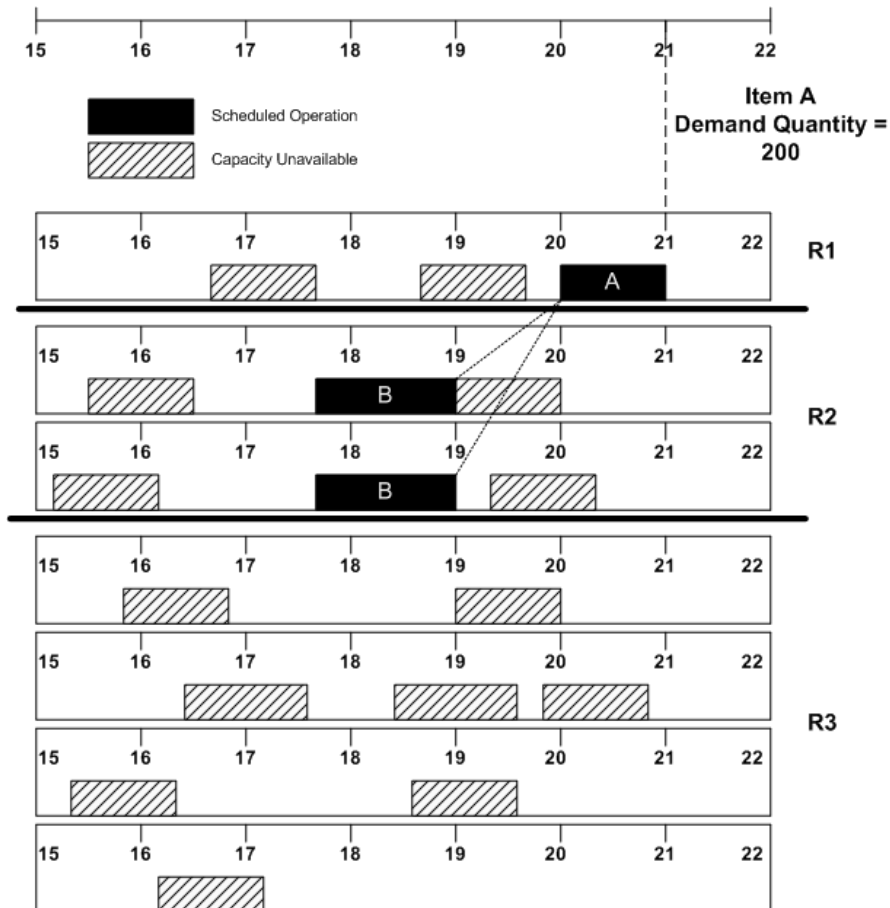


Backward schedule succeeds as the item C is scheduled in the available planning horizon.

**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.

**Figure 11–2 Impact on Backward Scheduling With Value Fixed at Routing Value**

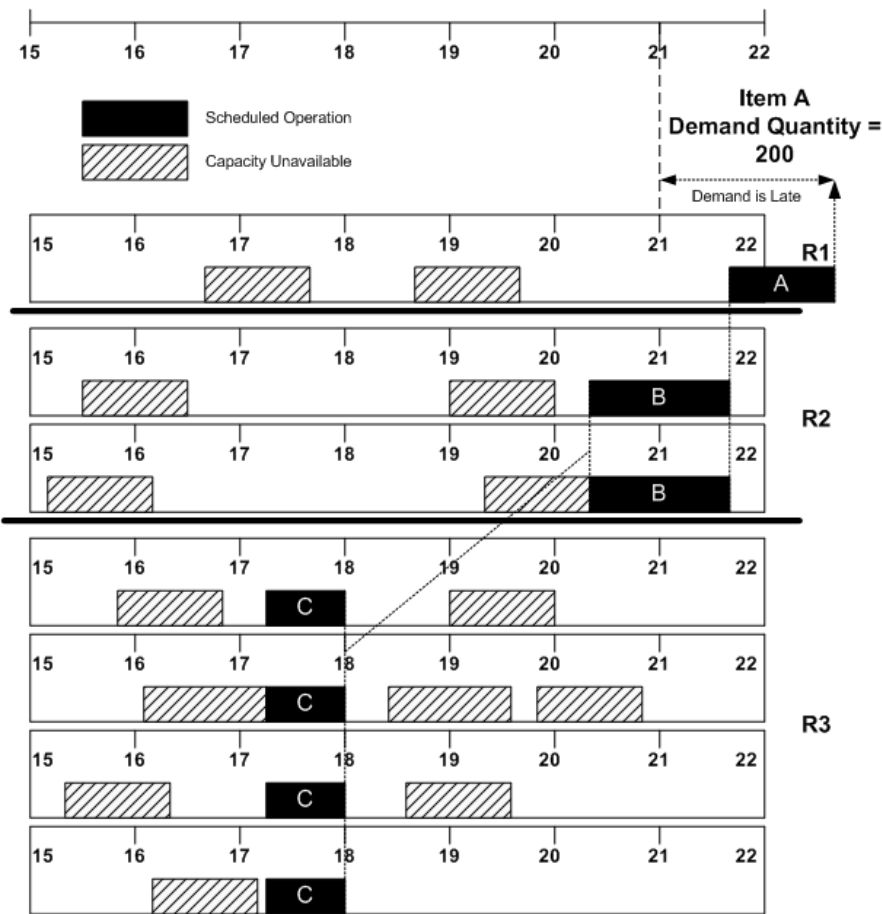


Backward scheduling fails when the profile option MSO: Use of Assigned Units in Scheduling is set to Fixed at Routing Value. There is no date available in the planning horizon to schedule 4 units for resource 3.

### 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.

Figure 11–3 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 (resource 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.

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:

- $\text{Resource availability (shift)} = \text{Capacity units (shift)} * \text{Hours available (shift)}$
- $\text{Resource availability (resource)} = \text{Sum of resource availability for all shifts}$

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—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.

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, un-firm, 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.

**Table 11–1   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.

**Table 11–2   Deflated Resource Usage on Release**

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.

**Table 11–3 Inflated Resource Usage During Collection**

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.

**Table 11–4 Routing**

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%).

**Table 11–5 Planned Order from Oracle Advanced Supply Chain Planning**

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.

**Table 11–6 Discrete Job from Oracle Advanced Supply Chain Planning**

Op Seq	Res Seq	Resource	Usage (hour)	Assigned Units	Start Time	End Time
10	-	-	-	-	0900 hours	1330 hours
-	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.

**Table 11–7 Collected Discrete Job from Oracle Advanced Supply Chain Planning**

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.

**Table 11–8 Discrete Job from Oracle Work in Process**

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 for discrete firm resource usages. During the next planning run, the planning engine correctly calculates the start and end times using the inflated resource usages.

**Table 11–9    Collected Discrete Job from Oracle Work in Process**

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.

**Table 11–10    Collected Firm Discrete Job from Oracle Work in Process**

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
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 [Chapter 6](#), Supply Chain Modeling 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 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.

**Figure 11–4 The Constraints Tab in the Plan Options window**

Plan Options (M1)

Plan: **leg-4**    Optimized with Forecast    Plan Type: **Manufacturing Plan**

Main    Aggregation    Organizations    **Constraints**    Optimization    Decision Rules

☒ Constrained Plan

☐ Enforce Demand Due Dates    ☒ Enforce Capacity Constraints

	Days	Weeks	Periods
Start Date	04-JAN-2002	04-NOV-2002	30-DEC-2002
Buckets	300	4	5
Resource Constraints	Yes	Yes	Yes
Material Constraints	Yes	Yes	Yes

**Scheduling**

Minutes Bucket Size (in Days): 0

Hours Bucket Size (in Days): 0

Days Bucket Size (in Days): 300

☒ Calculate Resource Requirements

Planned Resources: All Resources

Bottleneck Resource Group:

3. Using the drop-down menus, set Resource or Material Constraints to Yes or No based on your business requirements.

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**Note:** To generate exception messages related to material resource capacity, you must select the Constrained Plan checkbox.

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For more information on setting constraints prior to launching plans, see *Defining Plans*.

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**Note:** You cannot update the Start Date and End Date. The End Date is calculated based on your time bucket settings.

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## 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.

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**Note:** You must choose one and only one type of constraint.

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### 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.

Figure 11–5 The Constraints Tab in the Plan Options window

Plan Options (M1)

Plan **leg-4** Optimized with Forecast Plan Type **Manufacturing Plan**

Main Aggregation Organizations **Constraints** Optimization Decision Rules

☒ Constrained Plan

☐ Enforce Demand Due Dates ☒ Enforce Capacity Constraints

	Days	Weeks	Periods
Start Date	04-JAN-2002	04-NOV-2002	30-DEC-2002
Buckets	300	4	5
Resource Constraints	Yes	Yes	Yes
Material Constraints	Yes	Yes	Yes

**Scheduling**

Minutes Bucket Size (in Days) 0

Hours Bucket Size (in Days) 0

Days Bucket Size (in Days) 300

☒ 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 unselected 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.
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, please refer to [Chapter 5](#), Defining Plans and [Chapter 6](#), Supply Chain Modeling.

## 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

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**Note:** When Demand Priorities are not specified, the default priorities of the various demand types are (in order): sales order, forecast, and safety stock.

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- 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

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**Note:** When Demand Priorities are not specified, the default priorities of the various demand types are (in order): sales order, forecast, and safety stock.

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- Alternate BOMs are considered
- Alternate routings are considered
- Substitute items are considered

For additional information, please refer to [User-Defined Alternate Decision Rules](#) on page 16-44.

## 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



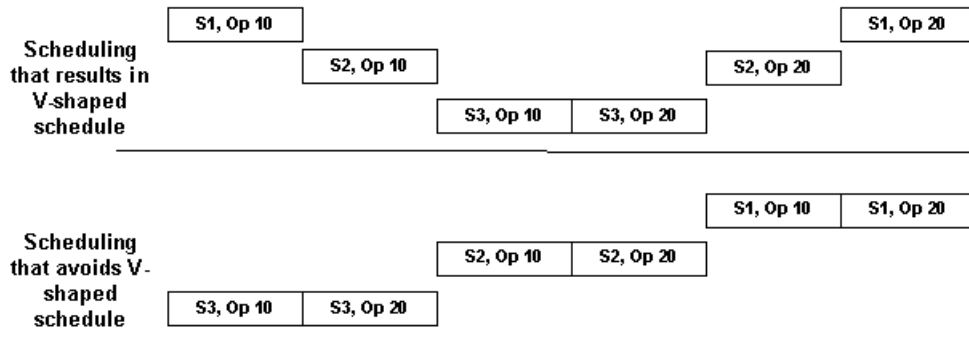
date from the backward pass for each demand; however, if the calculated schedule date for the demand is in the past, it schedule it to start it today.

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.



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.

$$\text{Elongation factor} = (60 - 15) / 60 = 0.75$$

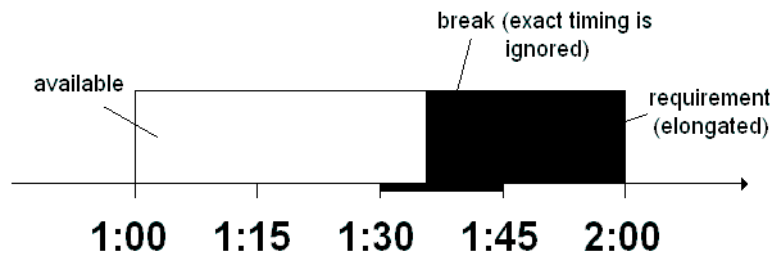
If there is a resource requirement of 18 minutes, due at 2:00, by using the elongation factor, the requirement duration is calculated to be:

$$\text{Requirement duration} = 18 / 0.75 = 24 \text{ minutes}$$

The requirement start time is therefore set to requirement end time (2:00) minus 24 minutes:

$$\text{Requirement start time} = 1:36$$

The following figure is an example of how a resource break is scheduled for when the planning time bucket size is one hour:

**Figure 11–6 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).

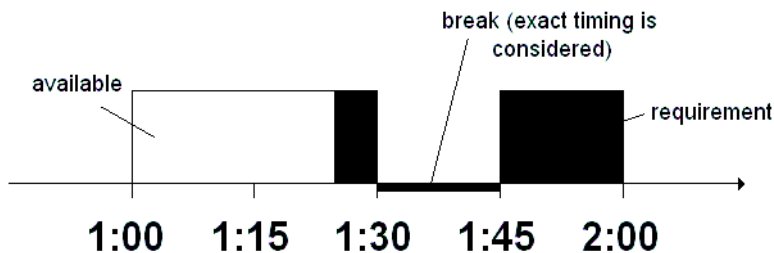
Once again there is a resource requirement of 18 minutes, due at 2:00.

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:

$$\text{Requirement start time} = 1:27$$

The following figure is an example of how a resource break is scheduled for when the planning time bucket size is one minute:

**Figure 11–7 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](#) on page A-32.

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).

## 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.
  - a. Sign in as System Administrator.
  - b. From the Navigator, choose Profile > System.

The Find System Profile Values screen appears.
  - c. Enter your search criteria and select the Find button.

The System Profile Values screen appears.

Figure 11–8 System Profile Values

Profile	Site	Application	Responsibility	User
MSO: Allow Partial Demand Co	All End Demands			

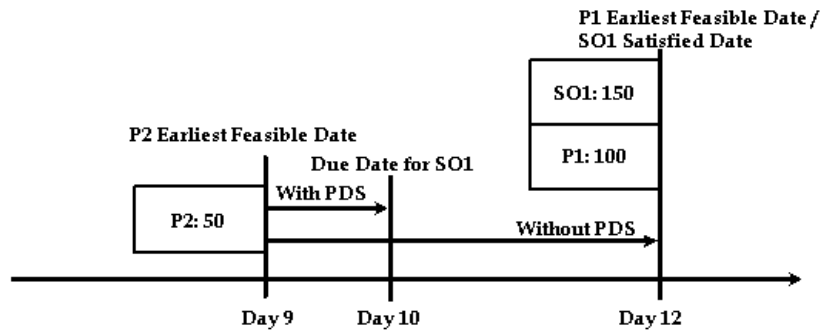
Set the MSO: Allow Partial Demand Completion profile option to any of the following values:

- 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:

**Figure 11–9 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.

**Figure 11–10** *Exception Details form*

**Exception Details (c11:M1)**

Plan **PDS-MRP1** Type **MRP** **PDS Testing Optimized - All end Demands**

Exception	Org	End Item	Quantity	Quantity Satisfied By Due Date	Order Num
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 1a 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.

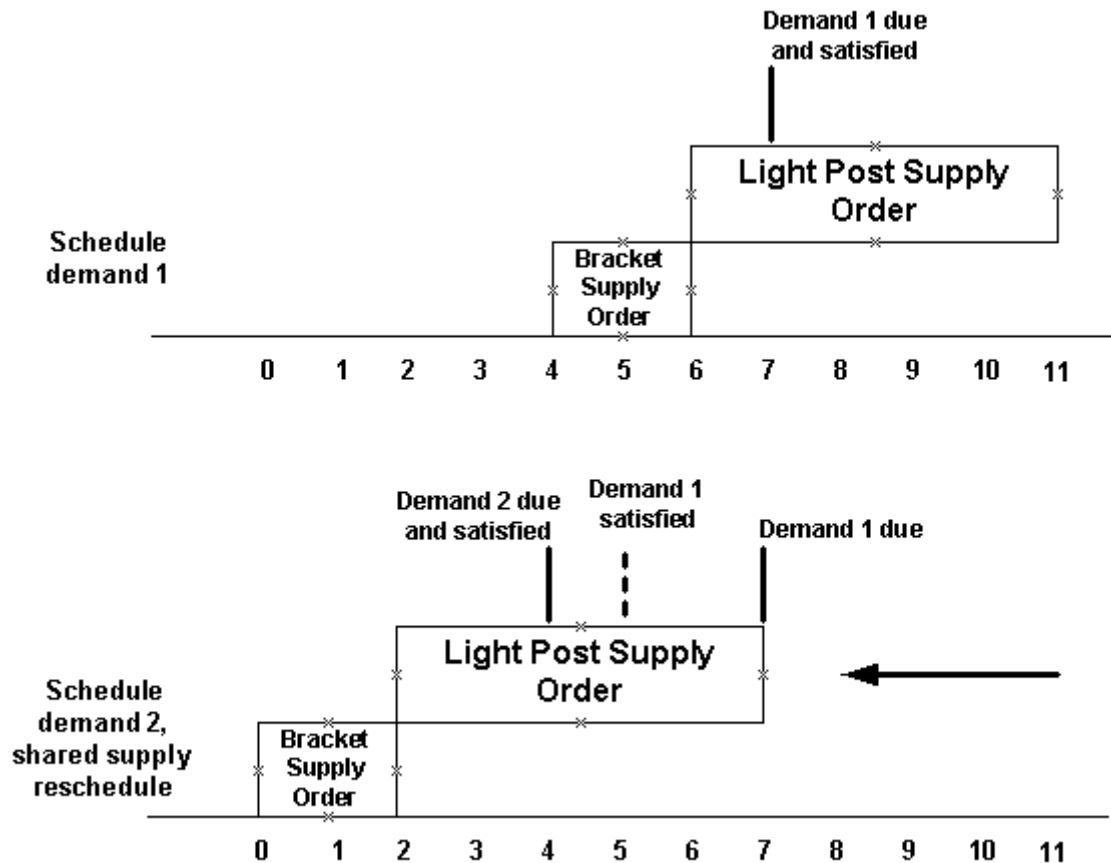
Two demands peg to a shared supply for attaching the brackets. Both demands are in the same demand slice:

- 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.



### 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.

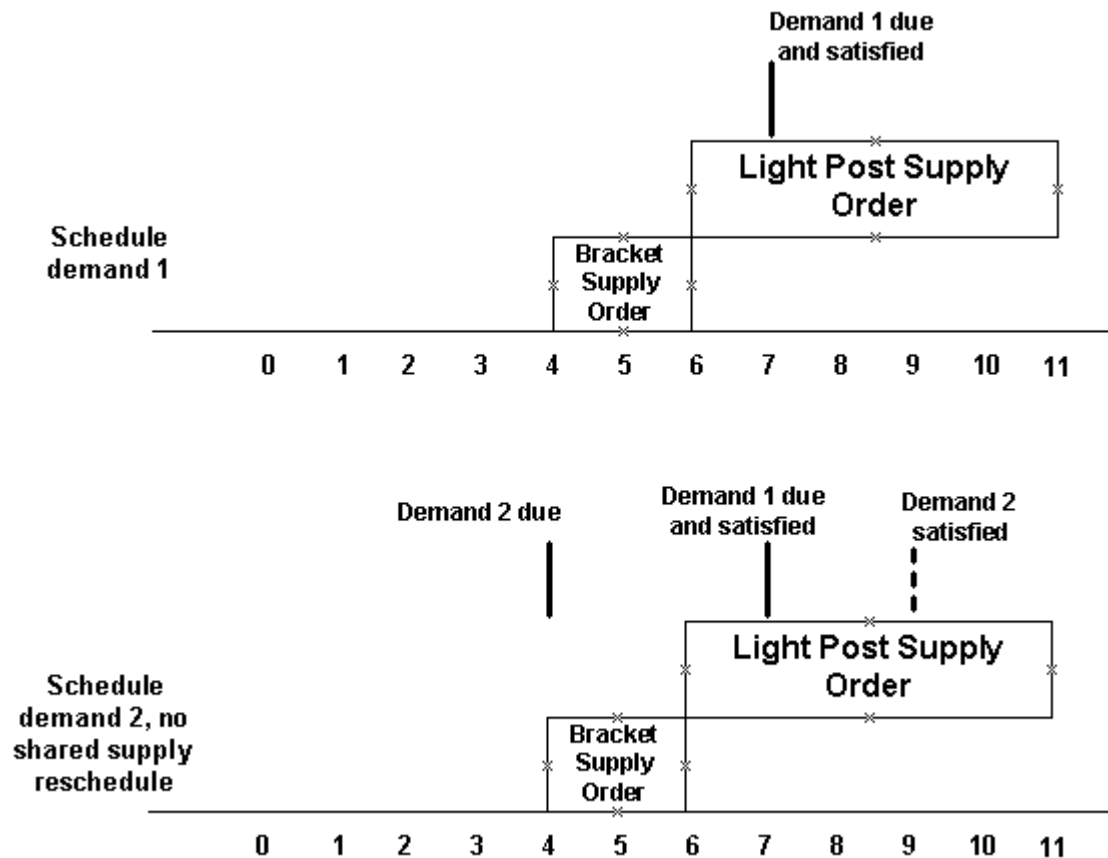
For example, the last process to produce light posts is to have a welder attach a purchased bracket to a light post subassembly. The welder can attach 100 brackets a day.

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.



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 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](#) on 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:

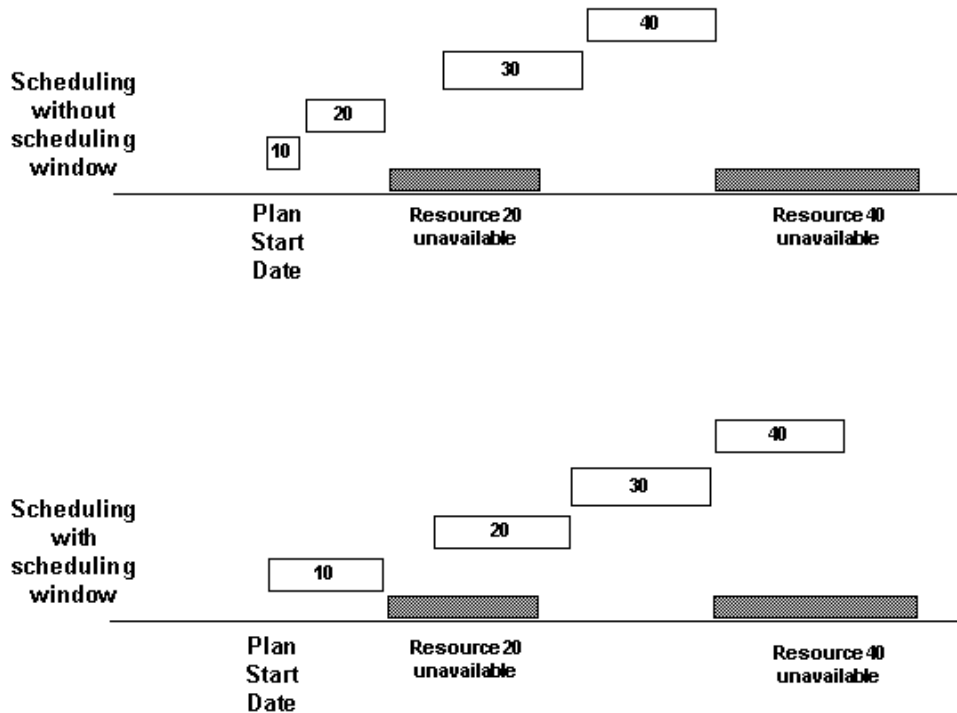
- Does not compress operations beyond their minimum durations unless the demand is due very close to the plan start date
- Tends to overload resources at times when they are unavailable rather than compressing operations into small gaps of available time
- Attempts to create resource overloads evenly 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.

**Figure 11–11 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.

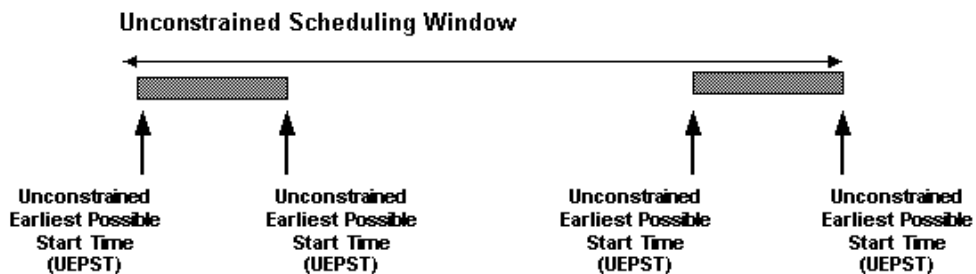
The Unconstrained Earliest Possible Completion Time (UEPCT) = UEPST + Minimum duration of operation

- 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.

**Figure 11–12 Unconstrained Operation Scheduling Window**

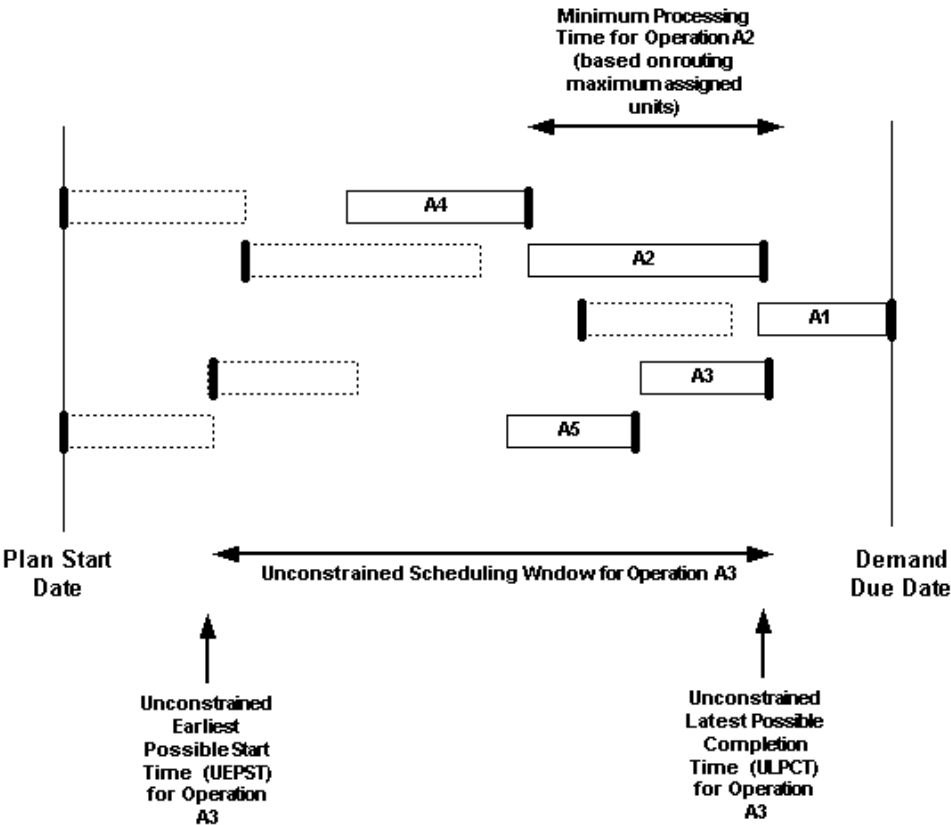


The planning engine finds the UEPST and ULPCT by backward and forward scheduling all activities, considering resource availability and breaks (according to the setting of the profile option MSO: Use Breaks in Calculation of Unconstrained Scheduling Windows), maximum assigned units, precedence constraints, 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.

**Figure 11–13 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 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 inter-related. 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:

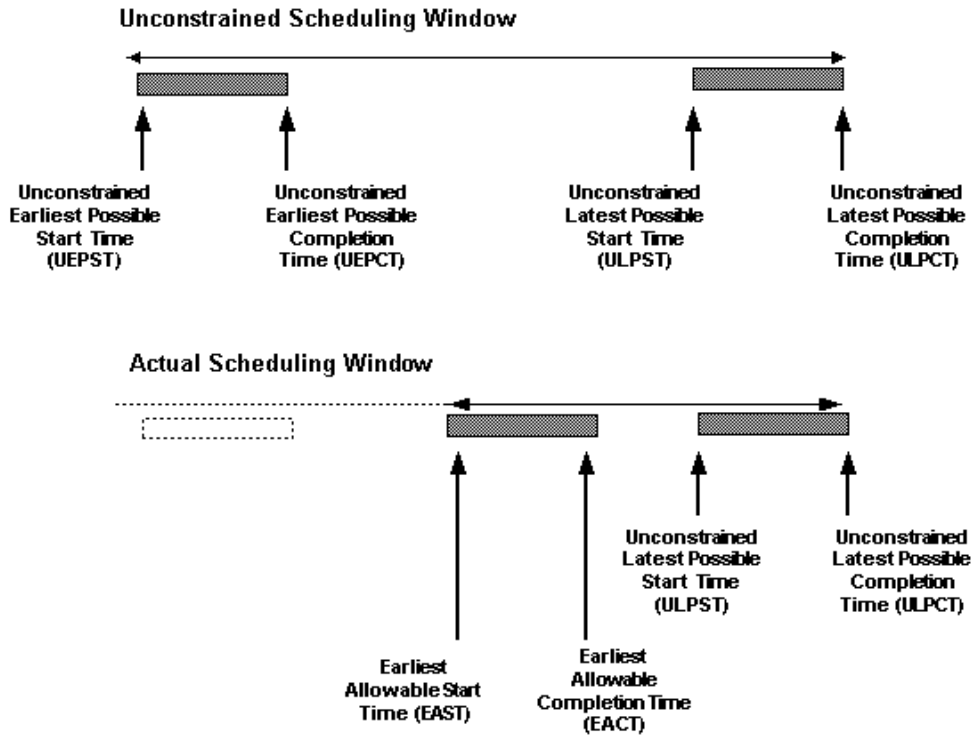
- **Earliest Allowable Completion Time (EACT):** The planning engine never schedules an operation to end earlier than this time. An earlier completion would take time from other activities and possibly cause them to have less slack than is proportional for them.

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.

**Figure 11–14 Unconstrained and Actual Operation Scheduling Windows**

### Scheduling Window Nature

The action that the planning engine takes to schedule an operation depends on the nature of the scheduling window. The nature of scheduling window depends on:

- The time between the plan start date and the demand due date
- The cumulative duration of all supplies and operations that need scheduling to satisfy the demand on time

If the size of the actual scheduling window is the same as or longer then the operation minimum duration, the planning engine schedules it at its minimum duration within the actual scheduling window.

If the size of the actual scheduling window is shorter than the operation minimum duration, the planning engine may compress it and schedules it for the duration of the actual scheduling window. This usually occurs when the demand due date is close to the plan start date and depends on the profile option MSO: Lead Time Control.

If the operation would start or end in the past, the unconstrained scheduling window is non-existent. The planning engine schedules the operations according to the setting of profile option MSO: Lead Time Control.

### **Scheduling Controls**

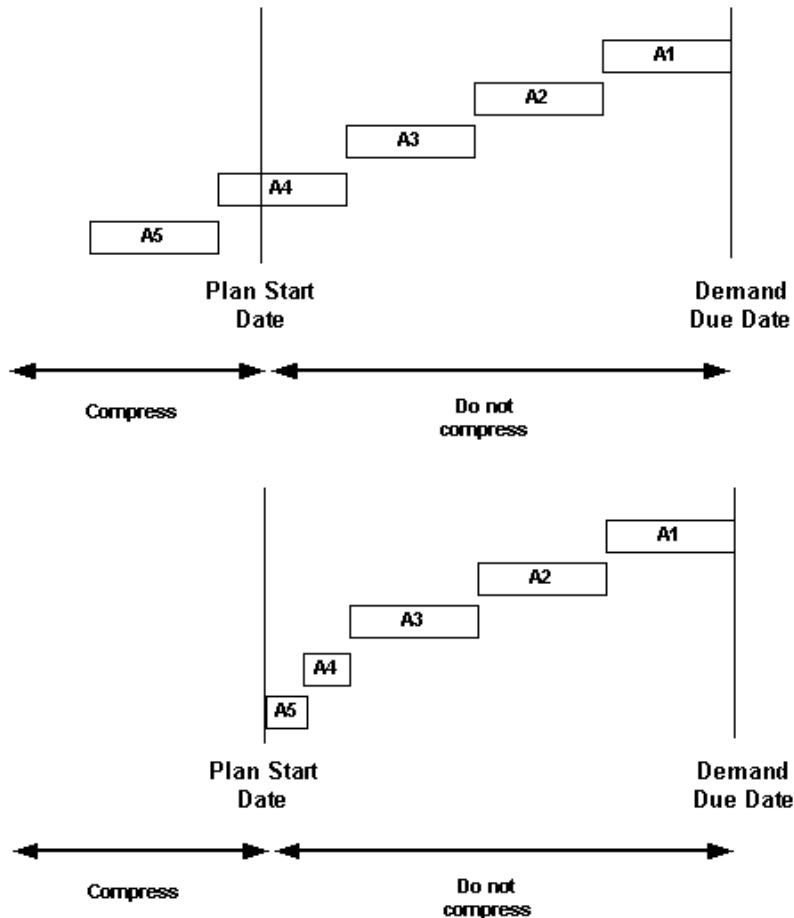
You can control some functions of the planning engine operation scheduling in enforce demand due date plans.

### **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.

**Figure 11–15 Violate Minimum Processing Times Example**

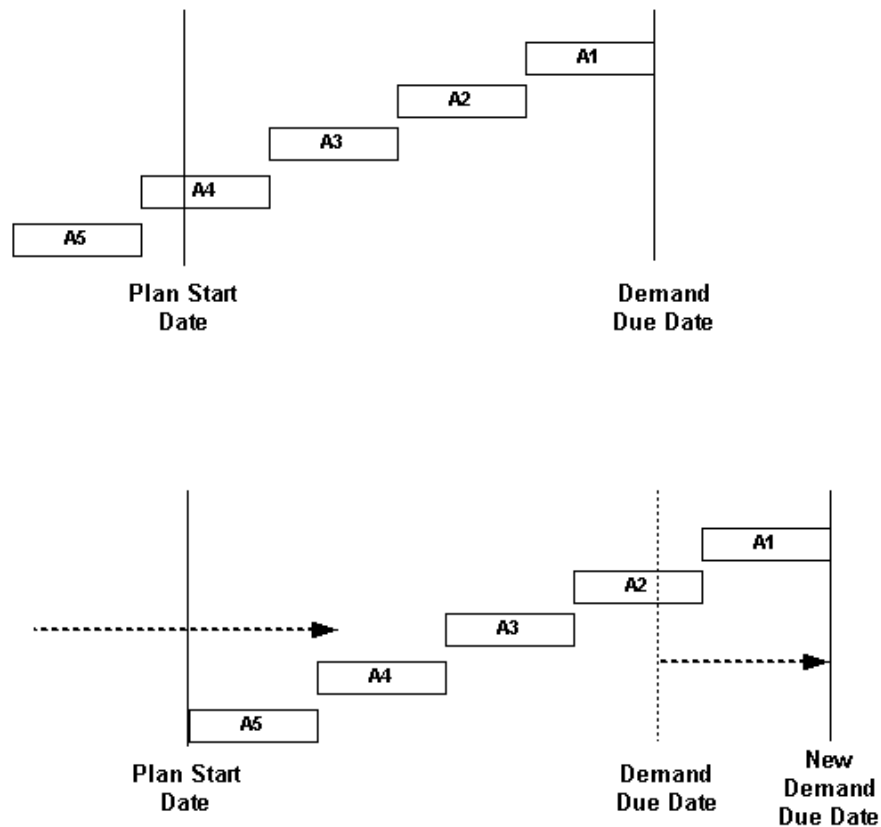
If you select Do not violate minimum processing times, the planning engine does not compress operations, calculates a new demand due date (the demand satisfied date), and reschedules the operations according to the new demand due date. The time between the original demand due date and the new demand 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.

**Figure 11–16 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.

### **Earliest Allowable Completion Time**

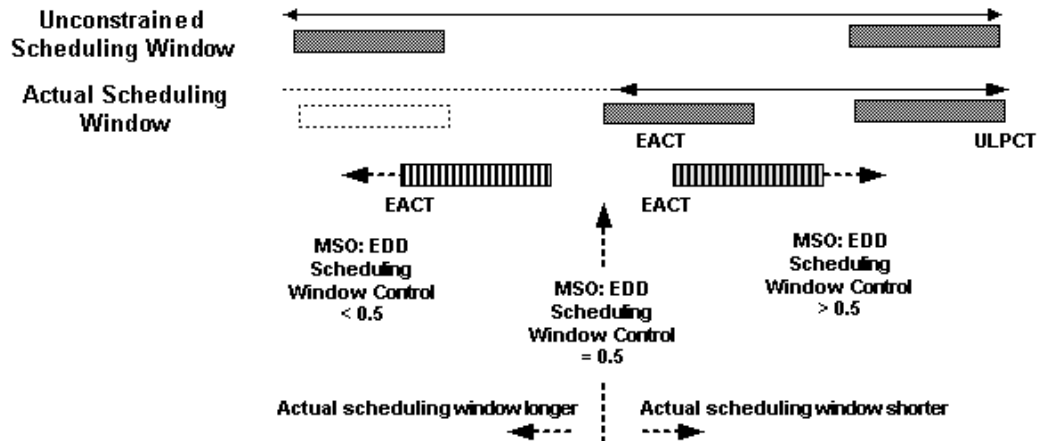
To control the planning engine calculation of Earliest Allowable Completion Time (EACT), set profile option MSO: EDD Scheduling Window Control. The planning engine calculates the optimal size for each operation's actual scheduling window as proportional to its minimum duration and whether or not it is in the critical path. You control the actual size of the actual scheduling window by entering a number between 0 and 1.

If you enter 0.5 (the default), the planning engine sets the actual scheduling window duration to the optimal size.

If you enter an number lower than 0.5, the actual scheduling window becomes larger than the optimal size. This could cause more resource overloads on upstream resources as compared to downstream resources.

If you enter an number higher than 0.5, the actual scheduling window becomes smaller than the optimal size. This could cause more resource overloads on downstream resources as compared to upstream resources.

This diagram shows the effect of different actual scheduling window sizes.

**Figure 11–17 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 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 %.

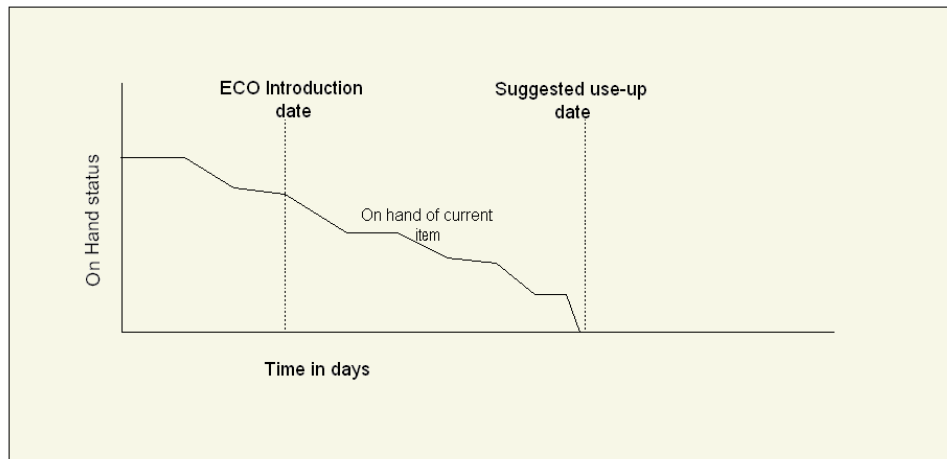
Since scheduling method is not exact, you may see available capacity which appears not used. The planning engine does not reschedule firm activities and, once it begins scheduling, does not usually return to already scheduled operations and resources to look for further opportunities.

## 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.



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.

Figure 11–18 Components window

Org	Item	Component	Effectivity Date	Usage	Alternate Bom	Change Notice
dmt:M2	PC-AT0-0C1	OC99944	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.

**Figure 11–19 Revised Items**

Revised Items (M1) - M1-1001

Main Item Details Dates Use Up Details Routing Details Work In Process Discrete Jobs Cancel Details

Item	Alternate	Item Rev	Description	Routing Rev	Effective Date
PC-AT0-0C1		C			24-APR-2002

Item Description: Sentinel Deluxe Desktop

History Revisions Routing Revisions Operations Components

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.

**Table 11–11   Plan Results With Forecast Expiration**

Entity	Due Date	Days Late	Original Forecast	Expired Demand	Qty/Rate
Forecast	4 November	-	700	100	- 600
Planned Order	4 November	0	-	-	300
Planned Order	4 November	0	-	-	300
Forecast	11 November	-	1000	200	- 800
Planned Order	1 November	-10	-	-	300
Planned Order	11 November	0	-	-	300
Planned Order	17 November	6	-	-	200

**Forecast Expiration Exception Messages**

Forecast expiration does not stop the planning engine from issuing Late replenishment for forecast exception messages. If you want to suppress those messages, set profile option MSO: Late Demands Exceptions Tolerance Minutes to the same length of time as you set profile option MSO: Maximum Allowable Days Late before Forecast Expiration. However, you can set it for any length of time; use quantity 1440 for each whole day.

Whether or not you suppress the exception message, you can sort on Days Late in the Late replenishments for forecast exception details. Sort on Days Late in descending order to review the exception messages outside of the MSO: Maximum Allowable Days Late before Forecast Expiration value.

**Implementing Forecast Expiration**

Use this information to adjust profile options and settings for best forecast expiration performance.

**MSO: Maximum Allowable Days Late**

This profile option interacts with MSO: Maximum Allowable Days Late before Forecast Expiration. It limits the number of days that the planning engine can move

out a demand or unfirmed scheduled receipt in an Optimized plan. You use it only to improve the performance of the optimization component of the memory based planner. Scheduling moves out demands and unfirmed scheduled receipts as long as necessary in the final plan output.

MSO: Maximum Allowable Days Late only applies to sales orders if MSO: Maximum Allowable Days Late before Forecast Expiration has a value. If MSO: Maximum Allowable Days Late before Forecast Expiration does not have a value, MSO: Maximum Allowable Days Late applies to all demands. For production planning purposes, MSO: Maximum Allowable Days Late limits how many days in the future that the planning engine considers alternate sources, end item substitutes, substitute components, alternate bills of material, and alternate routings when the primary method would result in a late supply. Typically, you should set the MSO: Maximum Allowable Days Late to the plan horizon for production plans to make alternate methods available for the entire plan duration. If it has a small value, for example 30, and the planning engine does not select an alternate method within the first 30 days, it selects the primary method. That typically moves the final supply date is pushed out beyond 30 days.

MSO: Maximum Allowable Days Late also impacts forecast expiration when MSO: Maximum Allowable Days Late before Forecast Expiration has a value. MSO: Maximum Allowable Days Late limits the number of days from the demand date that the planning engine reduces capacity for the supply if it is scheduled late. If MSO: Maximum Allowable Days Late has a small value, for example 30, and optimization cannot find capacity for the sales order within 30 days, then it stops looking at later dates. As a result, optimization may not expire forecasts when it should because it has not reduced capacity for sales orders. To avoid this, Oracle recommends that you set MSO: Maximum Allowable Days Late higher than the number of days in the plan horizon.

### **MSO: Queue Time Factor**

The optimization engine uses it to increase lead time when calculating capacity and scheduling supplies. This allows you to produce a more conservative estimate of when capacity is required and raises the amount of expired forecast quantities. Too high a value leaves unused capacity and expires too much of the forecast quantity. This profile option does not affect scheduling.

### **Controlling Late Replenishments**

To control the number of late replenishments beyond the MSO: Maximum Allowable Days Late before Forecast Expiration value, ensure that all of the processing lead time values are good representations of your actual lead times. If

there are many forecasts consistently late and information points to certain resource or material constraints, adjust the processing lead time and retest forecast expiration. Oracle recommends that you complete this tip and monitor forecast expiration performance before considering the next tip.

In addition, you can tune the results by setting profile option MSO: Queue Time Factor to a fraction. For example, if the value is .10, then the planning engine increases all lead times by 10% in all time buckets.

### **Forecast Expiration and Demand Priority**

The planning engine uses demand priority to decide which of these types of demand to expire first. If several eligible demands are in the same bucket with the same demand priority, the planning engine randomly selects the demand to expire first. A forecast entry and a sales order line can be in the same bucket and have the same demand priority. If the planning engine considers the forecast first, it may not post sufficient forecast expiration because it has not considered the sales order.

If you want forecast expiration to consider a certain demand before others, set its priority higher (a lower number) than the priority of the other demands. For proper forecast expiration, Oracle suggests that you use a demand priority rule that includes a date criteria first and then MDS/Sales Order Priority. This insures that:

- Sales orders in a bucket have a higher priority than forecasts in the same bucket.
- The planning engine performs forecast expiration in date sequence, properly balances demand and capacity in each bucket, and displays results that you can understand.

### **Forecast Expiration with Online and Batch Replan**

When running online or batch replan, the planning engine may reset expired demand to the quantity expired in that replan. When this happens, note the following:

- The Planner Workbench Qty/Rate field is not accurate.
- During the online or batch replan, the planning engine has not unexpired any expired forecast quantities. Once the forecast quantities have expired, they remain expired in all future online and batch replans.

For example, during a regenerative plan run, 1000 units expires. A subsequent batch replan expires an additional 100 units. The value in the Expired Demand field is now 100 units, not 1100 units. Original Order Quantity does not change during online or batch replan.

- When you 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 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.

**Table 11–12 Routing**

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%).

**Table 11–13 Planned Order from Oracle Advanced Supply Chain Planning**

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.

**Table 11–14 Discrete Job from Oracle Advanced Supply Chain Planning**

Op Seq	Res Seq	Resource	Usage (hour)	Assigned Units	Start Time	End Time
10	-	-	-	-	0900 hours	1330 hours

**Table 11–14   Discrete Job from Oracle Advanced Supply Chain Planning**

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.

**Table 11–15   Collected Discrete Job from Oracle Advanced Supply Chain Planning**

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

This table shows a discrete job for one unit that you manually created in Oracle Work in Process.

R1 in this job finishes 1.5 hours earlier then the job released from Oracle Advanced Supply Chain Planning because this job does not consider the resource efficiency and utilization.



Table 11–16 Discrete Job from Oracle Work in Process

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.

Table 11–17 Collected Discrete Job from Oracle Work in Process

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.

**Table 11–18    Collected Firm Discrete Job from Oracle Work in Process**

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

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## Planning in Mixed Mode Environments

This chapter includes:

- [Overview of Mixed Mode Manufacturing](#) on page 12-2
- [Common Features in Hybrid Manufacturing Environments](#) on page 12-3
- [Oracle Project Manufacturing](#) on page 12-11
- [Oracle Flow Manufacturing](#) on page 12-32
- [Oracle Process Manufacturing](#) on page 12-35
- [Oracle Shop Floor Management](#) on page 12-46

## Overview of Mixed Mode Manufacturing

Oracle ASCP supports mixed mode manufacturing which 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.

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**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.

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# Common Features in Hybrid Manufacturing Environments

Oracle ASCP includes full support for by-products, co-products, lot expirations, and formula effectivity dates. For repetitive manufacturing, all features in Oracle Applications Release 11 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

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**Note:** The combination of use phantom routings = Y and inherit phantom operation sequence = N is not supported.

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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.

Figure 12–1 Bill of Material Structure for Assembly A

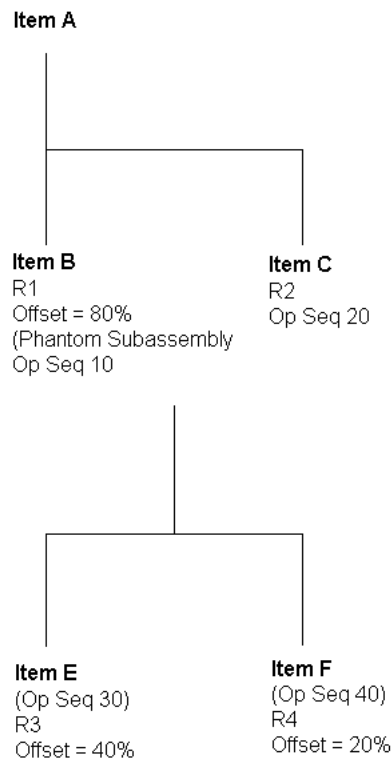


Table 12–1

Release	Use Phantom Routing	Inherit Phantom Op Seq	Behavior
11.0	Yes	Yes	Not supported
11.0	Yes	No	Not supported
11.0	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.

**Table 12–1**

<b>Release</b>	<b>Use Phantom Routing</b>	<b>Inherit Phantom Op Seq</b>	<b>Behavior</b>
11.0	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.
11i	Yes	Yes	Not supported
11i	Yes	No	Not supported
11i	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.
11i	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.

**See also:** [Defining Bills of Material Parameters](#), *Bills of Material User's Guide* and [Phantoms](#), *Bills of Material User's Guide*.

## Utilization Efficiency

Utilization and efficiency are incorporated into Capacity Planning with Oracle ASCP. Routings are used to generate capacity requirements for planned orders and suggested repetitive schedules by the memory-based planner. 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.

The range of values for utilization is 0.0 to 1.0. The range of values for efficiency is zero to infinity. The availability of department resources takes into account the utilization and efficiency of the resource. The net availability is calculated as follows:

Net availability = the number of hours the resource is available \* utilization \* efficiency.

(You can view utilization and efficiency in the Resources window in the Planner Workbench).

**See also:** [Assigning Resources to a Department](#), *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.

**See also:** [Creating a Routing](#), *Oracle Bill of Material User's Guide*

## Simultaneous, Aggregate, and Alternate Resources

The following new flexfields have been added in Oracle Applications to enter data for planning and scheduling. A sample implementation follows the flexfield definitions.

**Aggregate Resource for a Resource** This is defined in the Department Resources form. It is based on the existing flexfield Aggregate Resource Id.

**Simultaneous Resource Sequence** This is defined via a flexfield in the Operation Resources form.

**Alternate Resource for an operation** This is defined via a flexfield in the Operation Resources form.

**Priority of Alternate Resources for an operation** This is defined via a flexfield in the Operation Resources form.



**Priority for Substitute Items** This is defined in the Substitute Components form.

**Cost of using Alternate BOM / Routing** This is defined via a flexfield in the Bills of Material form.

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**Note:** If your source is later than 11.5.3, the first four flexfields have been converted to regular fields and the names given are different. Please refer to *Oracle Bill of Materials User's Guide* and [Chapter 6, Supply Chain Modeling](#).

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### Example

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**Note:** The following example assumes that you are using 11.0 Oracle Application.

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- Assumption: Primary resource has a priority of 0
- Principal Flag: 1 - Yes (primary resource); 2 - No (alternate resource)

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**Note:** When multiple resources are required for the same operation, one and only one must be marked as primary resource.

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In the following table, Resources R1 and R2 are primary resources, and Resource R3 is an alternate for R1.

**Table 12–2 Scenario 1:**

Operation Sequence	Resource Sequence	Resource	Flexfield	Values
10	10	R1	Resource step number	10
10	10	R1	Priority/Group	0
10	10	R1	Principal Flag	1 (Yes)
10	20	R2	Resource step number	20
10	20	R2	Priority/Group	0
10	20	R2	Principal Flag	1 (Yes)

**Table 12–2 Scenario 1:**

Operation Sequence	Resource Sequence	Resource	Flexfield	Values
10	30	R3	Resource step number	10
10	30	R3	Priority/Group	1 (Yes)
10	30	R3	Principal Flag	1 (Yes)

In the following table, R1 and R2 are simultaneous, R3 and R4 are simultaneous, and (R3, R4) is an alternate for (R1, R2).

**Table 12–3 Scenario 2:**

Operation Sequence	Resource Sequence	Resource	Flexfield	Values
10	10	R1	Resource step number	10
10	10	R1	Priority/Group	0
10	10	R1	Principal Flag	1 (Yes)
10	20	R2	Resource step number	10
10	20	R2	Priority/Group	0
10	20	R2	Principal Flag	2 (No)
10	30	R3	Resource step number	10
10	30	R3	Priority/Group	1 (Yes)
10	30	R3	Principal Flag	1 (Yes)
10	40	R4	Resource step number	10
10	40	R4	Priority/Group	1 (Yes)
10	40	R4	Principal Flag	2 (No)

In the following table, R1 and R2 are simultaneous, R3 is sequential, and R4 is an alternate for R2.

**Table 12–4 Scenario 3**

Operation Sequence	Resource Sequence	Resource	Flexfield	Values
10	10	R1	Resource step number	10
10	10	R1	Priority/Group	0
10	10	R1	Principal Flag	1 (Yes)
10	20	R2	Resource step number	10
10	20	R2	Priority/Group	0
10	20	R2	Principal Flag	2 (No)
10	30	R3	Resource step number	30
10	30	R3	Priority/Group	0
10	30	R3	Principal Flag	2 (No)
10	40	R1	Resource step number	10
10	40	R1	Priority/Group	1 (Yes)
10	40	R1	Principal Flag	1 (Yes)
10	50	R4	Resource step number	10
10	50	R4	Priority/Group	1 (Yes)
10	50	R4	Principal Flag	2 (No)

If Resource step number is NULL, the value defaults to Resource sequence. If priority is NULL, the value defaults to the primary priority.

If your source is 11i, the following tables show you the set up required to model alternate and simultaneous resources

In the following table, Resources R1 and R2 are primary resources, and Resource R3 is an alternate for R1.

**Table 12–5 Scenario 4**

Op. Seq.	Res. Seq.	Res.	Sched. Seq	Principal Flag	Resource(Alternate Resource Screen)	Replacement Group(Alternate Resource Screen)	Principal Flag(Alternate Resource Screen)
10	10	R1	10	Checked	R3	1	Checked
10	20	R2	20	Checked	N/A	N/A	N/A

In the following table, Resources R1 and R2 are simultaneous, R3 and R4 are simultaneous, and (R3,R4) is an alternate for (R1,R2).

**Table 12–6 Scenario 5:**

Op. Seq.	Res. Seq.	Res.	Sched. Seq	Principal Flag	Resource(Alternate Resource Screen)	Replacement Group(Alternate Resource Screen)	Principal Flag(Alternate Resource Screen)
10	10	R1	10	Checked	R3	1	Checked
10	10	N/A	N/A	N/A	R4	1	Unchecked
10	20	R2	10	Unchecked	N/A	N/A	N/A

In the following table, Resources R1 and R2 are simultaneous, R3 is sequential, and R4 is an alternate for R2

**Table 12–7 Scenario 6:**

Op. Seq.	Res. Seq.	Res.	Sched. Seq	Principal Flag	Resource(Alternate Resource Screen)	Replacement Group(Alternate Resource Screen)	Principal Flag(Alternate Resource Screen)
10	10	R1	10	Checked	N/A	N/A	N/A
10	20	R2	10	Unchecked	R4	1	Checked
10	30	R3	20	Checked	N/A	N/A	N/A

## 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 an 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.

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**Note:** The project control level for all project manufacturing organizations must be the same for all organizations in the supply chain project planning scenario.

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## 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.

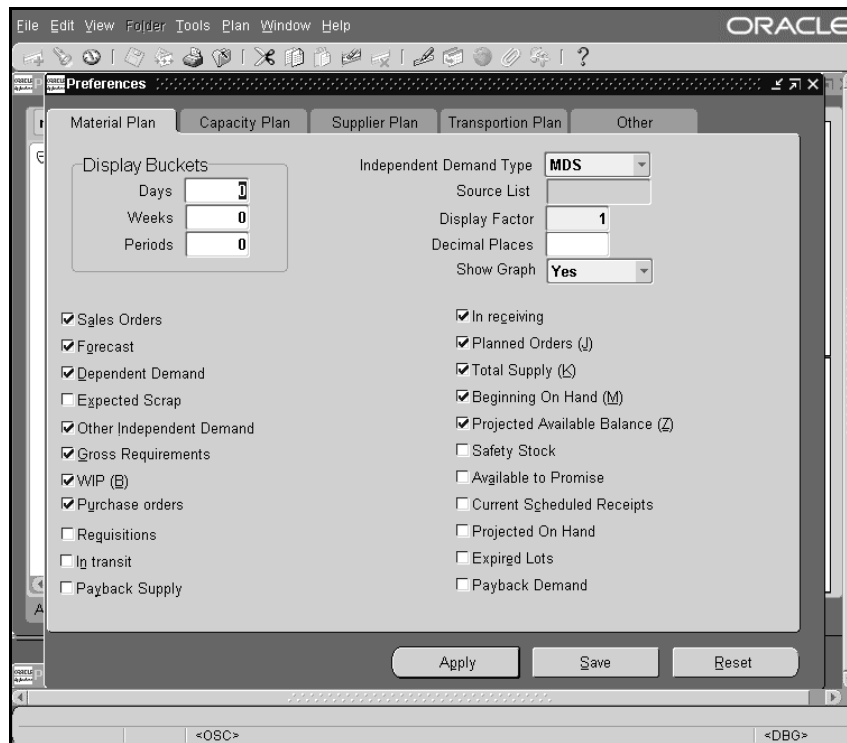
### **Planner Workbench**

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.



**Figure 12–2 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.

## **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.

**Figure 12–3 Supply/Demand for Unit Effective Items**

Oracle Planner Workbench (11i:P2) - Supply/Demand (11i:P1)

Plan: MUNE-APS | Material Cons Only | Type: MRP

Order | Release Properties | Sourcing | Line | Project

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

Pegging | Release | Select All For Release

<OSC>

## **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 plans safety stock for organization items with:

- Non-MRP planned safety stock
- MRP planned safety stock

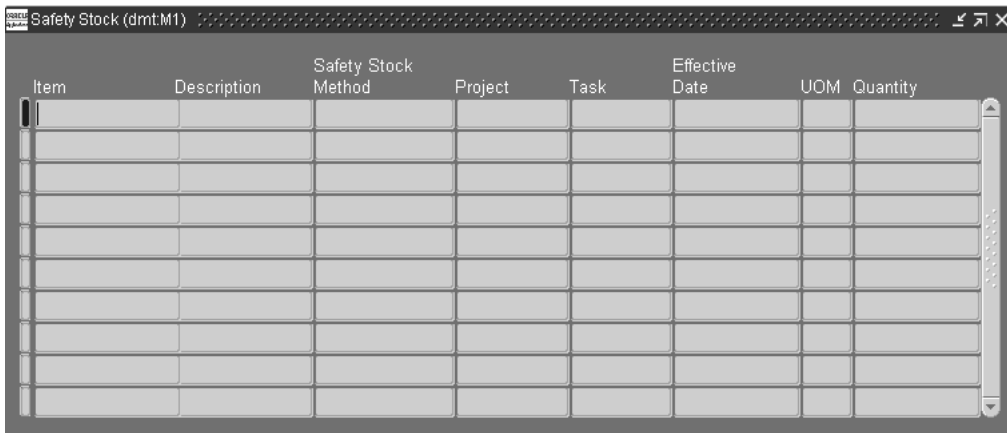
For safety stock information, see [Constraint Types](#) on page 11-3.

You can see safety stock information with project/task references in the:

- Planner Workbench, Horizontal Plan window, Projects view; see [Horizontal Plan](#) on page 10-70: 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](#) on page 10-102: 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 Using the Drill Down Windows.



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

**Table 12–8 Item A7 Project Safety Stock Calculations**

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

**Table 12–9 Item A7 Planning Group Safety Stock Calculations**

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

**Table 12–10 Item A7 Project-Task Safety Stock Calculations**

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)	-

**Table 12–10 Item A7 Project-Task Safety Stock Calculations**

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

**Table 12–11 Item A7 Soft-pegging Safety Stock Calculations**

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
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 ( $18 * 0.1 = 1.8$ )

**Table 12–12 Item A7 MRP-planned Safety Stock Calculations**

Schedule Entity	20	21	22	23	24	25
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)

**Table 12–12 Item A7 MRP-planned Safety Stock Calculations**

Schedule Entity	20	21	22	23	24	25
Projected available balance	2 (P1)	3 (P1)	4 (P1)	4 (P1)	4 (P1)	4 (P1)
		2 (P2)	2 (P2)	3 (P2)	3 (P2)	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

## 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.

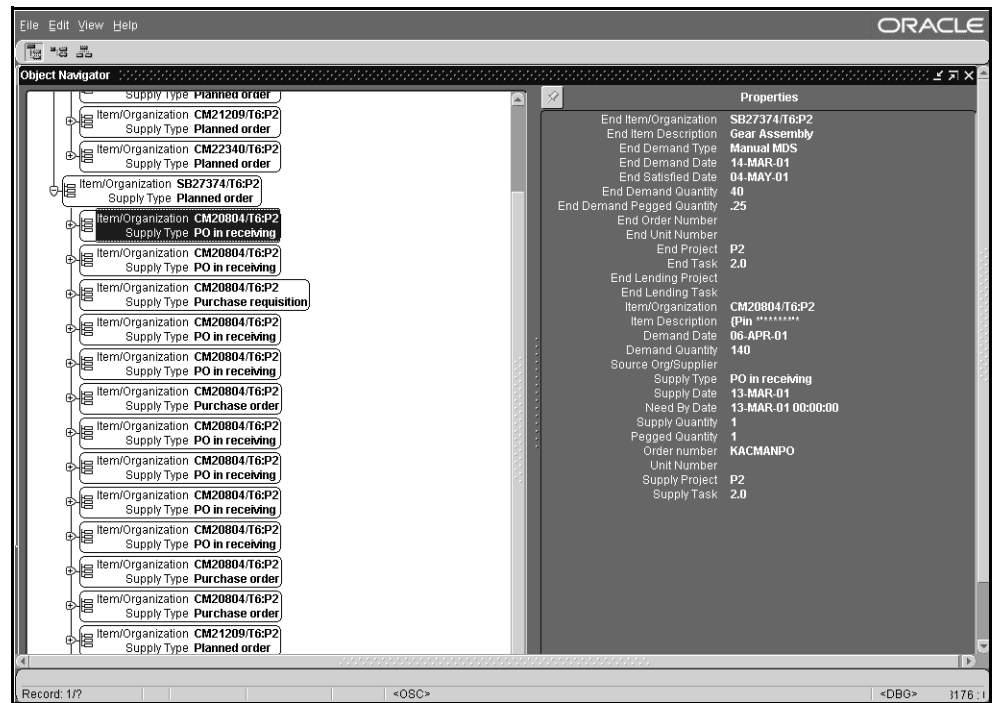
Oracle ASCP Setup

- 1. Define Plan Options by choosing Tools > Pegging.
- 2. Complete the following options in the Pegging window.

Table 12–13

Option	Description
Reservation Level	<p>This option determines the method of pre-allocation of project supply to project demand. You can choose to reserve based on:</p> <ul style="list-style-type: none"><li>■ Planning Group 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.</li><li>■ Project 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.</li><li>■ Task 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.</li><li>■ None This is a nonproject plan.</li></ul>
Hard pegging level	<p>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>

Figure 12–4 The Pegging window



### 3. Launch a plan.

Refer to [Chapter 5](#), Defining Plans for more information on defining plan options and launching plans.

## 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.

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**Note:** Order modifiers are applied before project netting calculations.

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## **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.

Oracle ASCP continues to support features in Oracle Flow Applications Release 11.0.

## 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.

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**Note:** You need to run the Push Plan Information concurrent program to see planned orders as valid inputs for flow schedules.

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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

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.

**See also:** 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.

**See also:** Line Design and Balancing Procedures, Flow Manufacturing Line Balance, Defining Flow Manufacturing Standard Processes, Defining Flow Manufacturing Standard Events, and Defining Flow Manufacturing Standard Line Operations, in *Oracle Flow Manufacturing User's 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.

**See also:** 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 User's Guide*.

## Product Families

Flow uses product families to plan at an aggregate level. Oracle ASCP supports product family items. You can define different planning horizons for product families or item level. Resources can be planned at the product family level.

**See also:** Products and Parts Setup, *Oracle Flow Manufacturing Implementation Guide* and [Assigning Product Family Members](#), *Oracle Bills of Material User's Guide*.

## 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.

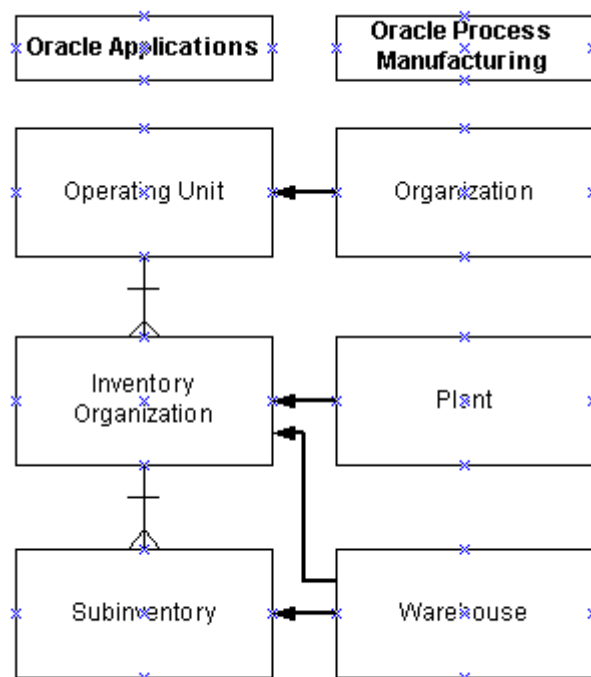
The data used to plan materials and capacity exists in the OPM schema. This data is used by the Oracle ASCP Planning Server. Oracle ASCP uses Inventory, Production, Formula, Planning, and Sales data from OPM and purchasing data from Oracle Applications. The user can run multiple plans and manage materials and resources. Once satisfied with the plan, it can be executed in the Production Module.

The following changes have been made to the existing methodology:

- No need to execute OPM P/MRP
- Outside vendor for finite scheduling no longer needed
- All Planning Activities can be on a Separate Server
- Plans are no longer restricted to material planning
- OPM structure mimics Apps Organization Structure

## Merged Organization Structure

The OPM structure merges with the Oracle Applications structure, as shown.

**Figure 12–5 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 sub-inventory 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 sub-inventory 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 effectivities in OPM allow 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 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
- Plant warehouse effectivities
- 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 byproducts 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.)

## 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.

## Plant/Warehouse Relationships

Plant warehouse effectivities are also known as plant/warehouse relationships. Plant warehouse effectivities specify the warehouses from which a plant consumes each item when it is used as an ingredient in a batch. They also specify the warehouses that a plant replenishes with each item when the item is a product of a batch.

On the Plant Warehouses form (the navigation path to this screen in the OPM application is OPM > Planning > Capacity Planning > Setup > Plant Resources), if the Warehouse Item field is left blank for a particular warehouse, then any item can be consumed from or replenished to that warehouse. This is called a global rule.

The plant warehouse effectivity item consumption and replenishment rules are enforced by Oracle ASCP for both global and warehouse items. Setting global rules increases the amount of data transferred because all warehouse item data is transferred, regardless of whether or not the warehouse items are actually consumed or replenished from the warehouse.

You can transfer items between warehouses as long as the item is defined in plant warehouse effectivities as a global or a specific rule. The consumption and replenishment indicators for the item/warehouse combination can be turned off and the item/warehouse combination can still be considered for transfers.

## 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.

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**Note:** Because one forecast can be used in multiple MPS schedules, be careful not to duplicate the demand for an item in a warehouse.

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### 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 leadtime 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 Onhand 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.

## 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](#) on page 10-188 to select and release planned orders from



Planner's Work Bench. 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 can pass job name, job start and completion dates, start quantity, BOM and Routing designators, demand class, and WIP class, etc. Oracle ASCP treats Lot-Based Jobs as valid supplies in the planning engine. You can pass the demand for the components of the assembly from Lot-Based Jobs, and calculate resource requirements. 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.

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**Note:** Lot-based Jobs are referred to as Discrete Jobs in the Planner's Work Bench

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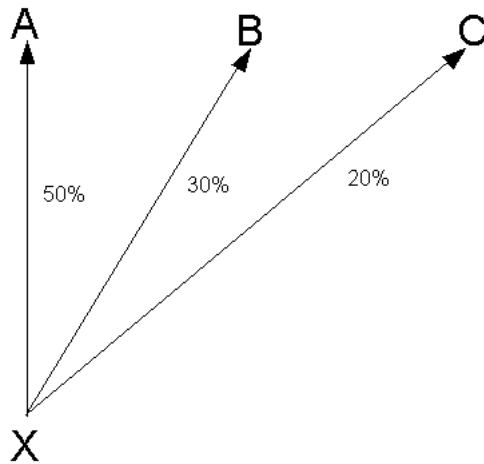
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## Coproducts

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 Support in Planning**

With APS and OSFM integration, you can calculate supply for multiple assemblies based on the demand for any one of the possible coproduct assemblies. You can generate and release planned orders for the assembly for which you realized demand. You can view coproduct supplies being generated for the rest of the items in coproduct relationship. This enables you to track the production for all the coproducts. The same applies if the planned order is converted into a lot-based job.

Oracle ASCP collection program collects the coproducts information into the planning server which is then used by the planning engine.

Referring to figure above, if you intend to produce 10 units of assembly A, you work with a supply of 20 units of X (i.e.,  $10/0.5$ ) to come up with 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 demand for item X is 20. You can consider any component level yield while passing the demand to item X. Please note that the supplies to be generated for B and C are of the type Planned order coproduct/byproduct and the supply generated for A is a planned order. In other words, you will see planned order for the item against which you realized the demand and Planned order

coproduct/byproduct for other items in the coproduct list as defined in coproduct definition. Planned order coproduct/byproduct is treated as a valid supply and open for allocation for any demand for the respective items.

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**Note:** Due to the nature of level by level and item by item planning, in some circumstances you may not be able to fully utilize the Planned order coproduct/byproduct supply.

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The table below shows the supply/demand picture as a result of demand for A for 10 units as described above.

Demand or Supply	Day 10	Day 25	Day 35
Demand(A)	0	10	0
Supply(A)	0	10	0
Demand(B)	0	0	0
Supply(B)	0	6	0
Demand(C)	0	0	0
Supply(C)	0	4	0

The next table shows the supply/demand picture after you get independent demand of 2 units for assembly B, on Day 35.

Demand or Supply	Day 10	Day 25	Day 35
Demand(A)	0	10	0
Supply(A)	0	10	0
Demand(B)	0	0	2
Supply(B)	0	6	0
Demand(C)	0	0	0
Supply(C)	0	4	0

The next table shows the supply/demand picture after you get independent demand of 10 units for assembly C on Day 10. Please note that Planned order

Coproduct/Byproduct supply is not moved in or out to support demands, and Planned order Coproduct/Byproduct supply is treated as firm.

Demand or Supply	Day 10	Day 25	Day 35
Demand(A)	0	10	0
Supply(A)	25	10	0
Demand(B)	0	0	2
Supply(B)	15	6	0
Demand(C)	10	0	0
Supply(C)	10	4	0

**Planned Order Released Qty. for Coproducts:** Referring to the first table, if you release the planned order for assembly A, the system creates a Lot-Based Job with a quantity of 20 to account for the production of A, B, and C with 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, Oracle ASCP snapshots a supply of 10 units for assembly A and maintains Discrete Job coproduct/byproduct supply for B and C for 6 and 4 respectively. If for some reason you do not wish to create and maintain Discrete Job coproduct/byproduct supplies, you have control over this at the Job level. The Coproducts supply flag at the Job determines if you need to create the Discrete Job coproduct/byproduct supply.

**Coproducts Support in Order Promising**

You can consider coproduct supplies as valid supplies for order promising as long as the demand is later than the coproduct supply date. In the example above, if you get an order for B on day 35, the coproduct supply of 6 units on day 25 should be considered as a valid supply. At the same time, if you get any orders for B or C prior to day 25, you cannot use the coproduct supplies on day 25 as valid supplies.

If you get an order for A for 15 on day 25, there are only 10 of A available. If you perform capable-to-promise, Order Promising checks the availability of X for quantity of 10 in order to come up with 5 units of supply for A. If there is enough X available, Order Promising creates 5 units of supply for A, 3 units for B, and 2 units for C.

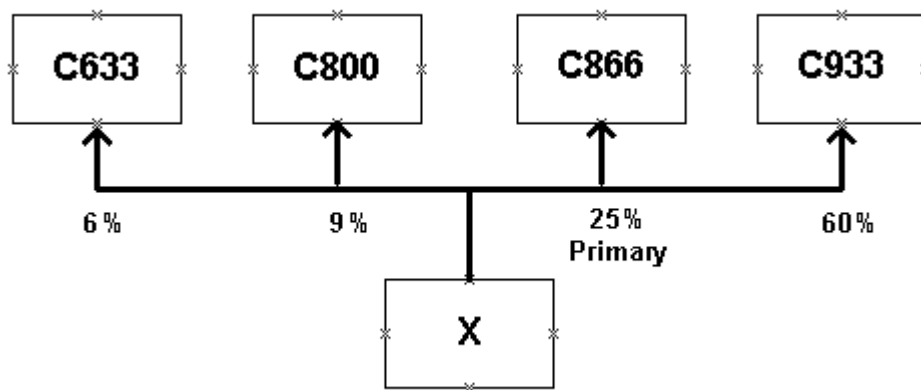
## Requirement Integer Quantities

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 coproduct 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 coproducts as the primary coproduct. The planning engine increases the primary coproduct requirements and decreases the other coproduct requirements to balance the rounding. It creates at least a quantity of 1 for each coproduct

This diagram shows a coproduct bill of material.



All coproducts are marked Enforce Integer Req either Up or Down.

The planning engine receives demand for 25 C933.

It calculates requirements for X as 42 [ $25 * 0.6 = 41.666$ , round to 42].

It calculates requirements for the coproducts:

- 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 coproducts:

- 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 coproduct requirements equal the supply of 42:

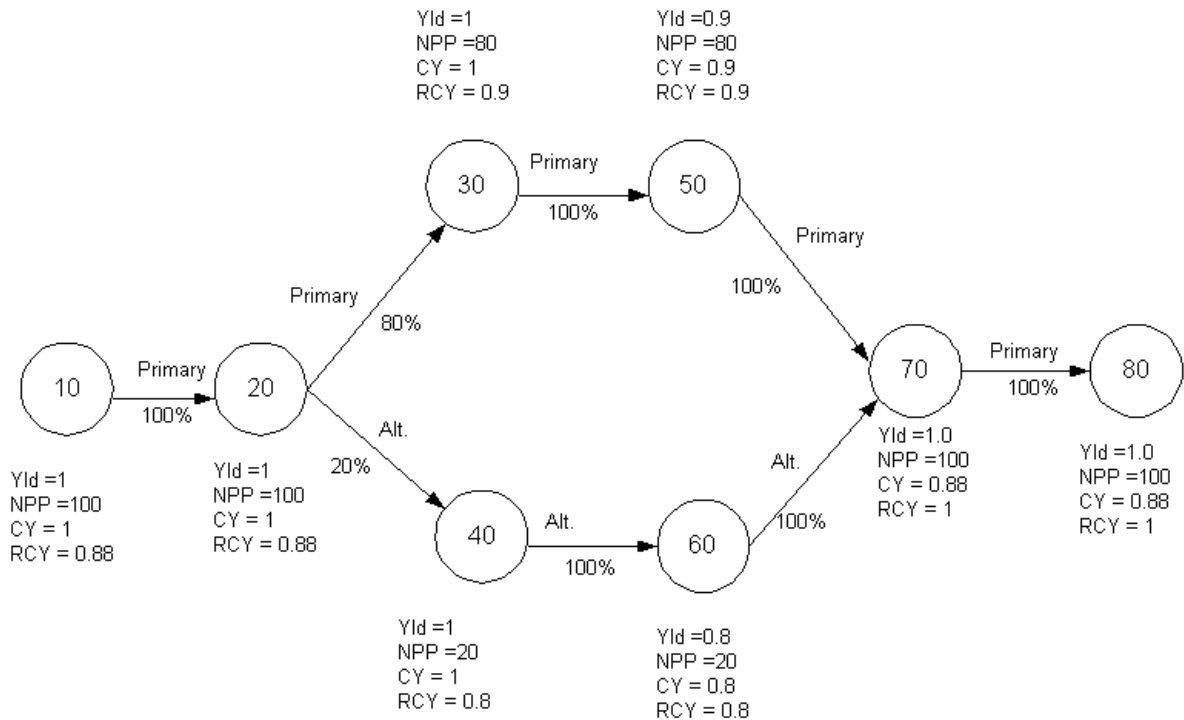
- C633: 2
- C800: 3
- C866: 12
- C933: 25

If the demand is for the primary coproduct, the planning engine rounds down all of the other coproducts and randomly selects one of them to increase to balance supply and demand. It does not increase the primary coproduct.

## 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.



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.

### **Operation Yield Support in Planning**

If you need to calculate materials needed at operation sequence 10, you need to divide the order quantity by Reverse Cumulative Yield and multiply it by Net Planning Percent at Operation sequence 10.

If you need item A at operation sequence 10, and you have an order quantity of 100, the component demand for A should be  $100 / .88 * 100\%$ , which is 113.63. Oracle ASCP consumes resources at various operation sequences based on the inflated order quantity which accounts for the operation yield. In our example, resources at operation sequence 10 are scheduled for a quantity of 113.63.

If you decide to scrap or reject some of the items on a Lot-Based Job, you can apply yields for the rest of the pending operations. If you reject 20 units out of a total order of 100 at Operation sequence 20 and assume that there were no losses at operation sequence 10, you can determine the component requirements based on a quantity of 80 and the reverse cumulative yield at operation sequence 20.

If you have network routings where you have multiple nodes joining a single node, the cumulative yield calculation is based on the weighted average of the yields from the nodes that join to form a single node.

### **Operation Yield 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.

## **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**

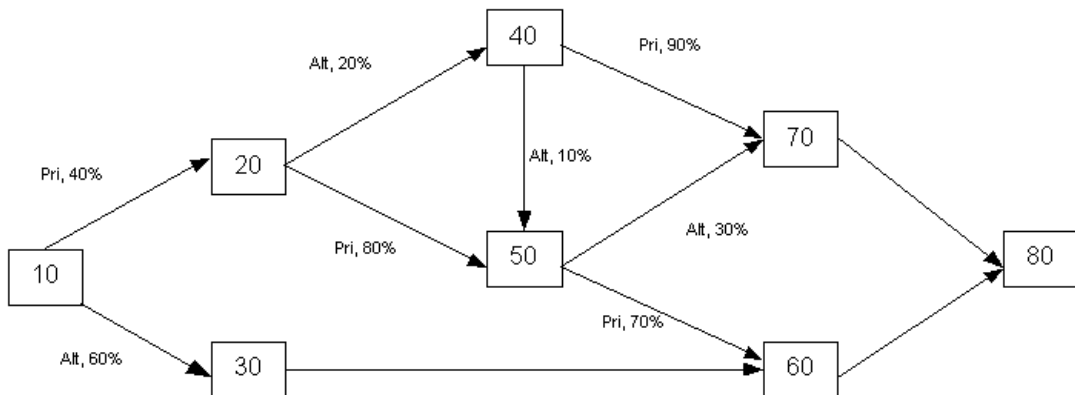
You can collect the Network Routings into the planning server using the APS Collection program. You can snapshot the Network Routings and use them to calculate and schedule resource requirements for existing Lot-Based Jobs and planned orders when you run a plan. You can choose to schedule orders using Network Routings in three ways:

- Primary Path



- 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. The following diagram shows Network Routings.



**Primary Path** 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  $100 \times$  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.

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.

### **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:  $\text{Order Qty} * \text{RCY} * 0.8 (\text{NPP}) * \text{Qty Per Assembly}$ .

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## Configure to Order

This chapter includes:

- [CTO Enhancements](#) on page 13-2
- [Multilevel ATO with Example](#) on page 13-3
- [Set Up Required to Use Multilevel ATO](#) on page 13-10

## CTO Enhancements

Oracle's Configure to Order solution has been enhanced to support Multilevel Configurations where you can have configurations under configurations. You can source the configurations from anywhere in the supply chain. The Configure to Order Solution contains the following features:

- Forecast Explosion and Consumption

You can explode the forecast from models to sub-models, option classes, optional items, and mandatory items with forecast control set to Consume or Consume and Derive in the source organization. You can maintain and consume forecasts for ATO model in the source Organization.

- Planning

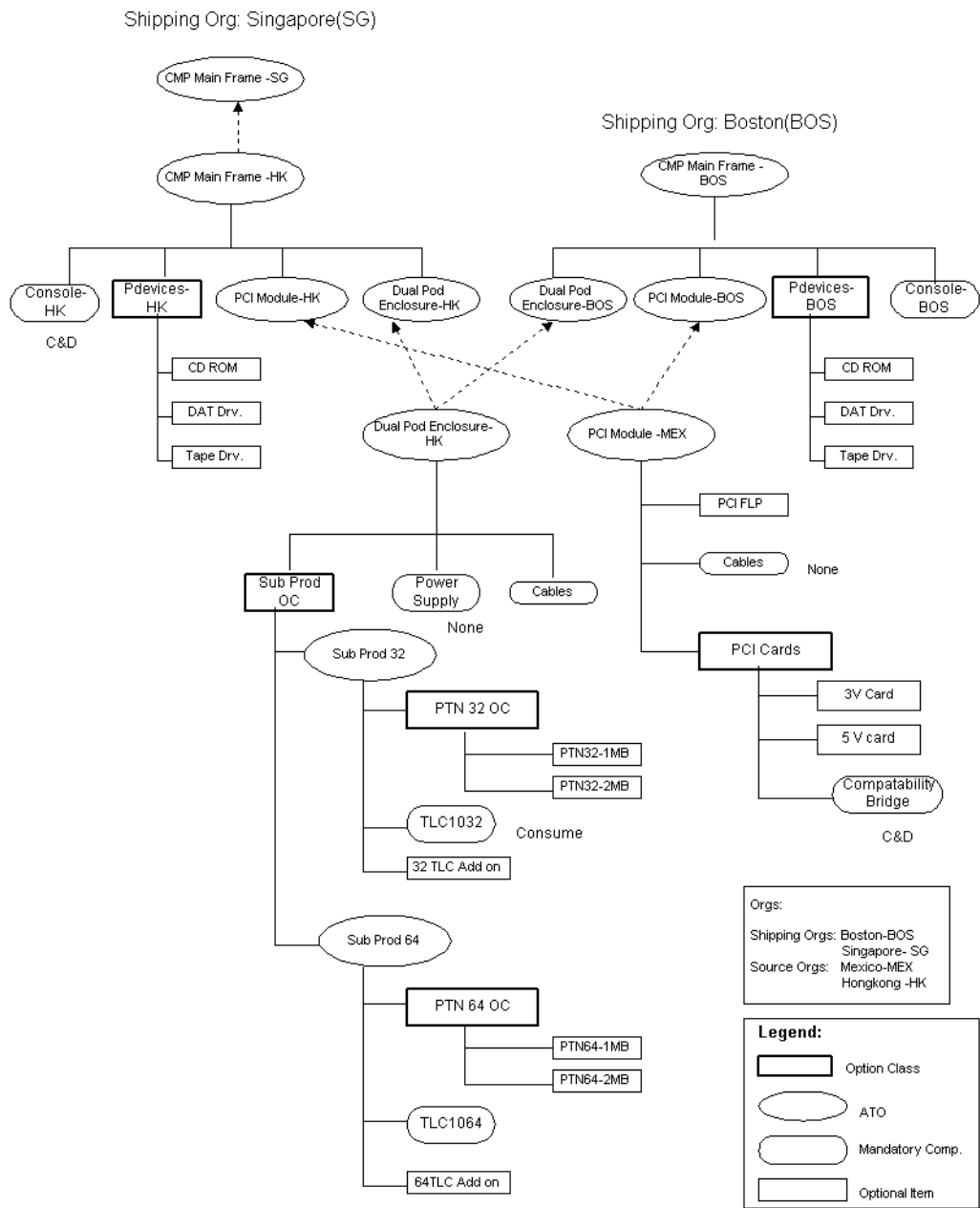
Once you configure your orders, you can place the demand on to the correct source organization, consume forecasts, and plan component requirements. You can explode through multilevel and multiorganization ATO bills for Forecasts and other independent demands. You can accurately reconcile the forecast and sales order numbers as demands prior to creating Configured item and after you create Configured item.

- Order Promising

You can perform order promising inquiries for your selected configurations with multiple levels of ATO models based on a plan output. Oracle APS automatically places sales order demands for your configuration in question, evaluates the best possible promise dates, and schedules supplies if needed.

## Multilevel ATO with Example

To illustrate this by an example, consider the supply chain bill shown in the following figure.



Please refer to the legends on the figure for an explanation of item types. Sourcing relationships are shown in dotted lines and the BOM relationships are shown in continuous lines. The BOM and the sourcing is defined using Oracle Bills of Material and Oracle Supply Chain Planning or Oracle APS. 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 its shipping organizations at Boston and Singapore, and it has three manufacturing sites; Hong Kong, Mexico, and Boston. CMP mainframes are assembled in Boston and Hong Kong. The PCI module is manufactured and sourced at the Mexico 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.

### **Forecast Explosion**

You can maintain forecasts for any item at any level in the bill you need. 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. The forecast explosion process assigns the priority of the ATO model to the sub-models, option classes, options and mandatory components so that the planning engine can schedule their supplies as close to one another as possible. 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. If you have multiple levels of ATO models, the forecast explosion process explodes through multiple levels of models in the BOM. The forecast explosion process stops at Standard items. Another important behavior to note is that the forecast explosion process explodes down to its forecasts only if you set the forecast control attribute of the components to Consume or Consume and Derive.

## Planning Process

### Forecasts

You can explode the forecast entries of ATO models into its component independent demand requirements during the planning process. The planning engine assigns the priority of the ATO model to the sub-models, option classes, options and mandatory components so that it can schedule their supplies as close to one another as possible. If the forecast control is set to None, the explosion can occur in the planning process. The explosion process depends on planning percentage on the Bills of Material. If the forecast control is set to Consume or Consume and Derive, the planning engine does not explode the requirements down because it has been exploded once during forecast explosion process.

### Sales Orders and Configuration Items

You can configure your orders using Oracle Configurator and establish orders using Oracle Order Management. Irrespective of the organization from which you want to ship the orders, you can source the configuration at your source organization. You can collect the configured and scheduled orders and their associated forecasts into the planning server using the collection program. You can consume the forecast specified at the sourced organization using the sales orders you entered using Oracle Order Management prior to the planning process at the planning server.

---

**Note:** You need to use the assignment set specified in profile option MRP: Default Sourcing Assignment as the assignment set used in plan options. This is because if the models are sourced, 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.

---

Oracle Advanced Supply Chain Planning places the sales order demands for Models, Sub Models, option classes, optional items, and mandatory components specific to your order configuration. 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.



If the scheduling process explodes model demand as dependent demand, it does not violate the dependencies between the options, their option classes, and the model item. 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 .

For example, if 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 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
Cables	MEX	Sales Order

Item	Org	Demands
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

You can create a Configuration Item based on your selection at Oracle Order Management. After the Configuration Item is created, you can rerun collections and the plan. As a result, you will see a sales order line for the Configuration Item at the shipping Organization in the plan. Referring to our previous example, you will see a sales order line for Configuration Item at the Singapore Organization. You will also see Configuration Items for each of the ATO models in your selection, i.e., CMP Main Frame, PCI Module, Dual Pod Enclosure, Sub Prod 32 at Hong Kong. In addition, you will see Configuration Item for PCI Module at Mexico. You will also see Bills of Material for each of the Configuration Items based on your selection. This will be used to pass the demand down to components as dependent demand and execute the orders. Forecast consumption will now reflect the Configuration Item instead of the ATO item.

The following table represents the demand picture in planning after creating the Configuration Item:

Item	Org	Type of Demand
CMP Main Frame*1	SG	Sales Order
CMP Main Frame*1	HK	Planned Order
Console	HK	Planned Order
CD-ROM	HK	Planned Order

Item	Org	Type of Demand
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

Notice that the Configuration Item is created for each ATO model shown as \*1 appended to the item in the above table.

The ASCP 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.

### Order Promising

You can use plans developed by Oracle Advanced Supply Chain Planning and the functionality of Oracle Global Order Promising to quote the promise dates for your customers. You need to ensure that you have the profile option Profile INV: Capable to Promise set to ATP/CTP Based on Planning Output and perform your inquiries from Oracle Order Management.

See [Multi-Level Supply Chain ATP](#) in *Oracle Global Order Promising Implementation and User's Guide*.

## Set Up Required to Use Multilevel ATO

The profile INV: Capable to promise must be set to ATP/CTP Based on Planning Output in order to perform multilevel order promising.

The profile MRP: Default Sourcing Assignment Set should be set to the assignment set that defines the sourcing rules for your model. The same assignment set should be used in your plan.

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. Only one sourcing organization is supported at this time.

See [Functional Setup for ATP Based on Planning Output](#) in *Oracle Global Order Promising Implementation and User's Guide*.

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## Cross-Instance Planning

This chapter includes:

- [Overview of Cross-Instance Planning](#) on page 14-2
- [Instances](#) on page 14-3
- [Collections](#) on page 14-5
- [Cross-Instance Supply Chain Modeling](#) on page 14-6
- [Cross-Instance Planning](#) on page 14-13
- [Global Available to Promise](#) on page 14-15
- [Cross-Instance Execution](#) on page 14-16
- [Cross-Instance Data Considerations](#) on page 14-18
- [Purchase Orders and Sales Orders Across Instances](#) on page 14-21

## 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.

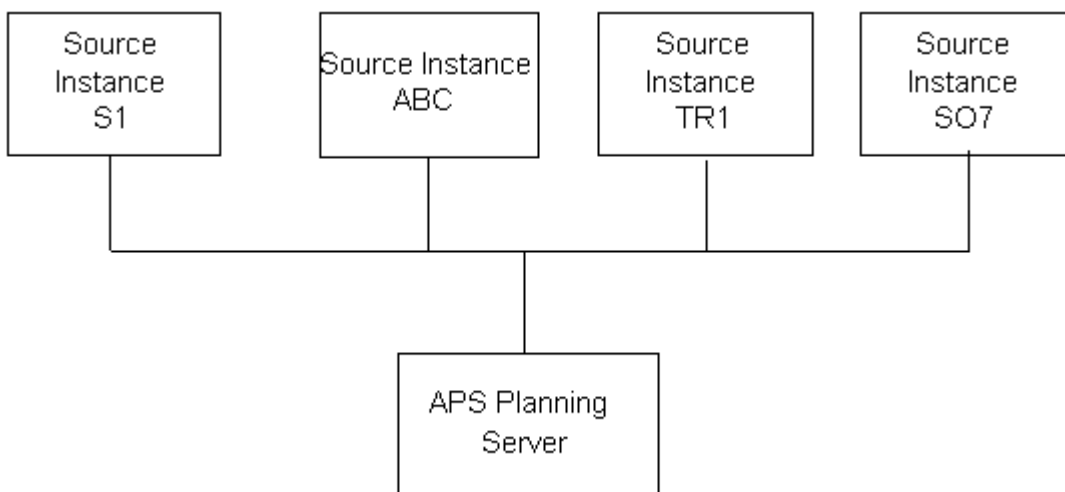
There are several types of instances:

- Source instances hold source information, for example, items, bill of materials, orders. Source instances are Oracle Applications instances (from releases 10.7, 11.0, and 11*i*) or 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.

**Figure 14–1** *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](#) on page 4-11.

## Cross-Instance Supply Chain Modeling

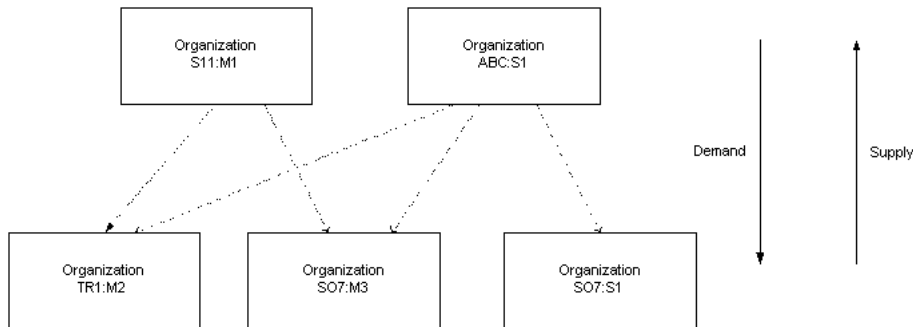
Cross-instance supply chain planning involves planning organizations that are in different instances in one planning process. The organizations are:

- 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 show 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.

**Figure 14–2 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).

## To view, create, and maintain cross-instance lead times

1. Navigate to the Transit Times form (Setup > Transit Times).

**Transit Times**

Organization: **TST:M1** **TST:Seattle Manufacturing** Find

Scope: **From Organization**

---

**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	Load Weight		Volume		Cost Per Unit
			Daily Capacity	UOM	Daily Capacity	UOM	
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

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.

If you select From and To Organization, you see the parts of the shipping network where Organization is either the From Org or the To Org. If you select From Organization, you see the parts of the shipping network where Organization is the From Org. If you select To Organization, you see the parts of the shipping network where Organization is the To Org.

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.

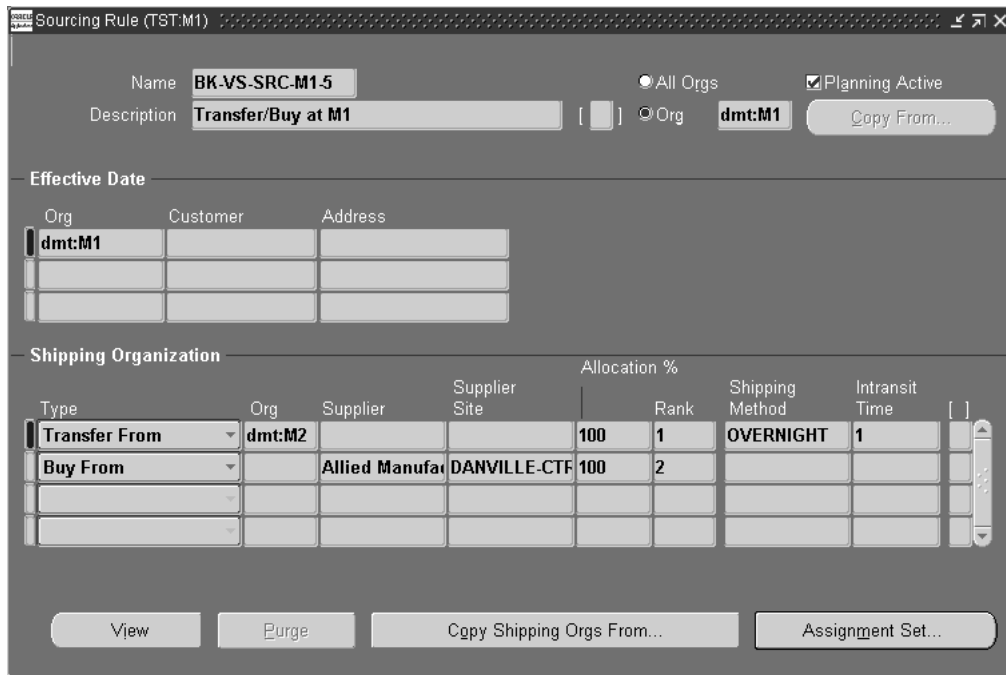
## Defining Cross-Instance Sourcing Relationships

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.

Sourcing Rule/Bill of Distribution	Receiving Org	Shipping Org	Allocation %	Intransit Lead Times
SR100	S11:M1	TR1:M2	25%	3
SR100	S11:M1	S07:M3	75%	10
SR200	ABC:S1	TR1:M2	60%	1
SR200	ABC:S1	S07:M3	15%	5
SR200	ABC:S1	S07:S1	25%	10

**Figure 14–3 The 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**    

**Effective Date**

Org	Customer	Address
<b>dmt:M1</b>		

**Shipping Organization**

Type	Org	Supplier	Supplier Site	Allocation %	Rank	Shipping Method	Intransit Time
<b>Transfer From</b>	<b>dmt:M2</b>			<b>100</b>	<b>1</b>	<b>OVERNIGHT</b>	<b>1</b>
<b>Buy From</b>		<b>Allied Manufac</b>	<b>DANVILLE-CTF</b>	<b>100</b>	<b>2</b>		

- 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. Its parameters are:

- Instance Code
- Organization: Instance
- Modeled Supplier
- Modeled Supplier Site
- Accept Demands from Unmet PO: If you select Yes, the planning engine creates planned order demand in the source organization based on the purchase order information, even if there is no sales order.

A screenshot of a 'Parameters' dialog box. The dialog has a title bar with 'Parameters' and a close button. It contains five input fields with labels to their left: 'Instance Code' with value 'TST', 'Organization' with value 'TST:M1', 'Modeled Supplier' with value 'Office Supplies, Inc.', 'Modeled Supplier Site' with value 'Antwerp' and a secondary value '768x240' to its right, and 'Accept Demands From Unmet PO' with value 'No'. At the bottom right are four buttons: 'OK', 'Cancel', 'Clear', and 'Help'. A vertical scrollbar is on the right side of the dialog.

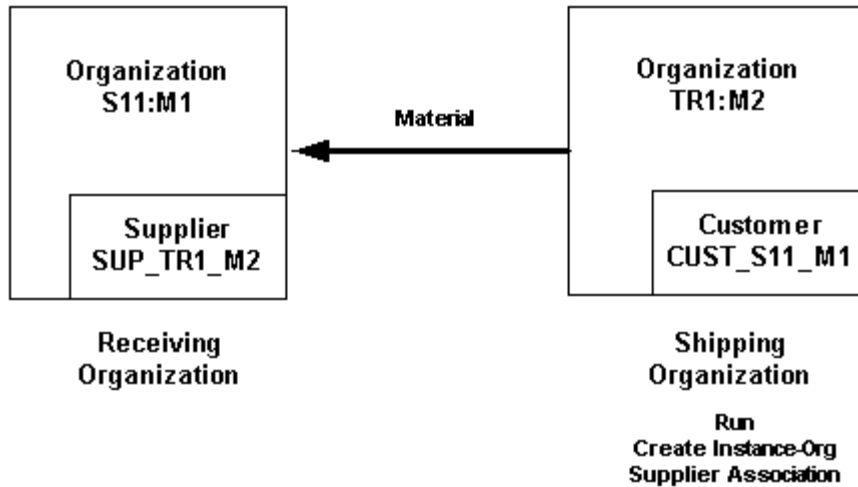
Instance Code	TST
Organization	TST:M1
Modeled Supplier	Office Supplies, Inc.
Modeled Supplier Site	Antwerp 768x240
Accept Demands From Unmet PO	No

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.

**Figure 14–4 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.

**Figure 14–5** Plan Options window

The screenshot shows the 'Plan Options (tps:JM1)' window. At the top, there are tabs for 'Plan' (set to 'ProdPlan1'), 'Production Plan', and 'Plan Type' (set to 'Distribution Plan'). Below these are several sub-tabs: 'Main', 'Aggregation', 'Organizations', 'Constraints', 'Optimization', and 'Decision Rules'. The 'Organizations' tab is currently selected.

Under the 'Organizations' tab, there are three main sections:

- Global Demand Schedules:** A table with columns: Name, Description, Type, and Ship To Consumption Level. It contains three empty rows.
- Organizations:** A table with columns: Org, Description, Net WIP, Net Reservations, Net Purchases, Plan Safety Stock, and Include Sales Order. It lists two organizations:
 

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"/>
- Demand Schedules:** A table with columns: Name, Description, Type, Ship To Consumption Level, and Inter Plant. It lists two 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:** A table with columns: Name, Description, and Type. It contains three empty rows.

At the bottom right, there is a button labeled 'Subinventory Netting'.

For more information on defining plans, see [Overview of Defining Plans](#) on page 5-2.

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.

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.

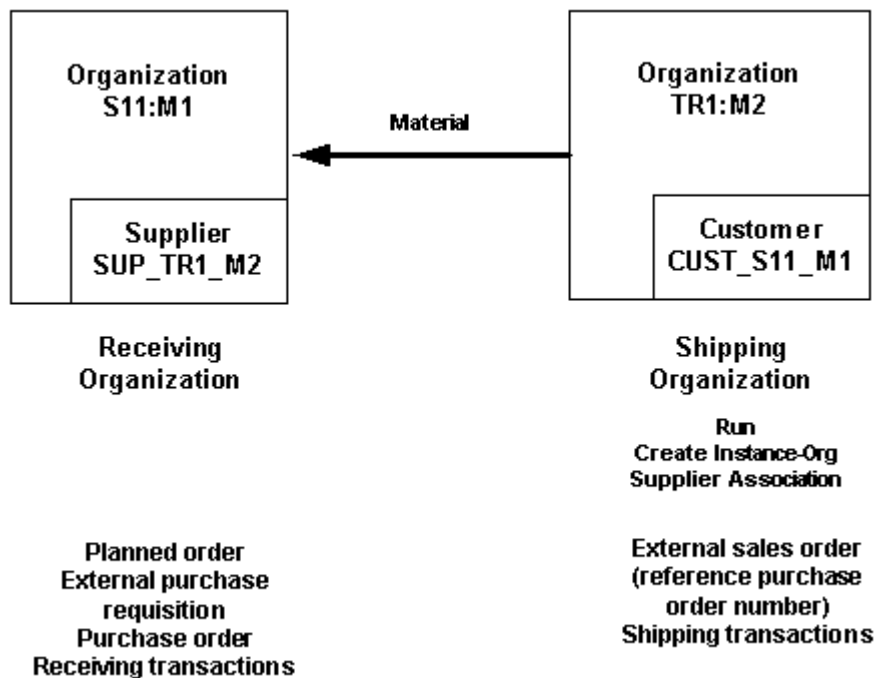
The collections process brings the sales orders into the planning server for display, including pegging.

You:

- Perform shipment transactions in the shipping organization.
- Perform receiving transactions in the receiving organization.

This diagram shows the cross-instance execution process.

**Figure 14–6 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, ASCP Cross Instance Planning.

### 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:

- The Oracle Application transaction instance 11.0 does not have purchase order line number details. External sales orders collected only from the Oracle Applications transaction instance 11*i* can be pegged to purchase orders.
- 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.

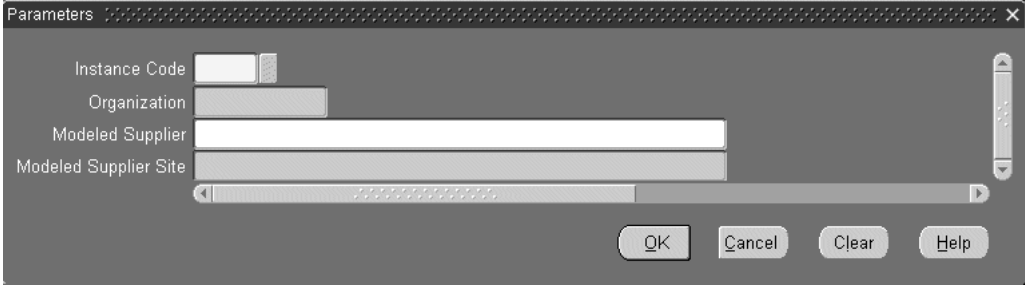
## **Designating Supplier Organization As External Supplier Organization**

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.

**Figure 14–7 Parameters window**

The image shows a screenshot of a software window titled "Parameters". The window has a dark gray background and a standard Windows-style title bar with a close button (X) in the top right corner. Inside the window, there are four text input fields stacked vertically. The first field is labeled "Instance Code" and contains a few characters. The second field is labeled "Organization" and is empty. The third field is labeled "Modeled Supplier" and is empty. The fourth field is labeled "Modeled Supplier Site" and is empty. To the right of these fields is a vertical scrollbar. At the bottom of the window, there 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.



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## Inventory Optimization

This chapter includes:

- [Overview of Inventory Optimization](#) on page 15-2
- [Defining an Inventory Plan](#) on page 15-6
- [Key Setups and Inputs](#) on page 15-29
- [Viewing Output](#) on page 15-41
- [ReviewingExceptionMessages](#) on page 15-48

## Overview of Inventory Optimization

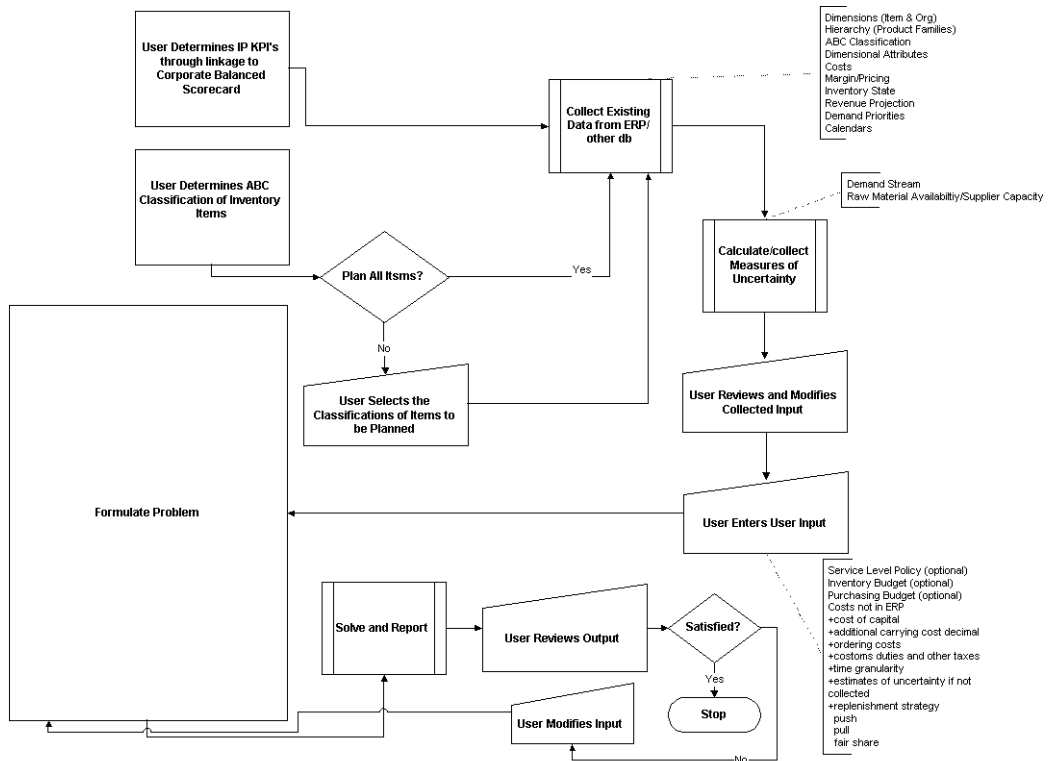
Oracle Inventory Optimization enables you to optimize your strategic inventory investment decisions by helping you to identify optimal inventory stocking levels, order quantities, order frequency, and other operational policies given a set of requirements and objectives.

Oracle's exclusive Stochastic optimization technology is a revolutionary breakthrough in optimization techniques that helps you manage the uncertainty inherent in your business decisions. Stochastic optimization techniques let you:

- Manage variability and risk
- Evaluate cost and risk tradeoffs
- Consider uncertainty in demand and supply
- See a graphic representation of your strategic inventory plan
- Plan telescoping time horizons
- Provide accurate inputs to tactical plans
- Manage to key performance indicators and drive continuous improvement
- Improve customer service while lowering inventory investment

### **Business Process**

The following diagram describes the business process flow for Oracle Inventory Optimization:



## Key Inventory Decisions

The following sections describe the key inventory decisions:

### Service Level Decision Factors

The service level cost trade-off decision considers the expected costs of inventory stockouts and backorders associated with poor customer service. Those costs are weighted against the expected costs of maintaining high safety stock inventories, and expedited purchasing, production, and distribution costs associated with high customer service level.

### **Safety Stock Decision Factors**

Since the purpose of safety stock is to buffer uncertainty, safety stock investment should be placed where there is uncertainty. In many cases, the degree of variability of supply and demand changes over time.

### **Inventory Location Decision Factors**

This decision involves a trade-off between delivery time and flexibility. When safety stock is distributed to be closer to customers, delivery time is decreased. However, greater flexibility is provided when safety stock is stored in a single central location.

When safety stock is stored in the form of finished goods, the lead time for those finished goods is decreased. However, the components and materials used in making those finished goods are committed, and cannot be used to satisfy unexpected demand for other items. Greater flexibility is provided when safety stock is stored at the raw material or component level.

### **Input**

Oracle Inventory Optimization takes the following information as input:

- Demand uncertainty scenarios and their associated probabilities.
- Customer service level requirement for each independent demand. If the customer service level is specified at a higher level of granularity (e.g. customer), the service level value will apply to all independent demands for that customer.
- Supplier lead time variation scenarios and their associated probabilities.
- Supply chain network in the form of sourcing rules and bill of distribution.
- List of items to be included.
- Bills of material, including effectivity and item substitution.
- Routings and key resources for items.
- Capacity constraints in the form of supplier capacity, transportation capacity, and resource availability or line rates.
- Cost elements, including production cost, item cost, carrying cost percentages, purchase cost, transportation cost, and resource cost.

You will be able to establish the following instances as eligible source instances for Oracle Inventory Optimization data:



- Oracle Applications R11 (Discrete or Process Manufacturing)
- Oracle Applications R11i (Discrete or Process Manufacturing)

## Output

The output of Oracle Inventory Optimization is a time-phased strategic inventory plan and material budget. More specifically, output includes the following:

- time-phased constrained and unconstrained safety stock levels and order quantities for each stockkeeping unit (SKU). The time-phased constrained safety stock quantities can be specified as input to Oracle ASCP in the form of demand plan(s).
- Recommended service level obtained for each SKU in each bucket.
- BIS key performance indicators.
- Exception messages and recommendations (for postponement, for example).
- Total cost of achieving the target customer service level and the individual cost elements that make up the total cost.

## BIS Key Performance Indicators

Oracle Inventory Optimization is integrated with Oracle Business Intelligence's performance management system. Oracle Business Intelligence lets you set the organizational objectives.

KPIs are used to drive continuous improvement in your enterprise. You can set performance targets and exception tolerances by business units (an organization, for example) or by period and automatically notify the appropriate people when exceptions arise.

Using the Planner Workbench, you can run multiple simulations, comparing them to your own performance metrics. As you firm a plan, you can directly update performance metrics in the execution system.

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**Note:** These objectives, known as Performance Measures in the Oracle Business Intelligence System (BIS), are referred to as Key Performance Indicators (KPIs) in Oracle Inventory Optimization.

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## Defining an Inventory Plan

This section describes features that helps you select a plan that best satisfies your business requirements. You can choose to run a global inventory plan or a subset plan to suit your supply chain environment or single organization environment, respectively. You can optimize your plan based on business objectives such as maximizing inventory turns, ontime delivery, and plan profit. Finally, you can specify aggregation levels to view plans at varying levels of detail.

### Global Inventory Planning and Subset Planning

Oracle Inventory Optimization enables you to create material and capacity plans for single organizations or multiple organizations. Global inventory planning refers to planning across multiple organizations while subset planning refers to single organization planning.

### Choosing Between Global Inventory and Subset Plans

In general, resource and material capacity are most efficiently utilized in a global inventory 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.
- **Commonality of the items produced** – If you have multiple organizations that produce or distribute similar products, global inventory 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 inventory planning because supply can be optimally distributed across plants depending on each plan's production requirements. Global inventory 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 inventory 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 inventory 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 Inventory 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

### Running an Inventory Plan

To run an inventory 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 are planned centrally.
- Suppliers and sourcing rules must be enabled in all relevant organizations.

### To create and launch an inventory plan

1. Sign in using the Inventory Planner responsibility.
2. Choose Inventory Plan > Names.

The Inventory Plan Names window appears.

<input type="checkbox"/>	Name	Description	Inactive Date
<input type="checkbox"/>	80%	80% Service Level Plan	
<input type="checkbox"/>	90%	90% Service Level Plan	
<input checked="" type="checkbox"/>	Supplier	Supplier Lead Time Variability Plan	
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			

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.
Inactive Date	Enter an inactive date for the plan.

3. Select Plan Options.
- The Plan Options window appears.

The screenshot shows the 'Plan Options (tps:JM1)' window with the following fields and values:

- Plan:** [Empty text box]
- Planned Items:** [Dropdown menu]
- Assignment Set:** [Empty text box]
- Forecast Distribution Assignment Set:** [Empty text box]
- Tabs:** Main (selected), Organizations, Constraints
- Plan Start Date:** 06-JAN-2006
- Plan End Date:** [Empty text box]
- Weeks:**
  - Start Date:** [Empty text box]
  - Buckets:** [Empty text box]
- Periods:** [Empty text box]
- ☐ Display Key Performance Indicators
- ☐ Explode Forecast
- Plan Level Penalty Factors:**
  - Exceeding Material Capacity %: 20
  - Exceeding Resource Capacity %: 20
  - Exceeding Transportation Capacity %: 20
  - Demand Lateness %: 100
- Safety Stock Change Frequency:**
  - Safety Stock Change Interval: 0 Days
  - Safety Stock Change Threshold Interval: 0 %

4. Continue setting plan options and parameters.

Only selected organizations are planned, regardless of whether planned items, routings, and so on, have been enabled in other organizations.

5. Click Launch.

The Launch Parameters window appears.

6. Verify launch parameters and click OK to launch the plan.

### To copy an inventory plan

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

Copy Plan (TST:M1)

Source Plan Name **Supplier**

Destination

Name **Supplier**

Description **Supplier Lead Time Variability Plan**

Copy Plan Options Only ☐

Inactive Date

OK Cancel Clear

2. In Plan Name and Plan Description, enter information for the new plan.
3. To copy only the plan options, select Copy Plan Options Only.
4. Enter an Inactive Date for the new plan.
5. Click OK.
6. Save your work.

### Setting Global Supply Chain vs. Subset Planning Parameters

You can choose the way you deploy Oracle Inventory Optimization to support either global supply chain or subset planning strategies. You can run one rapid single step supply chain plan that optimizes and plans your entire virtual enterprise. You can also choose to break the planning process into subsets. For example, you may choose to run an enterprise-wide high level plan, but plan manufacturing at the individual factory level. You can plan all, or any subset of your virtual enterprise in a single planning process. This reduces the number of plans and reduces the time and effort required to coordinate planning activities.

If you have a single instance of Oracle Applications, or if you prefer to pursue a strategy of subset planning, Oracle Inventory Optimization can be deployed as a module of an integrated Oracle Applications instance.

## Inventory Plan Options

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

- Main
- Organizations
- Constraints

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.

This table describes the fields and options.

Object	Description
Planned Items	Select an ABC classification for the plan.
Assignment Set	Select a plan assignment set.
Forecast Distribution Assignment Set	Select a forecast distribution assignment set for the global forecasting process. The forecast distribution assignment set contains global sourcing rules used to distribute global forecasts over multiple inventory organizations:  The rules to distribute sales orders are in plan option Assignment Set.

The Main Tabbed Region

Plan Options (tps:JM1)

Plan

Planned Items

Assignment Set

Forecast Distribution Assignment Set

Main

Organizations

Constraints

Plan Start Date

06-JAN-2006

Plan End Date

Weeks

Periods

Start Date

Buckets

☐ Display Key Performance Indicators

☐ Explode Forecast

Plan Level Penalty Factors

Exceeding Material Capacity %

20

Exceeding Resource Capacity %

20

Exceeding Transportation Capacity %

20

Demand Lateness %

100

Safety Stock Change Frequency

Safety Stock Change Interval

0

Days

Safety Stock Change Threshold Interval

0

%

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
Plan Start Date	<p>If you have not run the plan, choose a start date for your plan. If you have run the plan, this displays the start date of the latest run.</p> <p>The default is the bucket start date. If today's date is in the middle of the current bucket, the planning engine starts the plan on the first day of the next bucket.</p>
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.
Buckets	Number of buckets of this bucket type.
Display Key Performance Indicators	Select this plan option to instruct the planning engine to calculate key performance indicators for the plan.
Explode Forecast	<p>Select this plan option to instruct the planning engine to explode forecasts as follows:</p> <ul style="list-style-type: none"> <li>- Product family forecasts to 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>
Exceeding material capacity %	Enter a numerical value to quantify the impact of exceeding material capacity.
Exceeding resource capacity %	Enter a numerical value to quantify the impact of exceeding resource capacity.
Exceeding transportation capacity %	Enter a numerical value to quantify the impact of exceeding transportation capacity
Demand lateness %	Enter a numerical value to quantify the impact of late demand.
Safety Stock Change Interval	Enter the number of days that the inventory planning engine should hold item safety stock levels constant. It will not recommend a change in safety stock levels during this time but may recommend a change after this time.

Object	Description
Safety Stock Change Threshold Interval	Enter the percentage of safety stock change that is significant to your business. When the inventory planning engine calculates a new recommended safety stock level for an item, it checks its percentage difference from the safety stock values of the previous adjacent change interval. If this percentage difference is lower than the this plan option, the inventory planning process does not recommend a change to safety stock level for the item

The Organizations Tabbed Region

Plan Options (tps:JM1)

Plan

Planned Items

Assignment Set

Forecast Distribution Assignment Set

Main

Organizations

Constraints

Global Demand Schedules

Name	Description	Type	Ship To Consumption Level	Type of Demand Variability	Probability	Mean Absolute % Error

Organizations

Add All Authorized Orgs

Org	Description	Net WIP	Net Purchases	Net On Hand
		<input checked="" 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"/>

Demand Schedules

Scenario Set	Name	Description	Type	Ship To Consumption Level	Type of Demand Variability	Probability	Mean Absolute % Error

This table describes the fields and options.

Object	Description
Global Demand Schedules	Select the names of Oracle Demand Planning scenarios that drive this plan.
Type of Demand Variability	<p>Select a demand variability type for the global forecast. Values are:</p> <ul style="list-style-type: none"> <li>- Accuracy Metric MAPE or Accuracy Metric MAD: Instructs the Oracle Demand Planning to use demand variability information. This selection only appears if the forecast is within an Oracle Demand Planning scenario set and changes according to the scenario and the error measure provided by Oracle Demand Planning.</li> <li>- Probability: If Oracle Demand Planning demand variability information is not available or you want to run quick variability simulations, select this value, determine a confidence factor for this forecast, and enter it in Probability.</li> <li>- Mean Absolute % Error: If Oracle Demand Planning demand variability information is not available or you want to run quick variability simulations, select this value, determine a mean absolute percent error (MAPE) of this forecast, and enter it in Mean Absolute % Error.</li> </ul> <p>If you select a value for one forecast in a scenario set, that value applies to all forecasts in that scenario set; you cannot select different variability for the other forecasts in the scenario set.</p>
Probability	<p>If Type of Demand Variability is Probability, enter your confidence in the global forecast. For 100% confidence, enter 1.</p> <p>If you enter a value for one forecast in a scenario set, that value applies to all forecasts in that scenario set; you cannot enter different probabilities for the other forecasts in the scenario set.</p>
Mean Absolute % Error	<p>If Type of Demand Variability is Mean Absolute % Error, enter your mean absolute percent error (MAPE) of the global forecast.</p> <p>If you enter a value for one forecast in a scenario set, that value applies to all forecasts in that scenario set; you cannot enter different mean absolute percent errors for the other forecasts in the scenario set.</p>
Add All Authorized Orgs	When you click, the form retains the organizations that appear in Org and adds all organizations to which you have organization security (according to your responsibility). If one of your authorized organizations is already listed, the form does not add it a second time.
Org	An organization which this plan should plan.

Object	Description
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 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.
Net On Hand	Select to consider on-hand inventory in the netting process.
Demand Schedules	Select the names of demand schedules, forecasts, plans, and Oracle Demand Planning scenarios that drive this plan.
Scenario Set	Enter the ID for the scenario set with which the forecast is associated. See Setting Demand Variability.
Type of Demand Variability	<p>Select a demand variability type for the local forecast. Values are:</p> <ul style="list-style-type: none"><li>- Accuracy Metric MAPE or Accuracy Metric MAD: Instructs the Oracle Demand Planning to use demand variability information. This selection only appears if the forecast is within an Oracle Demand Planning scenario set and changes according to the scenario and the error measure provided by Oracle Demand Planning.</li><li>- Probability: If Oracle Demand Planning demand variability information is not available or you want to run quick variability simulations, select this value, determine a confidence factor for this forecast, and enter it in Probability.</li><li>- Mean Absolute % Error: If Oracle Demand Planning demand variability information is not available or you want to run quick variability simulations, select this value, determine a mean absolute percent error (MAPE) of this forecast, and enter it in Mean Absolute % Error.</li></ul> <p>If you select a value for one forecast in a scenario set, that value applies to all forecasts in that scenario set; you cannot select different variability for the other forecasts in the scenario set.</p>
Probability	<p>If Type of Demand Variability is Probability, enter your confidence in the local forecast. For 100% confidence, enter 1.</p> <p>If you enter a value for one forecast in a scenario set, that value applies to all forecasts in that scenario set; you cannot enter different probabilities for the other forecasts in the scenario set.</p>

Object	Description
Mean Absolute % Error	<p>If Type of Demand Variability is Mean Absolute % Error, enter your mean absolute percent error (MAPE) of the local forecast.</p> <p>If you enter a value for one forecast in a scenario set, that value applies to all forecasts in that scenario set; you cannot enter different mean absolute percent errors for the other forecasts in the scenario set.</p>

## The Constraints Tabbed Region

Plan Options (tps:JM1)

Plan

Planned Items  Assignment Set

Forecast Distribution Assignment Set

Main Organizations Constraints

☒ Enforce Service Level Constraints
 ☐ Enforce Budget Constraints
 ☐ Enforce Capacity Constraints

Service Level %

Budget Name

Budget Value

☐ Enforce Target Safety Stocks
 ☐ Enforce Sourcing Constraints

— Planning Horizon —

	Weeks	Periods
Start Date	<input type="text"/>	<input type="text"/>
Buckets	<input type="text"/>	<input type="text"/>
Resource Constraints	<input type="text" value="No"/>	<input type="text" value="No"/>
Material Constraints	<input type="text" value="No"/>	<input type="text" value="No"/>

This table describes the fields and options.

You can select only one of the following constraints for each plan run:

- Enforce Service Level Constraints

- Enforce Budget Constraints
- Enforce Capacity Constraints

Object	Description
Enforce Service Level Constraints	Select to enforce the service level specified at the most detailed level. The planning engine will exceed material and resource available capacity if needed.
Service Level %	If you select Enforce Service Level Constraints, enter the service level that you want the inventory optimization planning process to use as the service level constraint.
Enforce Budget Constraints	Select this plan option to use a budget amount as a constraint on inventory investment.
Budget Name	If you select Enforce Budget Constraints, select the name of the budget that you want the inventory optimization planning process to use as the budget constraint. Do not select a value for this plan option if you enter plan option Budget Value.
Budget Value	If you select Enforce Budget Constraints, enter a value for the inventory optimization planning process to use as the budget constraint . Do not enter this plan option if you select a value for plan option Budget Name.
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 on page 11-32, <a href="#">Setting Constraints for Different Plan Types</a> .
Enforce Target Safety Stocks	Select this plan option to enforce any safety stock levels that you define as a constraint on inventory stocking levels.
Enforce Sourcing Constraints	Select if you want to enforce the sourcing splits in the item sourcing rules. The planning engine may violate them if it results in less cost. It will violate them if enforcing them puts the plan constraint (service level, budget, or capacity) at risk.
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.
Material Constraints	Select Yes to consider material constraints.

## Using an Existing Plan as a Supply Schedule for a New Plan

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

### **To use an existing plan as a supply schedule for a new plan**

1. Choose Supply Chain Plan > Names to create a new inventory plan for the organization that will use an existing plan as a source.
2. Choose Plan Options > Organizations.
3. Specify the plan name to be used as a source for the new plan in the Supply Schedule portion of the form.

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

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

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

1. Choose Supply Chain Plan > Names to create a new inventory plan for the organization that will use an existing plan as a source.
2. Choose Plan Options > Organizations.
3. Specify the plan name to be used as a source for the new plan in the Demand Schedule portion of the form.

## Selecting Planned Items

Oracle Inventory Optimization calculates safety stock quantities only for those items whose safety stock planning method is set to MRP planned. Safety stock quantities are not calculated for items whose safety stock planning method is set to Non-MRP planned. However, time-phased planned order quantities are calculated for all items in the plan.

## Controlling Aggregation

Oracle Inventory Optimization enables you to specify various types and levels of aggregation for time buckets, materials, resources, and routings in your inventory plan. Aggregation control lets you specify the level of detail desired for different time horizons within a plan. For example, you may want detailed planning of items and individual resources using routings in daily time increments for the short term

portion of the plan. You may want aggregated scheduling at the product family level using aggregated resources and bills of resources in monthly time buckets for the long term portion of the plan.

## Plan End Date

**Forecast bucket and plan bucket granularity** In the inventory plan, the forecast buckets and granularity (defined in the ERP system in the Forecast Entries window) and the planning granularity (defined in the Plan Options window) should be aligned correctly. This means that the start date and end date for each forecast entry should match the start date and end date for each planning bucket respectively.

The Plan End Date is calculated based on the length of the planning horizon defined by the specified bucket sizes in the Aggregation tab.

The start date is hard coded as today's date.

### To view the end date for your inventory plan

1. Navigate to the Planner Workbench.
2. Choose Plan Options > Main tab.

The Aggregation tab appears showing the end date for your inventory plan.

## Setting Constraints

Constraint-based planning 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 issues are considered simultaneously, and factory, distribution, and transportation issues are integrated. This complete picture of the problem provides instant and global visibility to the effects of planning and scheduling decisions throughout the supply chain.

You can select one of the following three constraint options:

- **Enforce Service Level Constraints**

This option enforces the service level specified at the most detailed level. In a simple example, if the plan level (global) service level is set to 95% and the service level for item AS12345 is set to 98%, the 98% service level is enforced for item AS12345 and the 95% service level is enforced for all other aspects of the inventory plan. Material and production resources are utilized beyond available capacity constraints if necessary to attain the desired service levels.



- Enforce Budget Constraints

This option enforces a budget amount as a constraint on inventory investment. You can create budgets and specify one for each plan run. If you do not create budgets, you can specify a budget amount for each plan run.

- Enforce Capacity Constraints

This option enforces material and resource capacity constraints throughout the plan. Service Level Key Performance Indicator (KPI) reports the achievable service level.

For more information, see on page 11-30, [Setting Hard and Soft Constraints](#)

To set Oracle Inventory Optimization constraints, choose one of the enforcement check boxes in the Plan Options window, Constraints tabbed region:

## Setting Demand Variability

You can specify demand variability as a discrete distribution. The Plan Options window has a new field that lets you specify probability for a given forecast set. Forecast sets are grouped together in scenario sets by using the scenario set field.

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**Note:** Scenario sets are planned separately.

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### To set demand variability

1. Choose Plan Options > Organizations tab.
2. In the Scenario Set field, enter the scenario set number.
3. In the Name field, enter the demand schedule name (forecast set or MDS).
4. In the Probability field, specify corresponding probabilities for forecast sets.

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**Note:** One scenario set includes a list of one or more forecast sets. A forecast set includes a list of one or more forecasts. Use the Probability field to enter an estimate of probability that a particular forecast set within the scenario set will occur. For example, if a scenario set includes three forecasts sets named; Optimistic, Most likely, and Pessimistic, one could estimate the probability of the forecasts occurring as 0.15, 0.65, and 0.20, respectively

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**Note:** Safety stock is not calculated if there is no demand and supply variability.

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The sum of probabilities of forecast sets in a scenario set can be more than 1. They are normalized to 1 within the Inventory Optimization code. If a forecast set probability is not specified, a value of 1 is considered as default.

**Cumulative Demand Distribution**

You can specify demand uncertainty in terms of a cumulative probability distribution. This is in addition to the existing functionality of being able to specify demand uncertainty in terms of noncumulative probabilities. You can view the demand probability in the Supply/Demand window of the Planning Workbench.

**Profile option to indicate demand distribution format** A new profile option MSR: Probability Distribution Type is used to indicate whether the demand variability is assumed to be in terms of forecast set probabilities or in terms of forecast set cumulative probabilities. The valid options are: Probabilities and Cumulative Probabilities. The default value is Probabilities.

This option applies uniformly to all scenario sets. That is, it is not possible to express demand variability in one scenario set in terms of probabilities and in another scenario set in terms of cumulative probabilities. This must be ensured by the user. No validation will be performed in the engine or UI.

**Specifying cumulative probabilities** Cumulative probabilities are specified in the same place where the probabilities are currently specified. This is the Probability field in the Organizations tab on the Plan Options form (Demand Schedules section).

The maximum value of the cumulative probability, for a given scenario set, needs to be equal to 1.0. If this is not true, a warning message will be displayed when you attempt to save the plan options. If you run the plan at this point, the plan will error out.

The two tables below provide an example of correct user input.

**Table 15–1    User Input with Probabilities**

Scenario Set	Forecast Set	Qty	Prob
1	FSET-A	50	0.4
1	FSET-B	75	0.2

**Table 15–1 User Input with Probabilities**

Scenario Set	Forecast Set	Qty	Prob
1	FSET-C	100	0.4

**Table 15–2 User Input with Cumulative Probabilities**

Scenario Set	Forecast Set	Qty	Cum. Prob
1	FSET-A	50	0.4
1	FSET-B	75	0.6
1	FSET-C	100	1.0

The following two tables provide examples of incorrect user input:

**Table 15–3 Example 1: Invalid User Input with Cumulative Probabilities**

Scenario Set	Forecast Set	Qty	Cum. Prob.
1	FSET-B	75	0.4
1	FSET-A	50	0.6
1	FSET-C	100	1.0

The cumulative probability cannot go up when the demand quantity comes down. That is, if cumulative probability is 0.4 for a quantity of 75, the cumulative probability should be less than 0.4 for a quantity of 50. Oracle Inventory Optimization will log the following message during planning and exit if the forecast quantities in the demand distribution do not increase with the cumulative probabilities:

```
Error: Forecast quantity does not follow cumulative pattern for scenario set:
<scenario_set>, forecast set id: <forecast_set_id>, item_id: <item_id>, org_id:
<org_id>, instance_id: <instance_id>, date: <date>
```

**Table 15–4 Example 2: Invalid User Input with Cumulative Probabilities**

Scenario Set	Forecast Set	Qty	Cum. Prob
1	FSET-A	50	0.4
1	FSET-B	75	0.6
1	FSET-C	100	0.9

The maximum cumulative probability has to be equal to 1.0 (in the above example, it is only 0.9)

For Example 2, the plan options form will give a warning. If you run the plan at this point, the plan will error out.

**How Probability Data is Used by the System**

The probability information is used in three ways:

- Probability acts like a weight in a normalization calculation.
- Normalized probabilities are used to calculate an expected value for forecast quantities.
- The distribution of the discrete probabilities is used to estimate variance, which is a factor in calculating safety stock quantity.

Safety stock is sized in proportion to the variance of forecast sets probability distributions.

The following table shows how the variance of forecast set probability distribution affects the size of the safety stock.

Forecast Set	Prob. Dist A	Prob. Dist B
FCSTA	0.182	0.100
FCSTB	0.364	0.800
FCSTC	0.454	0.100

All other relevant factors being equal, the safety stock quantity for a situation depicted by probability distribution B would be smaller than safety stock quantity for a situation depicted by probability distribution A, because the variance of probability distribution B is less than the variance of probability distribution A.

**Weighted Average Calculation**

The probabilities of forecast sets within one scenario set can be entered so that they total more than 1. When this occurs, the probabilities are normalized within Inventory Optimization code so that they do sum to 1. In the following table, probabilities of the forecast sets within scenario set 10 are 0.8, 0.4, and 1.0, respectively. Recall that blank values default to 1.0. The sum of the probabilities is 2.2. Dividing the entered probabilities by the sum results in normalized

probabilities 0.364, 0.182, and 0.454, respectively. The normalized probabilities sum to one.

Scenario Set	Forecast Set	Probability (entered)	Probability (used)
10	FCST1	0.4	$0.4/2.2 = 0.182$
10	FCST2	0.8	$0.8/2.2 = 0.364$
10	FCST3	(blank)	$1.0/2.2 = 0.454$

### How to Assign Forecasts and Forecast Sets to Scenario Sets

The following tables presents the relationships of forecasts, forecast sets, and scenario sets when specifying demand variability.

Forecasts and probability distributions for Item A are displayed in the following table:

Time Period	Quantity	Probability
D1	100	0.80
D1	90	0.07
D1	80	0.13
D2	200	0.80
D2	220	0.07
D2	210	0.13
D3	150	0.60
D3	120	0.30
D3	180	0.10
D4	180	0.60
D4	190	0.30
D4	120	0.10

Note that Item A has the same probability distribution for D1 and D2, and another distribution represents its demand for D3 and D4.

The scenario sets, forecast sets, and forecasts shown in the following tables should be defined to specify demand variability for item A:

**Table 15–5 FCST1:Forecast Set 1/FC1: Forecast 1**

Item	Quantity	Date
A	100	D1
A	200	D2

**Table 15–6 FCST2: Forecast Set 2/FC2: Forecast**

Item	Quantity	Date
A	90	D1
A	220	D2

**Table 15–7 FCST3: Forecast Set 3/FC3: Forecast 3**

Item	Quantity	Date
A	80	D1
A	210	D2

**Table 15–8 FCST4: Forecast Set 4/FC4: Forecast 4**

Item	Quantity	Date
A	150	D3
A	180	D4

**Table 15–9 FCST5: Forecast Set 5/FC5: Forecast 5**

Item	Quantity	Date
A	120	D3
A	190	D4

**Table 15–10 FCST6: Forecast Set 6/FC6: Forecast 6**

Item	Quantity	Date
A	180	D3

**Table 15–10 FCST6: Forecast Set 6/FC6: Forecast 6**

Item	Quantity	Date
A	120	D4

These forecast sets are tied to their corresponding probabilities and assigned to scenarios sets in the Organization Tab of the Plan Options form as shown in the following table:

Scenario Set	Forecast Set	Probability
10	FCST1	0.80
10	FCST2	0.07
10	FCST3	0.13
20	FCST4	0.60
20	FCST5	0.30
20	FCST6	0.10

If item B has the same probability distribution as item A, you can include item B in the above forecasts and forecast sets. If item B does not follow the same probability distributions, then separate forecast sets and forecasts should be defined for item B. In this case, item A and B cannot share the same scenario sets either.

## Specifying Sources of Supply and Demand

### Specify Supply Types

You can specify existing supply types (On-Hand, PO, WO, and so on) to be included or excluded.

### To specify supply type

1. Navigate to the Planner Workbench.
2. Choose Plan Options > Organizations tab.
3. Choose the appropriate checkbox for each source of supply.

### **Demand Schedules**

You can specify a demand schedule or forecast set as input demand for an inventory plan.

#### **To specify sources of demand**

1. Navigate to the Planner Workbench.
2. Choose Plan Options > Organization tab.
3. Select the demand schedule (MDS or Forecast) from the list of values.



## Key Setups and Inputs

This sections describes some of the key inputs you need to provide to Inventory Optimization before you run an Inventory Optimization plan.

### Setting Target Service Levels

You can define service levels at each of the following hierarchies:

- Item/Demand class
- Item
- Category/Demand class
- Customer
- Organization
- Demand class
- Plan (global)

If the value is not specified at a certain level in the hierarchy, the system defaults to the value specified at the next higher level.

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**Note:** For more information on allocating demand to suppliers, see “Sourcing Rules and Bills of Distribution” in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User’s Guide*.

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#### Item/Demand Class

A field in the Define Allocation Rules window lets you define the Demand Class service level. Define the Item Demand Class service level by assigning rules to specific items in the Assign Allocation Rules window.

#### To define the Demand Class service level

1. From the Navigator, choose ATP > Allocation > Define Allocation Rule.

Figure 15–1 Allocation Rule window

**Allocation Rule**

Name:

Description:

Effective Date

From Date:  To Date:

**Allocations**

Demand Class	Allocation %	Priority	Service Level
INTERNAL	60	1	95
INTERNATIONAL	40	2	90

- 2. Enter a service level for each Demand Class in the Service Level field.

**To set the Item Demand Class service level**

- 1. From the Navigator, choose Allocation > Assign Allocation Rule.

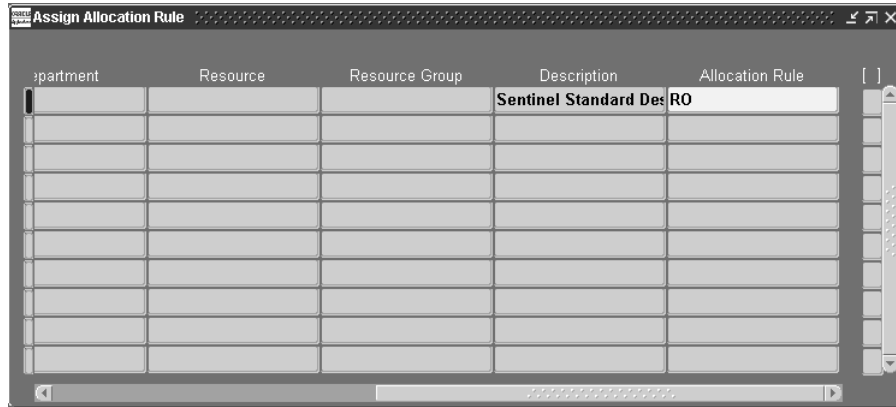
Figure 15–2 Assign Allocation Rule window

**Assign Allocation Rule**

Assign To	Item	Category	Department	Resource
Item	AS54999			

2. Choose Item from the drop down list in the Assign To field.
3. Scroll right then choose an allocation rule from the list of values in the Allocation Rule field.

**Figure 15–3 Assign Allocation Rule, Allocation Rule field**



## Item

A flexfield in the Oracle Inventory Master Item window in the source instance lets you define the Item service level.

### To set the Item service level

1. Choose Inventory > Items > Master Items > [New].
2. Click on the item flexfield entry box to the right of the Description field.  
The Items window appears.

Figure 15–4 Items window

The screenshot shows the 'Master Item (V1)' window with the 'Items' sub-window open. The main window has a menu bar (Action, Edit, Query, Go, Folder, Special, Help) and fields for Organization (V1 Vision Operations), Item (AS18947), and Description (Sentinel Multimedia). The 'MPS/MRP Planning' section includes checkboxes for Planning Method, Forecast Control, Pegging, Round Order Quantity (checked), and Repetitive Planning (unchecked). The 'Items' sub-window has a question mark icon and fields for Late Demands Penalty, Material Over-Capacity Penalty, and Service Level (98). It also has 'Clear', 'Cancel', and 'OK' buttons. The main window has a 'Reduce MPS' dropdown and 'Planning Time Fence', 'Demand Time Fence', and 'Release Time Fence' dropdowns with corresponding 'Days' input fields.

- 3. Enter a value in the Service Level flexfield.

**Category/Demand Class:**

The Define Allocation Rules window lets you define the Demand Class level service level. You can define the Category Demand Class level service level by assigning rules to specific categories in the Assign Allocation Rules window.

**To set the Category Demand Class service level**

- 1. From the Navigator, choose Allocation > Assign Allocation Rule.

**Figure 15–5 Assign Allocation Rule window**

Assign To	Item	Category	Department	Resource
Item Category		PF-YP		

2. Choose Item Category from the drop down list in the Assign To field.
3. Scroll right, then choose an allocation rule from the list of values in the Allocation Rule field.

**Figure 15–6 The Assign Allocation Rule window, Allocation Rule field**

Department	Resource	Resource Group	Description	Allocation Rule
				RO

## Customer

A flexfield in the Oracle Order Management Customers window in the source instance lets you define the Customer service level.

Service level by item overrides service level by customer.

**To set the Customer service level**

- 1. Choose Oracle Order Management > Customers > Standard.  
The Customers window appears.
- 2. Click on the customer information flexfield.  
The Customer Information window appears.

*Figure 15–7 Customer Information window*

The screenshot shows the 'Customers - Standard' window. The main form contains fields for Customer Name (Business World), Number (1000), Alternate Name, Taxpayer ID (68-98876532), Tax Registration Num, and an Active checkbox. A 'Classification' section is on the left. A 'Customer Information' flexfield window is open, showing 'D & B Number' and 'Service Level' (98). Below the flexfield are buttons for 'Clear', 'Cancel', and 'OK'. The main form also includes fields for Use (Cust), Profile Class (Ave), Class (High), Tax Code, Tax Rounding (Near), Salesperson (Howard Sprague), FOB (Destination), Price List (Business World), Warehouse, Ship Partial (Yes), Carrier, Order Type, Freight Terms, and Sales Channel (Commercial).

- 3. Enter a value in the Service Level flexfield.

**Organization**

A flexfield in the Oracle Inventory Organization Parameters window in the source instance lets you define the Organization service level.

**To set the Organization service level**

- 1. Choose Inventory > Setup > Organizations > Parameters.
- 2. Click on the organization parameters flexfield.  
The Organization parameters window appears.

**Figure 15–8 Organization Parameters window**

Organization Parameters (M1)

Inventory Parameters | Costing Information | Revision, Lot, Serial | ATP, Pick, Item-Sourcing

Organization Code: M1

Item Master Organization: Vision Operations

Calendar: Vision01

☐ Process Enabled

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Organization parameters

Late Demands Penalty: [ ]

Material Over-Capacity Penalty: [ ]

Resource Over-Capacity Penalty: [ ]

Transport Over-Cap Penalty: [ ]

Service Level: [ ]

Context: [ ]

OK Cancel Clear Help

Load Weight: [ ] UOM: [ ]

Volume: [ ] UOM: [ ]

3. Enter a value in the Service Level flexfield.

### Demand Class

A field in the Define Allocation Rules window lets you define the Demand Class service level. The rule you assign to the Global Assignment Type in the Assign Allocation Rules window determines the Demand Class service level.

### To set the Demand Class service level

1. From the Navigator, choose Allocation > Assign Allocation Rule.

Figure 15–9 Assign Allocation Rule window



- 2. Choose Global from the drop down list in the Assign To field.
- 3. Scroll right, then choose an allocation rule from the list of values in the Allocation Rule field.

**Global (Plan Level)**

Use the Service Level % field in the Plan Options form, Constraints tabbed region to define the plan service level.

**Set Supplier Lead Time Variability**

You can specify supplier lead time variability either at the item-supplier level or at the supplier level. If variability information is defined at the item-supplier level, it will be used by the optimization engine. Otherwise, the engine will use variability information defined at the supplier level.

Define supplier lead time variability in the Item Supplier Variability window.

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**Note:** You can only input supplier lead time variability information in the planning server.

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**To set supplier lead time variability**

- 1. Navigate to the Planner Workbench.
- 2. View by Supplier.





**Table 15–11**    *Description of Fields in the Supplier Variability Window*

Fields	Description
Supplier	Supplier name
Supplier Site	Supplier site name
Org	Organization
Item	Item name
Days Late	Specify the number of days (in whole numbers) the item is delivered late. Days late can be measured in negative whole numbers, indicating early delivery.
Probability	Specify a number between 0 and 1 corresponding to each estimation of days late for the item. The probabilities should sum to equal 1.

**Note:** Select your supplier in the Navigator to assign supplier variability independent of a specific item. If an item does not have specific supplier variability, it defaults to the supplier level.

Setting Penalty Costs

You can specify penalty costs instead of service levels for independent demands and have the system calculate safety stocks. The system trades off the cost of late demands with production costs, purchasing costs, and inventory costs in determining the best attainable service level.

The system uses the penalty costs, service level or both in calculating safety stock quantities as shown in the following table:

Plan Level Defaults	Enforce Service Level	Enforce Capacity
Service Level	used	used only for target safety stock calculation
Resource Penalty Costs	used	used only for target safety stock calculation
Material Penalty Costs	used	used only for target safety stock calculation
Late Demand Penalty Costs	not used	used

When you specify Enforce Service Level Constraints, the system calculates safety stock quantities for the specified service levels while minimizing penalty costs for exceeding material capacity, exceeding resource capacity, and exceeding transportation capacity.

Penalty cost for late demand is used only when you specify Enforce Capacity Constraints.

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**Note:** Specifying input penalty costs for late demand and specifying input service level are mutually exclusive.

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For information on setting penalty factors or costs, refer to on page 8-5, [Setting Penalty Factors](#).

## Setting Item Purchase Price by Supplier

During the collections process, Oracle Inventory Optimization captures the item purchase price by supplier and supplier site by taking the unit price from the most recent purchase order for each item. Oracle Inventory Optimization uses the item purchase price to compute the purchasing cost for an item. You can view the item purchase price from the Supplier Capacity window in both the Collection Workbench and the Planning Workbench.

### To view item price by supplier

1. Navigate to the Collection Workbench (Collections > View Collected Data) or Planner Workbench (Inventory Plan > Workbench).
2. Choose Suppliers from the drop down menu in the left pane.
3. Drill down and select an item underneath a supplier in the left pane.
4. Right-mouse click on the item.

A list appears.

5. Select Supplier Capacity.

The Supplier Price is a column in the Supplier Capacity window.

Figure 15–11 Supplier Capacity window



Supplier	Supplier Site	Penalty Cost Factor	Supplier Price	Delivery Cost
Allied Manufacturing				

Setting Performance Indicators

You can compare inventory plan output to the following performance indicators:

- Inventory Turns
- Service Level
- Planned Utilization
- Margin
- Margin Percentage
- Cost Breakdown
- Inventory Value

Refer to the *Oracle Business Intelligence System Implementation Guide* for information on setting performance indicator targets.

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**Note:** You can set targets for all Performance Indicators except Margin and Cost Breakdown.

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## Viewing Output

Oracle Inventory Optimization lets you view the following types of output:

- Horizontal plan
- Vertical Plan
- Performance Indicators
- Time-phased Supply and Demand
- Constrained and Unconstrained Safety Stocks

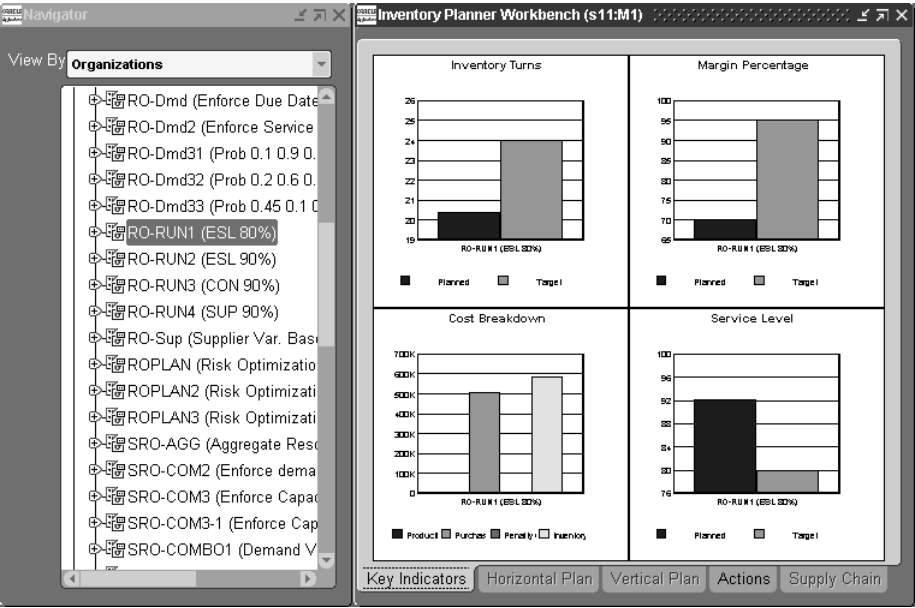
Refer to [Chapter 10, Planner Workbench](#) for more information on viewing horizontal and vertical plans.

## Performance Indicators

The initial window of the Planner Workbench, the summary chart, provides a graphical display of the plan's Key Performance Indicators (KPIs). At a glance, you can see how the plan performs relative to the following measures:

- Inventory Turns
- Service Level
- Planned Utilization
- Margin
- Margin Percentage
- Cost Breakdown
- Inventory Value

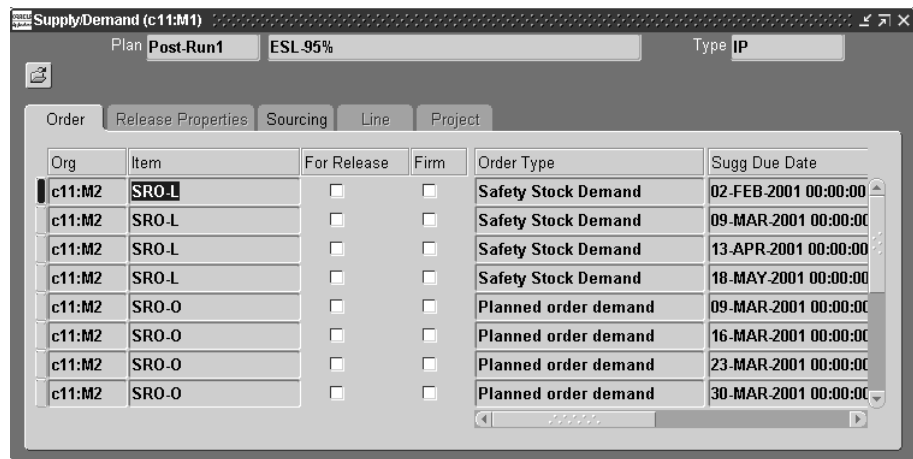
Figure 15–12 The KPIs Summary Chart in the Planner Workbench



Refer to [Chapter 10, Planner Workbench](#) for more information on viewing performance indicators.

## Time-Phased Supply and Demand

You can view time-phased demand and supply for all items in your inventory plan. To view time-phased supply and demand choose Tools > Supply/Demand.

**Figure 15–13 The Supply/Demand window**

The following information is available in the various tabs of the Supply/Demand window and by scrolling to the right:

### Order Tab

- Org
- Item
- For Release
- Firm
- Order Type
- Suggested Due Date
- Probability
- Qty/Rate
- Order Number
- ABC Class
- Alternate BOM
- Alternate Routing
- Bucket Type

- Customer
- Customer Site
- Demand Class
- Demand Lateness Cost
- End Date
- Product Family
- Schedule Designator/Forecast Set
- Service Level
- Ship Date
- Source Order Priority

#### **Sourcing Tab**

- Source Org
- Source Supplier
- Source Supplier Site

## **Safety Stocks and Target Safety Stocks**

Target safety stocks, which are unconstrained safety stocks, are the safety stock quantities required to support a given service level. Safety stocks, which are constrained safety stock quantities, are the quantities achievable given the capacity limitations. The constrained safety stocks are always less than or equal to the unconstrained target safety stocks equivalents.

Oracle Inventory Optimization calculates and displays both constrained safety stocks and unconstrained target safety stocks.

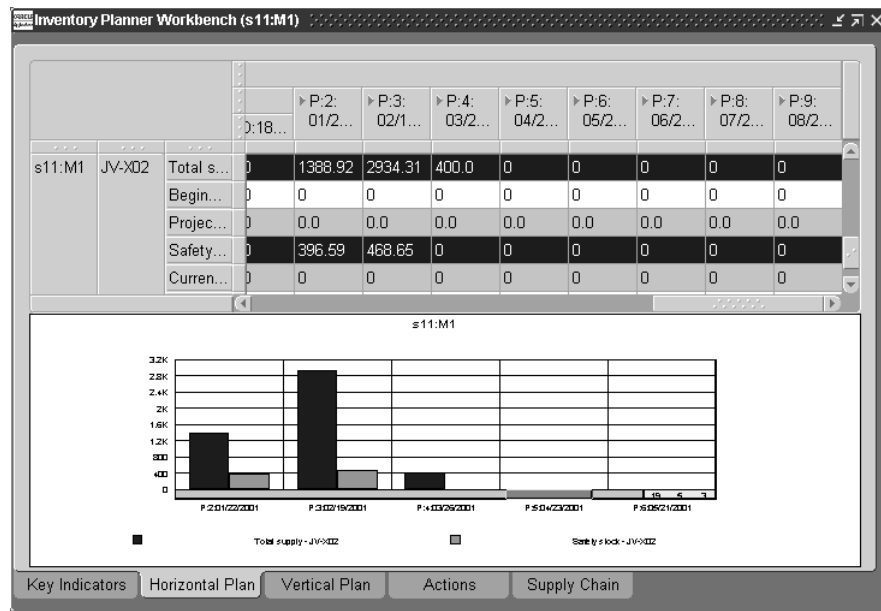
Using capacity exceptions and the unconstrained and constrained safety stock quantities, users of Oracle Inventory Optimization can determine the following:

- what service level is achievable
- what they need to do in order to achieve the target service level

Time-phased safety stock quantities for all items is available in the Horizontal Plan, Vertical Plan, and Supply and Demand windows.

To view time-phased safety stocks, choose the Horizontal Plan tab:



**Figure 15–14 The Horizontal Plan window**

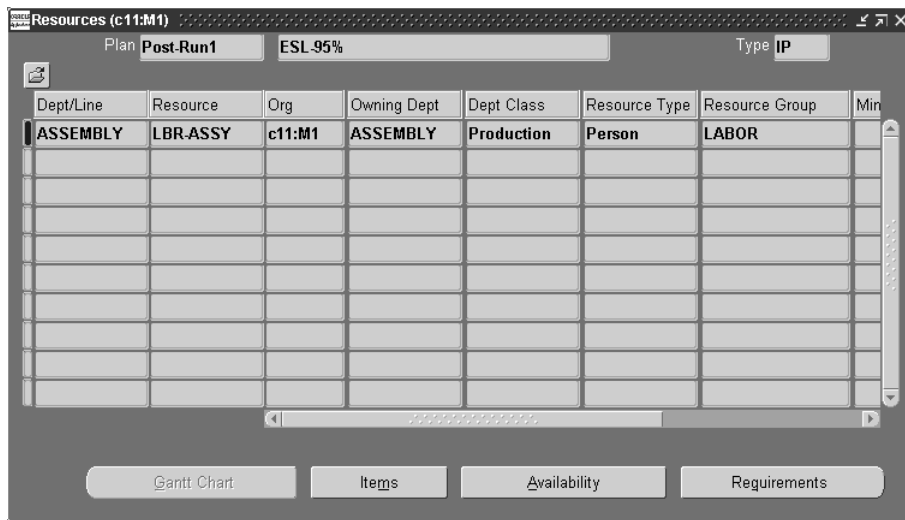
## Resource Requirements

You can view time-phased resource requirements for all resources in your inventory plan.

### To view time-phased resource requirements

1. [Right-click] on an item in the navigation tree then choose the Resources option.

**Figure 15–15** *The Resources window*



## 2. Choose Requirements.

The Resource Requirements window appears.

The following fields are displayed in the Resource Requirements window. Some of the fields appear when you scroll to the right:

- Dept/Line
- Resource
- Org
- Owning Dept.
- Dept. Class
- Resource Type
- Resource Group
- Start Date
- End Date
- Schedule Quantity
- Using Assembly

- Daily Rate
- Resource Hours
- Adjusted Resource Hours
- Touch Time
- Order Type
- Rate End Date
- Schedule Date
- Source Item

## Material/Resource Availability

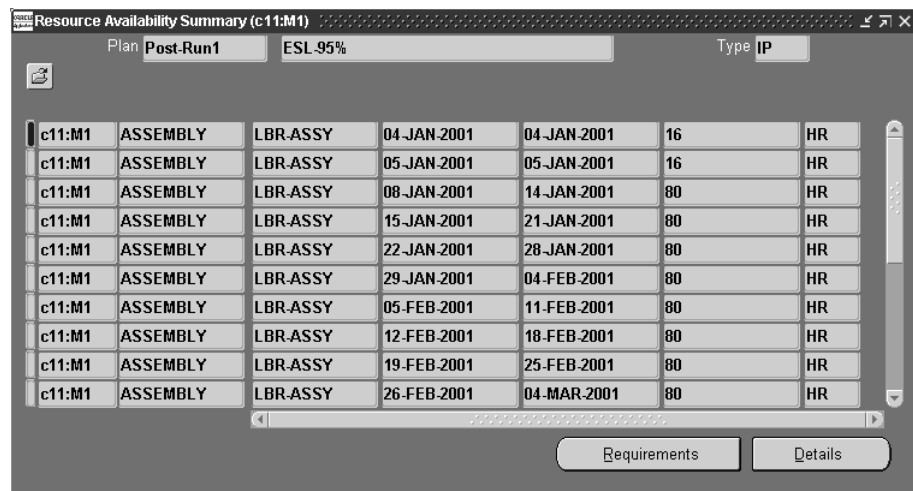
You can view time-phased material and resource availability for all items/resources in your inventory plan.

### To view time-phased material and resource availability

1. [Right-click] on an item in the navigation tree then choose the Resources option.
2. Choose Availability.

The Resource Availability Summary window appears.

**Figure 15–16** Resource Availability Summary window



The screenshot shows a window titled "Resource Availability Summary (c11:M1)". At the top, there are fields for "Plan" (Post-Run1), "ESL 95%", and "Type" (IP). Below these is a table with 7 columns. The first column lists the item "c11:M1" for all rows. The second column is "ASSEMBLY". The third column is "LBR-ASSY". The fourth and fifth columns show date ranges. The sixth column shows numerical values, and the seventh column shows "HR". At the bottom right, there are two buttons: "Requirements" and "Details".

Item	Type	Resource	Start Date	End Date	Value	Unit
c11:M1	ASSEMBLY	LBR-ASSY	04-JAN-2001	04-JAN-2001	16	HR
c11:M1	ASSEMBLY	LBR-ASSY	05-JAN-2001	05-JAN-2001	16	HR
c11:M1	ASSEMBLY	LBR-ASSY	08-JAN-2001	14-JAN-2001	80	HR
c11:M1	ASSEMBLY	LBR-ASSY	15-JAN-2001	21-JAN-2001	80	HR
c11:M1	ASSEMBLY	LBR-ASSY	22-JAN-2001	28-JAN-2001	80	HR
c11:M1	ASSEMBLY	LBR-ASSY	29-JAN-2001	04-FEB-2001	80	HR
c11:M1	ASSEMBLY	LBR-ASSY	05-FEB-2001	11-FEB-2001	80	HR
c11:M1	ASSEMBLY	LBR-ASSY	12-FEB-2001	18-FEB-2001	80	HR
c11:M1	ASSEMBLY	LBR-ASSY	19-FEB-2001	25-FEB-2001	80	HR
c11:M1	ASSEMBLY	LBR-ASSY	26-FEB-2001	04-MAR-2001	80	HR

## Reviewing Exception Messages

Material and Resources constraints are generated for Inventory Plans only if you choose the option Enforce Capacity Constraints. In this option, the output contains both unconstrained safety stocks (i.e., safety stocks required to meet the target customer service level), and constrained safety stocks (i.e., the achievable safety stock given the capacity constraints).

The constraint exception messages provide users with a list of capacity bottlenecks that prevent them from achieving the target service levels.

The exception messages generated for this case are the same as those available in ASCP. Please refer to [Chapter 9, Exception Messages](#) for information on what exceptions are generated for which type of plans, how exceptions can be viewed and analyzed, and how exception situations potentially can be resolved

The following is a list of exceptions for Inventory Optimization:

- Late Sales Orders and Forecasts
  - Past due transportation resource constraint
  - Past due forecast
- Material and Resource Capacity
  - Material constraint
  - Resource constraint
  - Resource overloaded
  - Supplier capacity overloaded
  - Resource underloaded
- Transportation and Distribution
  - Transportation resource overloaded
  - Transportation resource underloaded
- Shortage and Excess
  - Item with a shortage
  - Item with excess inventory
- Substitutes and Alternates Used
  - Planned order uses alternate BOM

- Planned order uses alternate routing
- Planned order uses substitute components
- Planned order uses alternate resources
- Order sourced from alternate facility
- Order sourced from alternate supplier
- Item Exceptions
  - Items with negative starting onhand
  - Items with no activity

## Inventory Optimization Reports

Users of Oracle Supply Chain Intelligence have access to a series of reports designed for analysis of Inventory Optimization output. These reports facilitate strategic decisions such as "What product lines, sales channels or customers should I focus my investments on (because they are the most profitable)?" or "What service level do I need to achieve in order to hit my revenue target?"

These reports contain both graphic and tabular content. You can view them along different dimensions and at varying levels of detail. The following is a list of the reports:

**Planned Service Level vs. Profit** This report shows you graphically the correlation between profit and service level. This information helps you to determine the service level you should target in order to meet your revenue or profit objectives.

**Planned Service Level** This report shows you the service level that can be attained given the constraints that you have. You can view planned service level by customer to understand which customers you should serve better in order to maximize your profit.

**Planned Cost Breakdown Summary** This report shows you the breakdown of your product cost. Product cost includes production cost, purchasing cost, carrying cost and penalty costs. You can view the cost breakdown for a product line to understand how you can improve the profit margin of that product line.

**Planned Purchasing Cost** This report shows you where you are spending your purchasing money. You can view purchasing cost by supplier and purchasing cost by item to understand which suppliers and items consume the largest proportion of

your procurement budget, and therefore where you should focus procurement savings efforts.

**Planned Inventory Value** This report shows you the Inventory Optimization-prescribed carrying costs and inventory values for different locations within your supply chain. Within a location (organization), you can view prescribed carrying costs and inventory values for finished goods, subassemblies and raw materials. This report tells you what inventory to hold, and where to hold it.

**Planned Gross Profit** This report shows you the revenue and profit breakdown for a specific service level. You can view revenue and profit breakdown by product line to understand which product lines you need to focus on to improve your bottom line.

This chapter includes:

- [Overview of Business Topics](#) on page 16-2
- [End-Item-Level Substitution](#) on page 16-3
- [User-Defined Alternate Decision Rules](#) on page 16-44
- [Organization Security](#) on page 16-77
- [Key Performance Indicators](#) on page 16-81
- [Supplier Acknowledgement for a Rescheduled Purchase Order](#) on page 16-92
- [Setting Demand to Supply Planning Automation](#) on page 16-94
- [Setting Supplier Collaboration Automation](#) on page 16-95

## Overview of Business Topics

This section presents information on a variety of business topics that affect all aspects of the APS product. They include such issues as:

- end item-level substitution
- user-defined alternate decision rules
- organization security
- key performance indicators



## 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:

1. 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
2. Set item attributes to control the generation of supplies

3. Set Item attribute to establish a window for substitution
4. Collect data
5. Run plans and analyze substitution decisions
6. Follow work flow procedure to enable execution
7. 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)

Currently, substitution rules or relationships can be defined 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.

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.

### 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.

Figure 16–1 Item Relationships window

From Item	To Item	Type	Reciprocal	Effective Dates	
				From	To
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"/>		

Item Description

From: Finished Goods

To: Finished Goods

Planning Details

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.

- 3. To further define details about the substitute relationship, select an item row and select the Planning Details button.

The Planning Details - Substitute window appears.

Figure 16–2 Planning Details - Substitute window

Planning Details (V1) - Substitute

From Item

PSS2

PRODUCT SUBSTITUTION

To Item

PSS1

PRODUCT SUBSTITUTION TEST

Planning Details

Substitution Set

PSS\_SIM1

Partial Fulfillment

☒

☐

☐

☐

Effective Dates

From

To

17-APR-2002

31-JAN-2003

11-MAY-2002

All Customers

☐

☐

☐

☐

Customer References

Customer

Address

Type

From

To

Customer XYZ

1234 Beach Street

Ship To

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 <a href="#">Simulate Possible Substitutions</a> on page 16-27.
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.

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Field	Description
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.
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 noncustomer-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	You can specify effective dates for substitution at a customer level. If you specify effective dates at customer level for a substitution relationship, the effective dates you might have specified at the in the Planning Details window and the Item Relationship window will be ignored.

Substitution Set-Up Examples

Use the following information to set up various substitution scenarios.

To set up substitution across many dates/effectivities

1. Fill out the Item Relationships window as shown in the following table:

From Item	To Item	Relationship type	Reciprocal
A	B	Substitute	not selected

2. Fill out the Planning Details window as shown in the following table:

Substitution Set	Partial Fulfillment	From Date	To Date	All Customers
null	unselected	Day 1	Day 50	selected
null	unselected	Day 65	Day 80	selected
null	unselected	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	not selected

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)	not selected	null	null	selected
SSET1	not selected	null	null	selected
SSET2	not selected	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 noncustomer-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	not selected

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	not selected
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	not selected

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	not selected

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.



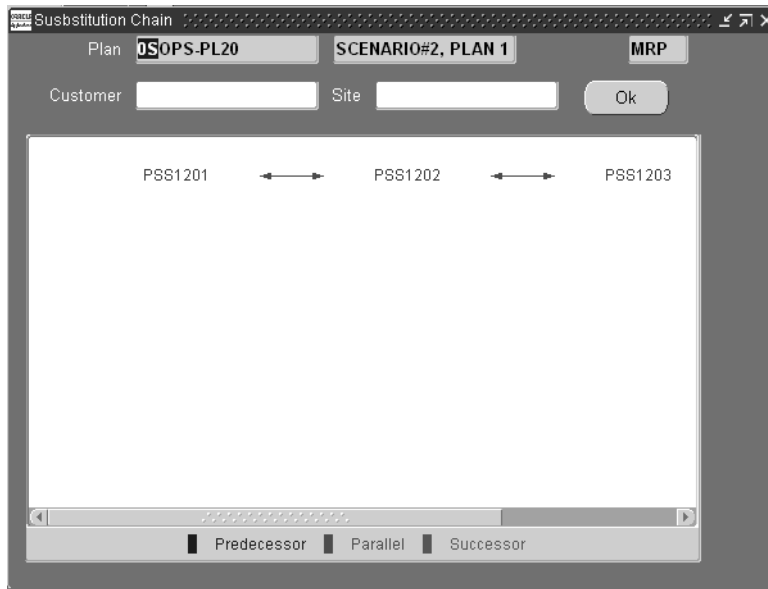
**Figure 16–3 Items window**

The screenshot shows the SAP 'Items (dmt.M1)' window. At the top, there are fields for 'Plan' (PSS-S3), 'COPY OF PSS-2 (4/25 9:30AM)', and 'Type' (MRP). Below these is a table with the following columns: Item, Org, BOM Item Type, Pegging, Preprocessing LT, Processing LT, and Po. The table contains two rows of data:

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

Below the table, there are several buttons: 'Destinations', 'Sources', 'Where Used', 'Components', 'Co-Product', 'Routing Operations', 'Safety Stock', and '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.

**Figure 16–4 Substitution Chain window**

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.

**Figure 16–5 Substitution Properties window**

From	To	Implied Substitution	Highest level item	Effective date	Disable date	Customer	Customer site	Substitution set	Partial Fulfillment

OK

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:

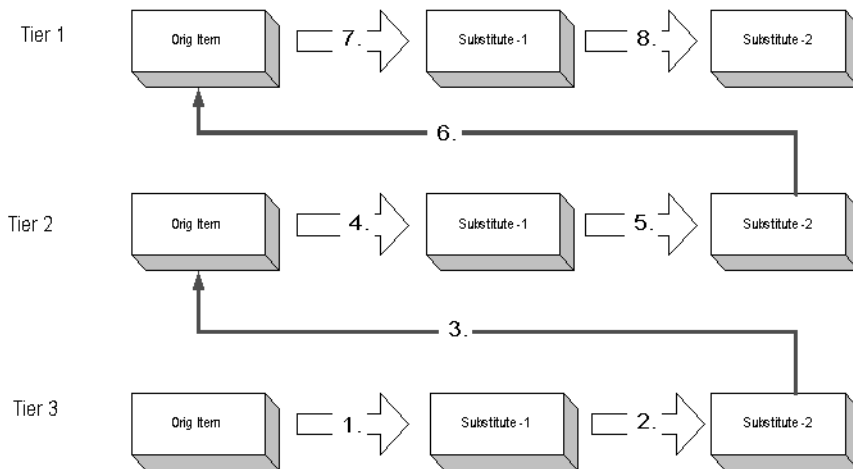
- searching the supply chain
- chaining

### 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. The search for demanded item or substitute items proceeds as follows:

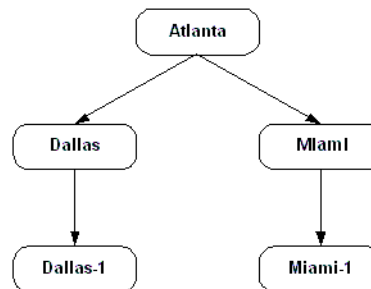
- you look for demanded and substitute/s within the same organization before going across to other organizations to fetch demanded item and substitute/s

The following figure shows 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.

**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

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 as shown below:

A --> B

B --> C

then, you can infer that item A can be substituted for item C, and the following substitution is valid:

A --> 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

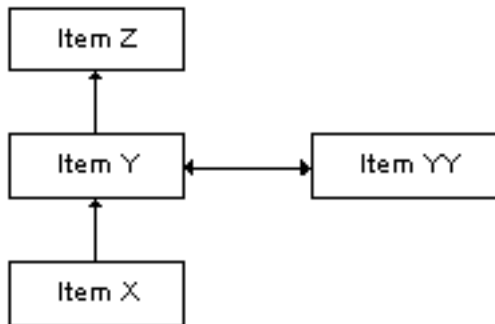
This section contains descriptions of substitution features available in Oracle ASCP. It contains information for the following features:

- 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.



### 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 coproducts. 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 coproduct supplies for the rest of the items in the coproduct relationship.

Oracle APS plans for the capacity to produce all the coproducts for a given order because you cannot produce only one item that is part of the coproduct.

**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 coproduct relationship, Oracle ASCP generates coproduct 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 coproduct 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.

Please refer to the section [Appendix A Profile Options](#) for more details on profile options.

**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.

<b>Profile Option: Choice of Item for Which to Create Supplies in Substitute Relationship</b>	<b>Item Attribute: Create Supply</b>	<b>Result</b>
Follow Item Attribute	Yes for A, B, and C	Create supplies normally (default)
Follow Item Attribute	No for A, B, and C	Does not create supplies and you will get shortages
Follow Item Attribute	Yes for A, No for B, and Yes for C	Create supplies for A based on demand for A; create supplies for B based on demand for B or C
Follow Item Attribute	No for A, Yes for B, Yes for C	Create supplies for B or C based on demand for A, B, or C
Follow Item Attribute	No for A, No for B, Yes for C	Creates supplies for C based on demand for A, B, or C
Follow Item Attribute	Yes for A, Yes for B, and No for C	Creates supplies for C based on demand for A or B
Follow Item Attribute	No for A, Yes for B, No for C	Creates supplies for B based on demand for A or B
Follow Item Attribute	Yes for A, No for B, No for C	Creates supplies for A based on demand for Item A

**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 Bucket1	Time Bucket 2	Time Bucket 3	Time Bucket 4	Time Bucket 5	Time Bucket 6
Item A	25	2	3	4	5	6
Item B	5	0	25	0	0	25

At the same time, if supply of 25 units in time period 3 was not available, you may not be able to wait until time period 6 to pick up the supply for item B, as delivery performance might drive you to use substitution right away.

Another aspect of substitution window might be to evaluate all native demands and supplies within a specified amount of time, and to consider only excess supply from each item as possible substitution supplies.

Continuing our example from above, you may also have demand for 20 units of item A in time period 1. In this case, you may not want to satisfy B’s demand using A’s supply. You may want to find out the excess after satisfying the native demand before you apply substitutions. Therefore, the demand for Item B can satisfied only

as follows: 5 units of its own supply in time period 1, 5 units of item A's supply in time period 1, and its own supply of 20 units in time period 3.

Satisfying native demand may run contrary to prioritized demand in constrained plans. The following table shows the supply/demand picture where demand for item B can be satisfied with a supply for item A. The substitute window for both items is 3 days.

Item	Time Bucket 1	Time Bucket 2	Time Bucket 3	Time Bucket 4	Time Bucket 5	Time Bucket 6
Item A (Demand)	20(Priority 10)	10(Priority 20)	0	0	0	0
Item A (Supply)	0	20	5	0	0	0
Item B (Demand)	50(Priority 1)	0	0	0	0	0
Item B (Supply)	5	10	0	0	0	25

Given the logic of constrained plans, you will try to satisfy every demand based on its associated demand priority. In the above scenario, satisfying native demand and following demand priorities are at odds. Going by priority, you will consume all the supplies for item B and substitute 10 units from item A to satisfy B's demand. This means demand from item A may not be satisfied on time because it needs to be manufactured or bought.

If your business scenario needs to give preference to native demand satisfaction within the substitute window, you can do so by setting up system level profile options. If you set up the profile option to give preference to native demand satisfaction, item B will not be able to substitute any supply from item A in the previous example. You can achieve native demand satisfaction by setting up system level profile options. Please see the section [Appendix A Profile Options](#) 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

**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 plant/s 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 substitution/s 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	indefinite
X1	X3	Company 2	Company 2 address	4/1/2002	4/1/2003
X2	X3	Company 2	Company 2 address	6/1/2002	indefinite
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

From	To	Substitution Set	Customer
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.

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**Note:** You must run a batch plan (as opposed to an online plan) to use substitution sets.

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**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

Record Type	Item	Day 1
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	Day2	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(O/H)	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
Supply	A	5(O/H)	0	0	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	15(O/H )	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(O/H)	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(O/H)	0	2	0	0	0	0	0	10	0
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 Day1, 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		
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 Day1 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.

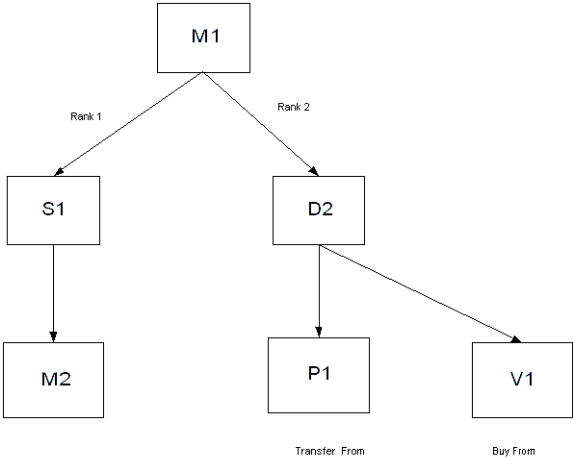
If the supply for A1 were to be on Day 15, you would not pick up substitute supply as it is outside the substitution window. If there is no time advantage and both demanded item and substitute item are available on the same day, you pick up demanded item's supply (i.e., A1's supply)

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
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.





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
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

Record Type	Item	Day 2	Day 5	Day 10	Day 20
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.

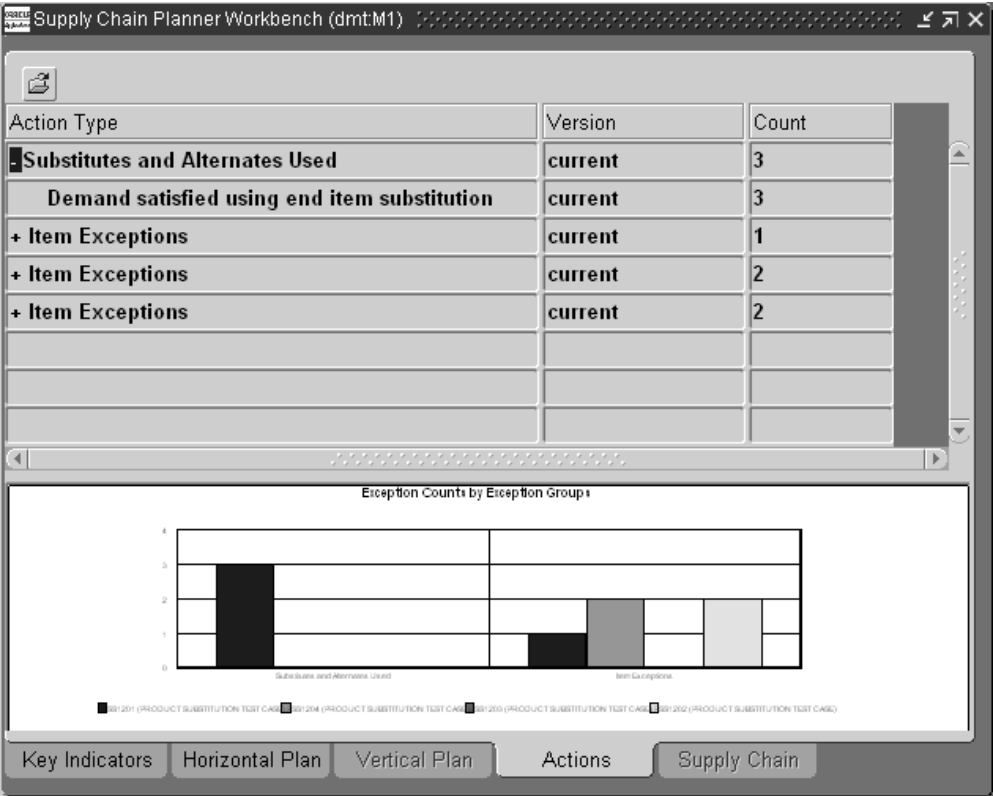
## Exception Messages

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.

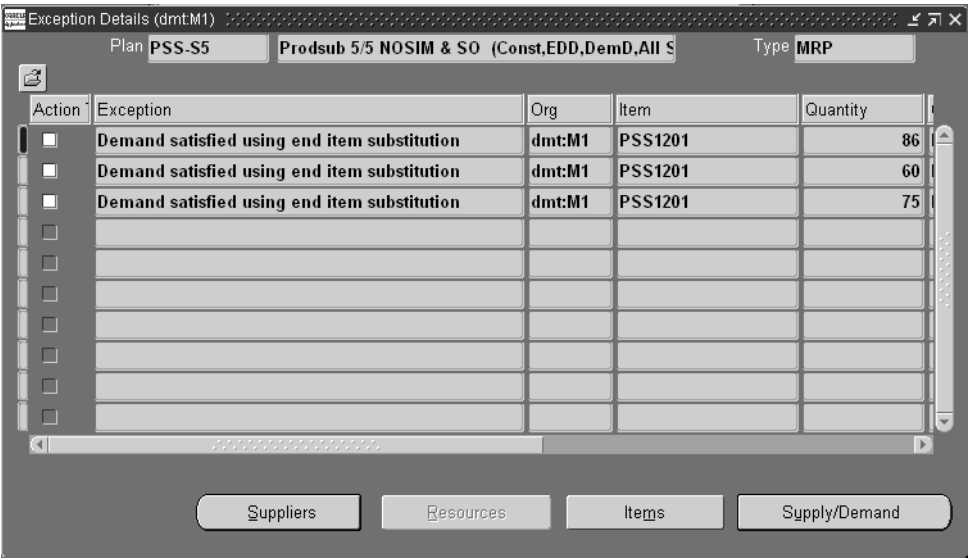
Figure 16–6 Exception Message



Exception Details

Oracle APS converts the demand from the original item to substitute item/s if substitute supply is found. Access the Exception Details window to view the demand that has been satisfied by the substitute item.

Figure 16–7 Exception Details window



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

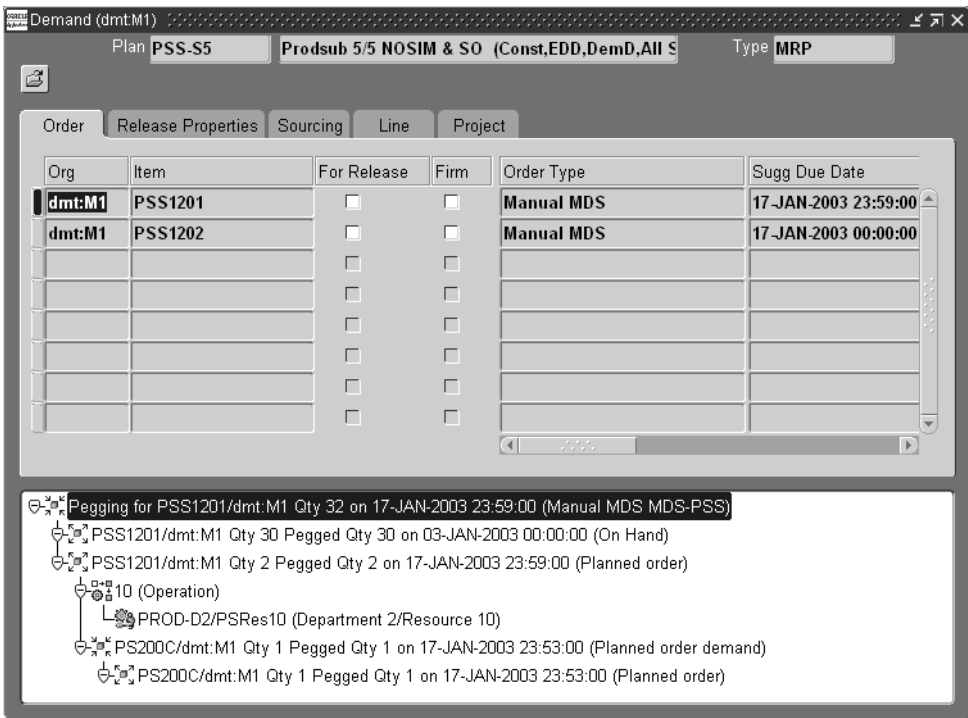
Field	Description
Org.	Organization in which the exceptions occurred
Item	The item for which you received the demand, the exception is for this item.
Quantity	The quantity on the original order
Order number	Sales Order Number or MDS/Forecast name for the From item
Substitute item/s	This is the item to 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.

Figure 16–8 The Demand window



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:

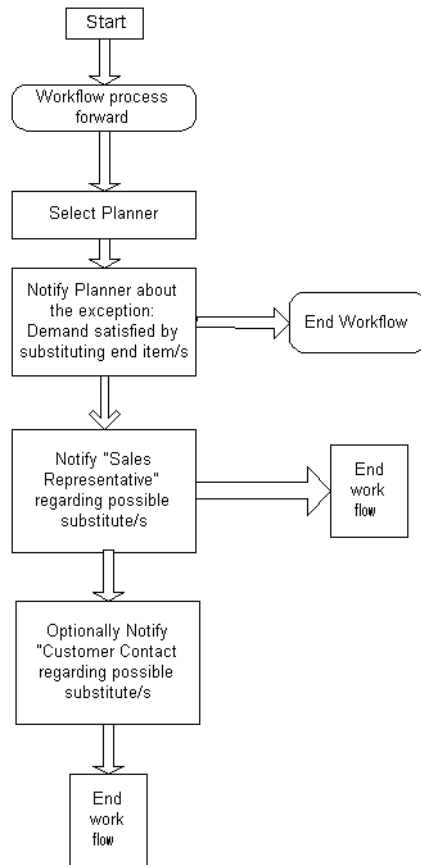
- 10 units of demand for Plug in Card 100
- 40 units of demand for Plug in Card 150
- 50 units of demand for Plug in Card 200

### **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.



The heading of the workflow is Demand Satisfied by Substituting End Item/s. 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.

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.

## 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 [Chapter 11, Constraint-Based Planning](#).

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.

Figure 16–9 Plan Options window

Plan Options (dmtM1)

Plan **PSS-S1**    Probsub **5/1 (Const,EDD,Demand,All)**    Plan Type **Manufacturing Plan**

Main    Aggregation    Organizations    Constraints    Optimization    Decision Rules

Planned Items **Demand schedule ...**    Assignment Set **KCC - NEW PSUB ASS**

Material Scheduling Method **Order Start Date**    Demand Priority Rule

End Item Substitution Set **DEFAULT**    Overwrite **All**

Demand Class

☐ Demand Time Fence Control    ☒ Append Planned Orders

☐ Planning Time Fence Control    ☐ Move Jobs to PIP

☒ Lot for Lot

**Default Forecast Consumption Days**

Backward Days    Forward Days

☒ Enable Pegging

☒ Peg Supplies by Demand Priority    Reservation Level **None**

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	unchecked
Use Alternate Resources	checked
Use Substitute Components	checked
Use Alternate BOM/Routing	checked
Use Alternate Sources	checked

## 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	checked	Use primary sources as far as possible and use alternate sources only if necessary.
Use alternate sources	unchecked	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	checked	Use primary routing as far as possible and use alternate only if necessary.
Use alternate BOM/routings	unchecked	Use only primary BOM/Routing
Use alternate resources	checked	Use primary resource as far as possible and use alternate resource only if necessary.
Use alternate resources	unchecked	Use only primary resources
Use end item substitutions	checked	Use primary item and end item substitute, when enabled, prior to creating new planned orders.
Use end item substitutions	unchecked	Use only the demanded item. Do not use the end item substitute.
Use substitute components	checked	Use primary items as far as possible and use substitute component only if necessary.
Use substitute components	unchecked	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*.

Figure 16–10 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

Eurge

Copy Shipping Orgs From...

Assignment Set...

The second screen shot shows rank using Bill of Distribution.

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Figure 16–11 Bill of Distribution

The screenshot shows a software window titled "Bill of Distribution". At the top, there are fields for "Name" (PLASTIC HOUSING) and "Description" (Plastic Housing Sourcing List). A "Planning Active" checkbox is checked, and a "Copy From..." button is present. Below this is a section for "Receiving Organization" with a table containing three rows of data. The first two rows are highlighted. Below that is a section for "Shipping Organization" with a table containing three rows of data. The first two rows are highlighted. At the bottom of the window are four buttons: "View", "Purge", "Copy Shipping Orgs From...", and "Assignment Set...".

Org	Customer	Address	From Date	To Date
M1			01-MAY-1997	
M2			01-MAY-1997	
S1			01-MAY-1997	

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

**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.

Figure 16-12 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.

PM-YC01-RM-C

Raw material

Ea

1

None

1

Substitute Component Information

Substitute Priority

1

OK

Cancel

Clear

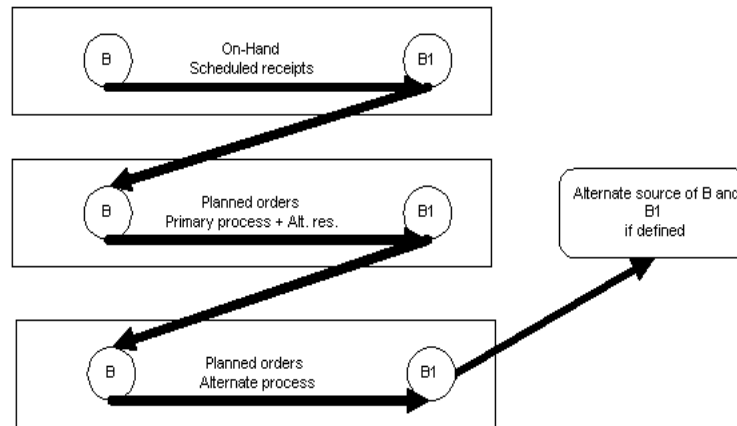
Help

Substitutes

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.



**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.

Figure 16-13 Operation Alternate Resources

Resource	Replacement Group	UOM	Basis	Usage	Inverse
AM_OSP_RES		HR	Item	1	1

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.

**Figure 16–14 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.

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**Note:** For information on End-Item Substitutions, please refer to [End-Item-Level Substitution](#) on page 16-3.

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### 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
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.

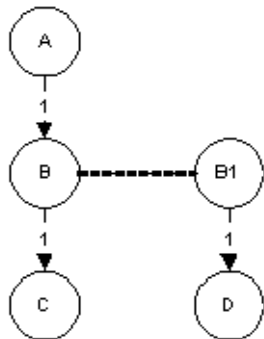
**Selection of Alternates for OSFM**

This section contains two scenarios that describe the selection of alternates for network routing based on:

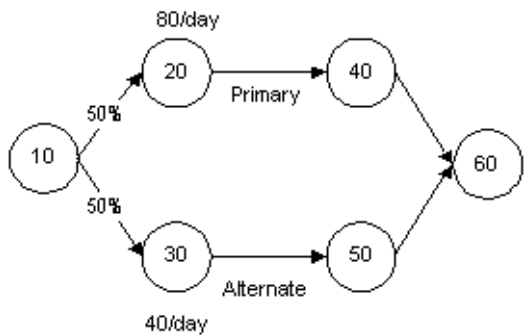
- Primary Path
- Planned Percentage

(For additional information, please see [on page 12-54, Network Routings](#)). 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.

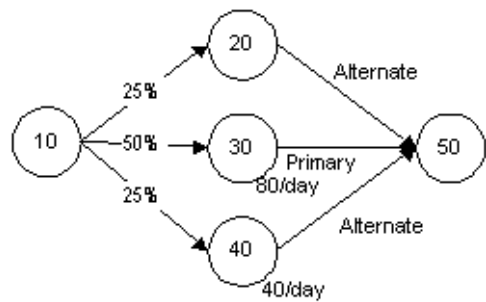
The following diagram shows the BOM for Item A where B1 is the substitute for B.



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.



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.



The following table shows the demand for Item A.

Demand	Date	Quantity
A	1	80
A	2	120
A	3	160

### Scenario I

The following table shows how supply would be affected if the scheduling method was Primary Path.

Item	Date	Supply
A	1	80
A	2	120
A	3	160
B	1	80
B	2	80
B	3	80
B1	2	40
B1	3	80

All the demand for Item A will be met on time. To meet the demand on Days 2 and 3, substitute item B1 is selected. On Day 2, the demand for 120 is satisfied with a supply of 80 units of item B and 40 units of items B1, whereas on Day 3 the demand

for 160 units of item A requires 80 units of item B and 80 units of item B1, all using only the Primary operation sequences.

Note that there is no supply available from the alternate path when the planning method is based on the primary path.

**Scenario II**

The following table shows how supply would be affected if the scheduling method was Planned Percentage.

Item	Date	Supply	Alternate
B	1	40	10-20
B	1	40	10-30
B	2	40	10-20
B	2	40	10-30
B1	2	10	10-20
B1	2	20	10-30
B1	2	20	10-40

All the demand for item A is met on time, but since the network scheduling method is based on Planned Percentage, both the Primary and the Alternate nodes are used to meet the demand in time. For example, item B is produced on both nodes 10-20 and 10-30 by placing a demand of 40 units per each node.

Note that the maximum capacity is constrained by the most-capacity-constraining node of the network routing.

**Simulations and User-Defined Decision Rules**

When simulating constrained ASCP plans, do not toggle the site level profile option MSO: Enable Decision Rules. Switching the profile option values and running on-line 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 [Chapter 7, Simulations](#).

## 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.)

---

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**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.

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### 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 an optimized 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.

**Figure 16–15 Plan Options window**

Plan Options (dmt.M1)

Plan: **PSS-S1** Probsub: **5/1 (Const,EDD,Demand,All)** Plan Type: **Manufacturing Plan**

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

Planned Items: **Demand schedule ...** Assignment Set: **KCC - NEW PSUB ASS**

Material Scheduling Method: **Order Start Date** Demand Priority Rule:

End Item Substitution Set: **DEFAULT** Overwrite: **All**

Demand Class:

☐ Demand Time Fence Control ☒ Append Planned Orders

☐ Planning Time Fence Control ☐ Move Jobs to PIP

☒ Lot for Lot

**Default Forecast Consumption Days**

Backward Days:  Forward Days:

☒ Enable Pegging

☒ Peg Supplies by Demand Priority Reservation Level: **None**

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	checked	Use primary sources as far as possible and use alternate sources only if necessary.
Use alternate sources	unchecked	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	checked	Use primary routing as far as possible and use alternate only if necessary.
Use alternate BOM/routings	unchecked	Use only primary BOM/Routing
Use alternate resources	checked	Use primary resource as far as possible and use alternate resource only if necessary.
Use alternate resources	unchecked	Use only primary resources
Use end item substitutions	checked	Use primary item and end item substitute, when enabled, prior to creating new planned orders.
Use end item substitutions	unchecked	Use only the demanded item. Do not use the end item substitute.
Use substitute components	checked	Use primary items as far as possible and use substitute component only if necessary.
Use substitute components	unchecked	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 [Chapter 8, Optimization](#).

**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](#) section starting on page 16-56 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.

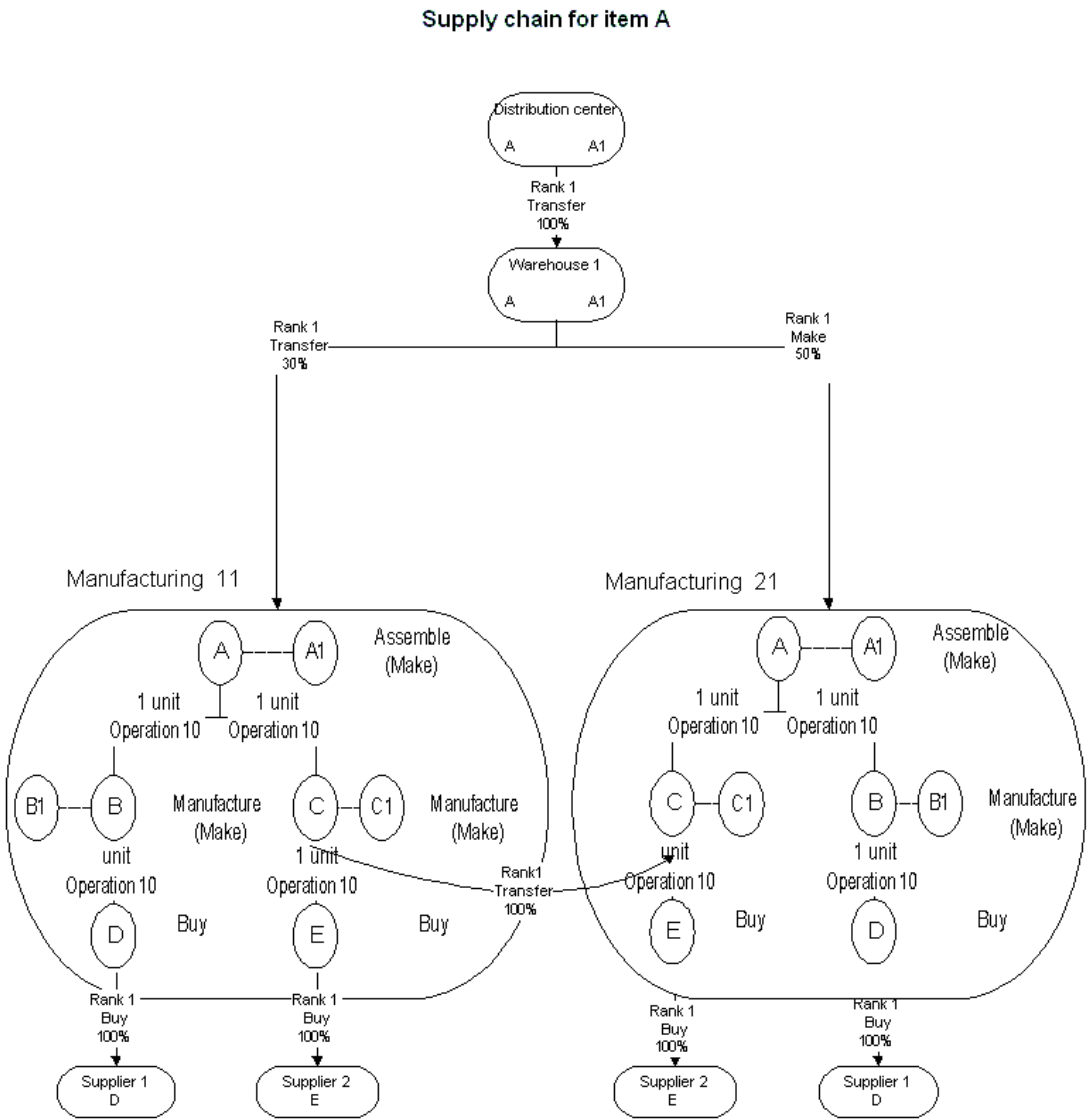


However, if both making at Org M and buying from Supplier S were \$100, the optimized plan would recommend the use of Org M because it is a higher ranked source.

## 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

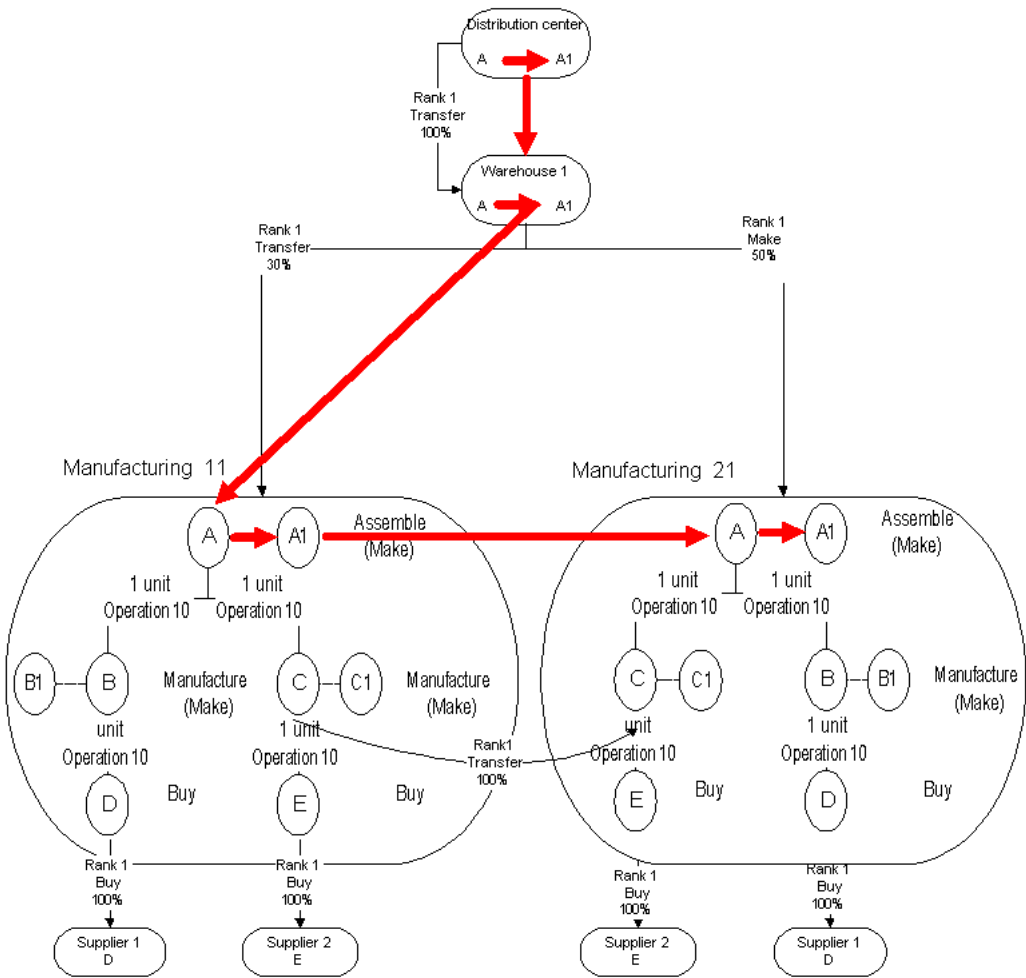


The planning engine searches on-hand quantity and schedules receipts (item A and end item substitute A1) across each tier before creating new planned orders for the demanded item. (Please refer to End Item Substitution chapter). To look for on-hand quantity and scheduled receipts of the demanded item 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.

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](#) on page 16-71), C (Refer to [Planning for C at Manufacturing 11](#) on page 16-72), D (Refer to [Planning for D at Manufacturing 11](#) on page 16-73), and E (Refer to [Planning for E at Manufacturing 11](#) on page 16-73)
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](#) on page 16-72), C (Refer to [Planning for C at Manufacturing 21](#) on page 16-73), D (Refer to [Planning for D at Manufacturing 21](#) on page 16-73), E (Refer to [Planning for E at Manufacturing 21](#) on page 16-73)
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](#) on page 16-73)
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](#) on page 16-73)
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](#) on page 16-73)
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](#) on page 16-73)
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-define decision rules:

### Make Item

The total processing lead-time =  $((1 + \text{Queue Time Factor}) * \text{processing lead-time})$  (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, the 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.

The total processing lead-time = preprocessing lead-time + postprocessing lead-time + processing lead-time.

The 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, Day1 demand will peg to 100 units of item B using primary resource/routing/BOM and 50 units of item B using alternate BOM/routing. Day2 demand will peg to 50 units of substitute component B1.

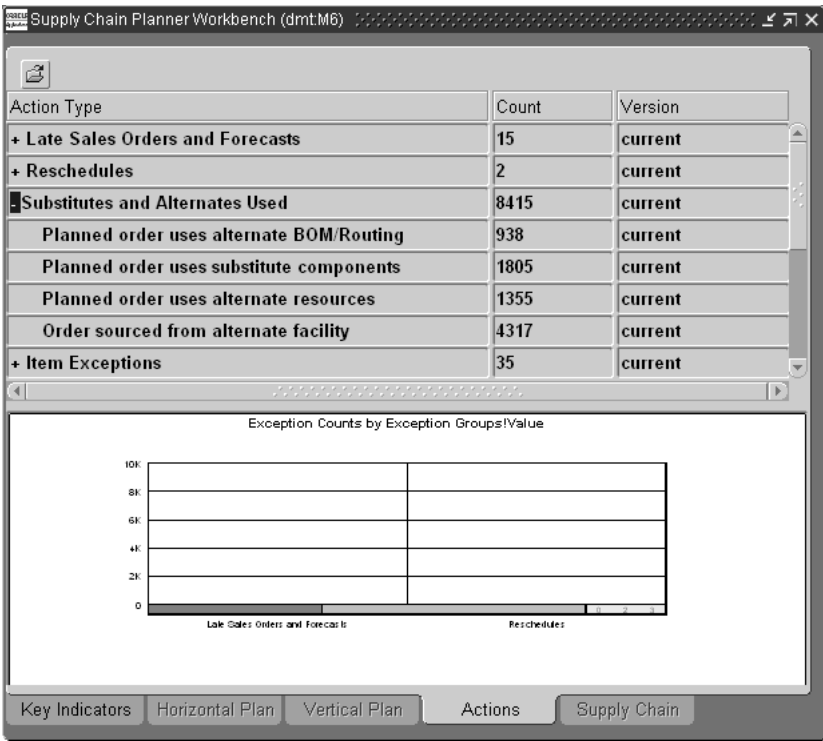
If you look at just the pegging for D1, 50 units of the substitute component is not used. Instead, 50 units of the alternate BOM/routing is pegged to D1. Therefore, it looks as if ASCP has broken the user-defined sequence. But, if the demand was for only 150 units, then the supply would be 100 units of item B and 150 units of substitute component B1, which follows the user-defined sequence.

## Exception Messages

Once the planning engine runs, you may find several instances where the engine has recommended alternates. When this happens, an exception message is generated. Typical flow may consist of analyzing exceptions generated by the plan, drilling into the details of exceptions, analyzing supply demand records using Supply/Demand window, vertical plan and pegging. Users may access the horizontal plan to get a detailed understanding of the demands placed on the alternates, supplies received as a part of the user-defined decision rule, and analyze possibilities of improving the solution based on their knowledge.

**Exception Display** When the system suggests the use of alternates, it also generates required exception messages referencing the type of alternates used. These exceptions are summarized in the Substitutes and Alternates Used exception group. The following screen shot shows a typical exception message.

Figure 16–16 Exception Message



## Organization Security

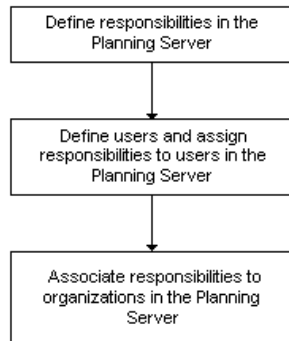
This feature restricts plan information access to authorized individuals. Oracle ASCP allow users to associate job responsibilities to organizations for security purposes. This ensures that you see/change planning data in an organization only if you have a job responsibility associated with the organization.

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.

**Figure 16–17 Assign Organizations to Responsibilities**

ORACLE  
Advanced Planning

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### 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, refer to the *Oracle Business Intelligence System Implementation Guide*.

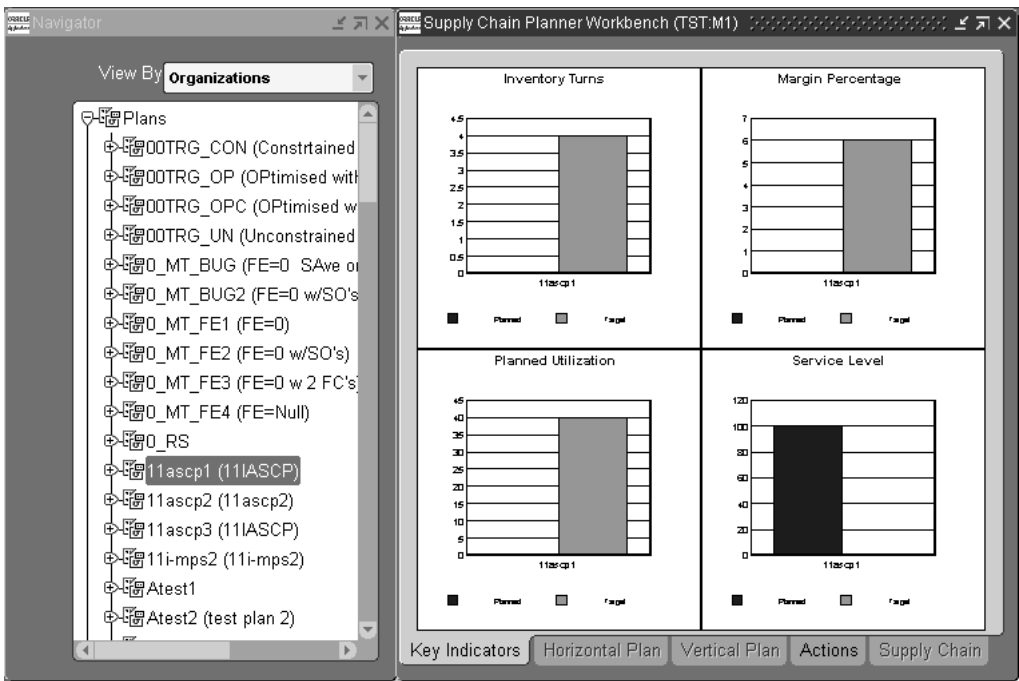
You can also compare the KPIs for multiple plan simulations using the Planner Workbench.

Oracle APS (Advanced Planning and Scheduling) provides eight KPIs against which a plan’s performance can be compared. The following table shows the KPIs that are available in the Oracle ASCP and Oracle Inventory Optimization modules.

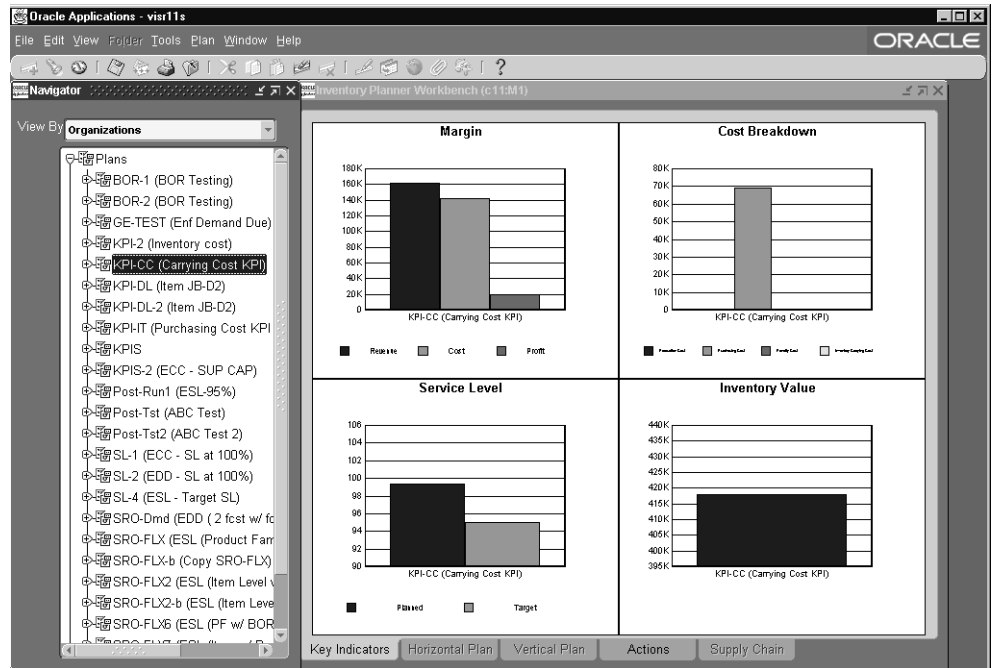
**Table 16-1 Available KPIs**

KPIs	ASCP	IO
Inventory Turns	Yes	Yes
Margin Percentage	Yes	Yes
Planned Utilization	Yes	Yes
Ontime Delivery	Yes	No
Margin	Yes	Yes
Cost Breakdown	Yes	Yes
Service Level	Yes	Yes
Inventory Value	No	Yes

Figure 16–1 Oracle ASCP Key Performance Indicators





**Figure 16–2 Oracle Inventory Optimization Key Performance Indicators**

Following are descriptions of various KPIs.

## Inventory Turns

Inventory turns for a given plan between time periods  $t_1$  and  $t_2$  are calculated as follows:

(annual) inventory turns = {dollar value of MDS demand in period  $[t_1, t_2]$  / dollar value of average inventory in period  $[t_1, t_2]$ } \* 365 / ( $t_2 - t_1$ )

dollar 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 expressed in units of 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  $[t_1, t_2]$

---

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**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.

---

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## Margin Percentage

Margin Percentage is the net difference between planned revenues and planned production costs.

Margin Percentage =  $\frac{[(\text{total shipment units}) * (\text{standard price}) * (\text{standard discount})] - [(\text{total shipment units}) * (\text{standard cost})]}{[(\text{total shipment units}) * (\text{standard price}) * (\text{standard discount})]}$

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 =  $\frac{(\text{Hours of capacity actually used})}{(\text{Available hours of capacity})} * 100$

---

---

**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 =  $\frac{\text{Sum of [Planned Utilization for all Planning time buckets]}}{\text{Number of Planning time buckets}}$

Plan level Planned Utilization does not include supplier utilization.

## On Time Delivery

Customer service level or delivery performance are calculated as follows:

$\frac{((\text{Total number of orders} - \text{Number of late orders}) * 100)}{\text{Total number of orders}}$

## Margin

Margin is calculated as follows:

$$\text{Top Assembly Margin} = (\text{total shipment units}) * (\text{standard price}) * (\text{standard discount}) - (\text{total shipment units})(\text{standard cost})$$
$$\text{Aggregate Level Margin} = \text{Sum of margin of top assemblies}$$

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.

## Cost Breakdown

Cost Breakdown KPI is composed of four separate 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:

$$\text{Production Cost} = \text{Sum of } (\text{Resource time needed} * \text{Resource Cost}) \text{ for all resources in the organization.}$$

Inventory carrying cost is calculated based on average inventory level in each time bucket. Inventory carrying is calculated as follows:

$$\text{Inventory Carrying Cost (period } i) = \text{Average inventory of period } i * \text{carrying cost percent}$$

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 above equation in the absence of item list price.

Purchasing cost is calculated based on the standard item cost and the supply quantity.

$$\text{Purchasing Cost} = \text{Sum of } [\text{Standard Cost} * \text{Supply quantity}] \text{ for all items}$$

You can drill down to Plan/Org KPI or to KPI Trend. No target is available for 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.

**Table 16-2 Service Level KPI Calculation**

Item	BIS period	Demand Due Date	Demand Quantity	Demand Quantity Satisfied by Demand Due Date	Service Level
A	-	-	-	-	95% $[(100 + 90 + 100 + 190 + 280) / (100 + 100 + 100 + 200 + 300)] * 100 = (470 / 500) * 100$
-	1 January - 31 January	-	-	-	97% $[(100 + 90 + 100) / (100 + 100 + 100)] * 100 = (290 / 300) * 100$
-	-	10 January	100	100	-
-	-	15 January	100	90	-
-	-	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.

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**Note:** For more information on using KPIs, refer to [Chapter 10, Planner Workbench](#).

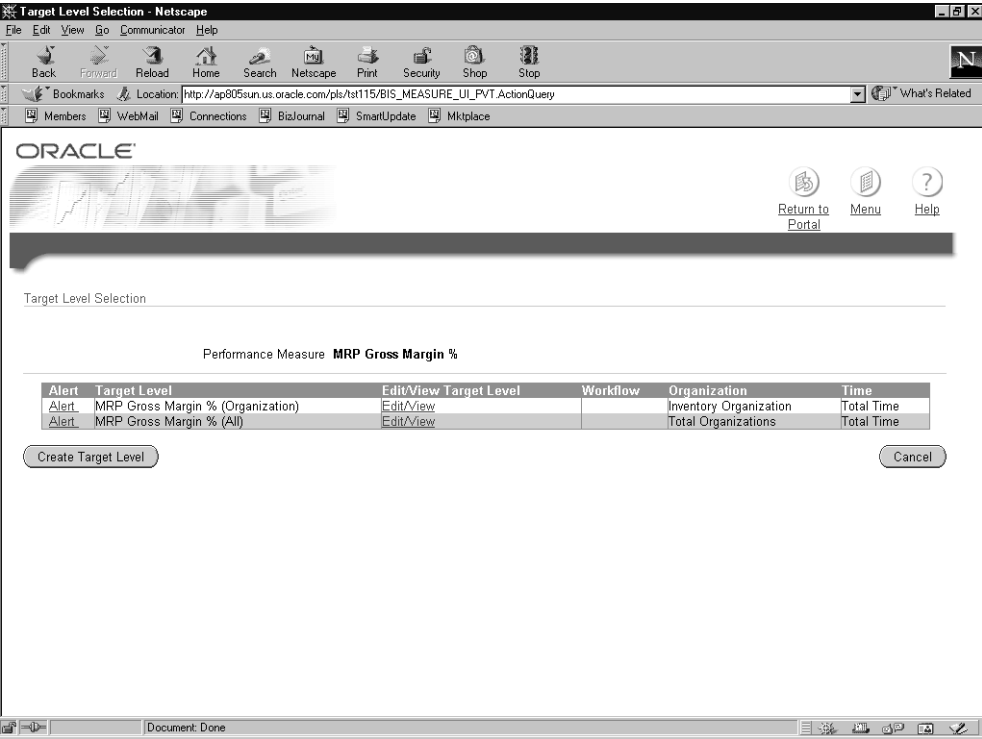
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## KPI Setup

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 Ontime Delivery% at the Total Organizations and Total Time dimensions
- MRP Planned Utilization% at the Total Organizations and Total Time dimensions

Figure 16–1 Setting KPI Target Levels in Oracle BIS



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 (e.g.; 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 [Chapter 10, Planner Workbench](#).

## 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, Ontime 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 Ontime Delivery.

### **Increasing Ontime Delivery**

- Ontime 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.)

#### **Example 1 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

#### **Example 2 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



**Example 3 If material and resource capacities are not constrained:**

- Increase penalty factor for unmet demand and late demand

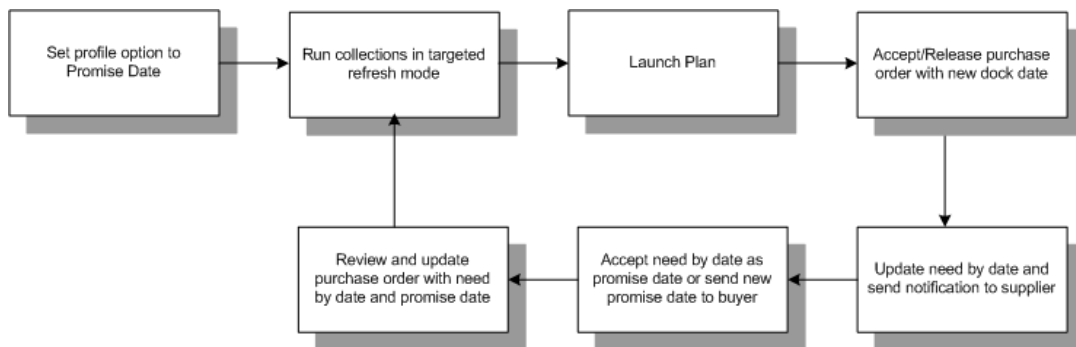
Increase weight given to the maximize on-time delivery objective, decrease weight given to other objectives.

## 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.

**Figure 16–2 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](#) 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:

**Table 16–1 Exception Messages**

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.

**Table 16–1   Exception Messages**

Exception Message	Scenario
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.

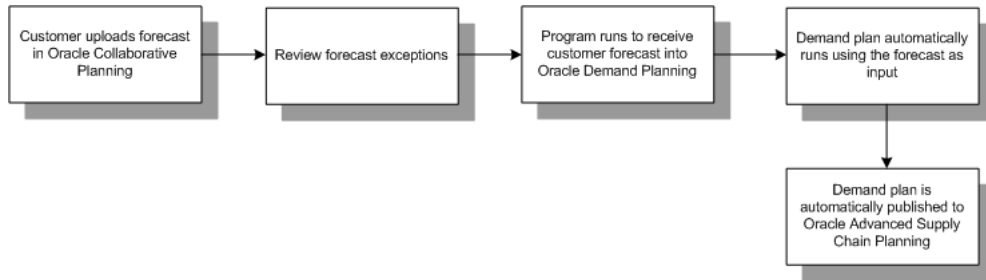
## Setting Demand to Supply Planning Automation

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.

**Figure 16–3 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.

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## Profile Options

This appendix includes:

- [Profile Options Introduction](#) on page A-2
- [INV Profile Options](#) on page A-4
- [MRP Profile Options](#) on page A-5
- [MSC Profile Options](#) on page A-11
- [MSD Profile Options](#) on page A-29
- [MSO Profile Options](#) on page A-32
- [MSR Profile Options](#) on page A-56

## Profile Options Introduction

There are different categories of profile options that relate to the Oracle Advanced Planning suite:

- MRP profile options
- MSC profile options
- MSD profile options
- MSO profile options
- MSR profile options
- INV profile options

The following sections contain tables which describe each profile option.

### 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	<p>Only applicable for Oracle Global Order Promising for non-Oracle Applications on Release 11i source. Only to be set up only on source instance. Do not set this up for an Oracle Applications Release 11i instance. Set this profile to Global ATP Server if Oracle Global Order Promising is deployed. This is a site level profile.</p>

## MRP Profile Options

The following table lists and defines the MRP profile options available with Oracle Advanced Planning.

Profile Option Name	Valid Values	Default Value	Description
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.
MRP: Calculate Excess Exceptions on Time Fence	Yes/No	Yes	Indicates whether excess exceptions are calculated at the time fence or up to the time fence.
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.
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 Profile Options

Profile Option Name	Valid Values	Default Value	Description
MRP: Create Time fence	Yes/No	Yes	Set to Yes to create a natural time fence based on firm work orders, purchase orders, flow schedules, and shipments. When set to No, the planning engine does not create a time fence.  The planning engine honors the item attribute Planning Time Fence regardless of the value of this profile option
MRP: Cutoff Date Offset Months	Integer >= 0	6	Determines how many months of resource availability should be computed for resources and simulation sets. No resource availability is calculated beyond this horizon. For constrained plans beyond this horizon, resource capacity 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.
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	-	-	Not used by Oracle Advanced Planning.

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	Set to Yes for firm planned orders to create a natural time fence. When set to No, the Planning Engine does not create a time fence at a firm planned order.
MRP: Firm Requisitions within time fence	-	-	Not used. Replaced by profile option MRP: Net All Purchase Orders Prior To Requisitions.
MRP: Include Schd Rcpts in Use-up	Yes/No	No	If set to Yes it includes scheduled receipts when computing the eco use-up date.
MRP: Include Substitute Components	Yes/No	No	Indicates whether to include substitute components in Order Promising calculation. Can update at the site level.
MRP: Interface Table History Days	-	-	Not used by Oracle Advanced Planning.
MRP: Maintain Original Schedule Version	-	-	Not used by Oracle Advanced Planning.
MRP: MPS Relief Direction	-	-	Not used by Oracle Advanced Planning.
MRP: Net All Purchase Orders Prior To Requisitions	Yes/No	No	<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_PLANNER_BACK_COMPATIBILITY	-	-	Not used by Oracle Advanced Planning.
MRP: Old Sales Orders Cutoff Days	-	-	Not used by Oracle Advanced Planning.

## MRP Profile Options

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Profile Option Name	Valid Values	Default Value	Description
MRP: Perform Planning Manager Functions in Loads	-	-	Not used by Oracle Advanced Planning.
MRP: Plan Revenue Discount Percent	Text	Null	Specifies the average discount percent applied to all items in a plan. This value is a key performance indicator used to calculate performance in a plan for Business Intelligence reports.
MRP: Plan Revenue Price List	Numeric	Null	Specifies the sales order price list applied to items in a plan. Used to calculate the plan margin key performance indicators for Business Intelligence reports.
MRP: Planner Batch Size	-	-	Not used by Oracle Advanced Planning.
MRP: Planner Workers	-	-	Not used by Oracle Advanced Planning.
MRP: Planning Manager Batch Size	-	-	Not used by Oracle Advanced Planning.
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	<p>Indicates group by option used when loading requisitions using the Planner Workbench form. Valid values are:</p> <ul style="list-style-type: none"> <li>■ All on One: Creates one purchase requisition for all recommended orders.</li> <li>■ Buyer: Creates one purchase requisition for buyer. Within each requisition, creates one line for each planned order for the buyer.</li> <li>■ Planner: Creates one purchase for planner. Within each requisition, creates one line for each planned order for the buyer.</li> <li>■ Vendor: Creates one purchase requisition for each vendor. Within each requisition, creates one line for each planned order for the vendor.</li> <li>■ Category: Creates one purchase requisition for each category of items. Within each requisition, creates one line for each planned order for the category.</li> <li>■ Item: Creates one purchase requisition for each inventory item. Within each requisition, creates one line for each planned order for the item.</li> <li>■ One each: Creates a purchase requisition for each planned order.</li> </ul>
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.
MRP: Snapshot Workers	Integer >= 0	1	Determines number of workers launched by the snapshot monitor. When set to 0, the Snapshot runs as a single-threaded process. Snapshot workers collect data on bills of material, work in process, on-hand quantities, purchasing, firm planned orders, routings, and work-in-process job resource requirements.
MRP: Sourcing Rule Category Set	-	-	Not used by Oracle Advanced Planning.
MRP: Time Fence Warning	-	-	Not used by Oracle Advanced Planning.
MRP: Trace Mode	Yes/No	No	Determines whether trace is enabled for all Oracle Advanced Supply Chain Planning processes.
MRP: Use Direct Load Option	Yes/No	No	Determines whether load worker can use the direct load option instead of conventional loads.

Profile Option Name	Valid Values	Default Value	Description
MRP: Use Ship Arrived Flag	Yes/No	No	<p>Determines whether sales orders are automatically viewed as arrived at a customer site after transit lead time has expired. You can manually update the ARRIVED_FLAG in SO_PICKING_HEADERS. Used when a customer is modeled as an organization. Valid Values are:</p> <ul style="list-style-type: none"><li>Yes: Use arrived flag in SO_PICKING_HEADERS.</li><li>No: Use transit time between source and the destination organizations.</li></ul>



## 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 <a href="#">Flexfield Attributes</a> for more information.
MSC: Allocated ATP Forward Consumption Method	Reduce future supply from lowest priority and Reduce available supply from any priority	Reduce future supply from lowest priority	<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	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.
MSC: Allow MRP Release of - DRP/MPS Planned Orders	-	-	Not used.

Profile Option Name	Valid Values	Default Value	Description
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>
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 Shop Floor Management (OSFM) routings with primary network scheduling method.</p> <ul style="list-style-type: none"> <li>- Order start date: Use the order start date to check for operation effectivity and select yield value</li> <li>- Operation start date: Use the operation start date to check for operation effectivity and select yield value.</li> </ul> <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>
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 does not inflate the order start quantity by the routing operation yield.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
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>
MSC: ATP Assignment Set	Text	Null	<p>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.</p>
MSC: ATP Capacity Allocation	Yes/No	No	<p>Set it to No. You should only set it to Yes under specific instruction from Oracle Applications development.</p>
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>
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>

Profile Option Name	Valid Values	Default Value	Description
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>
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: 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>
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	This profile option determines whether to generate project specific exceptions when running a project based plan. Yes: Enable the generation of project specific exceptions. No: Disable the generation of project specific exceptions. The default value is Yes.
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>
MSC: Cost of Using a BOM/ Routing Flexfield Attribute	-	-	Not used.
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: Daily Allocation to Maintain Safety Stock Level	Yes/No	Yes	Indicates whether or not the safety stock level that you specify needs to be maintained.

Profile Option Name	Valid Values	Default Value	Description
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 Workbench Height			Specify the default workbench height. Can be defined at the site level.
MSC: Default Workbench Width			Specify the default workbench width. Can be defined at the site level.
MSC: Degree of Parallelism for Index Creation	Integer >= 0	0	Controls the use of parallel workers in data collections. Specifies how many parallel workers to use when creating indexes.
MSC: Demand Priority Flexfield Attribute	Integer >= 0	Null	Stores the value of the attribute column that controls the demand priority. See <a href="#">Flexfield Attributes</a> for more information.
MSC: Demand Satisfied Percent Threshold for Pegging	Decimal percent	100.0	Set this profile option to instruct the planning engine to stop pegging supplies to a demand which is over satisfaction percentage. Oracle recommends setting the value greater than 99.9.  Even if you set this profile option below 100.0, the planning engine still satisfies 100% of the demand.
MSC: Display Order Rescheduling Supplies	Yes/No	No	This is a profile option is for use by Oracle. When set to Yes, Planner Workbench displays Order Rescheduling Supply and Order Rescheduling Demand inserted by available to promise when it unschedules a sales order for a configured item.
MSC: Display Warning Message When Rescheduling Recommendation Not Suggested by the Plan	Yes/No	Yes	This profile option specifies whether or not the Planner Workbench should display a warning message when you release rescheduled orders that the planning engine has not recommended.  The values are:  -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.  - 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.
MSC: Distribution Planning Ship Date	-	-	Not used.

Profile Option Name	Valid Values	Default Value	Description
MSC: Enable Allocated ATP	Yes/No	No	Use this profile options to indicate whether allocated order promising is used. Users can update this profile at the site level.
MSC: Enable ATP for Phantom Components	Yes/No	No	<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>
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> <ul style="list-style-type: none"> <li>Yes: Generate ATP Workflow Notifications</li> <li>No: Do not generate ATP Workflow Notifications</li> </ul>
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> <ul style="list-style-type: none"> <li>- Yes: They do. This ensures that the query performs more efficiently.</li> <li>- No: They do not.</li> </ul>



Profile Option Name	Valid Values	Default Value	Description
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>
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>
MSC: Forecast Priority Flexfield Attribute	Integer >= 0	Null	<p>Stores the value of the attribute column that will control the forecast priority. See <a href="#">Flexfield Attributes</a> for more information.</p>

Profile Option Name	Valid Values	Default Value	Description
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.
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, un-firm, 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>
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.
MSC: Maximum Percentage variation in safety stock values	Null or positive number	Null	The safety stock is not allowed to deviate by more than this value between two adjacent time intervals. Null allows any deviation.
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.

Profile Option Name	Valid Values	Default Value	Description
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 $(\text{Supply size} / \text{Demand size}) * 100$ is less than the value of this profile option. Oracle recommends setting the value at 0.0001.
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>
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> <ul style="list-style-type: none"> <li>■ Yes: Phantoms are planned as standard items.</li> <li>■ No: Phantoms are exploded to their components and supplies are not planned for the phantom.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
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.
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	Indicate whether co-products are planned and whether supplies are created for the co-products. Can be defined at the site level.
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.

Profile Option Name	Valid Values	Default Value	Description
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. See <a href="#">Flexfield Attributes</a> 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 <a href="#">Flexfield Attributes</a> for more information.
MSC: Provide Warning for Dates Entered on Non-work Days	Yes/No	No	<p>You can use this profile option to specify whether or not a warning message should be displayed when you enter an implementation date in the Planner Workbench that is not a valid working day in the organization calendar.</p> <p>The values are:</p> <ul style="list-style-type: none"> <li>- Yes: Use this value if you want the warning message to be displayed.</li> <li>- No: Use this value if you do not want the warning message to be displayed.</li> </ul>
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>
MSC: Purge Stg Tbl Cntrl	Yes/No	No	Truncates the staging table during data collection process. 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: Release WIP Dtls if Order Date different then BOM Revision Date	Yes/No	Yes	If the value is set to Yes, then WIP details are released even if the New WIP Start Date is different than the BOM Revision Date. If the value is set to No, then the WIP details are not released if the new WIP Start Date is different than the BOM Revision Date. In this case, Oracle WIP explodes the details effective as of the job start date.

Profile Option Name	Valid Values	Default Value	Description
MSC: Released Only By User	Yes/No	No	Controls the behavior of Planner's Workbench when releasing orders or schedule changes. Can restrict selection of changes to the specific user or from all users. Valid values are: <ul style="list-style-type: none"> <li>Yes: Restrict the releases or schedule changes selected to those created by this User.</li> <li>No: Do not restrict releases or schedule changes selected to those created by this user. Implementing changes select changes made by any user of this plan.</li> </ul>
MSC: Resource Group for a Line Flexfield Attribute	Integer >= 0	Null	This profile option stores the name of the flexfield column that contains the value in the corresponding table. See <a href="#">Flexfield Attributes</a> 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.
MSC: Sales Orders Offset Days	Integer >= 0	Null	Completed sales orders are collected within the offset duration. For example, if Sales Orders Offset Days is set to 90, all the sales orders completed in the past 90 days are also collected. Can be defined at the site level. A Null value means all closed sales orders are collected.
MSC: SCEN 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.

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: Source Setup Required	-	See <a href="#">Automatic Calculations</a> .	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.
MSC: Sourcing Variance Tolerance	Number between 0 and 1	0.05 (5%)	Used when Enforce Sourcing Constraints is enabled for a plan. This percentage value establishes a threshold for triggering exception messages if sourcing allocations are violated. Exceptions are generated if the difference between the user-specified sourcing allocation percentages and the plan-derived allocation percentages is greater than the Sourcing Variance Tolerance. The profile option is entered as a number and converted to a percentage. If the user enters 0.5 it becomes 50%.

Profile Option Name	Valid Values	Default Value	Description
MSC: Split Planned Order to perform safety stock pegging	No, Yes but do not violate order modifier, or Yes	No	<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>
MSC: Split Planned Orders for Scheduling Flexibility	Yes/No	Yes	<p>Determines whether the planning engine consolidates planned orders that were split during optimization processing prior to scheduling them.</p> <ul style="list-style-type: none"> <li>- Yes: Do not consolidate planned orders prior to scheduling.</li> </ul> <p>The planning engine splits them into multiple planned orders with duration of about one day each. During detailed 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> <ul style="list-style-type: none"> <li>- No: Consolidate orders when possible prior to scheduling.</li> </ul> <p>Set this option if you tend to have long production runs per routing that cross multiple planning buckets. The planning engine creates a single planned order.</p>
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	<p>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.</p>
MSC: Temp Index Extent Size (Bytes)	Number	1000000 (1 meg)	<p>Controls the size of the next extent when creating temporary tables while running collections or copy plan. The recommended value is calculated as the size of the index / 5. The default value is 1000000 (1 meg).</p>
MSC: Temp Table Extent Size (Bytes)	Number	1000000 (1 meg)	<p>Controls controls the size of the next extent when creating temporary tables while running collections or copy plan. The recommended value is calculated as the size of the table / 5. The default value is 10000000 (10 meg).</p>
MSC: Unit of Measure	-	-	Not used.



Profile Option Name	Valid Values	Default Value	Description
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>
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 firm 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>
MSC: Vertical view default query	Not applicable	Not applicable	Used by Oracle Collaborative Planning to display default results in the vertical view.
MSC: VMI Default Query	Not applicable	Not applicable	Used by Oracle Collaborative Planning to display default results on the VMI page.

Profile Option Name	Valid Values	Default Value	Description
MSC: Wait Time to Obtain Lock on Table/Partition for Snapshot Delete Worker (in sec)	Number >=0	60 seconds	Time (in seconds) the Snapshot Delete Worker waits to obtain a lock on a table/partition before aborting. Releasing plans recommendations through Workbench and running Purge Plan can cause locks on the table/partition preventing the Snapshot Delete Worker from obtaining a lock. If the timer expires, the program prints the following message in the log file: Unable to obtain a lock on table.
MSC: Write MBP Flat Files	Yes/No	No	Profile provide controls whether to flush the Planner concurrent process data files and setup data files during the plan run. If Yes, the process writes all the files to the \$APPLCSF/out/data<planid> directory.

## 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.
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>
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>
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 Consume and Derive product family members are subject to collection.</p>

# 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: 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:</p> <ul style="list-style-type: none"><li>▪ -1: Reschedule to last slice</li><li>▪ 0: Does not reschedule.</li></ul> <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:</p> <ul style="list-style-type: none"><li>▪ All End Demands: Enable Partial Demand Satisfaction for all independent demands (forecasts, sales orders, and MDS entries).</li><li>▪ Sales Orders: Enable Partial Demand Satisfaction for all Sales Order demand only.</li><li>▪ None: Schedules all supplies to coincide with completion date (latest supply date) to meet demand.</li></ul> <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> <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 <a href="#">Automatic Calculations</a> .	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 <a href="#">Automatic Calculations</a> .	Specifies weight for alternate resource objective in optimization.
MSO: Alternate Source Penalty	Number > 0	See <a href="#">Automatic Calculations</a> .	Specifies weight for alternate source objective in optimization.

Profile Option Name	Valid Values	Default Value	Description
MSO: Avoid non working days for Buy/Transfer order dates	Yes/No	No	<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)	<p>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.</p>
MSO: Calculate Constraint Exceptions	Yes/No	No	<p>Determines whether constraint exceptions are calculated for plans with Enforce Capacity Constraints selected.</p>
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 that 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}</math> on the routing for the item.</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 <a href="#">Automatic Calculations</a> .	<p>Specifies location and removal of redundant constraints.</p>



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> <ul style="list-style-type: none"> <li>■ 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.</li> <li>■ 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.</li> </ul> <p>Oracle Order Promising does not honor this profile option. Oracle Order Promising always honors native demand satisfaction logic.</p>
MSO: Convergent Supplies Consumption Pattern for Inter-Org and Supplier Sourced orders	Series/ Parallel	Parallel	<p>This profile option is used to specify whether you can satisfy multiple demands in parallel or in series from multiple supplies within the same organization.</p> <p>Values are:</p> <ul style="list-style-type: none"> <li>- Series: If you set this value, multiple supplies feed demands in series.</li> <li>- Parallel: If you set this value, demand is satisfied from multiple supplies in parallel.</li> </ul>
MSO: Convergent Supplies Consumption Pattern for Intra-Org Sourced orders	Series / Parallel	Parallel	<p>This profile option is used to specify whether to satisfy multiple demands in series or in parallel from multiple supplies within the same organization.</p> <ul style="list-style-type: none"> <li>- Series: Demand is satisfied from multiple supplies in series.</li> <li>- Parallel: Demand is satisfied from multiple supplies in parallel.</li> </ul>
MSO: CPLEX Crash Parameter	-1, 0, and 1	See <a href="#">Automatic Calculations</a> .	Determines how objective coefficients are used to select basis.
MSO: CPLEX Refactor Rate	Integer >= 0	See <a href="#">Automatic Calculations</a> .	Specifies the value of the parameter to control the refactor rate.
MSO: CPLEX Scaling Factor	-1, 0, and 1	See <a href="#">Automatic Calculations</a> .	Contains the scaling factor in the Planning Engine.
MSO: Default Forecast Priority	Integer >= 0	100000	Contains default priority value for forecasts and is used by the Scheduling Engine to determine when to schedule the forecast. Can be defined at the site level.

Profile Option Name	Valid Values	Default Value	Description
MSO: Default Sales Order Priority	Integer >= 0	10000	Contains default priority value for sales orders. Used by the Scheduling Engine to determine when to schedule a sales order. Can be defined at the site level.
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>
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>
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>

Profile Option Name	Valid Values	Default Value	Description
MSO: Demand Size Tolerance Before Splitting Planned Orders	Number >=0	Null	Creates a threshold percentage that causes Planned Orders to split prior to scheduling (if the remaining unallocated quantity of a planned order is greater than the remaining unallocated quantity of the pegged demand). Not used if order modifiers exist for an item. Valid values are positive decimal quantities (.5 is interpreted as 50%).
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 specified as the number of working days. 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>Use this profile option to specify whether you can feed multiple demands in parallel or in series by a supply from another internal organization.</p> <p>Values are:</p> <ul style="list-style-type: none"> <li>- Series With MTQ Only: You can set this value to indicate that supply needs to feed multiple demands in series when MTQ is specified.</li> <li>- Series: If you set this value, supply is used to meet multiple demands in series irrespective of MTQ.</li> </ul>
MSO: Divergent Supply Feeding Pattern for Intra-Org Sourced orders	Series With MTQ Only / Series	Series With MTQ Only	<p>Use this profile option to specify whether you can feed multiple demands in series by a supply from the same organization.</p> <ul style="list-style-type: none"> <li>- Series With MTQ Only: You can set this value to indicate that supply needs to feed multiple demands in series when MTQ is specified.</li> <li>- Series: If you set this value, supply is used to meet multiple demands in series irrespective of MTQ.</li> </ul>
MSO: Dual Simplex Parameter	0, 1, 2, 3, and 4	See <a href="#">Automatic Calculations</a> .	Gradient parameter for dual simplex.

Profile Option Name	Valid Values	Default Value	Description
MSO: EDD Scheduling Window Control	Any value between 0 and 1	0.5	<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>
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</li> <li>-Yes: Use costs from the cost rollup</li> </ul>
MSO: Enable Decision Rules	Yes / No	No	<p>The profile option enables User Defined Decision Rules.</p> <ul style="list-style-type: none"> <li>■ Yes: Use the user-defined decision rules.</li> <li>■ No: User defined decision rules are not allowed. The Plan Options tab, Decision Rules, is disabled.</li> </ul> <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>This profile option determines whether resources within a specific operation need to be scheduled contiguously. Use this profile option to improve the planning engine's scheduling performance.</p> <p>Values are:</p> <ul style="list-style-type: none"> <li>- Yes: The planning engine requires activities within an operation, such as resource requirements, to be contiguous. No slack time is permitted between each resource.</li> <li>- No: The planning engine does not require activities within an operation, such as resource requirements, to be contiguous. This implies that slack time between resources is allowed. Performance improves because the planning engine does not enforce contiguity.</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>
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 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> <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 >=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>

Profile Option Name	Valid Values	Default Value	Description
MSO: Firm Supply Allocation Window (Forward days)	Integers $\geq 0$	Null	The allocation of firm supplies to demands is based on demand priorities within the Firm Supply Allocation window. Set this window using system level profile options. This window is derived dynamically for each demand; it starts with the demand due date and moves forwards to the window size. This pegs demands to firm supplies that are scheduled after the demand date. After searching backward, it searches forward by the number of days set by this profile option, pegging the supply with the nearest (earliest) schedule to the unallocated demand quantity. This can cause supplies to be late for the demand due date.
MSO: Firm Work Orders/ Operations Within Time Fence	Yes / No	No	Used for both constrained and unconstrained plans. When set to Yes, all operations of an order with start dates in the Planning Time Fence are treated as firm. Any operation with a start date outside of the Planning Time Fence is not considered firm and can be moved. When set to No, operations with start dates in the Planning Time Fence can be rescheduled out.
MSO: Floating Point Precision	-	-	Not used. Replaced by profile option MSO: Floating Point Precision for Order Quantities
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 <a href="#">Floating Point Precision</a> 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 <a href="#">Floating Point Precision</a> 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 <a href="#">Floating Point Precision</a> 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 <a href="#">Floating Point Precision</a> 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>
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>
MSO: Global Batchable Flag	Yes/No	No	<p>This profile option enables resource batching functionality for order scheduling. Valid values are:</p> <ul style="list-style-type: none"> <li>■ Yes: Enable resource batching functionality.</li> <li>■ No: Do not enable resource batching functionality.</li> </ul>
MSO: Global Time Limit	Number > 0	See <a href="#">Automatic Calculations</a> .	Parameter used to set global time limit for halting optimization.

Profile Option Name	Valid Values	Default Value	Description
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.
MSO: Internal Demand Aggregation Within Optimization	Yes/No	Null (interpreted as No)	This profile specifies how the optimization engine should prioritize independent demands. Valid values are:  - Yes: Prioritize by date. This value improves optimization engine performance.  - No: Prioritize by demand priority
MSO: Inventory Carrying Costs Percentage	A number between 0 and 100 (%)	Null	Specifies inventory carrying costs percentage for all items in the plan. Can be defined at the site level. You can update this value. The inventory carrying cost is a percent (if the user enters 10, the value is 10%).
MSO: Late Demands Exceptions Tolerance Minutes	Integer > 0	0	This profile option is used by constrained plans. Sets the value in minutes for a window during which the planning engine does not issue exception messages for late demands. Use it particularly in cases where demands are only a few minutes or a few hours late.  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.
MSO: Lead Time Control	Violate Minimum Processing Times to Meet Demand Due Date and Do Not Violate Minimum Processing Times	Violate Minimum Processing Times to Meet Demand Due Date	This profile option is applicable to constrained plans with enforce demand due dates:  - 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).  - 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.  This is a user level profile option.
MSO: List Size for Pricing Candidates	Integer > 0	See <a href="#">Automatic Calculations</a> .	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 <a href="#">Automatic Calculations</a> .	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 <a href="#">Automatic Calculations</a> for more information on the default value for this profile option.
MSO: Maximize Search of Availability Intervals	Yes / No	Yes	<p>This profile option effects the internal scheduling algorithms of the planning engine.</p> <p>Values are:</p> <ul style="list-style-type: none"> <li>- Yes: The planning engine performs a detailed search for available intervals to schedule resources. This approach provides the most accurate constraint-based scheduling results.</li> <li>- No: The planning engine does not post extra propagation delays while performing the same detailed search.</li> </ul> <p>It is recommended that you use the default value Yes. However, if you set the profile option to No, the results may be acceptable with improved plan performance.</p>
MSO: Maximum Activity Duration	Number > 0	See <a href="#">Automatic Calculations</a> .	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.
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>

Profile Option Name	Valid Values	Default Value	Description
MSO: Maximum Demands per Group	Integer > 0, smaller than the size of a slice	5	Determines the maximum number of demands that can be grouped together for scheduling. Within a group, the default heuristic can try different orders among the demands. Can be defined at the site level.
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	-	-	Not used.
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 <a href="#">Automatic Calculations</a> 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 <a href="#">Automatic Calculations</a> for more information.
MSO: Maximum Number of Pushes for Operation	-1 or Integer > 0	-1	Use this profile option to specify how many attempts the planning engine should make to schedule a resource activity in Constrained plans (Enforce capacity constraints). Valid values are:  -1: Search for available capacity up to the planning horizon. If scheduling attempts fail, overload at the planning horizon.  Integer > 0: Make this many attempts to find available capacity. If all attempts fail, overload the activity at the point of the first scheduling attempt.
MSO: Maximum Operations Per Slice	Integer > 0	3000 operations	Determines the number of operations which can be scheduled in a slice. Limits the problem size in a slice and can be a limiting factor in determining the number of demands that can be scheduled in a slice.  Oracle recommends that you use a large value such as the default value.

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 <a href="#">Automatic Calculations</a> for more information.
MSO: Maximum Simplex Iterations	Integer > 0	See <a href="#">Automatic Calculations</a> .	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.
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 firmed 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>
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_ window). Can be defined at the site level.

Profile Option Name	Valid Values	Default Value	Description
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_window). Can be 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.
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	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.
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>

Profile Option Name	Valid Values	Default Value	Description
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.
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 Cost Factor for Exceeding Item Material Capacity Flexfield Attribute	Integer >= 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See <a href="#">Flexfield Attributes</a> for more information.
MSO: Penalty Cost Factor for Exceeding Material Capacity	Number >= 0	Null	Defines a penalty cost factor for exceeding material capacity.
MSO: Penalty Cost Factor for Exceeding Material Capacity Flexfield Attribute	Number	Automatically generated to denote flexfield segment holding the penalty factor	This profile option stores the item flexfield segment that holds the penalty cost factor for exceeding material capacity. The collections process 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 >= 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See <a href="#">Flexfield Attributes</a> for more information.
MSO: Penalty Cost Factor for Exceeding Org Resource Capacity Flexfield Attribute	Integer >= 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See <a href="#">Flexfield Attributes</a> for more information.
MSO: Penalty Cost Factor for Exceeding Org Transportation Capacity Flexfield Attribute	Integer >= 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See <a href="#">Flexfield Attributes</a> 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 <a href="#">Flexfield Attributes</a> 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 <a href="#">Flexfield Attributes</a> 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 <a href="#">Flexfield Attributes</a> 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 <a href="#">Flexfield Attributes</a> for more information.
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 <a href="#">Flexfield Attributes</a> 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 <a href="#">Flexfield Attributes</a> for more information.
MSO: Preprocessing Aggregator Fill	Integer $> 0$	See <a href="#">Automatic Calculations</a> .	Preprocessor aggregator fill.
MSO: Preprocessing Aggregator Limit	Integer $> 0$	See <a href="#">Automatic Calculations</a> .	Parameter to control preprocessing aggregator limit.
MSO: Preprocessing Flag for LP Matrix	0 and 1	See <a href="#">Automatic Calculations</a> .	Contains the presolve indicator.
MSO: Preprocessor LP Compression	-	-	Not used.
MSO: Primal Simplex Parameter	-1, 0, 1, 2, 3, and 4	See <a href="#">Automatic Calculations</a> .	Gradient parameter for primal simplex algorithm.
MSO: Primal/Dual Preprocessing Reduction	0, 1, 2, and 3	See <a href="#">Automatic Calculations</a> .	Used by optimization.

Profile Option Name	Valid Values	Default Value	Description
MSO: Pull push base	-	-	Not used.
MSO: Pull push offset	-	-	Not used.
MSO: Queue Time Factor	Number >= 0	None	Increases item lead time in optimization, so that lead time values are close to those used in the Scheduling Engine. Optimization lead time is padded to include queue time.
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:</p> <ul style="list-style-type: none"> <li>■ Yes: Considers whether scheduling shared supplies early will allow subsequent resource batching. A Yes value improves the scheduled utilization of batch resources by considering earlier constraints.</li> <li>■ No: Schedules resource batching when supplies are available.</li> </ul>
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	<p>Selects order scheduling strategy used in resource batching. Valid values are:</p> <ul style="list-style-type: none"> <li>■ Nearest Date: Schedules orders to load resources nearest the due date of the order.</li> <li>■ Level Utilization: Schedules orders to level utilization of the resource.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSO: Resource Group for the Line Flexfield Attribute	Integer $\geq 0$	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 <a href="#">Flexfield Attributes</a> for more information.
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 <a href="#">Automatic Calculations</a> .	Parameter to set the simplex feasibility tolerance.
MSO: Simplex Optimality Tolerance	a number between e-9 and e-4	See <a href="#">Automatic Calculations</a> .	Parameter to set the optimality tolerance for the simplex algorithm.
MSO: Simplex Perturbation Constant	Number greater than e-8	See <a href="#">Automatic Calculations</a> .	Parameter to set the simplex perturbation constant.
MSO: Simplex Perturbation Limit	Integer $> 0$	See <a href="#">Automatic Calculations</a> .	Parameter for the simplex perturbation limit.
MSO: Simplex Perturbation Parameter	0 and 1	See <a href="#">Automatic Calculations</a> .	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 <a href="#">Automatic Calculations</a> .	Parameter to set the limit on the number of pre-solves.
MSO: Simplex Singularity Repair Limit	Integer $> 0$	See <a href="#">Automatic Calculations</a> .	Parameter to set the simplex singularity repair limit.
MSO: Simultaneous Resource Overlap Mode	-	-	Not used.



Profile Option Name	Valid Values	Default Value	Description
MSO: Slack Hours for Batch Resource	Integer	Null	<p>This profile value is used by Oracle Advanced Supply Chain Planning to right justify the max 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 <a href="#">Automatic Calculations</a> .	Controls whether the Planning Engine solves the dual problem or the primal problem.
MSO: Sourcing Allocation Window	integer >= 1	7	Specifies the Allocation Percentages Satisfaction Period. The constraints are enforced in a rolling horizon manner. Used with Enforce Sourcing Constraints enabled in specific plan options.
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>
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.

Profile Option Name	Valid Values	Default Value	Description
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 specified in the number of working days. Null is treated as 1 in the Planning Engine.
MSO: Target Inventory Level % of Safety Stock	-	-	Not used.
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.</p> <p>This profile option is important for hub and spoke businesses to use to synchronize the resource calculations of the MRP plan with those of the DRP plan. The synchronization coordinates resource availability between the two plans.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> <li>- No: Always use plan start time</li> <li>- Yes: Always use collections start time</li> <li>- Use Input Demand Plan Start Time or Collections Start Time: If there is an input demand plan, use its start time; if there is not, use collections start time.</li> <li>- Use Input Demand Plan Start Time or Plan Start Time: If there is an input demand plan, use its start time; if there is not, use plan start time</li> </ul> <p>For example, collections starts at 0600 hours, the resource availability computation starts at 0800 hours, and the plan run starts at 1400 hours:</p> <ul style="list-style-type: none"> <li>- If this profile option is No, resource availability is calculated from 0800 today until the end of the planning horizon and the plan uses the resource availability as of 1400 hours.</li> <li>- If this profile option is Yes, resource availability is calculated from 0600 hours until the end of the planning horizon and plan uses the resource availability as of 0600 hours.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSO: Use of Assigned Units in Scheduling	Variable / Fixed at Routing Value	Variable	<p>You can control an operation's duration by specifying whether the planning engine should use a fixed number of assigned units or a variable amount for a routing operation's resource sequence while scheduling.</p> <p>The values are:</p> <ul style="list-style-type: none"> <li>- Variable: The planning engine considers the assigned units on the routing operation's resource as the maximum value. The planning engine uses the assigned units from 1 to the maximum assigned units on the routing to schedule. Note that as the used units decrease, the cycle time increases.</li> <li>- Fixed at Routing Value: The planning engine uses specific units assigned for each operation's resource sequence in the routing form. Set this value for scheduling enforce demand due date within a specific scheduling window.</li> </ul> <p>In certain cases, the planning engine exceeds the fixed assigned units while compressing the activity beyond the minimum duration. For example, when enforce demand due date plans have the value Violate Minimum Processing Time to Meet Demand Due Date and when firm jobs force certain activities to be compressed.</p> <p>This profile option is applicable for all stages within scheduling such as forward, backward, enforce demand due date, and just-in-time calculations.</p>
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:</p> <ul style="list-style-type: none"> <li>■ 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.</li> <li>■ False: The Planning Engine uses the same aggregate time buckets as specified in the Aggregation tab of the Plan Options window.</li> </ul>

Profile Option Name	Valid Values	Default Value	Description
MSO: Use Shift Definitions When Scheduling Lead Times	Yes/No	No	<p>Use this profile option to instruct the planning engine in the use of shift timings. Valid values:</p> <ul style="list-style-type: none"><li>- Yes: Use the defined shift timings in each calendar to offset lead times and to calculate the dates of supply and demand orders. Schedule each lead time to the minute, for example, a lead time of 1 day requires 1440 minutes.</li><li>- No: Ignore shift definitions when offsetting lead times and calculating the dates of supply and demand orders. Assume that each workday has 24 hours of working time.</li></ul> <p>This profile option does not affect the scheduling of operations within a routing. The planning engine always looks at the defined shifts for these operation resources.</p>

# MSR Profile Options

The following table lists and defines the MSR profile options in Oracle Advanced Planning.

Profile Option Name	Valid Values	Default Value	Description
MSR: Budget Category Set	Null or any category sets	Null	Use this profile option to specify the categories that you can use when defining budgets in Oracle Inventory. Valid values are:  - Null: Define budgets with any category.  - Any category set: Define budgets only with categories that are in the category set.
MSR: Postponement Factor	Integers >= 0	10	Specifies maximum depth in the bill of materials and sourcing tree to which uncertainty must be postponed.
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: <ul style="list-style-type: none"><li>■ Probabilities: Demand uncertainty is stated in terms of a (non-cumulative) probability distribution.</li><li>■ Cumulative Probabilities: Demand uncertainty is stated in terms of a cumulative probability distribution.</li></ul>

# B

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## Flexfields

This appendix includes:

- [Overview of ASCP Flexfields](#) on page B-2
- [Applying Flexfields to Different Versions of Oracle RDBMS](#) on page B-4

## 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.

The following three are for 11.0 and 11.i.1 sources only. For 11.i.2 and beyond, they are in the forms for routings in the source.

**Simultaneous Resource Sequence** This is defined via a flexfield in the Operation Resources form. This is stored in the table BOM\_OPERATION\_RESOURCES.

**Alternate Resources for an Operation** This is defined via a flexfield in the Operation Resources form. It is stored in the table BOM\_OPERATION\_RESOURCES.

**Priority of Alternate Resources for an Operation** This is defined via a flexfield in the Operation Resources form. This is stored in the table BOM\_OPERATION\_RESOURCES.

## Applying Flexfields to Different Versions of Oracle RDBMS

All flexfields are applied as a set to the following releases of the Oracle RDBMS:

- 11.0
- 11*i*

In each case, 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 R11*i* provides fields in the Inter-Location Transit Time window for setting load weight and load volume. These fields are not available in Release 11.0. You should use flexfields to set these values when running Release 11.0.

## Creating Demand Priority Flexfield Numbers Manually

### To Create Demand Priority Flexfield Number Manually

#### For 11 and later

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

Field	Enter
Column	Pick a right attribute column <attribute col> (attribute 10 for example)
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 chapter includes:

- [Setup Data Control Files](#) on page C-2
- [Supply Control Files](#) on page C-4
- [Demand Control Files](#) on page C-5
- [User-Defined Keys](#) on page C-6

## Setup Data Control Files

The following table shows the setup data control files.

<b>Business Object</b>	<b>Flat File Loader's File Name Option</b>	<b>Control Files</b>
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
Routing	Operation Resources	MSC_ST_OPERATION_RESOURCES.ctf
Resources	Resources	MSC_ST_DEPARTMENT_RESOURCE.ctf ES
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
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

<b>Business Object</b>	<b>Flat File Loader's File Name Option</b>	<b>Control Files</b>
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.ctf
Demand Forecast	Forecast Demands	MSC_ST_DEMANDS_FORECAST.ctf
Demand Forecast	Forecast Designators	MSC_ST_DESIGNATORS_FORECAST.ctf
Master Demand Schedule	Demand Schedule Demands	MSC_ST_DEMANDS_MDS.ctf
Master Demand Schedule	Demand Schedule Designators	MSC_ST_DESIGNATORS_MDS.ctf
Work Order Component Demand	Work Order Component Demands	MSC_ST_DEMANDS_WORK_ORDER.ctf
Safety Stocks	Safety Stocks	MSC_ST_SAFETY_STOCKS.ctf
Reservations	Reservations	MSC_ST_RESERVATIONS.ctf

## User-Defined Keys

COMPANY\_NAME is required only if SCE is installed. For standalone APS, this is defaulted to -1.

The following table shows user-defined keys (UDK's) for various business objects.

Business Object	Table	User-Defined Key (UDK)
Item	MSC_ST_SYSTEM_ITEMS	SR_INSTANCE_CODE, ORGANIZATION_CODE, ITEM_NAME, COMPANY_NAME
BOM	MSC_ST_BOMS	SR_INSTANCE_CODE, ORGANIZATION_CODE, BOM_NAME (defaulted from ASSEMBLY_NAME if Null), ASSEMBLY_NAME, ALTERNATE_BOM_DESIGNATOR (null allowed), COMPANY_NAME
BOM	MSC_ST_BOM_COMPONENTS	SR_INSTANCE_CODE, ORGANIZATION_CODE, BOM_NAME (defaulted from ASSEMBLY_NAME if Null), ASSEMBLY_NAME, ALTERNATE_BOM_DESIGNATOR (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_SUBSTITUTES	SR_INSTANCE_CODE, ORGANIZATION_CODE, BOM_NAME (defaulted from ASSEMBLY_NAME if Null), ASSEMBLY_NAME, ALTERNATE_BOM_DESIGNATOR (can be null), OPERATION_SEQ_CODE (if null or character would be defaulted to 1), COMPONENT_NAME, SUB_ITEM_NAME, COMPANY_NAME
Categories	MSC_ST_CATEGORY_SETS	SR_INSTANCE_CODE, CATEGORY_SET_NAME, COMPANY_NAME
Categories	MSC_ST_ITEM_CATEGORIES	SR_INSTANCE_CODE, ORGANIZATION_CODE, CATEGORY_SET_NAME, CATEGORY_NAME, ITEM_NAME, COMPANY_NAME

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
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
Resources	MSC_ST_RESOURCE_CHANGES	SR_INSTANCE_CODE, ORGANIZATION_CODE, RESOURCE_CODE, DEPARTMENT_CODE, SHIFT_NUM, FROM_DATE, TO_DATE, FROM_TIME, TO_TIME, SIMULATION_SET, ACTION_TYPE, COMPANY_NAME
Resources	MSC_ST_RESOURCE_GROUPS	SR_INSTANCE_CODE, 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_DESIGNATOR (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 to1), 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 to1), 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
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

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
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
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 to1), 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
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 to1), SR_INSTANCE_CODE, ORIGINATION_TYPE = 2 (Non Standard), 3 (Standard), ORGANIZATION_CODE, COMPANY_NAME

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
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
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
Reservations	MSC_ST_RESERVATIONS	SR_INSTANCE_CODE, COMPANY_NAME, SALES_ORDER_NUMBER, LINE_NUM, ORGANIZATION_CODE

<b>Business Object</b>	<b>Table</b>	<b>User-Defined Key (UDK)</b>
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
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 MRP process that identifies a type of action to be taken to correct a current or potential material coverage problem.

### **address validation**

The type of validation you want the system to use for your address, if you are not using a flexible address format for validation. Address validation can be implemented at three levels- Error, No Validation, or Warning. 'Error' ensures that all locations exist for your address before it can be saved. 'Warning' displays a warning message if a tax rate does not exist for this address (allows you to save the record). No Validation does not validate the address.

### **aggregate resources**

The summation of all requirements of multi-department resources across all departments that use it.

### **Allocated ATP**

This term is used to describe the ability to allocate scarce supply, whether it's finished goods, or a key components or resources, to various demand channels. Whether you are performing ATP or CTP, the allocation is being considered for order promising. See Feature Highlight: *Allocation*.

### **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 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 item**

*See assemble-to-order item.*

**ATO model**

*See assemble-to-order model.*

**ATP (Available to Promise)**

ATP (Available to Promise) typically refers to the ability to promise finished goods availability based on a statement of current and planned material supply.

**ATP**

*See available to promise.*

**Availability**

Availability means how much 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 centers (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 using the following formula:

*ATP = Planned production - committed demand.*

**calendar type**

The period pattern used to define a manufacturing calendar.

**capable to deliver**

Refers to considering 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.

**capacity requirements planning**

A time-phased plan comparing required capacity to available capacity, based on a material requirements plan and department/resource information. *See routing-based capacity and rate-based capacity.*

**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. *see standard component.*

**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**

### **end item**

Any item that can be ordered or sold. *See finished good and product.*

### **engineering change order (ECO)**

A record of revisions to one or more items usually released by engineering.

### **(execution) production activity control**

The function of routing and dispatching the work to be accomplished through the production facility and of performing supplier control.

## **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.

### **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. See Feature Highlight: *Multilevel Supply Chain ATP/CTP/CTD*

For the rest of the document, we will use 'Multilevel ATP' as a short form for this feature.

## **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.

- If a *constrained* plan is run, the planning process will use the planned orders and actual routings for scheduling to derive the suggested due date.
- If an *unconstrained* plan is run, the suggested due date will simply be the same as 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**

### **Operation Data Store (ODS)**

It represents all the tables that acts as destination for the collected data from each of the data sources (both Oracle Applications or 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**

In this plan, you can generate an optimized and executable plan based on plan objectives as well as material, resource, and transportation constraints.

**Original Item**

Item for which you received Demand.

**overload**

A condition where required capacity for a resource or production is greater than available capacity.

**P****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**

You can use the Planner Workbench 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 an MRP plan, or only those that meet a certain criteria.

**Planning Data Store (PDS)**

It represents all the tables within Oracle ASCP which encompass those in 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 master 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).

You specify the types and number of planning time buckets for each plan when you establish its plan options; typically, you specify smaller buckets closer in and larger buckets farther out.

For example, for a weekly bucket, the planning engine accumulates all of the time-phased data that falls within that week and nets that data such that demand and supply are balanced for the week without attempting to balance for each day, hour, and minute.

The time-phased data included all demands (which are due at the end of the week), all supplies, and all capacities (material and resource).

A planning time bucket is different from a time bucket used for reporting purposes; you use that type of bucket to specify a number of days of plan data summarized into a display.

### **Planning Time Fence**

A Master Scheduling/MRP 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.

**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. *See* **current projected on hand**.

**projected on hand**

The total quantity on hand plus the total scheduled receipts plus the total planned orders.

**R****Resource Constrained Plan**

In this option, all resource constraints such as available machine hours, transportation capacity, as well as alternate resources are considered. Alternate bill of materials are considered only when optimized option is selected. 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 MRP system.

**Seiban manufacturing**

A type of manufacturing environment where demand and supply are identified by Seiban numbers to 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. Consider the following diagram, Item/Orig, Item/Rev1, Item/Rev2 are three items in a substitution chain, where Item/Rev2 can be substituted for Item/rev1 and Item/Orig. Item/Rev1 can be substituted for Item/Orig., but Item/Orig cannot be substituted for either item/Rev1 or Item/Rev2.

**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.

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.

- If a constrained plan is run, the planning process will use the planned orders and actual routings for scheduling to derive the suggested due date.

- If an unconstrained plan is run, the suggested due date will simply be the same as 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.

### **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. See Feature Highlight: *ATP for Multiple Supply Locations*.

### **supply chain management**

The planning, organization, and controlling of supply chain activities.

### **Supplier Flex-fences**

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**

In this plan, the system performs traditional MRP type planning and 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**

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