

Oracle® Advanced Planning

Implementation and User's Guide, Volumes 1 & 2

Release 11*i*

Part No. B10144-03

May 2003

Oracle Advanced Planning Implementation and User's Guide, Volumes 1 & 2 , Release 11i

Part No. B10144-03

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Glossary

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Send Us Your Comments

Oracle Advanced Planning Implementation and User's Guide, Volumes 1 & 2, Release 11i
Part No. B10144-03

Oracle Corporation 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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Audience for This Guide

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

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

- The principles and customary practices of your business area.
- Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization

If you have never used Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization, Oracle suggests you attend one or more of the Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization training classes available through Oracle University.

- The Oracle Applications graphical user interface.

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

The other products of the Oracle Advanced Planning and Scheduling suite are documented as follows:

- Oracle Demand Planning is documented in the applications help and in the *Oracle Demand Planning User's Guide*.
- Oracle Manufacturing Scheduling is documented in the *Oracle Manufacturing Scheduling User's Guide*.
- Oracle Global Order Promising is documented in the applications help and in the *Oracle Global Order Promising User Guide*.
- Oracle Supply Chain Exchange is documented in the applications help.

See Other Information Sources for more information about Oracle Applications product information.

How To Use This Guide

This guide contains the information you need to understand and use Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization.

It contains the following chapters and appendices:

- Chapter 1, Overview: Provides an overview of Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization and describes new features in this release.
- Chapter 2, Setting Up: Instructs you how to set up Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization.
- Chapter 3, Planning Business Flows: Describes the flows of information between the components of the Oracle Advanced Planning and Scheduling suite and how Oracle Advanced Supply Chain Planning functionality relates to planner daily business processes.
- Chapter 4, Running Collections: Describes the data collections process and architecture.
- Chapter 5, Defining Plans: Describes features that help you select a plan that best satisfies your business requirements. It describes various issues to consider when setting up a plan including deciding whether to run a subset plan, choosing a plan type, choosing a level of optimization, choosing an objective function, and choosing aggregation levels.
- Chapter 6, Supply Chain Modeling: Instructs you how to set up a supply chain.
- Chapter 7, Simulations: Describes the advanced simulation capabilities which you can use to rapidly simulate changes to a plan to respond to changing conditions.
- Chapter 8, Optimization: Describes optimized plan capabilities.
- Chapter 9, Exception Messages: Describes how to interpret, research , and respond to plan exception messages.
- Chapter 10, Planner Workbench: Describes the Planner Workbench, a powerful graphical tool that lets you perform advanced simulation, review plan performance, and take actions based on system recommendations.
- Chapter 11, Constraint-Based Planning: Describes constrained plan capabilities, an approach for balancing material and plant resources while meeting customer demand.
- Chapter 12, Planning in Mixed Mode Environments: Describes support for mixed mode manufacturing and planning distribution and manufacturing operations in conjunction with Oracle Project Manufacturing, Oracle Flow Manufacturing, Oracle Process Manufacturing, and Oracle Shop Floor Management (OSFM).

- Chapter 13, Configure to Order: Discusses how you can create multilevel configurations (configurations under configurations) and source them from anywhere in the supply chain.
- Chapter 14, Cross-Instance Planning: Discusses how you can define, run, and execute a single plan across multiple source instances, a key feature for companies that use a hub-and-spoke planning model.
- Chapter 15, Inventory Optimization: Describes how you can optimize your strategic inventory investment decisions. You develop requirements and objectives and the plan suggests optimal inventory stocking levels, order quantities, order frequency, and other operational policies.
- Chapter 16, Business Topics: Discusses end item-level substitution, decision rules, organization security, and key plan performance indicators the Oracle Business Intelligence System (BIS) performance management tool.
- Appendix A, Profile Options: Lists the profile options used by all of the Oracle Advanced Planning and Scheduling suite products.
- Appendix B, Flexfields: Lists the Oracle Advanced Supply Chain Planning flexfields.
- Appendix C, Control Files: Lists control files and user-defined keys.

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Other Information Sources

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

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

Online Documentation

All Oracle Applications documentation is available online (HTML or PDF).

- **Online Help** - The new features section in the HTML help describes new features in 11*i*. This information is updated for each new release of Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization. The new features section also includes information about any features that were not yet available when this guide was printed. For example, if your administrator has installed software from a mini-packs an upgrade, this document describes the new features. Online help patches are available on MetaLink.
- **11*i* Features Matrix** - This document lists new features available by patch and identifies any associated new documentation. The new features matrix document is available on MetaLink.
- **Readme File** - Refer to the readme file for patches that you have installed to learn about new documentation or documentation patches that you can download.

Related User's Guides

Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization shares business and setup information with other Oracle Applications products. Therefore, you may want to refer to other user's guides when you set up and use Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization.

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) available with this release of Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization (and any other Oracle Applications products). 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.

User Guides Related to This Product

Oracle Applications Demonstration User's Guide

This guide documents the functional storyline and product flows for Vision Enterprises, a fictional manufacturer of personal computers products and services. As well as including product overviews, the book contains detailed discussions and examples across each of the major product flows. Tables, illustrations, and charts summarize key flows and data elements.

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.

BIS 11i User Guide 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.

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 Daily Business Intelligence User's Guide

This guide 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 Demand Planning User's Guide

This guide explains how to use Oracle Demand Planning, an Internet-based solution for creating and managing forecasts.

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 Global Order Promising User's Guide

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

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 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 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 Self Service Web Applications User's Guide

This guide describes how Oracle Self Service Web Applications enable companies to provide a self-service and secure web interface for its employees, customers and suppliers. Employees can change their personal status, submit expense reports or request supplies; customers can check on their orders; and suppliers can share production schedules with their trading partners. This guide is available in HTML only.

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 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 Guide

This guide explains 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, the Oracle8 technology stack, and the Oracle8*i* Server 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's guides and implementation guides.

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.

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. It describes the Oracle Application Object Library components needed to implement the Oracle Applications user interface described in the *Oracle Applications User Interface Standards for Forms-Based Products*. It also provides information to help you build your custom Oracle Forms Developer 6*i* forms so that they 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.

Multiple Reporting Currencies in Oracle Applications

If you use the Multiple Reporting Currencies feature to record transactions in more than one currency, use this manual before implementing Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization. This manual details additional steps and setup considerations for implementing Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization with this feature.

Multiple Organizations in Oracle Applications

This guide describes how to set up and use Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization with Oracle Applications' Multiple Organization support feature, so you can define and support different organization structures when running a single installation of Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization.

Oracle Workflow Guide

This guide explains 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.

Oracle Applications Flexfields Guide

This guide provides flexfields planning, setup and reference information for the Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization implementation team, as well as for users responsible for the ongoing maintenance of Oracle Applications product data. This manual 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 Metalink

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 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 Applications Message Reference 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 Supply Chain Planning and Oracle Inventory Optimization 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 Supply Chain Planning and Oracle Inventory Optimization 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 Corporation 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 Supply Chain Planning and Oracle Inventory Optimization and this user's guide.

Oracle values your comments and feedback. At the end of this guide is a Reader's Comment Form you can use to explain what you like or dislike about Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization or this user's guide.

Send electronic mail to **`mfgdoccomments_us@oracle.com`**.

Overview

This chapter includes:

- [Oracle Advanced Planning and Scheduling Suite](#) on page 1-2
- [Oracle Advanced Supply Chain Planning](#) on page 1-3
- [Oracle Inventory Optimization](#) on page 1-11

Oracle Advanced Planning and Scheduling Suite

The Oracle Advanced Planning and Scheduling Suite includes the following products:

- Oracle Advanced Supply Chain Planning (ASCP)
- Oracle Collaborative Planning
- Oracle Demand Planning
- Oracle Global Order Promising
- Oracle Inventory Optimization
- Oracle Manufacturing Scheduling
- Oracle Supply Chain Intelligence
- Oracle Supply Chain Management Portal

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 10.7, Oracle 11 and Oracle 11i 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.

New ASCP Features

Peg Supplies by Demand Priority

Oracle ASCP will allocate both firm and non-firm supplies to demands in the order of demand priority. Oracle ASCP will follow the following guidelines to allocate supplies to demands:

- Allocate supply to demand in the order of demand priority instead of closest quantity pegging
- Minimize pegging of a given supply to multiple demands
- Avoid multiple pegs to higher priority demands.

End Item Substitution

ASCP considers end-item substitution for demanded items. Previously, only BOM component substitution was considered.

Substitute items may be defined using the Oracle Inventory Item Relationships form. Ease-of-use features include the ability to define a reciprocal substitute relationship, the ability to infer chained substitution relationships, and the ability to define customer/ customer site specific relationships and whether this customer will allow an order to be filled by a combination of the original requested item and the substitute item. Item substitution relationships are time effective. Item

relationships may also include a reference to a Substitution Set that can be selected in the Plan Options window.

End-item substitution capability applies only to standard items. It is not supported for assemble-to-order items or models.

User-Defined Alternate Decision Rules

You can specify the types of alternates (sources, bills of material/routings, end items, components, resources) that ASCP is free to consider during planning, and you can do so without having to enter extensive cost data.

You can define alternate types of supply such as end-item substitutes, component substitutes, alternate sources, and alternate bills of material/routings across your supply chain. You can define multiple alternates and assign appropriate priorities to the alternates. Oracle ASCP honors these sources of supply when calculating the best means of satisfying demand.

For example, you can define an item A to have multiple substitute components with appropriate priorities (for example, component B - priority 1; component C - priority 2). ASCP will exhaust supply from a higher priority alternate (component B) before using supply from a lower priority alternate (component C).

You can control which alternate sources of supply ASCP considers. ASCP will try as far as possible to use only the primary method of supply to meet demand on time. But if the material or resource capacity is violated for any supply, ASCP will try to maximize the available supply by using additional supply from the alternates that you enabled.

Organization Security

This new feature allows you to restrict access to plan information to authorized individuals. You can associate job responsibilities to organizations for security purposes. This ensures that the only way you can see or change planning data in an organization is if you have a job responsibility associated with the organization.

Identify Differences Between Plans

ASCP provides an easy way to compare plan exceptions and plan setups between two plans. This is useful for determining whether 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 have been pushed out as a result of pulling the problem sales order in. Also, a planner may wish to know what plan setup changes led to changes in key indicator performance. To facilitate this diagnosis, ASCP displays the plan option settings for two plans side by side. Results of comparisons between plans are shown in both graphical and tabular format.

Planning Detail Report

ASCP provides a consolidated report that helps you understand and analyze the output of the supply chain planning process. For a given supply chain plan, the report lists details about items, resources, gross requirements, scheduled receipts, planned orders, plan constraints, and exceptions in separate worksheets. You can filter report information according to plan, organization, item, resource, project, and other parameters. The basic structure of the MRP Planning Detail Report in Release 11 of Oracle Applications has been retained. The Planning Detail Report is implemented in Discoverer 4i, which allows you to manipulate report formatting. You can selectively print individual worksheets of the report.

Collections from Legacy System

Collections is the process by which data from execution and ERP transaction systems are loaded periodically into the ASCP planning server for use during planning. Previously, collections were supported only for Oracle (10.7, 11, 11i) transaction systems. This feature makes it easy to load data from legacy (non-Oracle) transaction systems into the ASCP planning server. A new user interface allows you to initiate the population of Oracle APS interface tables using batch upload of flat files. A preprocessing engine validates the incoming legacy application data. This provides an open framework for you to bring data from legacy systems into Oracle Advanced Planning.

Planned Inventory Points

During manufacturing, certain items may need to be used up prior to a specific time or they need to be transformed or consumed into another item. This can occur because an item is chemically or mechanically unstable or because there is no physical storage space allocated for the item on the shop floor. ASCP allows you to specify if an item can be stocked via the Planned Inventory Point (PIP) attribute for the item at the Item-Organization level. It schedules jobs for non-PIP items even if the jobs do not have demands to peg to, and continues to create supplies and schedules the supplies for higher-level items on the bill all the way up to and including the next Planned Inventory Point item. A new plan option (Move Jobs to PIP) turns this scheduling behavior on.

Backward/Forward Forecast Consumption

Backward/forward forecast consumption days create a window of time in which to compare sales orders and forecasted demand for the purposes of forecast consumption. Previously, you could only specify backward/forward forecast consumption days in a forecast set, consume the forecasts in the forecast set during Master Demand Schedule load, and then collect the resulting MDS to the APS planning server for use by ASCP as independent demand. However, for forecast scenarios generated within Oracle Demand Planning and fed directly into ASCP as independent demand, there was no mechanism for specifying backward/forward forecast consumption days. Now, you can specify these parameters at the plan level via new fields in the ASCP plan options form.

Partial Demand Satisfaction

When multiple supplies are required to satisfy a single demand, Oracle ASCP sets the demand satisfied date to be the due date of the latest supply. By default, it also tries to realign the dates of the earlier supplies with the demand satisfied date so that inventory is held for as little time as possible. When the demand is satisfied late, this realigns all the supplies to be late, even though it may be possible to ship out some of the supplies on time (by the demand due date).

Partial Demand Satisfaction is a new scheduling feature that causes the supplies that can be available by the demand due date to be planned for that date, with the remainder of the supplies planned for the demand satisfied date. This allows you plan for sending a partial shipment to your customer by the customer's due date.

Flexible Shift Times

Previously, ASCP restricted resource shift breaks to occur on the hour. A shift could start or end on, say, 11:00, but could not start or end on 11:15. ASCP now permits resource shift start and end times at any minute within the hour.

Minimum Transfer Quantity Phase 2

Oracle ASCP allows you to specify a Minimum Transfer Quantity (MTQ), which is the minimum amount of completion of an operation that is required 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 this release the functional enhancements to MTQ logic are:

- 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.

Targeted Replacement of Business Entities in Collections

Collections is the process by which data from execution/ERP transaction systems are loaded periodically into the ASCP planning server for use during planning. It can constitute a significant fraction of the duration of the overall planning cycle. This enhancement allows the collections duration to be reduced in cases where information about just some, but not all, planning-related business entities on the planning server needs to be updated.

Heretofore, ASCP has supported two modes of collection. Complete Refresh mode clears all transaction data from the planning server, then copies over information about the user-selected entities. Net Change mode 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. The new Targeted Replacement mode clears from the planning server transaction data for only the user-selected business entities, and then copies the entity information over from the transaction instance. Information about non-selected entities remains intact on the planning server. All planning business entities are supported by Targeted Replacement collections.

Enforce Sourcing Splits

Supplier contracts may require that a company source its materials from suppliers based on specified allocation percentages. Similarly, requirements such as labor agreements may necessitate adherence to sourcing allocation percentages from internal organizations. You can tell Oracle Advanced Supply Chain Planning to enforce (and not override on the basis of cost considerations) sourcing percentages specified in sourcing rules and bills of distribution when it makes sourcing decisions.

Floating Point Precision Profile Options

Certain quantities (usages in routings, planned order quantities, transportation lane capacities by weight by volume, and planned order start and end times) used by ASCP may in practice have fractional (non-integer)\ values, but for the purposes of internal processing by the ASCP planning engine are required to have integer

values. ASCP addresses this problem by providing five floating-point precision profile options that act as internal multipliers. When one of the concerned quantities is encountered, it is multiplied by the appropriate floating-point precision profile option value, and the resulting equivalent integer is processed by the ASCP planning engine. The functional enhancement with this release is that the number of floating-point precision profile options has been increased from one to five. This gives you more flexibility to control the precision with which to consider each quantity, as well as more flexibility to avoid numerical overflow on 32-bit platforms, where the rule is that each equivalent integer processed by ASCP must not exceed approximately 2 100 000 000.

The five floating-point precision profile options are:

1. MSO: Floating Point Precision for Usages in Routings
2. MSO: Floating Point Precision
3. MSO: Floating Point Precision for Transportation Capacities (Weight)
4. MSO: Floating Point Precision for Transportation Capacities (Volume)
5. MSO: Floating Point Precision for Planning Bucket Efficiency

Engineering Change Order Use-Up Effectivity

ASCP calculates use-up effectivity dates for engineering change orders (ECO). The use-up effectivity date is determined to be the day when the on-hand quantity for an item will be exhausted based on projected gross requirements. This date is calculated for all items in the plan (from end assembly items down through components). ASCP considers scheduled receipts in calculating the use-up effectivity date if the profile option MRP: Include Schd Rcpts in Use-up is set to Yes. The recommended use-up effectivity date is pushed to the source system (Oracle Engineering) by running the current program Push Plan Information.

All items used in the plan are updated with recommended use-up dates. You can override the recommended use-up effectivity date in Oracle Engineering by querying the ECO, selecting the item, and modifying the use-up date.

Avoiding Excess Splitting of Planned Orders

In optimized plans, ASCP by default generates a separate planned order for each item in each planning period (if demand/supply netting indicates that creation of planned order supply in the planning period is necessary.) Even if the planned orders create requirements on the same resource or line for the same item in

consecutive planning periods, there will be separate planned orders for each planning period for the item.

You might end up with a planned order for Item A, quantity 100 on Day 1 that results in requirements on Processing Line 1, and a planned order for quantity 150 on Day 2 that results in requirements on the same Processing Line 1. This is best from a scheduling flexibility point of view, because it allows ASCP to time shift or offload the second planned order independently of the first. However, it may cause a higher number of work orders on the shop floor than desired, and may also result in scheduling inaccuracy if the routing for Item A incorporates setup as the first operation because separate planned orders result in an extraneous setup being incurred on Day 2 in our example.

You can now direct ASCP to create, in the above example, a single consolidated planned order for 250 on Day 2. Consolidated planned orders will still be split if resource or line capacity so dictates. In the above example, if the capacity of Processing Line 1 is 100/day, and an alternate Processing Line 2 is available on Day 2, then two separate planned orders would be created: Item A, quantity 200, Day 2, Processing Line 1; Item A, quantity 50, Day 2, Processing Line 2.

Support for Procurement of Configured Assemblies

When planned orders for purchased configured items are released, ASCP passes the configuration bill of materials on to Oracle Purchasing so that it can be attached to the resulting purchase order to the supplier.

Data Setup Audit Reports

The Audit Statement Report concurrent request checks for common data setup errors that can lead to collection or plan failures or incorrect planning outputs. You can run the report for any of the following data setup areas:

- Collections Data Setup
- Planning Data Setup
- UI Data Setup

You can control the level of detail of the resulting audit report. The supported levels of detail are: Summary; Detailed - Errors Only; Detailed - Errors and Warnings; Detailed - Complete (a complete listing of errors and warnings along with properly executed data setups).

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, Supply and Lead Time Variability. Oracle's exclusive stochastic optimization technology allows the interdependence of demand, supply and 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.

New Inventory Optimization Features

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.

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 a (non-cumulative) probability distribution. A new profile option MSR: Probability Distribution Type allows you to indicate whether the demand variability is in terms of forecast set probabilities or in terms of forecast

set cumulative probabilities. You can view the demand probability in the Supply/Demand window of the Planner Workbench.

Enforce Sourcing Splits

Supplier contracts may require that a company source its materials from suppliers based on specified allocation percentages. Similarly, requirements such as labor agreements may necessitate adherence to sourcing allocation percentages from internal organizations. You can tell Oracle Inventory Optimization to enforce (and not override on the basis of cost considerations) sourcing percentages specified in sourcing rules and bills of distribution when it makes sourcing decisions.

Sourcing percentages are enforced for Rank 1 sources only.

Sourcing Allocation Window You can specify a Sourcing Allocation Window in days (say, x days). The intent of this parameter is to allow Inventory Optimization some flexibility to trade off strict adherence to the allocation percentages in sourcing rules against more cost-effective sourcing decisions. Inventory Optimization will ensure that sourcing decisions are made such that at only the end of every x days, the cumulative supply sourced from any supplier or internal organization matches the percentage allocation in the sourcing rule as closely as possible. (In between, the sourcing may differ from the rule.) You can specify this parameter via a profile option called MSO: Sourcing Allocation Window.

Allocation History Start Date You can specify a global allocation percentages start date from which the sourcing history is collected and accumulated for making sourcing decisions. This is done via the new profile option called MSC: Start Date Offset for Sourcing History (Months).

Exceptions You can 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 will be triggered. The tolerance is specified in the new profile option called MSC: Sourcing Variance Tolerance.

Inter-Organization Allocations The allocation percentages are enforced for all sourcing types:

- External supplies from suppliers
- Transfer supplies from internal organizations
- Make supplies within an organization

Item Purchase Price by Supplier

In its inventory planning calculations, Inventory Optimization considers item purchase prices that vary by supplier site. The prices are obtained by taking the unit prices from applicable purchase order lines. If multiple purchase order lines are applicable, the maximum unit price is used.

Data Setup Audit Report

The Audit Statement Report concurrent request checks for common data setup errors that can lead to collection or plan failures or incorrect planning outputs. You can run the report for any of the following data setup areas:

- Collections Data Setup
- Planning Data Setup
- User Interface Data Setup

You can control the level of detail of the resulting audit report. The supported levels of detail are: Summary; Detailed - Errors Only; Detailed - Errors and Warnings; Detailed - Complete (a complete listing of errors and warnings along with properly executed data setups).

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 10.7, 11.0 or 11*i*. The planning server is an 11*i* instance.

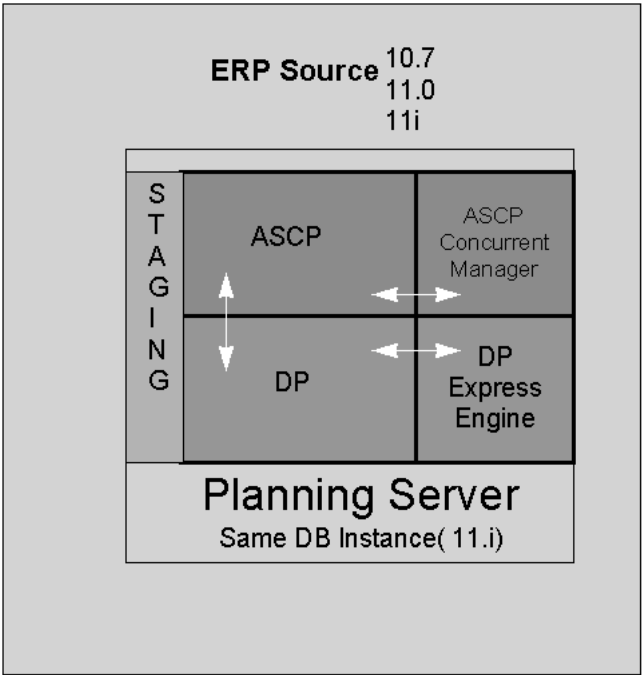
Both source and destination database instances must be on the same major release of the Oracle database; see [Setup Flowchart](#) on page 2-8.

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.

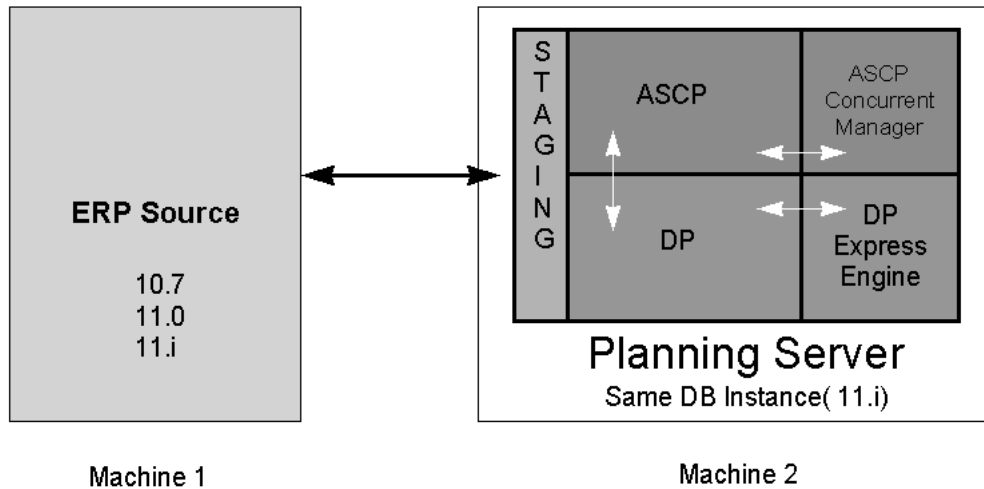
Note: ASCP means Advanced Supply Chain Planning and DP means Demand Planning.

Figure 2–1 Single Machine Deployment Configuration



Two-Machine Implementation

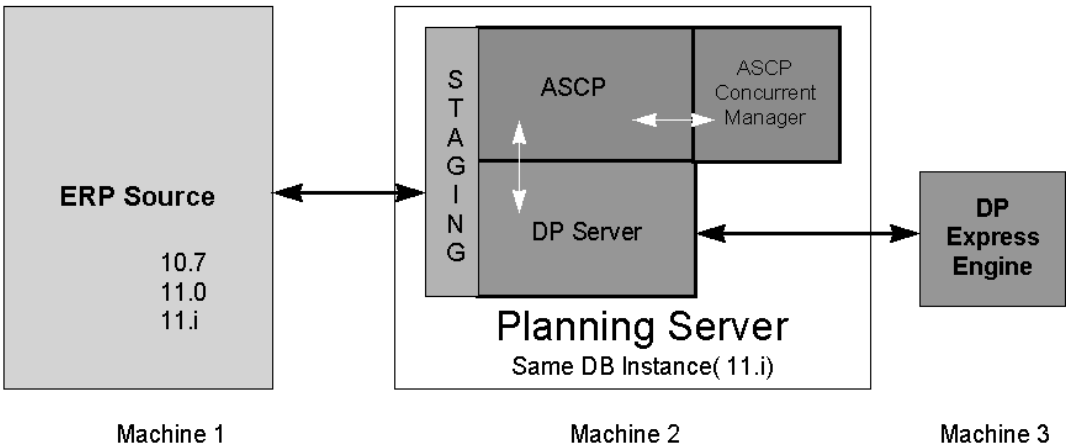
For larger implementations where system throughput is more important, the various instances can be deployed on separate machines. A two-machine deployment configuration is appropriate when the size of the demand planning data is relatively small. The following figure illustrates this configuration.

Figure 2–2 Two-machine Deployment Configuration

Three-Machine Implementation

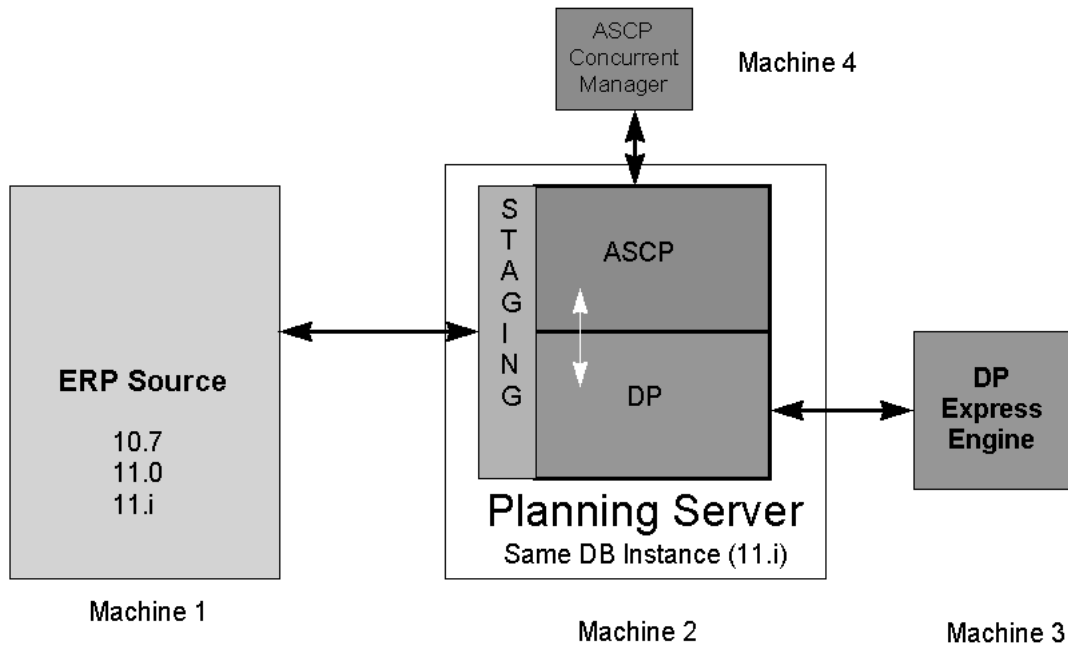
A three-machine deployment allows for the manipulation of high-dimensionality, large-scale demand planning data to occur on a machine separate from the planning calculations done on the planning server. The following figure illustrates this configuration.

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.

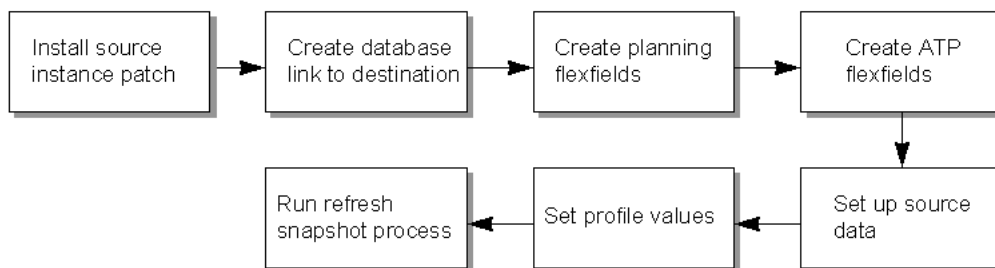
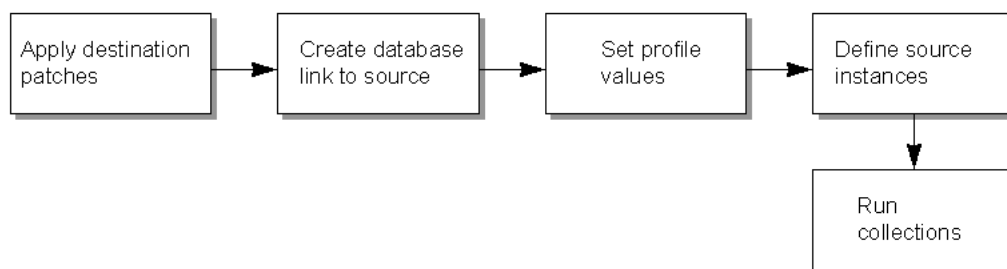
Setup Flowchart

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
10.7	8.0	1260711
10.7	7.3	1268507

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 following 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](#).

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.

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

Descriptive Flexfield Names	Parameter Name (In flexfield form and report parameter)	Base Table Name	Profile Option Name
Bill of Material Information	BOM/Routing Cost	BOM_BILL_OF_MATERIALS	MSO: Cost of using a BOM/Routing flexfield attribute
MRP Forecast Dates	Late Forecasts	MRP_FORECAST_DATES	MSO: Penalty cost factor for late forecasts
Additional Line Information	Late Sales Order Penalty	SO_LINES	MSO: Penalty cost factor for late sales orders
Production Line	Resource Group (Line)	WIP_LINES	MSO: Resource group for a line flexfield attribute

4. Launch the Create Planning Flexfields report from the newly created Advanced Supply Chain Planner responsibility. The parameters that must be set for the report are the attributes that you wish to utilize for the new flexfield definitions. The list of values for each parameter lists only the available attributes in the subject descriptive flexfield.

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

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

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

5. Create the Global Order Promising flexfields.

The Create Global ATP Flexfields is very similar to the Create Planning Flexfields program. It creates new flexfield segments to hold global ATP data at

the item, BOM, routing, and resource levels. The same process, including warnings and suggestions, applies for the Create Global ATP Flexfield program.

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

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

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

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

8. Execute the Refresh Snapshot concurrent program.

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

Setup Steps for the Destination

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
- msd - Oracle Demand Planning
- mso - Oracle Constraint Based Option
- msr - Oracle Inventory Optimization

2. Create a database link pointing to each source.

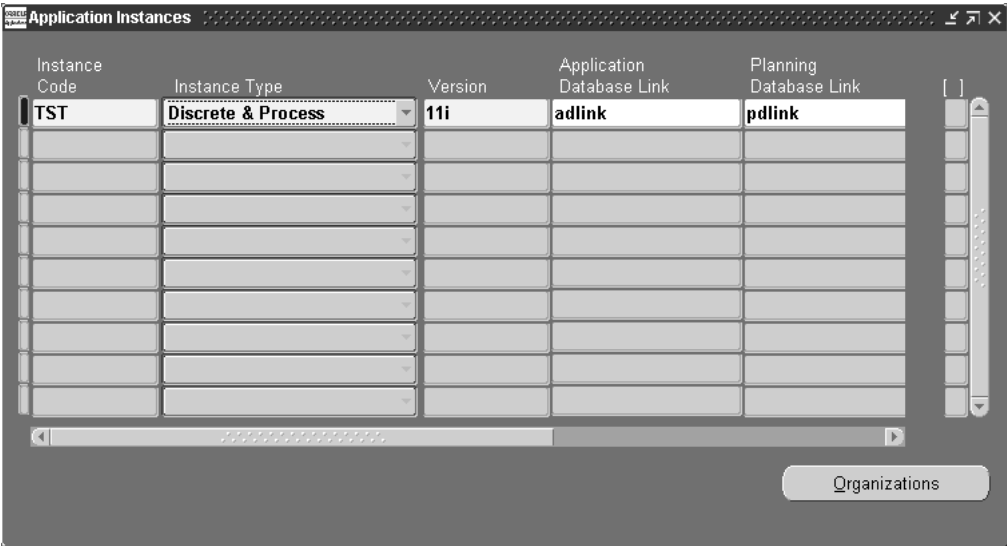
These links will be needed when defining instances later on in this setup procedure.

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

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

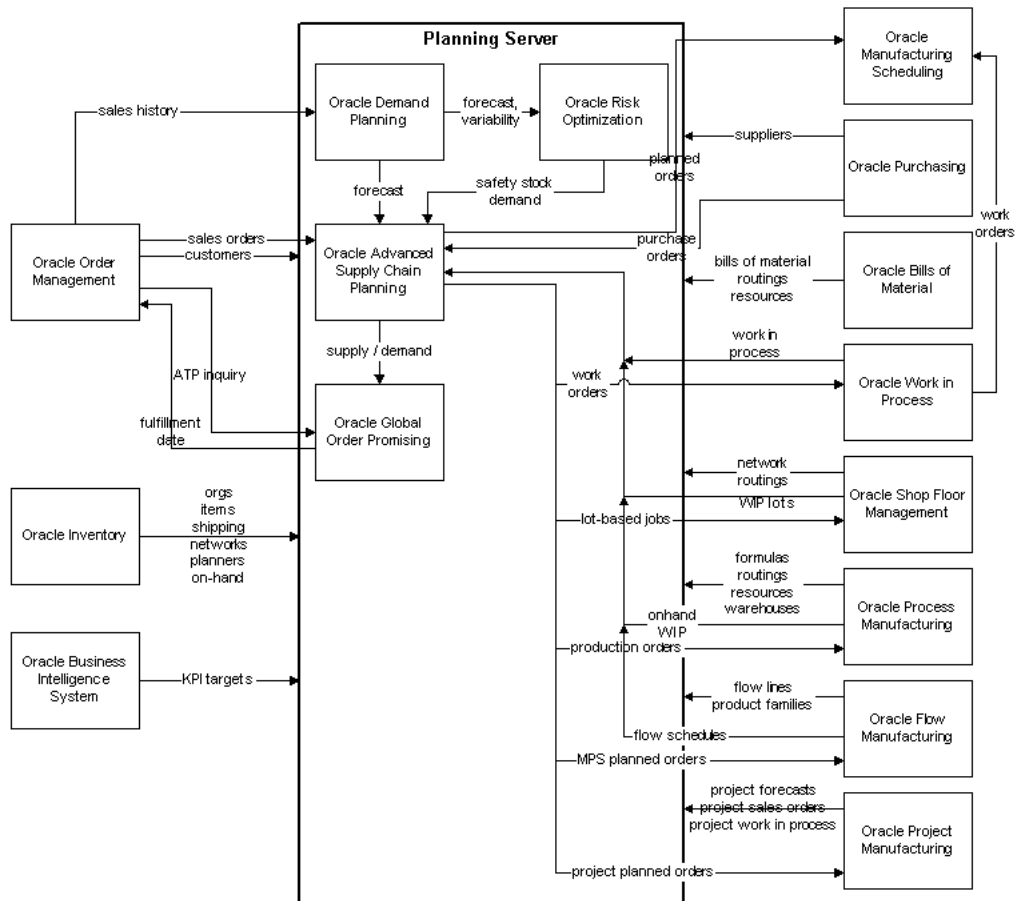
This section describes the flows of information between the components of the Oracle Advanced Planning Suite and provides an overview of how these components are to be used together in order to accomplish several key business flows.

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 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

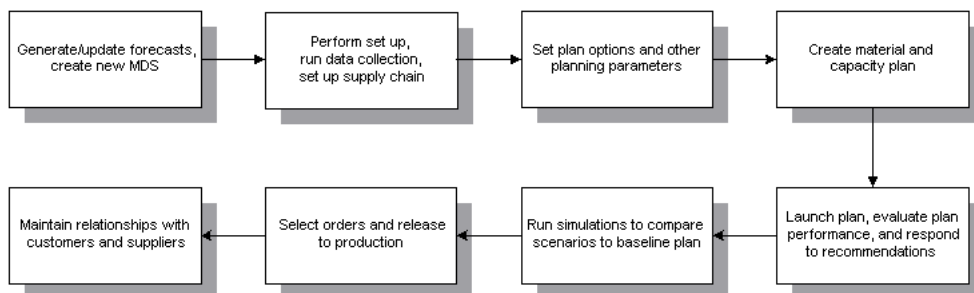
The demand/supply picture output by Oracle ASCP serves as the basis for the order promising results calculated by Oracle Global Order Promising. Oracle Global Order Promising can be called either from a customer-facing order capture application such as a web store or from Oracle Order Management.

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.

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

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

If you are using basic forecasting and MDS functionality found in Oracle Master Scheduling/MRP and Oracle Supply Chain Planning, see [Overview of Forecasting](#) in 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 16-83, [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 left pane and select the plan(s) for which you want to view exceptions.
3. Choose the Actions tab on the right portion of the window. 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	■ Item is over committed ■ Item has a shortage ■ Item has excess inventory ■ Items with expired lots ■ Past due forecast ■ Late supply pegged to a forecast ■ Items below safety stock
Rescheduling Workflow	■ Item has orders to be rescheduled in ■ Item has orders to be rescheduled out ■ Item has orders to be cancelled ■ Item has orders with compression days ■ Item has past due orders
Sales Order Workflow	■ Past due sales orders ■ Late supply pegged to a sales order
Project Workflow	■ Items with shortage in a project ■ Items with excess in a project ■ Items allocated across projects

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.

See on page 10-41, [Pegging](#). 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.

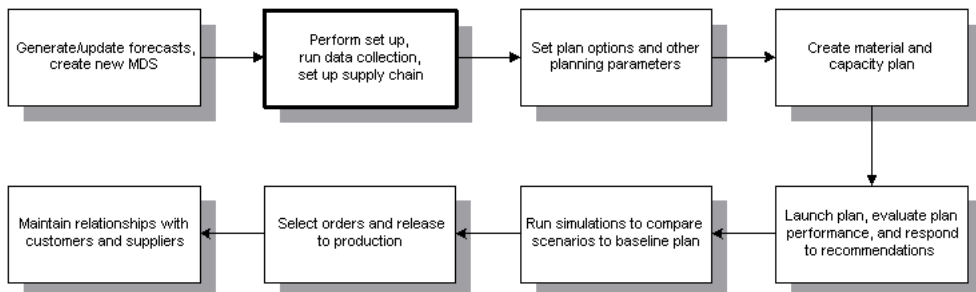
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Running Collections

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 4-7
- [Collection Methods](#) on page 4-12
- [Running Collection Steps](#) on page 4-14
- [Data Changes That Can Be Collected in Net Change Mode](#) on page 4-21
- [Legacy Collection](#) on page 4-23

A Day in the Life of a Planner



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 10.7, Oracle 11, 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 10.7 or higher. It supports several configurations. You can run a complete refresh, an incremental refresh, or a targeted refresh. All three of these are explained later. You can also choose the frequency of refresh.

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.

Data Collection Data collection consists of the following:

- **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.

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.

Oracle Applications Version and RDBMS Version

You can plan across Oracle Applications version 10.7 or higher. The following table shows you which version of the RDBMS supports which version of Oracle Applications.

Version of Oracle Applications	Version of RDBMS
10.7	8.0 and 8i
11.0	8.0 and 8i
11i	8i

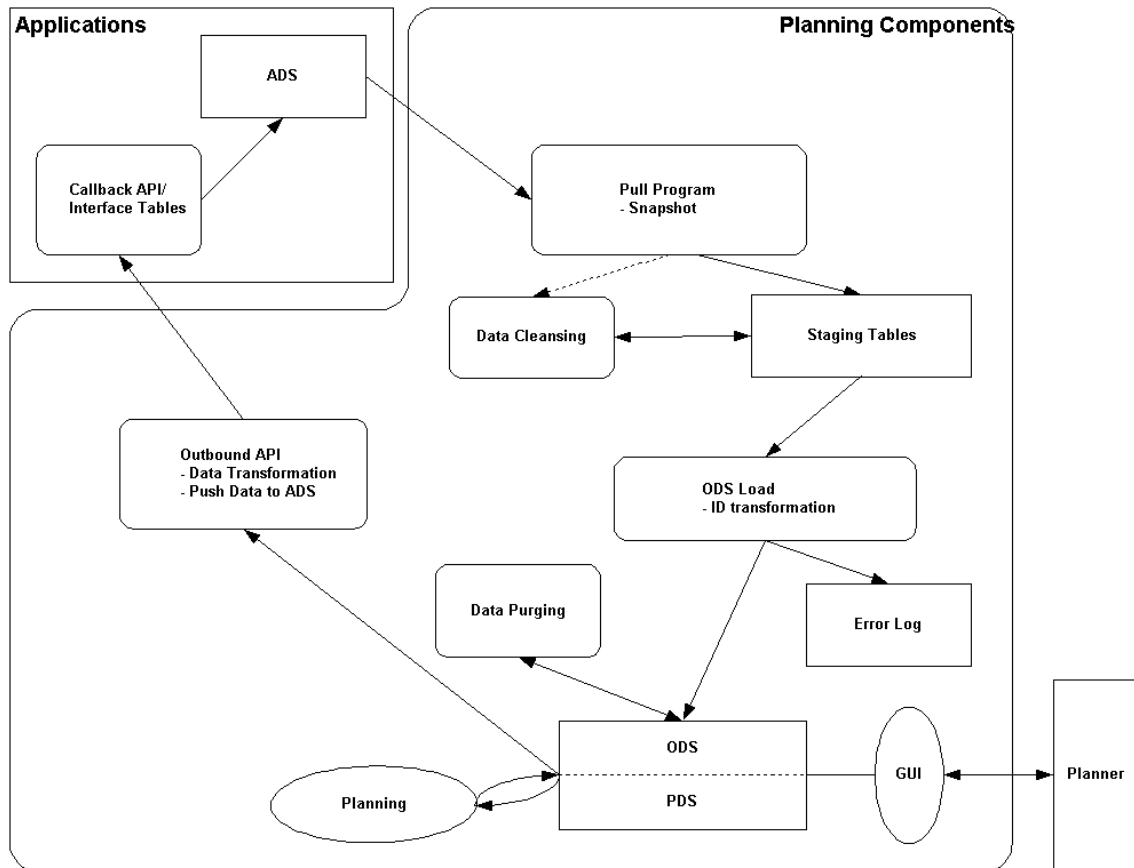
Support for Several Configurations

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

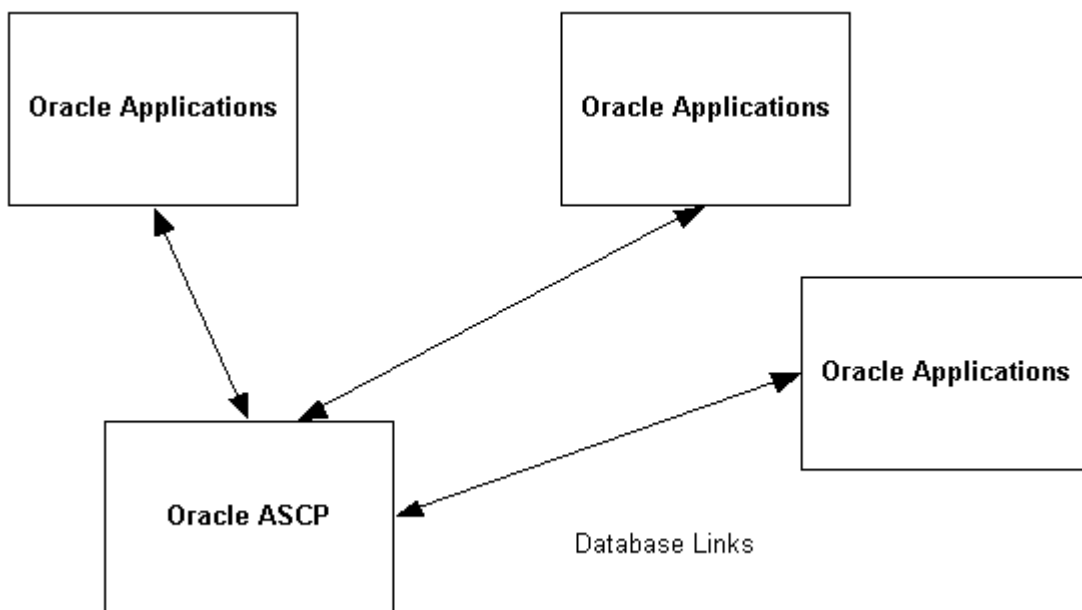
These configurations offer you enough flexibility to design a mode of planning that suits your business objectives. Both configurations are supported using a consistent architecture as outlined in the previous section. The sole distinction is that

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



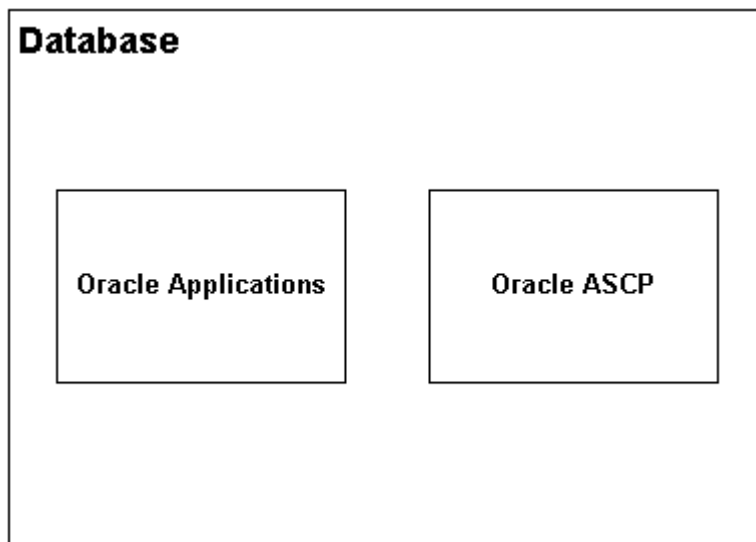
Oracle ASCP works as a central Planning Server across several source data instances. The collection program is installed on the planning server and the data stripped by instance_id is moved into staging tables within Oracle ASCP during the data collection process.

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

Decentralized Planning

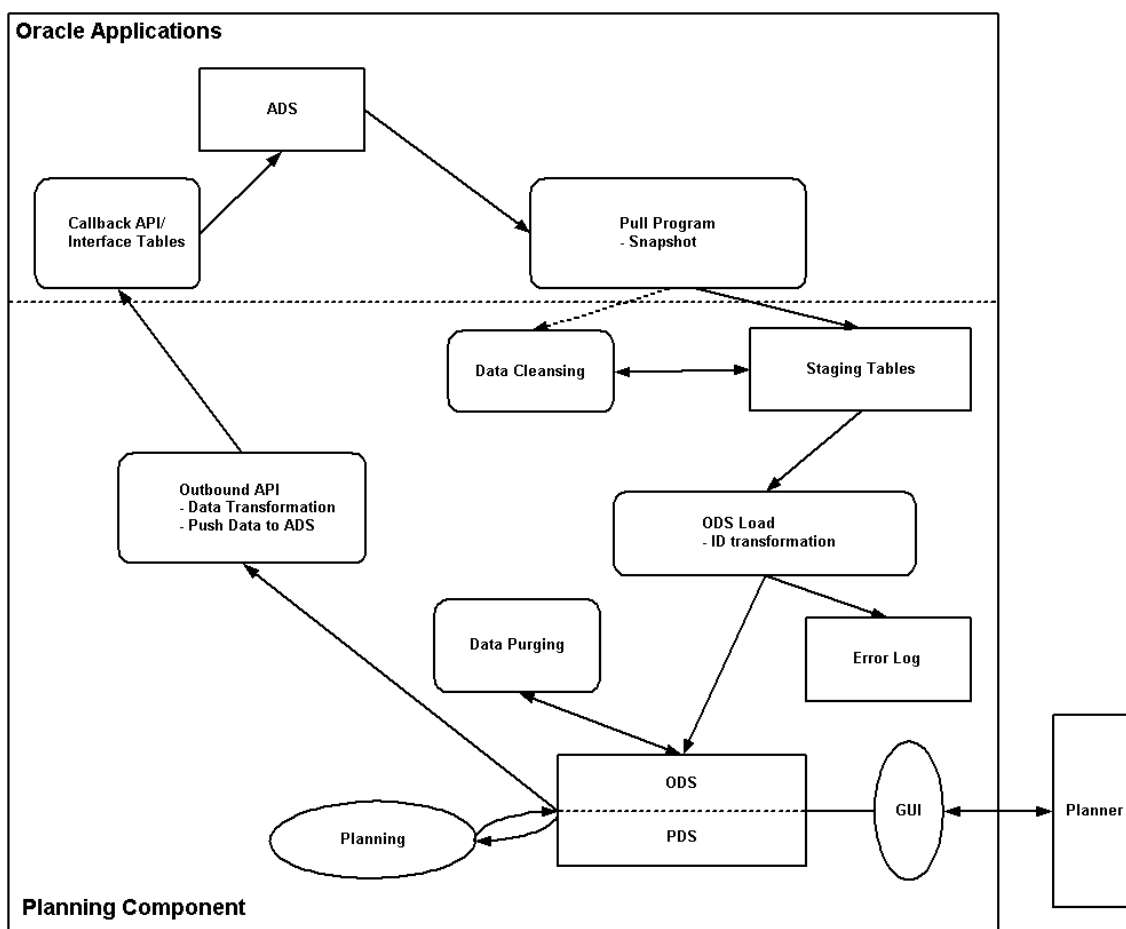
The following figure shows the decentralized planning configuration:

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. Because of this, ASCP now 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 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.
- 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.

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.

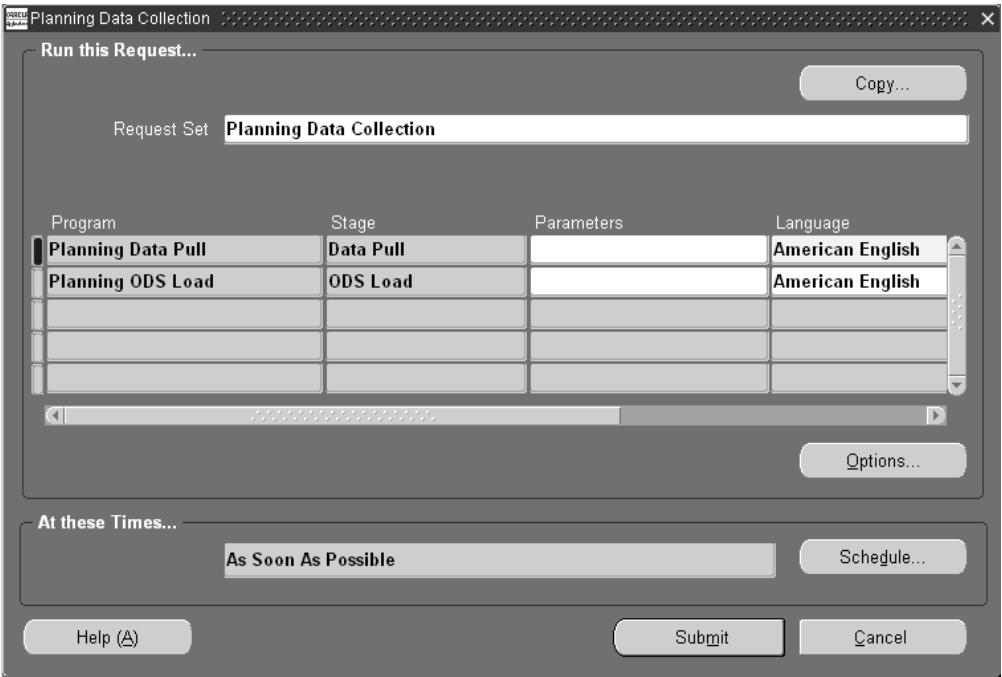
You would also use Targeted Refresh (in lieu of Net Change Refresh) to bring over the latest picture of supply and demand to the planning server in cases when the incremental changes to supply and demand on the source instance since the last collection are very extensive. In this case, the update mechanism 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).

Running Collection Steps

To collect data from an Oracle Applications transaction instance (10.7, 11.0 or 11i)

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

Figure 4–5 Planning Data Collection window



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.

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

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

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

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

The Parameters window appears.

Figure 4–7 Planning ODS Load Parameters window

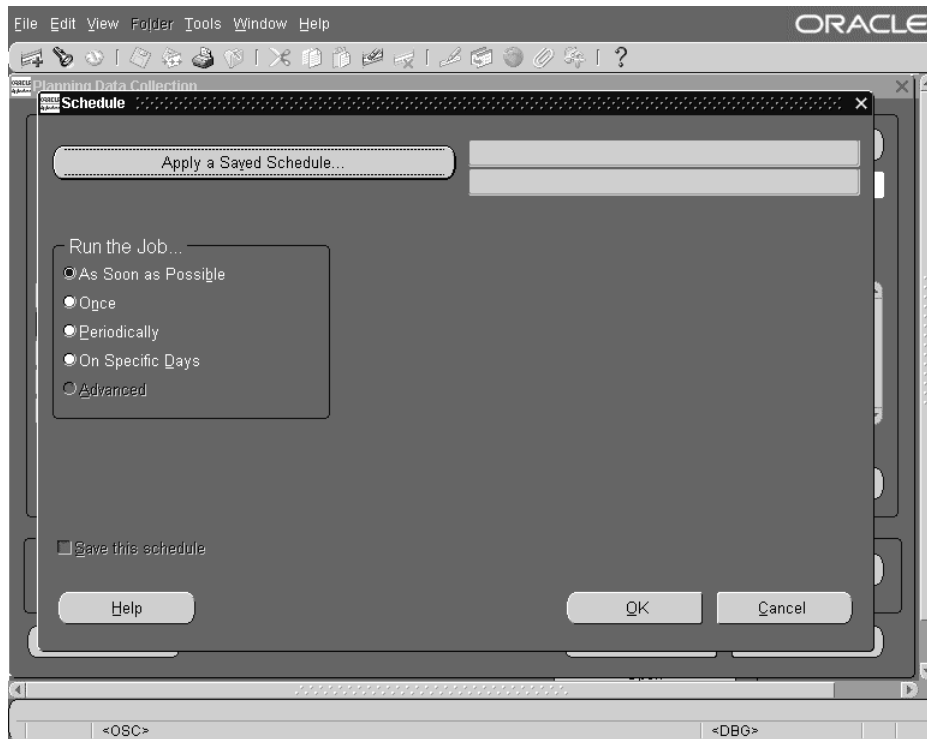
7. Use the information in the following table to specify the fields and options in this window.

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.

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

Figure 4–8 The Schedule Window

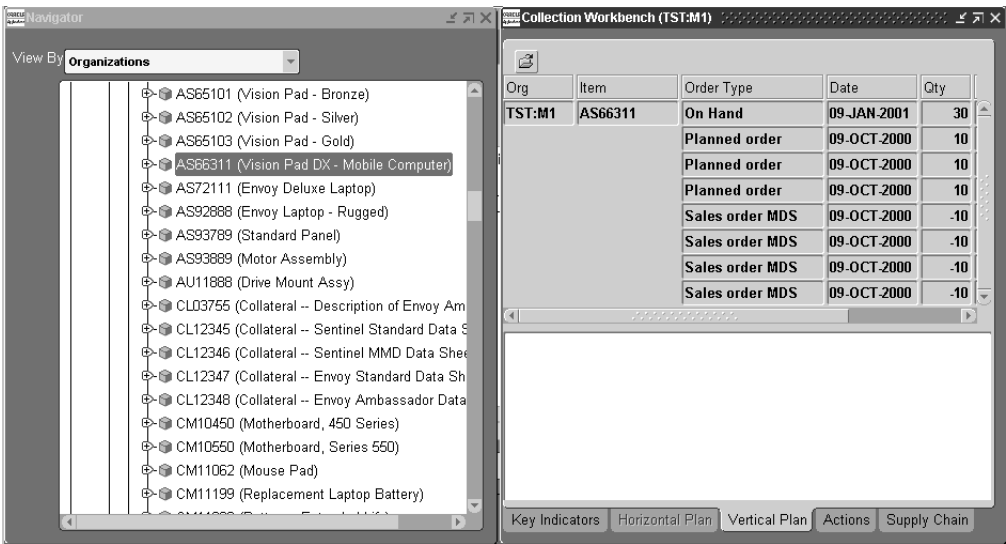
You have complete control over the timing and frequency of the collection of data from the transaction systems, and the timing and frequency of planning. You can manage the balance between network traffic and the need to monitor current status in your plans.

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.

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. 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.

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.
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.

Data Element	Comments
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.
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.

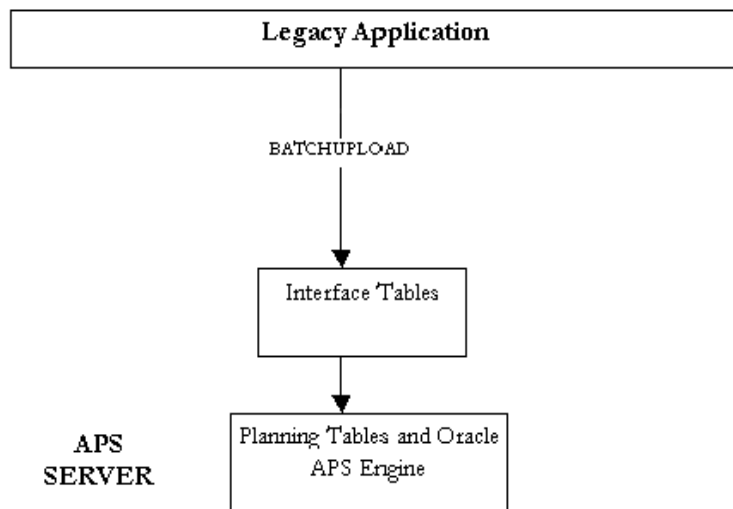
Legacy Collection

Legacy Collection provides a more open framework for consulting and system integrators to bring data from legacy systems into Oracle APS/SCE. This feature is intended to make the collections process free of Oracle systems and to extend it to non-Oracle systems. 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 via flat files.

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.ctf)

```
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||'~'||
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.ctf.
11. Upload sourcing rules using control file MSC_ST_ITEM_SOURCING.ctf.
12. Upload UOM conversions using MSC_ST_UOM_CONVERSIONS.ctf, MSC_ST_UOM_CLASS_CONVERSIONS.ctf.
13. Upload resources using control file MSC_ST_DEPARTMENT_RESOURCES.ctf.
14. Upload bill of materials using the following control files: MSC_ST_BOMS.ctf, MSC_ST_BOM_COMPONENTS.ctf, and MSC_ST_COMPONENT_SUBSTITUTES.ctf. 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.ctf, MSC_ST_ROUTING_OPERATIONS.ctf, and MSC_ST_OPERATION_RESOURCES.ctf. 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.ctf, MSC_ST_SUPPLIER_CAPACITIES.ctf, and MSC_ST_SUPPLIER_FLEX_FENCES.ctf. You can upload MSC_ST_SUPPLIER_CAPACITIES.ctf with MSC_ST_ITEM_SUPPLIERS.ctf or in subsequent runs. You can also upload MSC_ST_SUPPLIER_FLEX_FENCES.ctf with MSC_ST_ITEM_SUPPLIERS.ctf 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.ctf.
18. Upload resource demand using the control file MSC_ST_RESOURCE_REQUIREMENTS.ctf. If WIP_ENTITY_NAME is not valid (it was not previously loaded using the MSC_ST_SUPPLIES_WO.ctf 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 4–10 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.

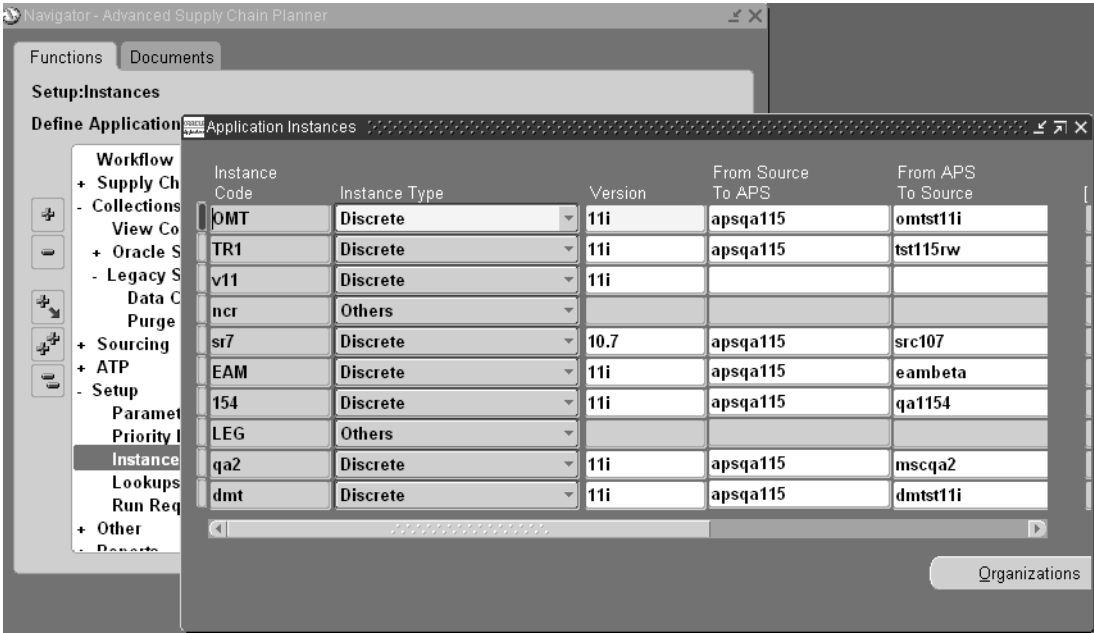
Setting up Legacy Instance

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 4–11 Application Instances



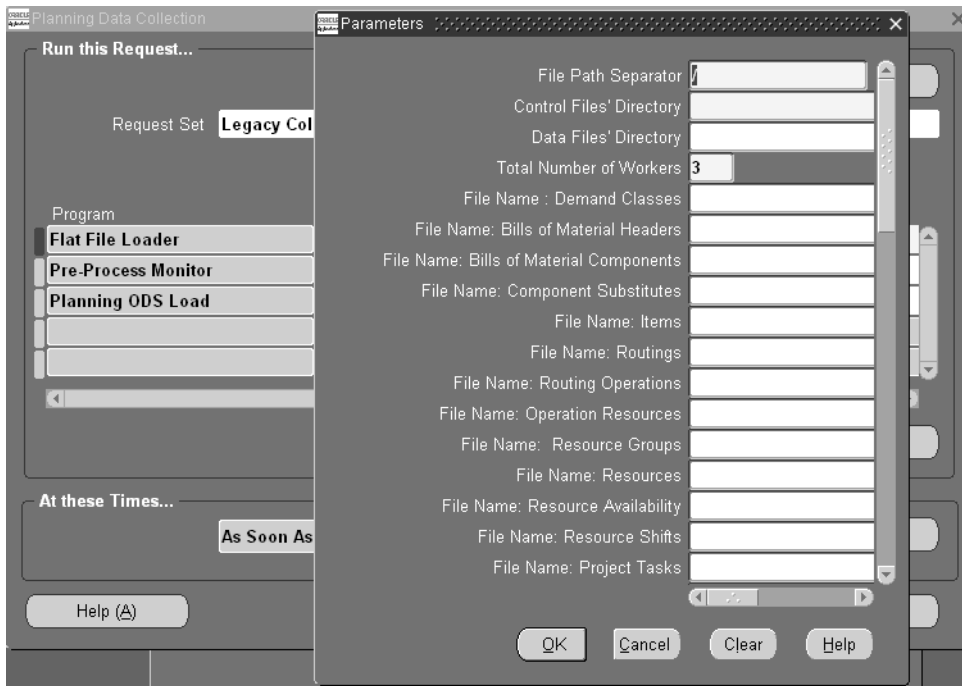
8. Specify the Instance Code for the Legacy Instance and set the Instance Type as Other. Leave the fields From Source to APS and From APS To Source blank. Fill the other fields for the instance as specified in the on-line help.

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

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 4–12 Flat File Loader Parameters screen

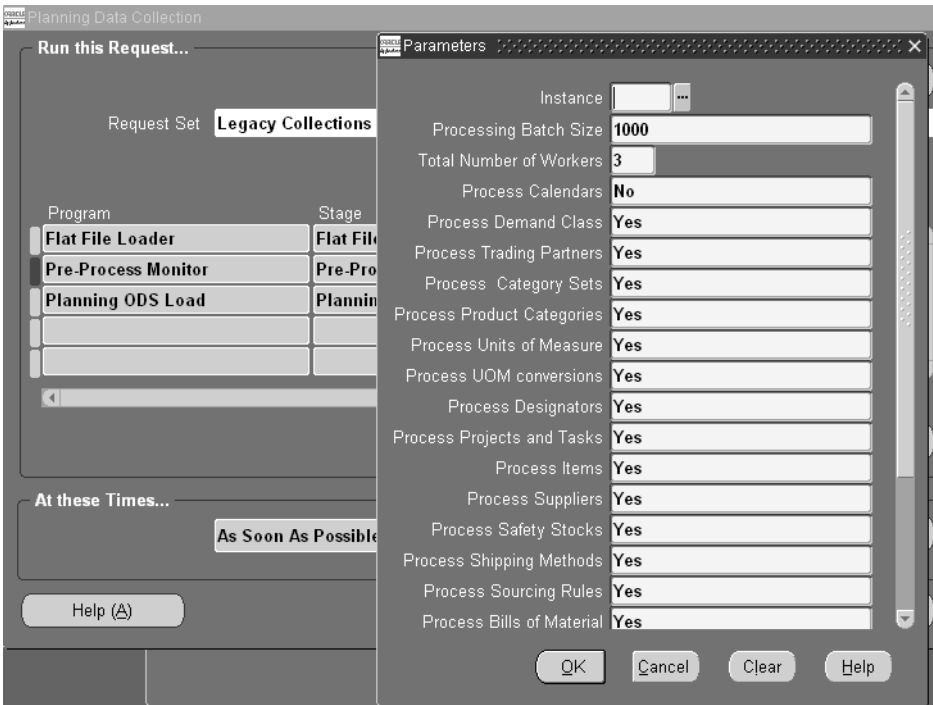
5. Enter the required information and the File Names for all the data files that you want to upload. You can either enter the directory path in the Data File's Directory field and then enter the file names for each entity to be uploaded in the File Name fields, or you can leave the Data File's Directory 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 4–13 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 4–14 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.

Purge Program

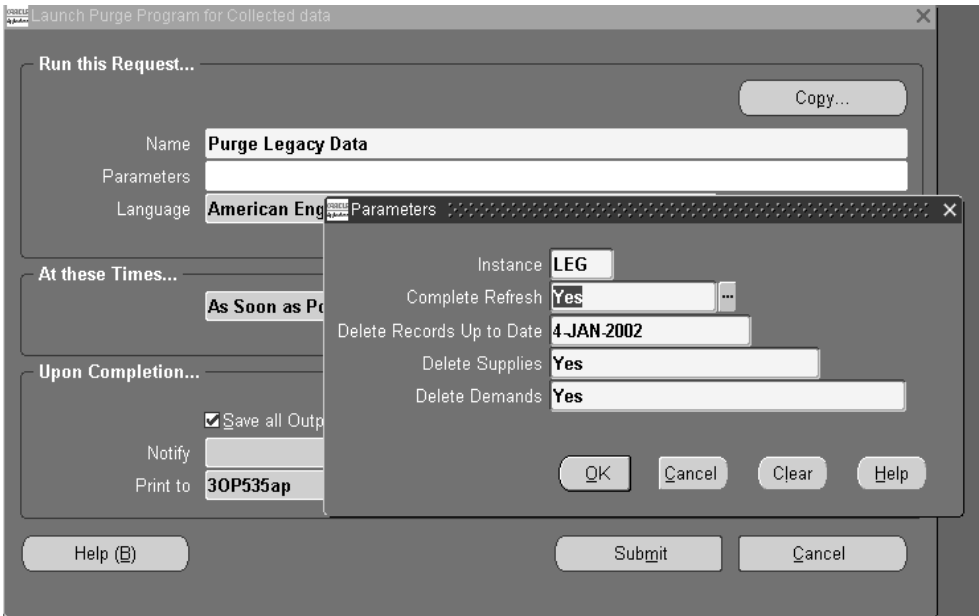
The Purge program deletes the data from the ODS table as well as the local id table (MSC_LOCAL_ID_XXX). Depending upon the option selected while submitting the concurrent program, it behaves differently as explained below.

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 4-15 Purge Parameters screen



The following table shows the values for this screen.

Field	Value
Instance	Legacy instance against which the purge program is to be run.
Complete Refresh	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	BO's Name
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 BO's 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 4–16 Purge Parameters screen

Launch Purge Program for Collected data

Run this Request... Copy...

Name **Purge Legacy Data**

Parameters

Language **American English**

At these Times... **As Soon as Possible**

Upon Completion... ☒ Save all Output

Notify

Print to **30P535ap**

Parameters

Instance **LEG**

Complete Refresh **No**

Delete Records Up to Date **4 JAN 2002**

Delete Supplies **Yes**

Delete Demands **Yes**

OK Cancel Clear Help

Help (E) Submit Cancel

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 BO's records and those records whose creation date is less than user-entered date get deleted from the ODS and LID tables.

Customization

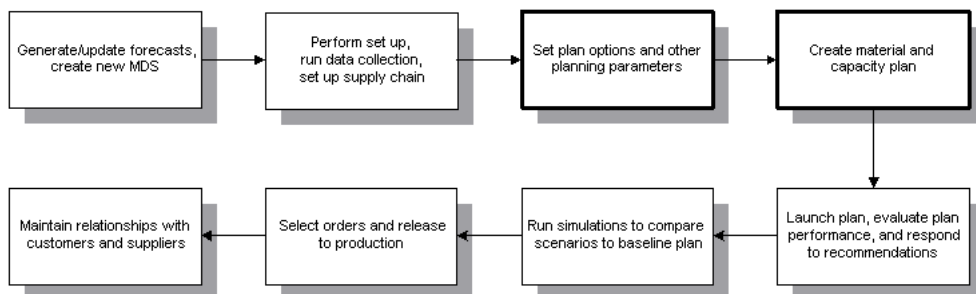
System integrators may want to add custom validations for enabling preprocessing to filter out unwanted incoming data. The preprocessing engine provides hooks for each entity, which can be used to plug-in custom validations.

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 5-59
- [Choosing an Objective Function](#) on page 5-65

A Day in the Life of a Planner



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

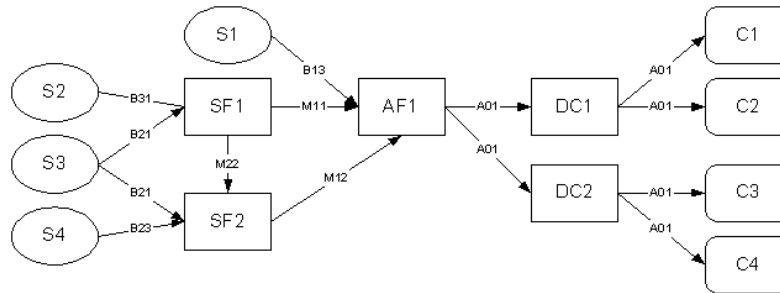
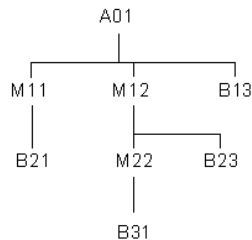


Figure 5–2 Sample Bill of Material



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)

Production

ATP

Notifications

Name	Description				Plan Type	Inactive Date	
☒ 1MA-MRP	MRP Plan	☒	☐	☐	Manufacturing Plan		
☐ 1MA-MRP2	MRP Plan	☒	☐	☐	Manufacturing Plan		
☐ 1PF-MPS	PF-MPS	☒	☐	☐	Production Plan		
☐ 1PF-MPS2	PF-MPS	☒	☐	☐	Production Plan		
☐ A1	Optimized Plan	☐	☐	☐	Manufacturing Plan		
☐ ATP	Global ATP Plan	☐	☐	☐	Manufacturing Plan		
☐ CT-H.PLAN	CTO-H.PLAN	☐	☐	☐	Manufacturing Plan		
☐ CTO-H.PLAN	CTO-H.PLAN2	☐	☐	☐	Manufacturing Plan		
☐ Con-NewL	Constrained Plan	☐	☐	☐	Manufacturing Plan		
☐ Con-OldL	Constrained Plan	☐	☐	☐	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 Choosing a Plan Type on page 5-16 for further details.

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

Plan Options (TST:M1)

Plan1MA-MRP

MRP Plan

Plan TypeManufacturing Plan

Main

Aggregation

Organizations

Constraints

Optimization

Decision Rules

Planned Items

Demand schedule ...

Material Scheduling Method

Order Start Date

End Item Substitution Set

Assignment Set

Demand Priority Rule

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

Default Forecast Consumption Days

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	All items in the planned organizations having an MRP planning code of: - DRP planning - MRP and DRP planning - MPS and DRP planning MRP planned and MPS planned items that are in between the above items in the bill structure. All items in the input schedules.	All items in the planned organizations having an MRP planning code of: - MPS planning - MPS and DRP planning MRP planned and MRP/DRP planned items that are in between the above items in the bill structure. All items in the input schedules.	All items in the planned organizations except ones having MRP planning code of Not Planned.

Planned Items	Distribution Plan Planning Type includes...	Production Plan Planning Type includes...	Manufacturing Plan Planning Type includes...
Include demand schedule items only	All items in the input demand schedules, and all components of these items that have an MRP planning code of: ■ DRP planning ■ MRP and DRP planning ■ MPS and DRP planning MPS and MRP planned items that are in between the above items in the bill structure.	All items in the input demand schedules, and all components of these items that have an MRP planning code of: ■ MPS planning ■ MPS and DRP planning	All items in the input demand schedules, and all components of these items that have an MRP planning code of: ■ MRP planning ■ MRP and DRP planning
Include supply schedule items only	All items in the input supply schedules, and all components of these items that have an MRP planning code of: ■ DRP planning ■ MRP and DRP planning ■ MPS and DRP planning MRP planned and MPS planned items that are in between the above items in the bill structure.	All items in the input supply schedules, and all components of these items that have an MRP planning code of: ■ MPS planning ■ MPS and DRP planning	All items in the input supply schedules, and all components of these items that have an MRP planning code of: ■ MRP planning ■ MRP and DRP planning

Planned Items	Distribution Plan Planning Type includes...	Production Plan Planning Type includes...	Manufacturing Plan Planning Type includes...
Include demand and supply schedule items only	All items in the input demand and supply schedules, and all components of these items that have an MRP planning code of: ■ DRP planning ■ MRP and DRP planning ■ MPS and DRP planning MRP planned and MPS planned items that are in between the above items in the bill structure.	All items in the input demand and supply schedules, and all components of these items that have an MRP planning code of: ■ DRP planning ■ MRP and DRP planning ■ MPS and DRP planning MRP planned and MPS planned items that are in between the above items in the bill structure.	All items in the input demand and supply schedules, and all components of these items that have an MRP planning code of: ■ MRP planning ■ MRP and DRP planning

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.

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.

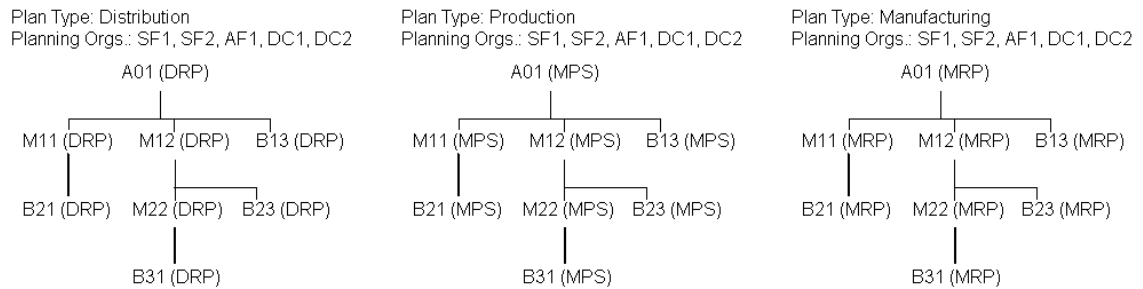
To set the MRP Planning Type item attribute at the more detailed item-organization level

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

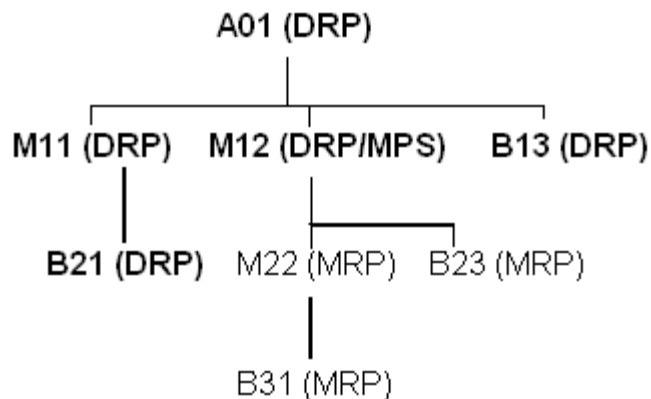


The usefulness of the different types of plans comes in when subset planning is used. Suppose, for example, that subset plan M12 and all its components and subcomponents are used. Some reasons for needing to do so are discussed above.

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

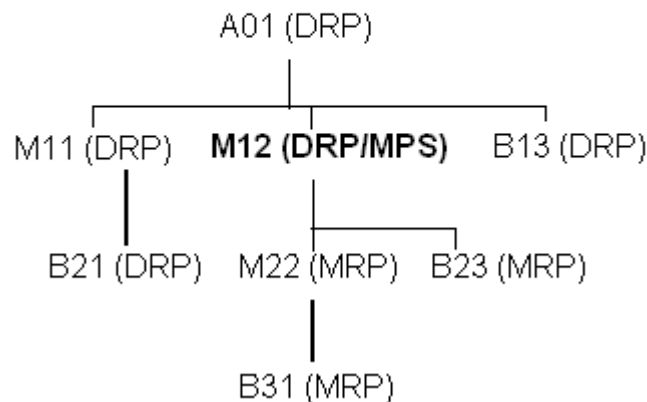


This combination of plan type and MRP Planning Type item attribute values creates cross-supply chain planned orders for A01, M11, B13, B21, and M12 and omits M22, B23, B31.

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



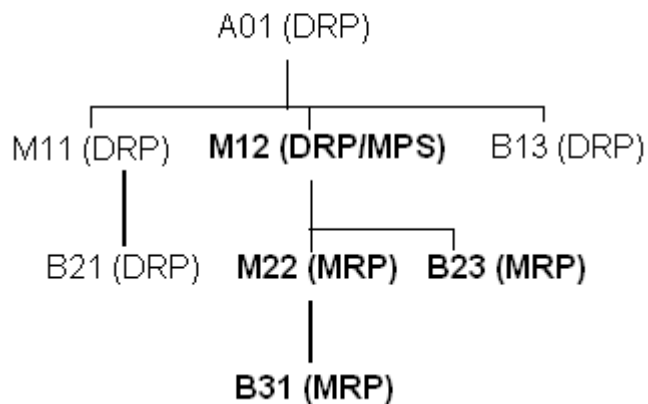
3. Manually modify the MPS for M12 as necessary.

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.

One should always check the Optimized option if execution time constraints permit.

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 (TST:M1)

Plan1MA-MRP

MRP Plan

Plan TypeManufacturing Plan

Main

Aggregation

Organizations

Constraints

Optimization

Decision Rules

Planned Items

Demand schedule ...

Material Scheduling Method

Order Start Date

End Item Substitution Set

Assignment Set

Demand Priority Rule

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

Default Forecast Consumption Days

Backward Days

Forward Days

☒ Enable Pegging

☐ Peg Supplies by Demand Priority

Reservation Level

None

Hard Pegging Level

None

This table describes the fields and options.

Object	Description
Planned Items	This parameter and the Plan Type field in the Supply Chain Names window, control the items that are planned in the supply chain plan. An item must satisfy conditions imposed by both parameters before being included in the supply chain plan. Please see Choosing a Plan Type on page 5-16 for further details.
Assignment Set	The assignment set that holds the sourcing rules and bills of distribution that define the rules for material flow within your supply chain.

Object	Description
Material Scheduling Method	Choose from Operation Start Date or Order Start Date scheduling methods. If you choose Operation Start Date, material is scheduled to arrive at the start of the operation for which it is required. If you choose Order Start Date, material is scheduled to arrive at the start of the order for which it is required. Order State Date is usually an earlier date than the Operation Start Date and therefore this selection represents the more conservative planning logic of the two options.
Demand Priority Rule	When ASCP does detailed scheduling, it schedules demands one by one. The rule specified here dictates the order in which demands will be considered during detailed scheduling, and thus which demands will get the first opportunities to take up available materials and resource capacities. Please see the section Demand Priority Rules on page 5-54.
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 on page 16-3, End-Item-Level Substitution . You can use a set of substitution relationships to be effective for a given plan by selecting the substitution set as an option for the plan. This allows you to run simulations of possible substitutions and evaluate performance indicators given possible future substitutions.
Overwrite	Overwrite planned orders. For further details, please see Overwrite Options on page 5-49.
Demand Class	If you want to limit a production plan to a demand class, enter it. This field is active only for a Production Plan/MPS schedule.
Demand Time Fence Control	Check this option to enforce demand time fence control.
Append Planned Orders	Appends new planned orders to current plan. For further details, please see Overwrite Options on page 5-49.
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.
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 Forecast Consumption Days on page 5-40 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 Forecast Consumption Days on page 5-40 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 Peg Supplies by Demand Priority on page 5-57.
Reservation Level	If Enable Pegging is selected, choose a reservation level: Planning Group, Project, Project-Task, or None.
Hard Pegging Level	If Enable Pegging is selected, choose a hard pegging level: Project, Project-Task, or None.

The Aggregation Tabbed Region

This table describes the fields and options.

Object	Description
Plan Start Date	If you have never run the plan, this field displays today's date. If you have run the plan, this field displays the planning horizon start date of the last run.
Plan End Date	Calculated planning horizon end date based on your entries in Buckets and the owning organization calendar.
Start Date	Calculated start date for each bucket based on your entries in Buckets and the owning organization calendar. The value for the Days column is the Plan Start Date.
Buckets	Number of buckets of this bucket type.

Object	Description
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.

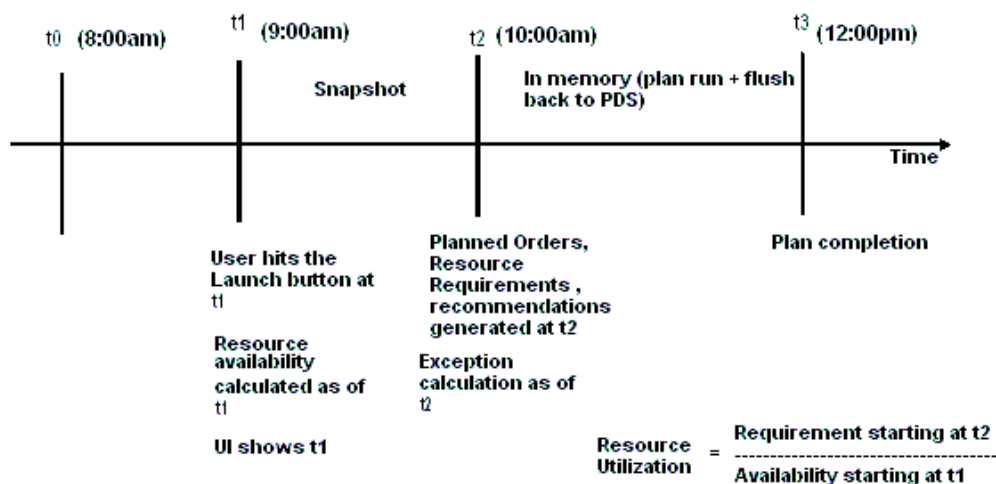
Resource Utilization Calculation

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 (TST:M1)

Plan **1MA-MRP** **MRP Plan** Plan Type **Manufacturing Plan**

Main Aggregation **Organizations** Constraints Optimization Decision Rules

Organizations

Add All Authorized Orgs

Org	Description	Net WIP	Net Reservations	Net Purchases	Plan Safety Stock	Include Sales Order
☒ TST:M1	TST:Seattle Manufactur	☒	☒	☒	☐	☐
☐		☐	☐	☐	☐	☐
☐		☐	☐	☐	☐	☐

Demand Schedules

Name	Description	Type
☒ 1PF-MPS	PF-MPS	MPS
☐		
☐		

Supply Schedules

Name	Description	Type
☐		
☐		
☐		

Subinventory Netting

This table describes the fields and options.

Object	Description
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.
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.

Object	Description
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.
Simulation Set	Select a Simulation Set from the list of values. A simulation set is a set of adjustments to the base availability calendar of a resource, and is defined via the Oracle Bills of Material Department Resources form. You can define different simulation sets to model different availability scenarios (for example, the base availability calendar reflects 5 day operations; simulation set 1 reflects working 6 day operations; simulation set 2 reflects 7 day operations). The planning engine applies the simulation set to all resources in the organization.
Demand Schedules	Select the names of demand schedules, forecasts, and plans that drive this plan.
Interplant	If selected, the planning engine uses only interorganization orders and demands from interorganization planned orders. If cleared, the planning engine uses demands from all planned orders.
Supply Schedules	Select the name of supply schedules that participate in this plan.
Subinventory Netting	Opens the Subinventory Netting window.

The Constraints Tabbed Region

Plan Options (TST.M1)

Plan1MA-MRP

MRP Plan

Plan TypeManufacturing Plan

Main

Aggregation

Organizations

Constraints

Optimization

Decision Rules

☒ Constrained Plan

☒ Enforce Demand Due Dates

Days

Start Date03-JAN-2003

Buckets200

Resource ConstraintsYes

Material ConstraintsYes

Weeks

28-JUL-2003

4

Yes

Yes

Periods

22-SEP-2003

5

Yes

Yes

☐ Enforce Capacity Constraints

Scheduling

Minutes Bucket Size (in Days)0

Hours Bucket Size (in Days)0

Days Bucket Size (in Days)200

☒ Calculate Resource Requirements

Planned ResourcesAll 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.
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 11-19, Setting Constraints for Different Plan Types .

Defining Plans 5-33

Object	Description
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 11-19, Setting Constraints for Different Plan Types .
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.
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

The screenshot shows the 'Plan Options (TST:M1)' dialog box with the 'Optimization' tab selected. The 'Plan' is '1MA-MRP' and the 'Plan Type' is 'Manufacturing Plan'. The 'Optimization' tab is active, showing options to optimize and enforce sourcing constraints. Under 'Objectives', three goals are listed with weights: 'Maximize inventory turns' (1), 'Maximize plan profit' (.1), and 'Maximize on-time delivery' (1). Under 'Plan Level Penalty Factors', four categories are listed with percentage inputs: 'Exceeding material capacity %', 'Exceeding resource capacity %', 'Exceeding transportation capacity %', and 'Demand lateness %'.

Plan	Plan Type
1MA-MRP	Manufacturing Plan

Optimization Tabbed Region

☒ 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 %	

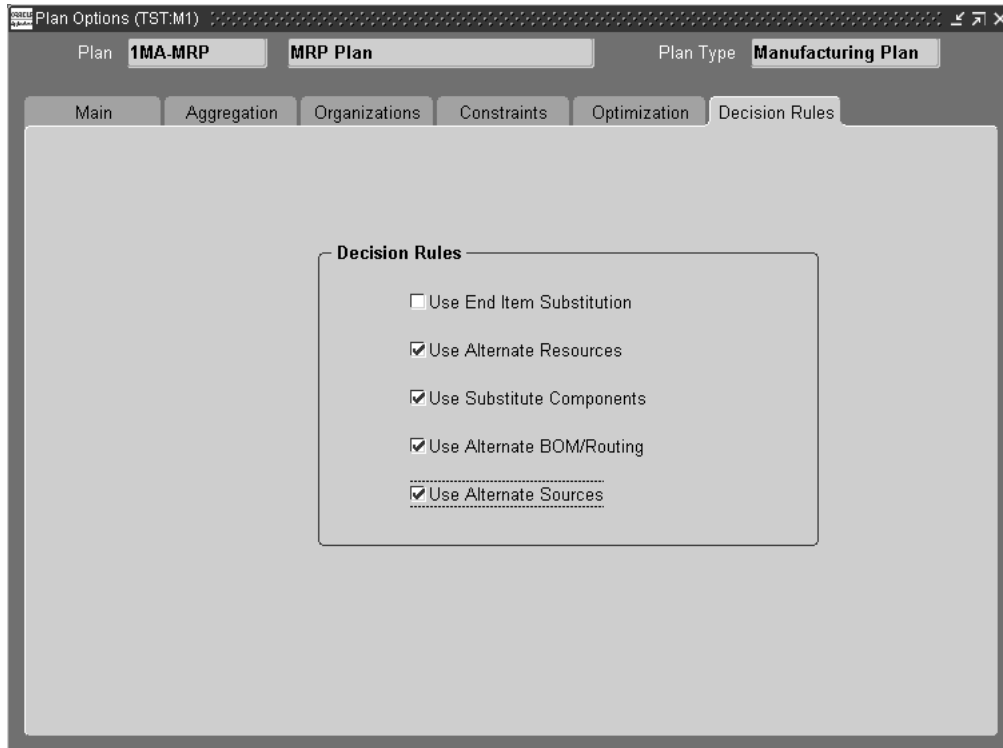
This table describes the fields and options.

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.

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.

Name	Description	Net
ConsignVen	Vendor Consigned Inventory	☒
Consumable	Consumables Inventory	☐
CustReturn	Customer Returns	☐
DropShip	DropShipments wash Inventory	☐
Engineer	Engineering Inventory	☐
FGI	Finished Goods Inventory	☒
FS_Truck6	Field Service Truck 6	☒
FS_Truck7	Field Service Truck 7	☒
FS_Truck8	Field Service Truck 8	☒
FS_Truck9	Field Service Truck 9	☒

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:

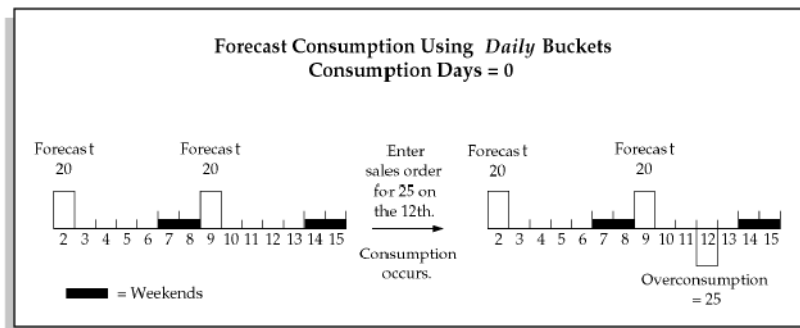
- You do not always have an exact match between the sales order line schedule dates and forecast entry dates.
- Your forecast entry quantity is not always sufficient to cover the sales order quantities.

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.

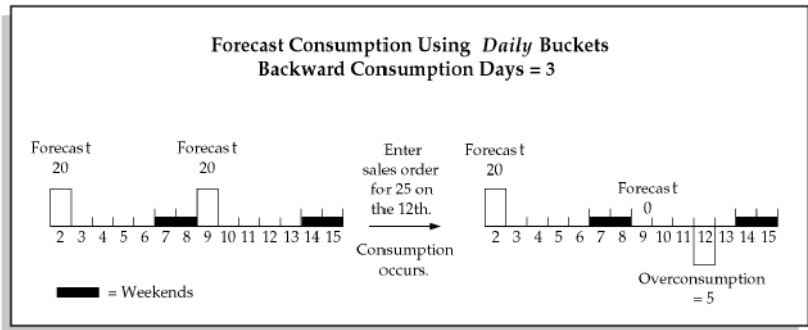
Since there are no forecasts on day 12, the forecast consumption process creates an overconsumption entry on the 12th and the forecasts remain the same.



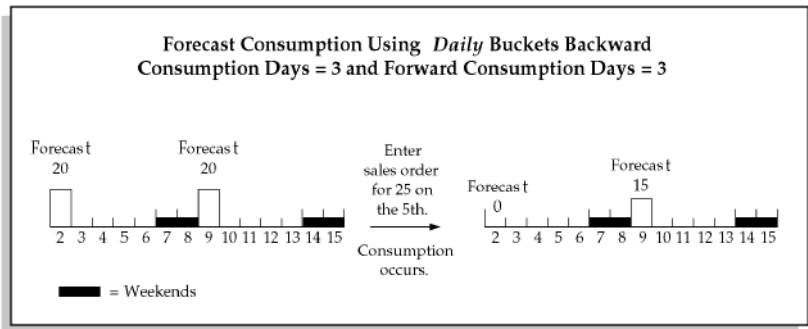
This diagram shows a daily forecast with 3 backward consumption days. You enter a sales order line for quantity 25 on day 12.

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.

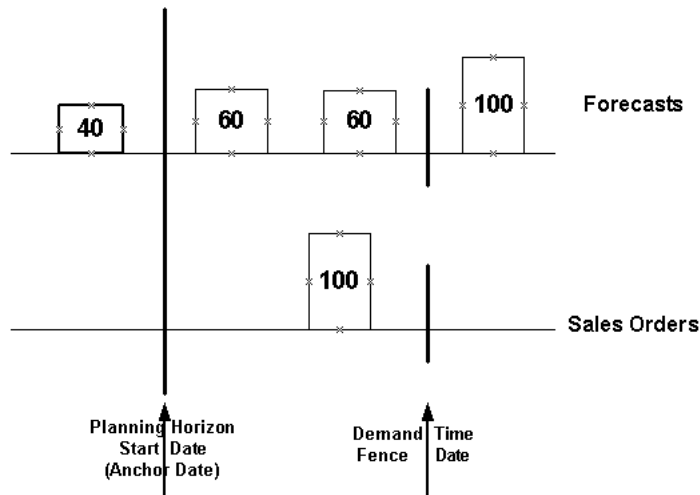
If an item has a demand time fence, the planning engine checks the profile option MSC: Consume forecast within demand time fence and does the following depending on its value:

- 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.

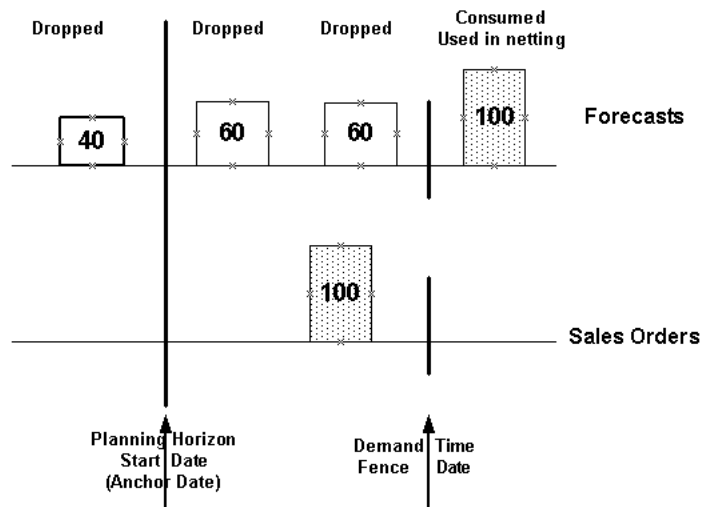


The planning engine checks the profile option MSC: Consume forecast within demand time fence and does the following depending on its value:

- 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.

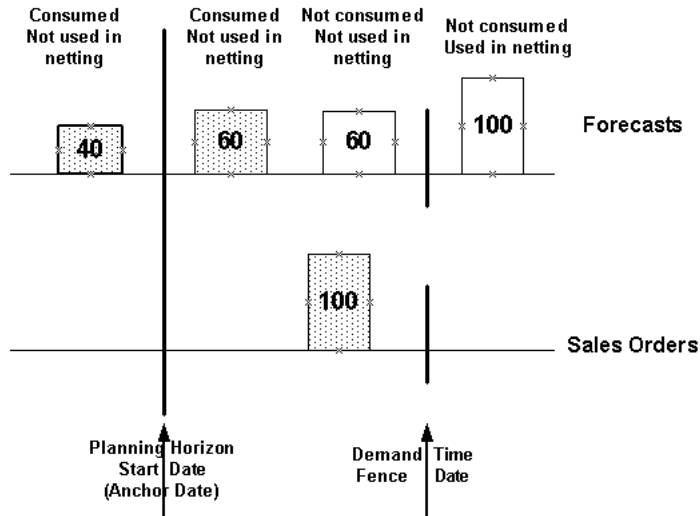
This diagram shows the results of the No profile option using the previous example:



- 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

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.

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

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

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

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

Schedule Date	Quantity
02-FEB	110

Schedule Date	Quantity
09-FEB	220
16-FEB	330

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

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

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

Overwrite None, Append Planned Orders

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

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

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

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

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

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

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

Overwrite None, Do Not Append Planned Orders

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

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

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

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

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

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

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

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.

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

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

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

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 5–8 Define Priority Rules window

Define Priority Rules

Name

Demand Priority Rule 3

Description

External demand priority followed by schedule date

☒ Enabled

☐ Default

[]

Criteria Name

Criteria Order

☐ Sales Orders & MDS Entries Priority

1

☒ Schedule Date

2

☐

☐

☐

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

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

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

To attach a priority rule to a supply chain plan

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

Oracle ASCP will allocate both firm and nonfirm supplies to demands in the order of demand priority. Oracle ASCP will follow the following guidelines to allocate supplies to demands:

- Allocate supply to demand in the order of demand priority instead of closest quantity pegging

- Minimize pegging of a given supply to multiple demands
- Avoid multiple pegs to higher priority demands.

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 the *Oracle Bill of Materials 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.

Figure 5–9 The Constraints tab

The screenshot shows the 'Plan Options (M1)' dialog box with the 'Constraints' tab selected. The 'Plan' is 'leg4' and the 'Plan Type' is 'Manufacturing Plan'. The 'Main' tab is also visible. The 'Constrained Plan' checkbox is checked. Under 'Enforce Demand Due Dates', the 'Start Date' is '04-JAN-2002' and 'Buckets' is '300'. Under 'Enforce Capacity Constraints', the 'Start Date' is '04-NOV-2002' and 'Buckets' is '4'. The 'Periods' are '30-DEC-2002' and 'Buckets' is '5'. The 'Resource Constraints' and 'Material Constraints' are both set to 'Yes'. The 'Scheduling' section has 'Minutes Bucket Size (in Days)' set to '0', 'Hours Bucket Size (in Days)' set to '0', and 'Days Bucket Size (in Days)' set to '300'. The 'Calculate Resource Requirements' checkbox is checked. The 'Planned Resources' dropdown is set to 'All Resources' and the 'Bottleneck Resource Group' is empty.

	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. 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 trade-offs between competing objectives.

You can optimize your plans to the objectives shown in the following table.

Objective Function	How is the Objective Achieved?
Maximize Inventory Turns	Minimize inventory carrying cost
Maximize Plan Profit	Maximize plan revenue minus plan cost
Maximize On-Time Delivery	Minimize penalty cost for late demand

Inventory Turns

The inventory turns are maximized by minimizing inventory carrying cost. Inventory carrying cost is summed up for all items in all time buckets. Inventory carrying cost is calculated as follows:

inventory carrying cost = (average inventory per bucket) * (carrying cost percent) * (item cost)

Plan Profit Objective

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

The margin percentage objective is calculated as follows:

margin percentage = (plan revenue) - (plan cost)

plan revenue = {(sales order line price)*(sales order quantity)} + {(item list price)*(item discount)*(forecast quantity)}

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

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

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

$$\begin{aligned} \text{item cost} = & \{(\text{resource cost}) * (\text{resource quantity used})\} + \\ & \{(\text{buy item cost}) * (\text{buy item quantity})\} + \\ & \{(\text{process cost}) * (\text{quantity using process})\} \end{aligned}$$

$$\begin{aligned} \text{transportation cost} = & \{(\text{transfer quantity}) * (\text{item weight}) * (\text{shipping cost per unit weight})\} \\ & + \{(\text{buy quantity}) * (\text{item weight}) * (\text{shipping cost per unit weight})\} \end{aligned}$$

$$\begin{aligned} \text{inventory carrying cost} = & \{(\text{average inventory per bucket}) * (\text{carrying cost pct}) * (\text{item cost})\} \end{aligned}$$

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

Ontime Delivery Objective

The ontime delivery objective is calculated as follows:

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

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

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

- 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
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.

Factor	Penalty Cost for Using Alternate Sources	Penalty Cost for Using Alternate Routings	Penalty Cost for Using Alternate Resources	Penalty Cost for Using Substitute Items	Implicit Carrying Cost
Resource Cost	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 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.
- Maximize the use of resource and routing aggregation (see [Choosing Resource Aggregation Levels](#) on page 5-60).

Ways to decrease the number of items include:

- Enable each item in as few organizations as possible because each combination of item-organization counts as a separate item.
- Maximize the use of item aggregation (to the product family level) in the plan options.
- Set the Planned Items option in the Main tab of the Plan Options window to something other than All Planned Items. For example, set it to Demand Schedule Items Only.

Ways to decrease the number of demands include:

- Maximize the use of time aggregation (larger time buckets) in plan options. This collapses multiple demands occurring within a larger time bucket to a single demand at the end of the time bucket.
- Maintain long-term forecasts in larger time buckets (for example, weeks or periods) instead of shorter time buckets such as days. This reduces the number of MDS demands once the forecast is loaded into an MDS for input to the planning process.

Optimized Plans Data Requirements

The majority of the data required for optimized plans for different objectives are available in ERP systems. These data include:

- Item Standard Cost, List Price, Selling Price, Discount
- Carrying Cost Percent
- Resource Cost
- Transportation Cost
- Sourcing Rank
- Substitute Item Priority
- BOM/Routing Priority
- Alternate Resource Priority

The remaining data can be set up at the profile option level or plan level to expedite the implementation of optimized plans. These data include:

- Exceeding Item Capacity Penalty Factor
- Exceeding Resource Capacity Penalty Factor
- Exceeding Transport Capacity Penalty Factor
- Late Demand Penalty Factor

Oracle ASCP considers some default values for these fields, such as 0.01 for the Standard Cost. The Optimization process cannot produce very valuable results based on these default values alone. It is recommended that you specify starting values for these fields at the profile option level at the start of implementation.

Optimization Effects on Sourcing

Oracle ASCP optimization does not consider allocation percentages specified in the sourcing rules and/or bills of distributions. Sourcing decisions are made based on capacity, item standard cost, and rank with respect to penalty costs and constraints.

Example 1: Enforce Capacity Constraints Scenario

Item A is sourced from organizations O1 and O2 with ranks equal to 1 and 2 respectively. If the total costs (item plus penalty costs) are equal in both organizations, and capacity is available only in O2; then this organization is used as the source for item A and ranking is overridden.

Example 2: Enforce Demand Due Dates Scenario

Item A is sourced from organizations O1 and O2 with ranks equal to 1 and 2 respectively. If the total costs (item plus penalty costs) are equal for both organizations, Organization O1 with rank 1 is loaded (or overloaded) to source item A.

Example 3: Enforce Demand Due Dates Scenario

Item A is sourced from organizations O1 and O2 with ranks equal to 1 and 2 respectively. If the total cost (item plus penalty costs) in organization O1 is greater than organization O2, Organization O2 with rank 2 is loaded (or overloaded) to source item A and ranking is overridden.

Nervousness

Nervousness is the condition in which small changes in demand cause large changes in supply (planned order releases). In traditional MRP, plan nervousness causes lost time due to extra setups (and confusion and frustration) on the plant floor. With Oracle ASCP’s ability to generate a single global supply chain plan, the effects of nervousness are magnified because they extend to trading partners (who may not have the same urgency to constantly replan manufacturing to accommodate rapidly changing requirements).

Consider the following example. End-item A has lead time 1 day and order modifier of Fixed Order Period = 3 days. End-item A contains one component B, which has a lead time of 3 days and order modifier Lot for Lot. Initial planned orders for A and B are shown in the next two tables.

Item A	Current	1	2	3	4	5
Gross Requirements	0	10	10	10	10	50
Scheduled Receipts	0	0	0	0	0	0
Project On-Hand	15	5	-5	0	0	0
Net Requirements	0	0	5	10	10	50
Planned Order Due Date	0	0	25	0	0	50
Planned Order Start Date	0	25	0	0	50	0

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

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

Item A	Current	1	2	3	4	5
Gross Requirements	0	0	70	0	0	0
Scheduled Receipts	0	0	0	0	0	0
Project On-Hand	25	25	-50	0	0	0
Net Requirements	0	0	50	0	0	0
Planned Order Due Date	0	0	50	0	0	0
Planned Order Start Date	0	50*	0	0	0	0

Item B	Current	1	2	3	4	5
Gross Requirements	0	10	5	10	10	50
Scheduled Receipts	0	0	0	0	0	0
Project On-Hand	15	5	0	-10	0	0
Net Requirements	0	0	0	10	10	50
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.

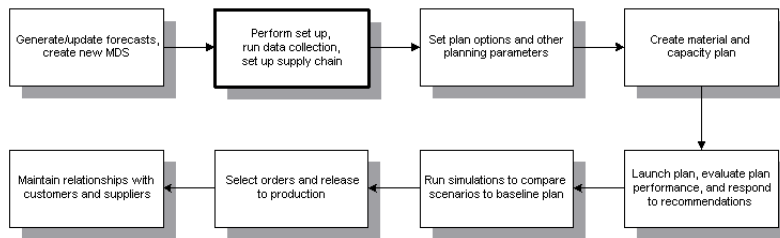
Time fences can be used to freeze near-term plans and reduce nervousness. However, they also reduce the ability of the planning process to accommodate changes in demand. They should be set to the lowest values possible.

Supply Chain Modeling

This chapter includes:

- [Overview of Supply Chain Modeling](#) on page 6-3
- [Setting up the Supply Chain](#) on page 6-4
- [Setting Supplier Capacity](#) on page 6-6
- [Setting up Alternate and Simultaneous Resources](#) on page 6-13
- [Setting Up Routings](#) on page 6-40
- [Planned Inventory Points](#) on page 6-53
- [Setting Up Batch Resources](#) on page 6-61
- [Allocating Demand to Suppliers](#) on page 6-66
- [Sourcing Example](#) on page 6-68
- [Enforce Sourcing Splits](#) on page 6-78
- [Viewing the Supply Chain](#) on page 6-84
- [Performing Tasks on the Planning Server](#) on page 6-86
- [Audit Statements Report](#) on page 6-87

A Day in the Life of a Planner



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 6-84.

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 6-84.

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 6-84.

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 6-84.

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.

Setting Up Supplier Capacity

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)

Setting Supplier Capacity by Time Periods

Supplier capacity can vary by time period. You can specify one daily capacity for period 1 and a different capacity for period 2. Time periods are specified from a start date to an end date.

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

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

Supplier Item Attributes (M1)

Global ☐ Local ☐ Create Local

Item: RB-CM201 Commodity: Supplier: RB-SUPLCD2 Site: RB-SITLCD2

Purchasing UOM: Release Method: Price Update Tolerance: % Country of Origin: []

Source Documents | Supplier Scheduling | **Planning Constraints**

Processing Lead Time: Delivery Calendar:

Order Modifiers: Minimum Order Quantity: Fixed Lot Multiple:

Capacity:

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

Tolerance Fences:

Days in Advance	Tolerance %

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%.

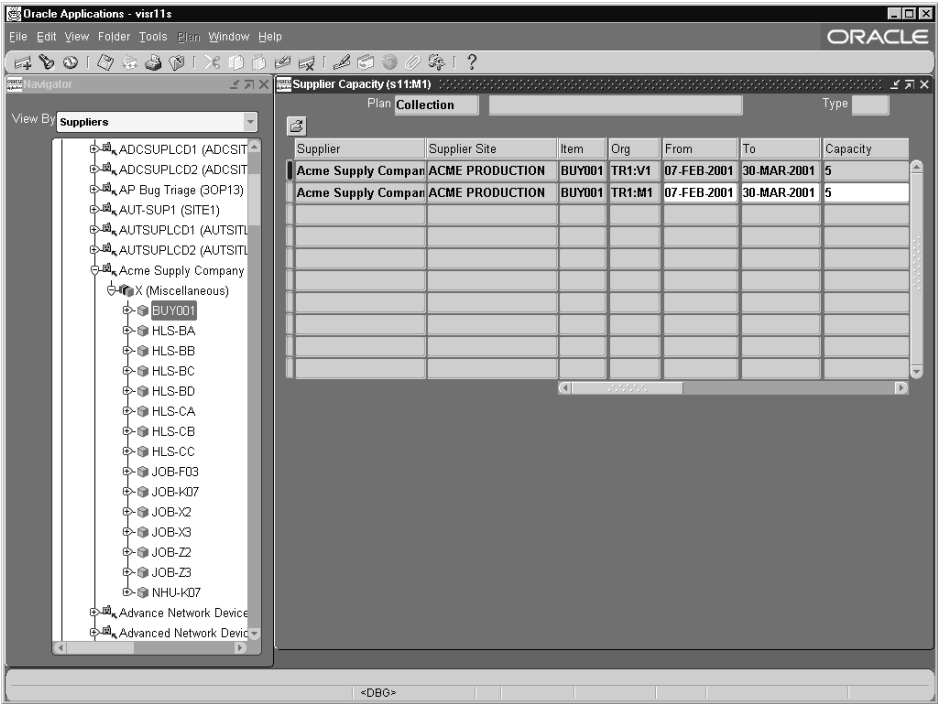
Note: You can define capacity tolerance percentages that can vary for each of your items. The tolerance fence data in Oracle Purchasing is used to adjust production according to capacity changes for item/supplier combinations when the order is placed. Tolerance fence values can be specified for the capacity fluctuation allowed for available to promise; and used to determine demand based on the amount of advanced notice given to the supplier.

To see an example of how this might be used, please refer to Tables 6-3, 6-4, and 6-5.

If you are using version 10.7 or 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

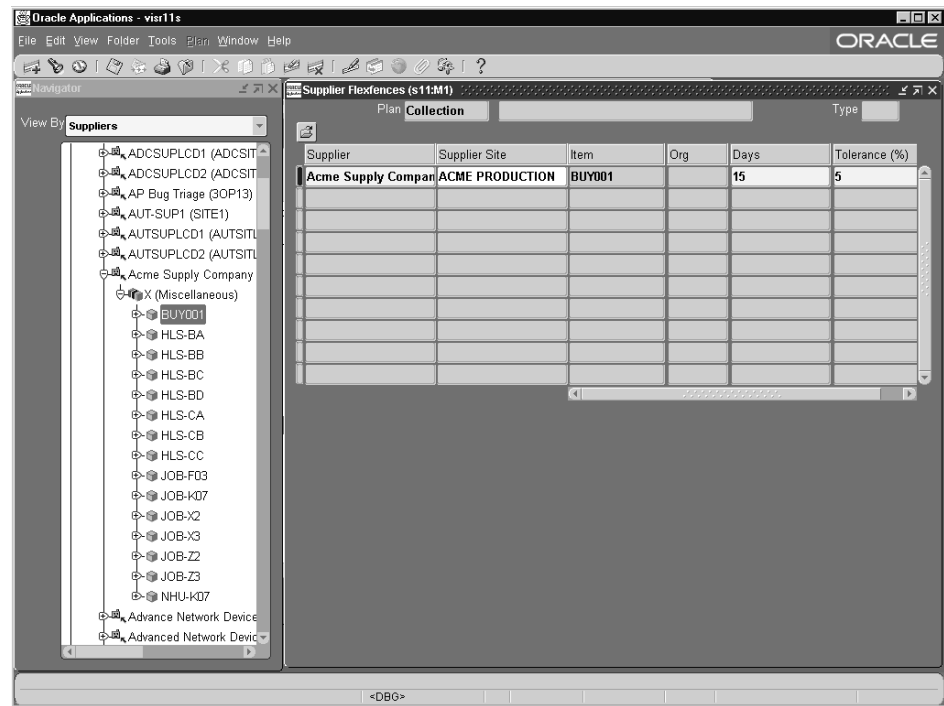


- 4. Enter your supplier capacities by time period.

If you are using version 10.7 or 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 Alternate and Simultaneous Resources

This section discusses some of the advantages of setting up simultaneous and alternate resources and shows you how to set them up.

Advantages

- You can schedule two or more resources (simultaneous resources) to be used at the same time within the job operation. For example: you can schedule a person resource operating a machine resource (i.e., a lathe).
- You can define resource groups within the operation. This lets you give your primary resource a group number. This group can then be replaced by other resource(s). For example: a group of lathes can be replaced by a group of computer numerical control (CNC) machines.
- You have the ability to define substitute resource(s) for each primary resource group defined. This enables you to specify resource sequences that can replace the primary resource group. For example: a group of lathes can be replaced by a group of CNC machines.
- You can assign a priority to the substitute resource groups, and specify under what circumstances the substitute groups are to be considered. For example: you can assign a less expensive resource(s) as priority 1, and a more expensive resource(s) as priority 2. This means that resource(s) with priority 1 (less expensive) will be used first.

Required Setup

To set up an alternate resource if you use 11i source

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

The Routings window appears.

Figure 6–4 Routings window

Routings (M1)

Item: [] UOM: []

Alternate: [] ☐ Capable To Promise

Revision: **A** Date: **26-JUN-2002** []

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

Operations

Main | WIP | Operation Yield | ECO | Description

Seq	Code	Department	Effective	Disabled	Option Dependent	Lead
10					☐	
					☐	
					☐	
					☐	
					☐	

Routing Details | Routing Revisions | Operation Resources

3. Select the Find (flashlight) icon.
The Find Routing window appears.
4. Use this window to find your routing, then select Find.
The Routing window appears with your routing.
5. From the main tab, select the operation sequence within which you want to set up alternate resources.
6. Select Operation Resource.
The Operation Resource window appears with the first resource already entered. This resource is considered as a primary resource.

Figure 6–5 Operation Resource

[illegible]

7. Select the Scheduling Tab.
8. Enter Schedule Sequence number so that you can enable the Alternate button. Schedule sequence number is used to tie the two resources together to establish alternate relationship. Schedule Seq. Number overrides Resource Sequence number.
9. Check the Principal Flag for the resource.
10. Select Alternate.

The Operation Alternate Resources window appears.

Figure 6–6 Operation Alternate Resources

Operation Alternate Resources (M1) - 10

Item

sce-test1

Alternate

Sequence

10

Effective Date

03-JAN-2003

Resource Seq.

10

Resource Code

sce-

Alternate Resources

Main

Scheduling

Costing

Resource	Replacement Group	Schedule Seq	Assigned Units	Schedule	Offset %	Principle Flag	Setup Type
		10	1	No		☒	
						☐	
						☐	
						☐	
						☐	
						☐	
						☐	

11. Enter the alternate resource and choose Replacement Group. Replacement Group number establishes relative priority. Enter a value of 1 or higher. If you have multiple alternates, enter them as multiple rows with appropriate Replacement Group #s to indicate priorities.
12. Check the Principle Flag for your alternate resource.

To set up an alternate resource if you use 10.7 or 11.0 source

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

Figure 6–7 The Routings window

The screenshot shows the 'Routings (M1)' window with the following fields and sections:

- Item:** [Text Field]
- UOM:** [Text Field]
- Alternate:** [Text Field]
- ☐ Capable To Promise
- Revision:** A
- Date:** 04-JAN-2002
- Display:** Future and Current
- Operations:** [Section Header]
- ☐ [Checkbox]
- Referenced:** Main
- Table:**

Seq	Code		Department	Effective	Disabled	Option Dependent	Lead Time	
		☐				☐		
		☐				☐		
		☐				☐		
		☐				☐		
		☐				☐		
		☐				☐		
- Buttons:** Routing Details, Routing Revisions, Operation Resources

3. Select the Find (flashlight) icon.
The Find Routings window appears.

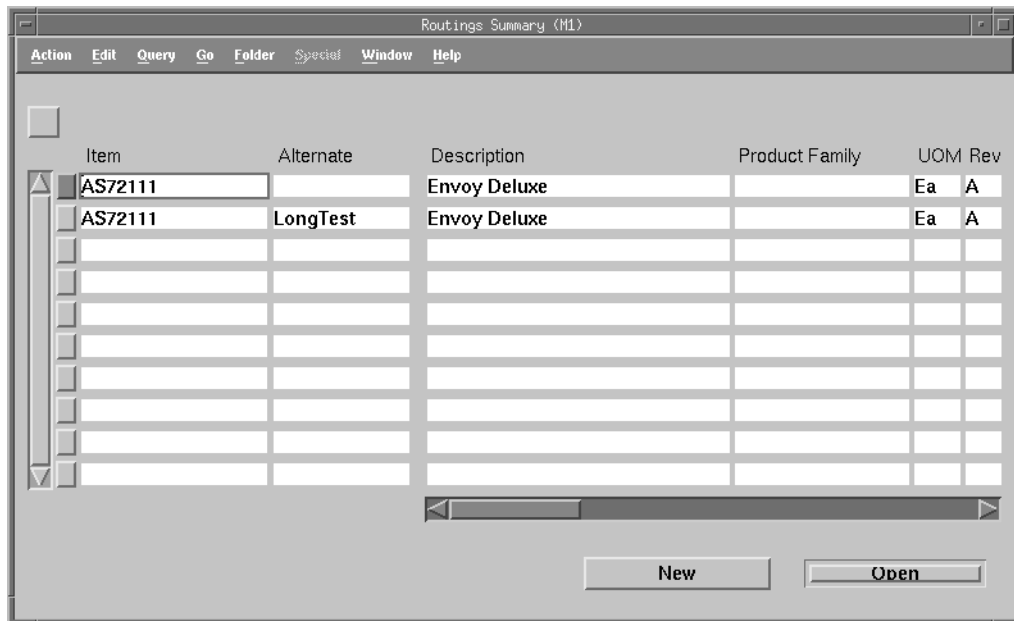
Figure 6–8 Find Routings window

The screenshot shows a window titled "Find Routings (M1)". The menu bar includes "Action", "Edit", "Query", "Go", "Folder", "Special", "Window", and "Help". The main content area has the following fields and sections:

- Item**: A text input field.
- Alternate**: A text input field.
- Product Family**: A text input field.
- Common Routing**: A section containing an **Item** text input field.
- Operation Code**: A text input field.
- Department**: A text input field.

At the bottom right, there are three buttons: "Clear", "New", and "Find".

4. Use this window to find your routing, then select Find.
The Routings Summary window appears.

Figure 6–9 *Routings Summary window*

5. From the Main tab, select the operations sequence for which you want to set up an alternate resource.
6. Select Operation Resources.
The Operation Resources window appears.
7. Select a routing and select Open.
The Routings window reappears populated with routing information.

Figure 6–10 Routings window (populated)

Routings <M1>

ActionEditQueryGoFolderSpecialWindowHelp

ItemAS72111Envoy DeluxeUOMEa

AlternateCapable To Promise

RevisionADate04-JAN-2002

DisplayFuture and Current

Operations

ReferencedMain

Seq	Code		Department	Effective	Disabled	Option Dependent	Lead Time	
10	SDAS		ASSEMBLY	09-JUL-1997			0	
20	SBAS		ASSEMBLY	09-JUL-1997			.07	
30	SFAS		ASSEMBLY	09-JUL-1997			.14	
40	STST		TESTING	09-JUL-1997			.35	
50	DSAS		PACKING	09-JUL-1997			99.49	
60	SFPK		PACKING	09-JUL-1997			99.83	

Routing Details

Routing Revisions

Operation Resources

- 8. Select an operation sequence for which you want to set up an alternate resource.
- 9. Select Operations Resources.

Figure 6–11 Operation Resources

The screenshot shows the 'Operation Resources' window with the following details:

- Item: AS72111
- Sequence: 40
- Alternate: (empty)
- Effective Date: 09-JUL-1997
- Resources: (empty)
- Scheduling: (selected)

Seq	Resource	Available 24 Hours	Assigned Units	Schedule	Offset %
10	LBR-TEST	☒	1	Yes	
20	TESTER	☒	1	Yes	
		☐			
		☐			
		☐			
		☐			

10. Enter the two resources you want to use as alternates.
11. Select the flexfield for the first resource (LBR-TEST, in this example).
The Operation Resource Information window appears.

Figure 6–12 Operation Resource Information window (first resource)

Field	Value
Firm Flag	
Principal Resource	Yes
Priority	0
Resource Step Number	10
Activity Group Id	
Factory Planner Resource Type	machine

Buttons: Clear, Cancel, OK

12. Designate this resource as a principal resource. Assign this resource an integer priority greater than or equal to 0.
13. Select OK.
The Operation Resource Information window closes.
14. Select the flexfield for the alternate resource (TESTER in this example).
The Operation Resource Information window reopens.

Figure 6–13 *Operation Resource Information window (alternate resource)*

Firm Flag	
Principal Resource	Yes
Priority	1
Resource Step Number	10
Activity Group Id	
Factory Planner Resource Type	machine

Clear Cancel OK

15. Set the priority number higher than that of the first resource, and make sure the Resource Step Number matches that of the first resource.

The two resource will behave as alternates.

To set up simultaneous resources if you use 11i source

1. Sign on using the Manufacturing and Distribution Manager responsibility.
 2. From the Navigator, choose Bills of Material > Routings > Routings.
 3. Select the Find (flashlight) icon.
- The Find Routing window appears.
4. Use this window to find your routing, then select Find.
- The Routing window appears with your routing.
5. From the main tab, select the operation sequence within which you want to set up simultaneous resources.
 6. Select Operation Resource.

The Operation Resource window appears with the first resource already entered.

7. Enter Schedule Sequence number. Schedule sequence number is used to tie the two resources together to establish simultaneous relationship. Schedule Seq. Number overrides Resource Sequence number.
8. Check the Principal Flag for the first resource.
9. Enter the simultaneous resource for the resource in step number 6 as a second row in the operation resources window. Ensure that schedule sequence number you entered is the same as in step number 7.
10. Do not check the Principle Flag for your simultaneous resource. You can have only one principal resource in a given simultaneous group.

To set up simultaneous resources if you use 10.7 or 11.0 source

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

Figure 6–14 The Routings window

Routings (M1)

Action Edit Query Go Fielder Special Window Help

Item UOM

Alternate ☐ Capable To Promise

Revision Date ☐

Display

Operations

☐

Referenced

Seq	Code	Department	Effective	Disabled	Option Dependent	Lead Time
					☐	
					☐	
					☐	
					☐	
					☐	
					☐	

Routing Details Routing Revisions Operation Resources

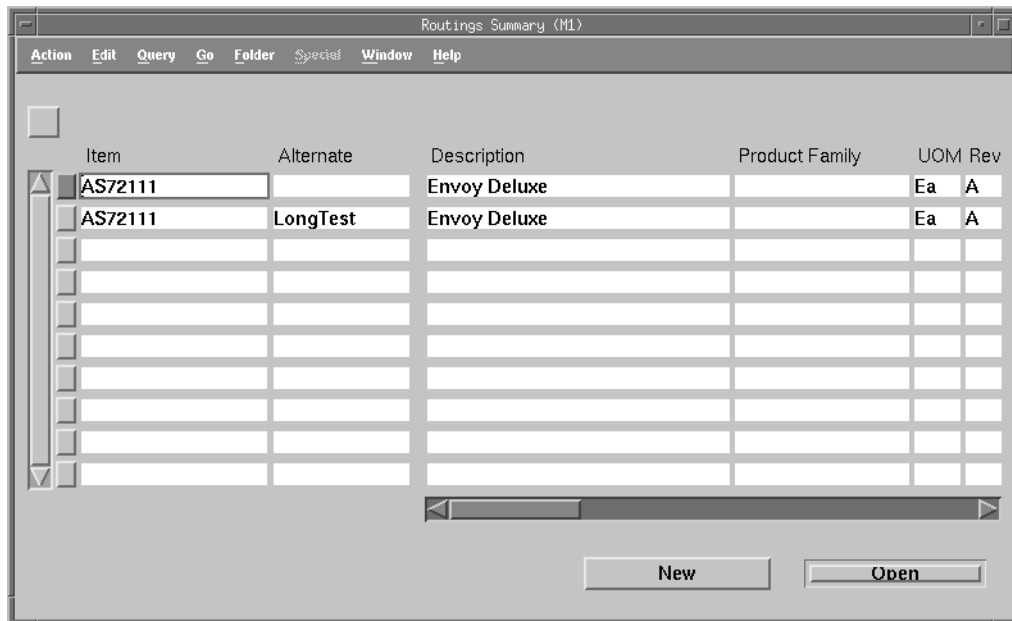
3. Select the Find (flashlight) icon.
The Find Routings window appears.

Figure 6–15 Find Routings window

The screenshot shows a window titled "Find Routings (M1)". The menu bar includes "Action", "Edit", "Query", "Go", "Folder", "Special", "Window", and "Help". The main content area contains the following fields and controls:

- Item:** A dropdown menu followed by a text input field.
- Alternate:** A text input field.
- Product Family:** A dropdown menu followed by a text input field.
- Common Routing:** A section header above a dropdown menu and a text input field for "Item".
- Operation Code:** A text input field.
- Department:** A text input field.
- Buttons:** "Clear", "New", and "Find" buttons are located at the bottom right.

4. Use this window to find your routing, then select Find.
The Routings Summary window appears.

Figure 6–16 *Routings Summary window*

5. From the Main tab, select the operations sequence for which you want to set up a simultaneous resource.
6. Select Operation Resources.
The Operation Resources window appears.
7. Select a routing and select Open.
The Routings window reappears populated with routing information.

Figure 6–17 *Routings window (populated)*

The screenshot shows the 'Routings (M1)' window. At the top, there is a menu bar with 'Action', 'Edit', 'Query', 'Go', 'Folder', 'Special', 'Window', and 'Help'. Below the menu bar, the 'Item' field is populated with 'AS72111' and 'Envoy Deluxe'. The 'UOM' is 'Ea'. There is an 'Alternate' field and a 'Capable To Promise' checkbox. 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, which includes a 'Referenced' tab and a table of operations. The table has columns for 'Seq', 'Code', 'Department', 'Effective', 'Disabled', 'Option Dependent', and 'Lead Time'. The operations listed are: 10 SDAS ASSEMBLY, 20 SBAS ASSEMBLY, 30 SFAS ASSEMBLY, 40 STST TESTING, 50 DSAS PACKING, and 60 SFPK PACKING. The lead times are 0, .07, .14, .35, 99.49, and 99.83 respectively. At the bottom, there are three tabs: 'Routing Details', 'Routing Revisions', and 'Operation Resources'.

Seq	Code	Department	Effective	Disabled	Option Dependent	Lead Time
10	SDAS	ASSEMBLY	09-JUL-1997			0
20	SBAS	ASSEMBLY	09-JUL-1997			.07
30	SFAS	ASSEMBLY	09-JUL-1997			.14
40	STST	TESTING	09-JUL-1997			.35
50	DSAS	PACKING	09-JUL-1997			99.49
60	SFPK	PACKING	09-JUL-1997			99.83

8. Select an operation sequence for which you want to set up a simultaneous resource.
9. Select Operations Resources.

The Operations Resources window appears.

Figure 6–18 Operation Resources

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

Item: AS72111 Alternate:
Sequence: 40 Effective Date: 09-JUL-1997

Resources

Scheduling

Seq	Resource	Available 24 Hours	Assigned Units	Schedule	Offset %
10	LBR-TEST	☒	1	Yes	
20	TESTER	☒	1	Yes	
		☐			
		☐			
		☐			
		☐			
		☐			

10. Enter the two resources you want to use as simultaneous resources.
11. Select the flexfield for the first resource (LBR-TEST, in this example).
The Operation Resource Information window appears.

Figure 6–19 Operation Resource Information window (first resource)

Field	Value
Firm Flag	
Principal Resource	Yes
Priority	0
Resource Step Number	10
Activity Group Id	
Factory Planner Resource Type	machine

Buttons: Clear, Cancel, OK

12. Designate this resource as a principal resource. Assign this resource an integer priority greater than or equal to 0.
13. Select OK.
The Operation Resource Information window closes.
14. Select the flexfield for the simultaneous resource (TESTER in this example).
The Operation Resource Information window reopens.

Figure 6–20 *Operation Resource Information window (simultaneous resource)*

Firm Flag	
Principal Resource	No
Priority	0
Resource Step Number	10
Activity Group Id	
Factory Planner Resource Type	machine

Clear Cancel OK

15. Set the Principal Resource flexfield to No, the Priority flexfield should match that of the first resource, and the Resource Step Number should match that of the first resource.

Ensuring that Related Resources are Used for the Same Job

The following two scenarios illustrate how to ensure that related resources are used for the same job.

Scenario 1: Resources are related because they belong to the same manufacturing cell

A manufacturing enterprise has two manufacturing cells, each with machining and deburring stations. The manufacturing cells are far apart on the shop floor or perhaps in different facilities altogether. The planning process must ensure that if a job is assigned to the machining station in Cell 1, it must be assigned to the deburring station in Cell 1. If it is assigned to the machining station in Cell 2, it must be assigned to the deburring station in Cell 2. After deburring, all material is processed through a common packaging operation.

In ASCP, assuming an 11i source, the routing scenario is modeled as shown in the following two tables:

Primary Resource

Op. Seq.	Res. Seq.	Sched. Seq.	Resource	Principal Resource	Activity Group ID	Resource Priority
10	10	2	CELL1_MACHINING	Yes	100	0
10	20	4	CELL1_DEBURRING	Yes	100	0
20	10	1	CELL3_PACKAGING	n/a	n/a	n/a

Each primary resource is associated with a single alternate resource. These alternate resources are listed below. CELL2_MACHINING is the alternate resource for CELL1_MACHINING, and CELL2_DEBURRING is the alternate resource for CELL1_DEBURRING. There is no alternate resource for CELL3_PACKAGING.

Alternate Resource

Sched. Seq.	Resource	Principal Res.	Activity Group ID	Replacement Group
2	CELL2_MACHINING	Yes	100	1
4	CELL2_DEBURRING	Yes	100	1
n/a	n/a	n/a	n/a	n/a

The common Activity Group ID of 100 indicates that the four activities (or task-resource combinations) CELL1_MACHINING, CELL2_MACHINING, CELL1_DEBURRING and CELL2_DEBURRING form a group within which ASCP will search for related resources on which to schedule the same job.

Within each Activity Group, ASCP looks for activities with the same Resource Priority or Replacement Group value. These are considered to be related. ASCP ensures that related resources are used as a job makes its way through its routing. In the above example, the activities CELL1_MACHINING and CELL1_DEBURRING have the same Resource Priority (0), so they would always be used together. Similarly, the activities CELL2_MACHINING and CELL2_DEBURRING have the same Replacement Group value (1), so they would always be used together. Therefore, selection of CELL1_MACHINING automatically guarantees selection of CELL1_DEBURRING, and selection of CELL2_MACHINING automatically guarantees selection of CELL2_DEBURRING.

For a 10.7 or 11.0 source, primary and alternate resources are modeled differently, leading to the routing scenario shown in the following table:

Op. Seq.	Res. Seq.	Resource	Res. Step Number	Principal Res.	Activity Group ID	Resource Priority
10	10	CELL1_MACHINING	2	Yes	100	0
10	20	CELL2_MACHINING	2	Yes	100	1
10	30	CELL1_DEBURRING	4	Yes	100	1
10	40	CELL2_DEBURRING	4	Yes	100	1
20	10	CELL3_PACKAGING	1	n/a	n/a	n/a

The functions of the Activity Group ID and Resource Priority parameters are the same as in an 11i source.

Scenario 2: Perform setup and processing on the same resource

A second scenario that can be modeled using the concept of related resources is the following. Either of two injection molding machines, INJECT1 and INJECT2, can run a number of polypropylene parts. Prior to running any particular part, a setup (die change) must be performed. Obviously, the machine that incurs the setup should be the machine that runs the part.

In Oracle Applications, setup is typically modeled as the initial activity within an operation. Subsequent activities model processing. In the above scenario, if a setup activity employing INJECT1 is selected, the processing activity must be assigned to INJECT1. If INJECT2 is selected for setup, INJECT2 should do the processing. Accomplishing this behavior in ASCP (to return to the concept of related resources) requires a resource to be related to itself.

In ASCP, assuming an 11i source, this second scenario is modeled as shown in the following two tables:

Primary Resource

Op. Seq.	Res. Seq.	Sched. Seq.	Resource	Principal Res.	Activity Group ID	Res. Priority
10	10	2	INJECT1	Yes	100	0
10	20	4	INJECT1	Yes	100	0

Each primary resource is associated with a single alternate resource. These alternate resources are listed below. INJECT2 is the alternate resource for INJECT1.

Alternate Resource

Sched. Seq.	Resource	Principal Res.	Activity Group ID	Replacement Group
2	INJECT2	Yes	100	1
4	INJECT2	Yes	100	1

If INJECT1 (Resource Priority 0) is chosen for the setup task (Resource Sequence 10), then INJECT1 will be also chosen for the processing task (Resource Sequence 20), because the Resource Priority for that activity is also 0. If INJECT2 (Replacement Group 1) is chosen for the setup task (Resource Sequence 10), then INJECT2 will be also chosen for the processing task (Resource Sequence 20), because the Replacement Group number for that activity is also 1.

For a 10.7 or 11.0 source, the routing scenario is shown in the following table:

Op. Seq.	Res. Seq.	Resource	Res. Step Number	Principal Res.	Activity Group ID	Resource Priority
10	10	INJECT1	2	Yes	100	0
10	20	INJECT2	2	Yes	100	1
10	30	INJECT1	4	Yes	100	0
10	40	INJECT2	4	Yes	100	1

The functions of the Activity Group ID and Resource Priority parameters are the same as in an 11i source.

Note: Only operation resources within the same operation sequence can be designated as related resources. You cannot designate related resources across multiple operation sequences. Also, you cannot model complex resource dependencies. For example, if a job runs on CELL1_MACHINING, it cannot then run on either CELL1_DEBURRING or CELL5_DEBURRING. The type of resource relationship supported is strictly one-to-one

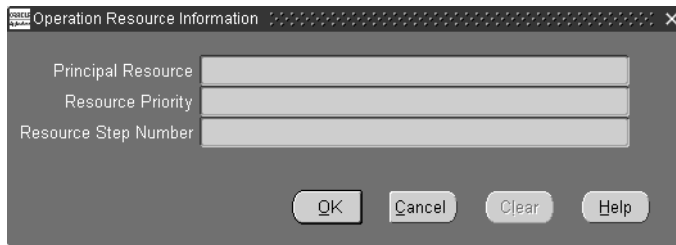
To establish resource relationships using an 11i source

Note: You must first complete the setup steps for alternate resources using an 11i source, as described on page 6-13 in the [Required Setup](#) section. Then, use the following steps to enter four additional pieces of information:

- (Data #1) The Resource Priority of all primary operation resources.
 - (Data #2) The Activity Group ID of all primary operation resources.
 - (Data #3) The Replacement Group of all alternate operation resources.
 - (Data #4) The Activity Group ID of all alternate operation resources.
-

1. Sign on using the Manufacturing and Distribution Manager responsibility.
2. From the Navigator, choose Bills of Material > Routings > Routings.
The Routings window (blank) appears.
3. Select the Find (flashlight) icon.
The Find Routings window appears.
4. Enter routing search criteria (for example, the name of the item for which you wish to find a routing), then select Find.
The Routings Summary window appears.
5. Select a routing from this window, then select Open.
The Routings window (populated with routing data) appears.
6. Select a particular operation sequence.
7. Select Operation Resources.
The Operation Resources window appears.
8. Select the Scheduling tab.
9. Select a primary resource, and select the corresponding flexfield at the right side of the window.
The Operation Resource Information window appears.

Figure 6–21 Operation Resource Information window



Operation Resource Information

Principal Resource

Resource Priority

Resource Step Number

OK Cancel Clear Help

10. Enter the Resource Priority (Data #1) and Activity Group ID (Data #2) of the primary resource.
 11. Select OK to close the Operation Resource Information window and return to the Operation Resources window.
 12. Select Alternates to enter information about alternate resources for the selected operation resource.
- The Operation Alternate Resources window appears.
13. Select the Scheduling tab.
 14. Select an alternate resource. Enter the Replacement Group (Data #3) for the alternate resource.
 15. Select the flexfield at the right side of the window corresponding to the selected alternate resource.

The Operation Resource Information window appears.

Figure 6–22 Operation Resource Information window

Operation Alternate Resources (M1) - 10

Item: AS72111 Alternate:
 Sequence: 10 Effective Date: 09-JUL-1997
 Resource Seq.: 10 Resource Code: TEST

Alternate Resources

Main Scheduling Costing

Resource	Replacement Group	Schedule Seq	Assigned Units	Schedule	Offset %	Principle Flag	Setup Type
LBR-TEST2	1	1	1	Yes		☒	

Operation Resource Information

Activity Group Id - Alt Resource: 1

OK Cancel Clear Help

16. Enter the Activity Group ID (Data #4) of the alternate resource.

17. Select OK.

To establish resource relationships using a 10.7 or 11.0 source

Note: You must first complete the setup steps for alternate resources using a 10.7 or 11.0 source, as described on page 6-13 in the [Required Setup](#) section. Then, use the following steps to enter two additional pieces of information:

- (Data #1) The Resource Priority of all operation resources
- (Data #2) The Activity Group ID of all operation resources

1. Sign on using the Manufacturing and Distribution Manager responsibility.
2. From the Navigator, choose Bills of Material > Routings > Routings.
The Routings window (blank) appears.
3. Select the Find (flashlight) icon.

The Find Routings window appears.

4. Use this window to enter routing search criteria (for example, the name of the item for which you wish to find a routing), then select Find.

The Routings Summary window appears.

5. Select a routing from this window, then select Open.

The Routings window (populated with routing data) appears.

6. Select a particular operation sequence.
7. Select Operation Resources.

The Operation Resources window appears.

Figure 6-23 Operation Resources window

The screenshot shows the 'Operation Resources' window with the following details:

- Item:** SAR-A1
- Sequence:** 10
- Alternate:** (empty)
- Effective Date:** 04-JAN-2001
- Resources:** (selected tab)
- Costing:** (selected sub-tab)

Seq	Resource	Activity	Standard Rate	Charge Type	
10	SAR-RA1	Run	■	WIP Move	Yi
20	SAR-RA2	Run	■	WIP Move	Yi
30	SAR-RA3	Run	■	WIP Move	Yi
40	SAR-RA4	Run	■	WIP Move	Yi
50	SAR-RA5	Run	■	WIP Move	Yi
			■		
			■		

8. Select the Scheduling region.
9. Select a resource, and select the corresponding flexfield at the right side of the window.

The Operation Resource Information window appears.

Figure 6–24 *Operation Resource Information window*

Principal Resource	Yes
Priority	0
Resource Step Number	10
Activity Group Id	555
Factory Planner Resource Type	machine

Clear Cancel OK

10. Enter the Priority (Data #1) and Activity Group ID (Data #2) of the selected resource.
11. Select OK to close the Operation Resource Information window.

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 6–25 Operation Resources

Operation Resources (M1) - 10

Item	SB68415	Alternate	
Sequence	10	Effective Date	09-APR-1997

Resources

Main **Scheduling** Costing

		— Rate or Amount —			
Seq	Resource	UOM	Basis	Usage	Inverse
10	LBR-ASSY	HR	Item	.16666666666666666666	

Alternative

4. Set up resource schedule from the Scheduling tab. The possible values for the schedule flag are: Yes, No, Prior, Next.

For details on other columns and functionality, refer to the *Routings* chapter in the *Oracle Bills of Material User's Guide*.

Minimum Transfer Quantity (MTQ)

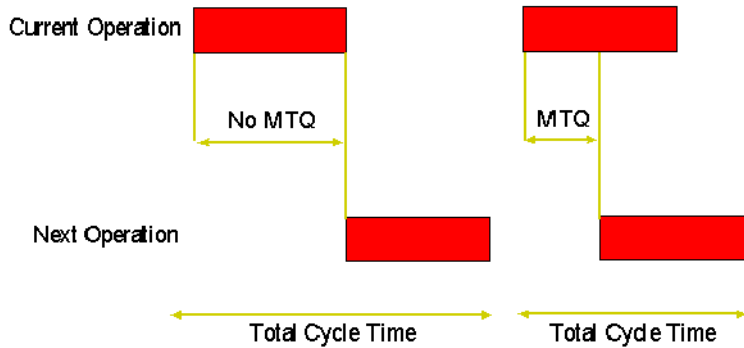
Oracle ASCP allows you to specify a Minimum Transfer Quantity (MTQ), which is the minimum amount that an operation must be completed in order to trigger the start of the next operation.

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 6–26 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 6–27 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', 'Referenced', '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' set to 0. At the bottom of the form are three buttons: 'Routing Details', 'Routing Revisions', and 'Operation Resources'.

Seq	Code	Referenced	Count Point	Autocharge	Backflush	Min Transfer Qty
10	SDAS	☐	☒	☒	☒	0
20	SBAS	☐	☒	☒	☒	0
30	SFAS	☐	☒	☒	☒	0
40	STST	☐	☒	☒	☒	0
50	DSAS	☐	☒	☒	☒	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.

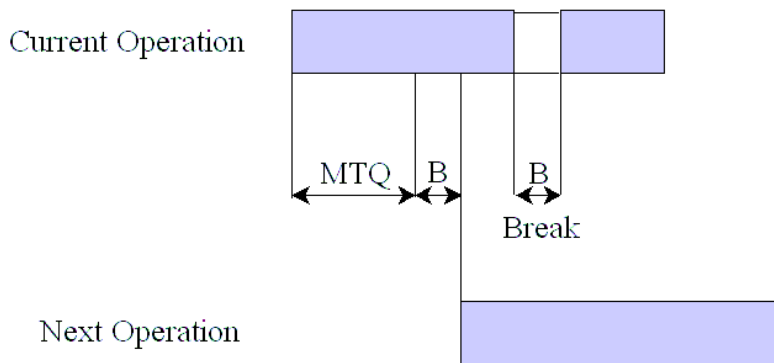
Consideration of Resource Breaks

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.

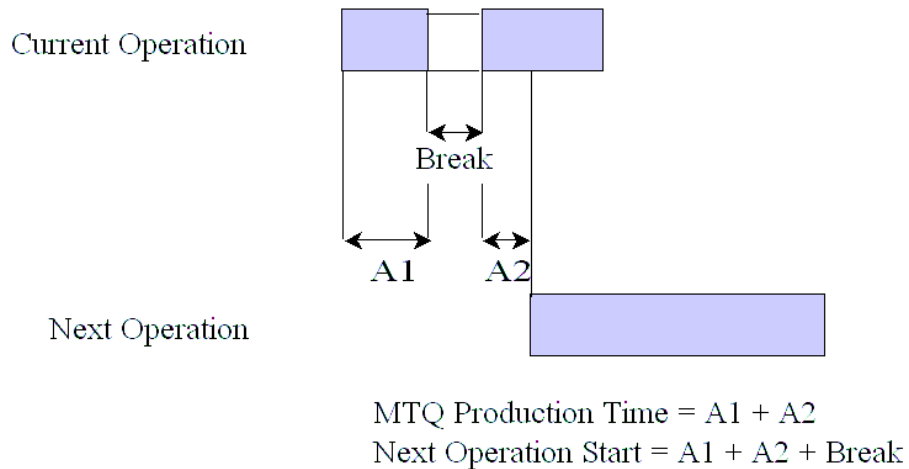
Figure 6–28 MTQ - Example 1



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

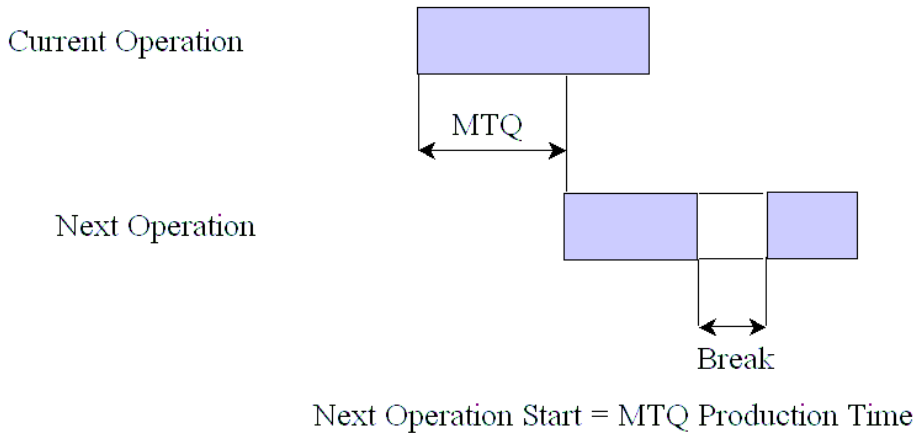
Advanced Example 2 - Resource Break in the Current Operation, No Resource Break in the Next Operation: Second Variation

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 6–29 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 6–30 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).

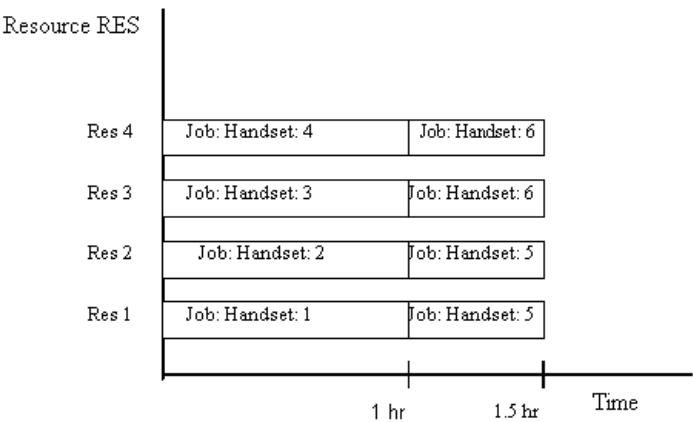
A manufacturing house is assembling telephone handsets. The handset assembly job consists of one assembly operation that takes one hour. The manufacturing house has one resource called RES. The resource RES has 4 resource units which are 4 assemblers (Res 1, Res 2, Res 3, Res 4). Please note that within ASCP, a resource can be either a single or a multiple resource unit of the same type.

Job Parameters

Job	handset assembly
Job Qty	6
Resource RES units	Res 1, Res 2, Res 3, Res 4
Usage rate	1 hr. per operation

The following figure shows how the resource unit allocation should be done.

Figure 6–31 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.

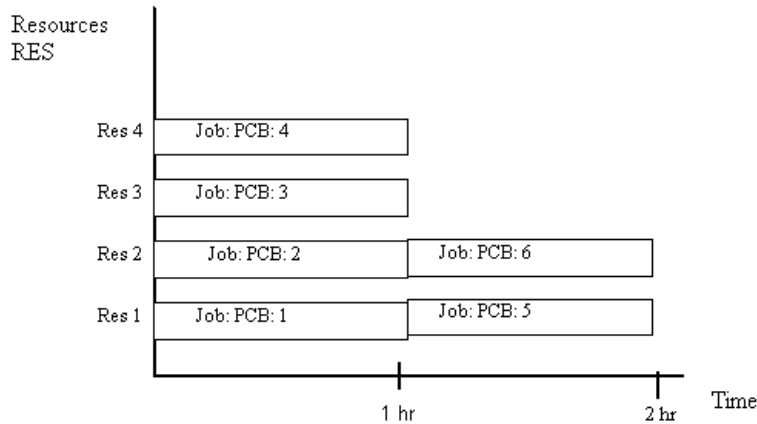
Job Parameters

Job	PCB Assembly
Job Quantity	6
Resource RES	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 6–32 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:

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:

Job quantity	4
Number of assigned resource units	3
Job duration	2 hours

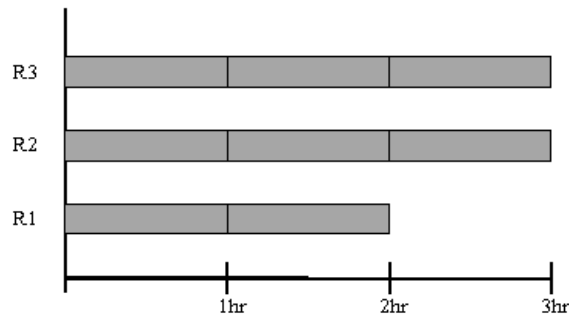
Here, all 3 resource units are occupied for first two hours (job duration). For the next two hours, only one resource unit is occupied. The job takes four hours to complete.

Example 3:

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 6–33 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

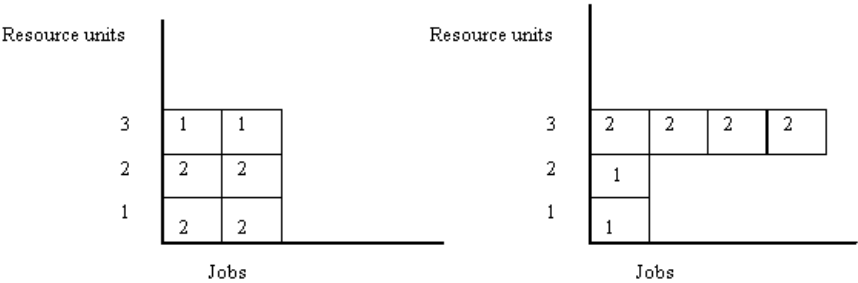
Since Oracle ASCP treats the capacity of multiple units of a single resource as a large bucket (instead of as independent buckets for each resource unit), certain detailed scheduling decisions will be approximate and may not be locally optimal. For example, in the situation below:

Job Parameters:

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 6–34 Example 4



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.

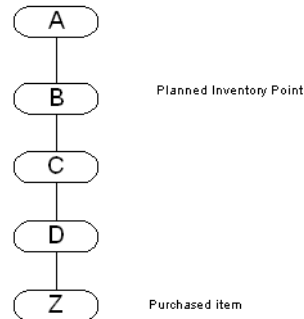
If you are using the 11.0 version of the transaction system, you can choose the attribute in the flex field at the item attributes form. The name of the flex field is Inventory Point and the possible values are Yes or No.

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 6–35 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

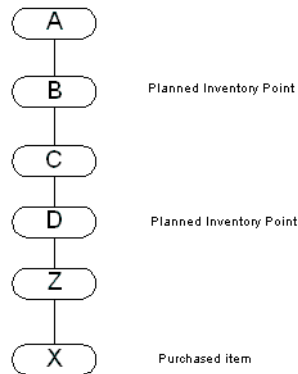
You may have jobs opened at two or more levels that peg to each other. In such cases, the amount of fictitious demand added is equal to the maximum quantity of the jobs that needs to be moved to PIPs. The fictitious demand is not just a sum total of all the open unpegged jobs. For example, using [Figure 6–35](#) 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 6–36 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 losing 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 6–37 Departments

The screenshot shows a software window titled "Departments (M1)". Inside the window, there are several data entry fields arranged vertically. The first field is "Department" with a small flashlight icon to its right. Below it is a long "Description" field. Then come "Class" and "Location" fields, which are visually grouped by a horizontal line. Below these are "Project Expenditure Org" and "Inactive On" fields. To the right of the "Inactive On" field is a small square icon. At the bottom right of the window, there are two buttons: "Rates" and "Resources".

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

The Department Resources form appears.

Figure 6–38 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 three buttons: 'Instances', 'Tolerance Fences', and 'Shifts'. The 'Borrowed' section shows a similar table with columns: Resource, Description, Owning Department, UOM, Units, Check CTP, and Group. The first row is empty.

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

Figure 6–39 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'). There is a 'Volume' label and a slider bar below the unit of measure. 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

Tables 6-1 through 6-8 contain the set up data required to explain the example. Table 6-9 has historical allocation data, which results from previous allocations.

Table 6-1 Demand for Item A

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

Table 6-2 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

Table 6-3 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

Table 6-4 Supplier Capacity Tolerance Percentages 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	0	0	0	0	10
S2	0	0	0	5	10
S3	0	0	0	5	10

Table 6-5 Supplier Capacity Profile with Tolerance Percentages 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	66
S2	80	80	80	84	88
S3	20	20	20	21	22

The numbers in Table 6-5 come from applying tolerance percentages from Table 6-4 to the supplier capacity profile in Table 6-3. For example, for supplier S1 on 7/16/98, total supplier capacity is $60 + 10\%(60) = 66$.

Table 6-6 Supplier Delivery Patterns for Item A

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

Table 6-7 Supplier Processing Information for Item A

Source	Processing (days)
S1	3
S2	2
S3	2

Table 6-8 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

Table 6-9 Historical Allocation Totals

Source	Quantity
S2	1400
S3	1000

Table 6-10 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 6-2) apply due to effectivity dates. S1 has rank 1 with allocation percentage = 100 (Table 6-2). 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 (from Table 6-6) before due date (7/15/98). This respects the processing and postprocessing lead times (Table 6-7).

Cumulative capacity = 180 from Table 6-5 (tolerance percentage = 0)

Unsatisfied demand = $310 - 180 = 130$

Allocation to S1 = 180

Table 6-11 shows you the resource availability after the allocation of 180 items consumes capacity.

Table 6-11 Supplier Capacity Profile After S1 Allocation

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

The values in Table 6-11 are derived from subtracting demand satisfied from Table 6-5.

Step 2: Calculation of Historical Allocations for Alternate Sources.

Consider S2 and S3 from Table 6-9 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 Table 6-2)

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 Table 6-8). 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 Table 6-11).

Table 6-12 shows you the resource availability after all allocations so far have consumed capacity.

Table 6-12 Supplier Capacity Profile After S2 Allocations

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 Table 6-8).

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 Table 6-6 and Table 6-7).

Cumulative Available Capacity = 60

Table 6-13 shows you the resource availability after all allocations so far have consumed capacity.

Table 6-13 Supplier Capacity Profile After S3 Allocation

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 Table 6-10).

Table 6-14 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 Table 6-1)

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 Table 6-13), 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 Table 6-9 and Table 6-14.

Historical Allocations beginning 1/1/98.

S2: $1400 + 125 = 1525$

S3: $1000 + 21 = 1021$

Total Allocations for S2 and S3 = 2546

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

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

Target Sourcing Percentages: S2 = 60%

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

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

$$(S2 + 1525) / 2810 = 0.6$$

S2 Allocation = 161

Step 4: Respect Order Modifiers If They Exist.

S2 Allocation: 161 becomes 175 because S2 has a fixed lot multiple of 25 (see Table 6-8), and to respect that $7 * 25 = 175$ 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 Table 6-8). 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 Table 6-13)

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.

Table 6-15 shows you the resource availability after all allocations so far have consumed capacity.

Table 6-15 Supplier Capacity Profile After S2 Allocation

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 = $164 - 56 = 108$

Table 6-16 shows you the capacity available after all allocations so far have consumed capacity.

Table 6-16 Supplier Capacity Profile After S3 Allocation

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.

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

Table 6-17 Final Capacity Profile

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

Source	7/10/98 (Thurs)	7/11/98 (Fri)	7/14/98 (Mon)	7/15/98 (Tues)	7/16/98 (Wed)
S3	4	0	0	0	22

Table 6-18 shows the summary of allocations for planned order #2, and Table 6-19 shows the planned order allocations summary.

Table 6-18 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

Table 6-19 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 6–40 Sourcing Rule screen

Sourcing Rule (c11:M1)

Name

ALLIED

☐ All Orgs

☒ Planning Active

Description

Allied Mfg - San Jose

☐ Org

Copy From...

Effective Date

From Date

To Date

[]

04-JAN-2001

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			

View

Purge

Copy Shipping Orgs From...

Assignment Set...

- 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 6–41 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.

Demand/Supply/Sourcing Allocation	Day 1	Day 2	Day 3	Day 4
Dependent Demand	0	3	0	3
Planned Order Supply, S1	0	2	0	1
Planned Order Supply, S2	0	1	0	2
Cumulative Allocation, %, S1	0%	67%	67%	50%
Cumulative Allocation %, S2	0%	33%	33%	50%

On Day 2, it is not possible to exactly achieve the contractual 50%/50% split, so planned order supplies that achieve the closest possible split (67%/33%) are generated.

On Day 4, S2 is given a higher allocation in order to bring the cumulative allocation to the desired 50%/50%.

In this example, the sourcing allocation window is assumed to be equal to one day.

Constraints Precedence

If you select the Enforce Sourcing Constraints at the plan option level, the precedence among the above constraints are established as follows:

Case 1 - Enforce Demand Due Dates

You have selected the Enforce Demand Due Dates or the Enforce Service Levels plan option. In this case, the order of priority among the constraints is as follows:

1. Enforce Demand Due Dates/Enforce Service Levels (highest priority)
2. Enforce Capacity Constraints
3. Enforce Sourcing Constraints (lowest priority)

Case 2 - Enforce Capacity Constraints

You have selected the Enforce Capacity Constraints plan option. In this case, the order of priority among the constraints is as follows:

1. Enforce Capacity Constraints (highest priority)
2. Enforce Demand Due Dates/ Enforce Service Levels
3. Enforce Sourcing Constraints (lowest priority)

Note that in either case, the sourcing constraints have the lowest priority; that is, these constraints may be violated, if required, to satisfy the capacity constraints or to meet demands.

Consideration of Rank 1 Sources

Only Rank 1 sources are considered for enforcing sourcing allocation percentages. The allocation percentages are ignored for sources of ranks 2 and higher.

The system considers sources of ranks 2 and higher only if there is insufficient capacity among rank 1 sources to meet the required supply. If one or more rank 1 sources fall short of capacity, the sourcing allocation percentages are ignored, and the system allocates supply quantities among the sources of ranks 1 and higher based on cost and capacity considerations. The enforcement of ranking priority functionality is unchanged and it is accomplished by means of internal penalty factors.

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.

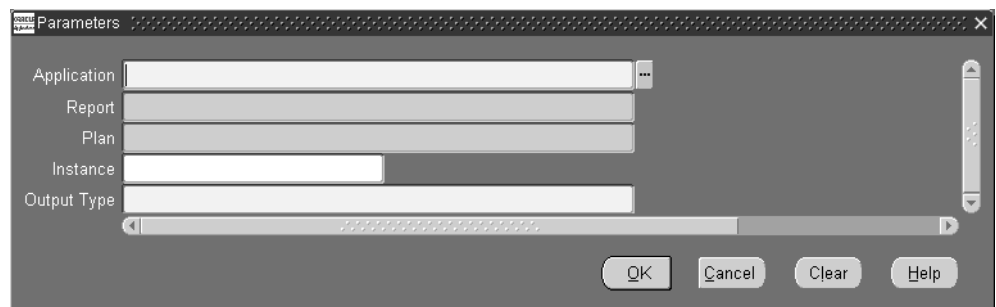
4. Select Single Request, then click OK.

The Submit Request window appears.

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

The Parameters window appears.

Figure 6–42 *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 6–43 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....

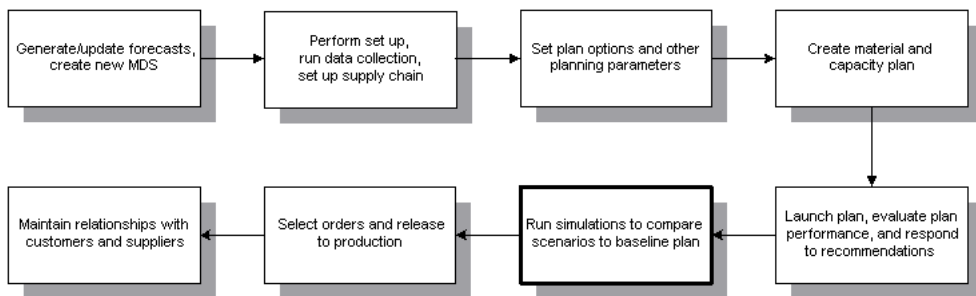
No errors.

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

A Day in the Life of a Planner



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. You can also simulate changes to the objectives and weights used for optimization or simulate changes to demand priorities. 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 includes available machine hours, available worker hours, and adding or removing shifts.

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.

Optimization Objectives

You can decide the relative importance of the many objectives Oracle ASCP tracks according to your business or industry sector. These will provide the basis for Oracle ASCP in optimizing the plan. For example, for some industries, inventory turns are a much more important performance indicator than cycle time. The following objectives are supported by Oracle ASCP:

- maximize inventory turns
- maximize plan profit
- maximize ontime delivery

You can also modify the weights that you have assigned for each objective and have the system generate an optimal plan based on the new objectives.

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

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

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.

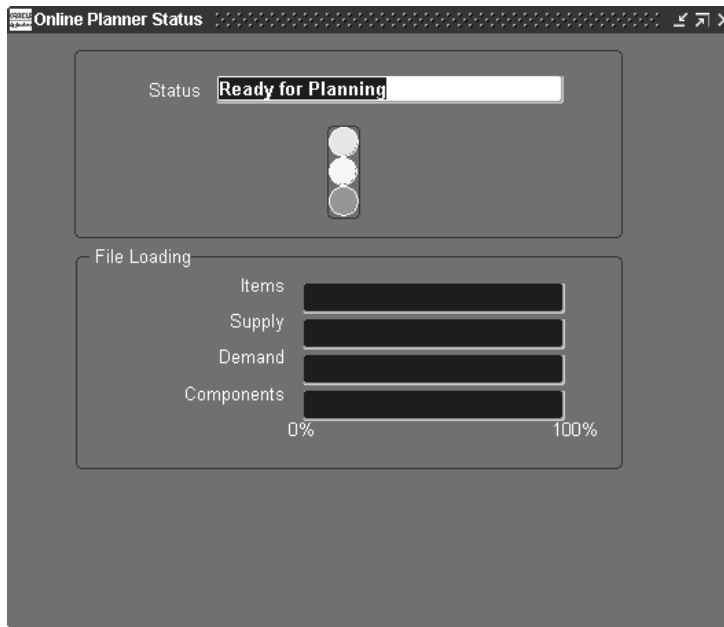
4. When the status window informs you that the session is ready for planning, close the window to return to the Planner Workbench. Your online planner session is now active.
5. Make the desired changes to your plan.
6. Save the plan.
7. Choose Plan > Online Replan.

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



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:

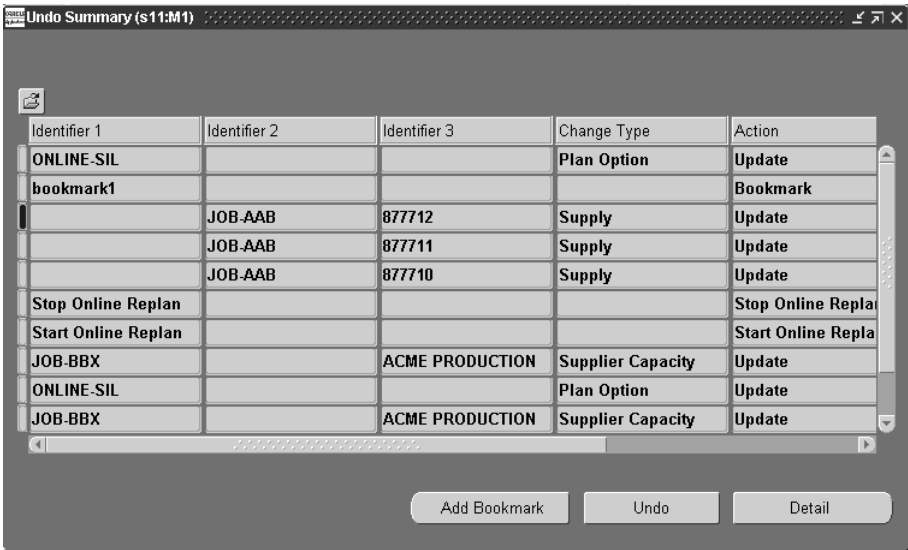
- You can undo your changes in any order, as long as the record you are undoing has not had subsequent changes made to it.
- You can undo changes until the plan is rerun in batch mode.
- You can view online planning changes using Undo Summary.
- You can view all of the changes that have been made since 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, including actions like "Update", "Bookmark", "Stop Online Replan", and "Start Online Replan". At the bottom of the window are three buttons: "Add Bookmark", "Undo", and "Detail".

Identifier 1	Identifier 2	Identifier 3	Change Type	Action
ONLINE-SIL			Plan Option	Update
bookmark1				Bookmark
	JOB-AAB	877712	Supply	Update
	JOB-AAB	877711	Supply	Update
	JOB-AAB	877710	Supply	Update
Stop Online Replan				Stop Online Replan
Start Online Replan				Start Online Replan
JOB-BBX		ACME PRODUCTION	Supplier Capacity	Update
ONLINE-SIL			Plan Option	Update
JOB-BBX		ACME PRODUCTION	Supplier Capacity	Update

Buttons: Add Bookmark, Undo, Detail

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
Capacity	7	5

To undo your actions

You can undo actions you make in the online planner in any order so long as no one else has made subsequent changes to the record you are undoing.

Note: You can only undo changes made between batch replan runs.

1. Select Plan > Undo Summary.
The Undo Summary window appears (See Figure 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

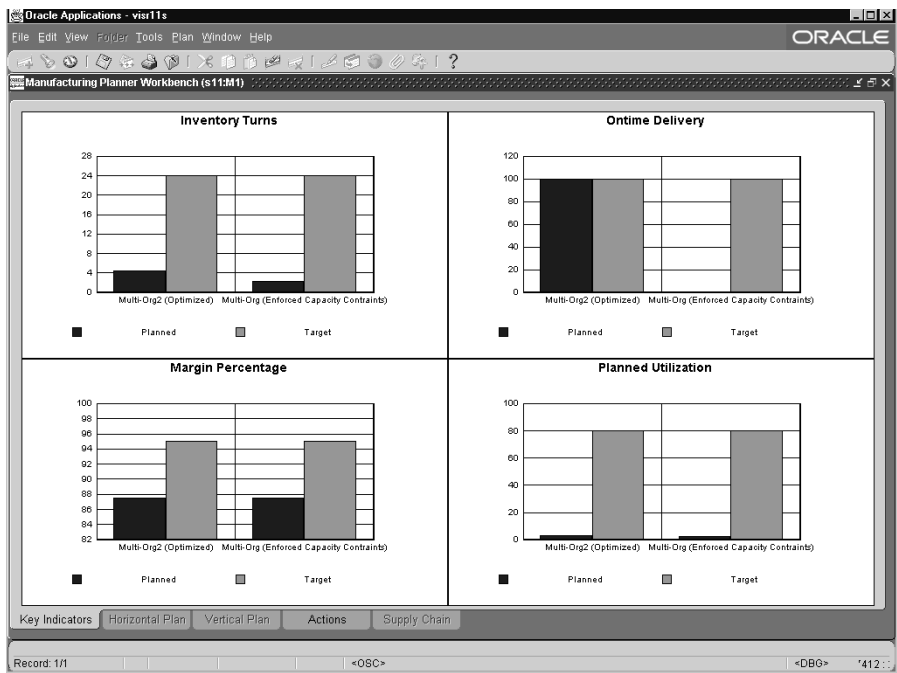
You can quantify the results of simulation scenarios and graphically compare the results of multiple scenarios to help you choose the plan that best meets your performance objectives.

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

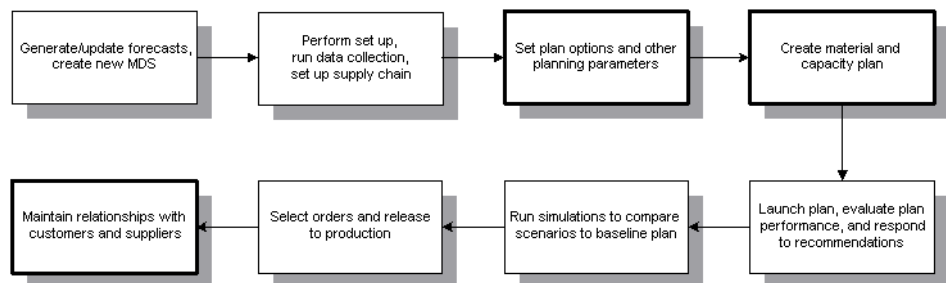


Optimization

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

A Day in the Life of a Planner



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 ontime 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 Ontime Delivery This maximizes ontime delivery by trying to ensure that all demand is met ontime. Penalty factors specify the relative importance of demands when maximizing ontime 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.

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.

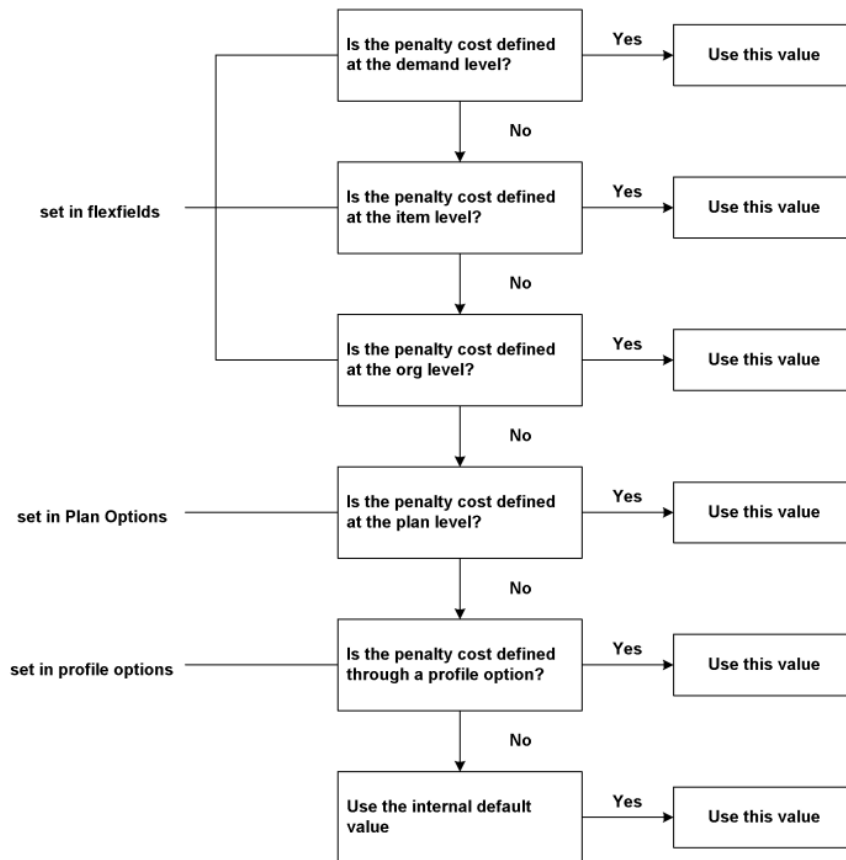
For all of the steps related to setting penalty factors, please log in as Manufacturing and Distribution Manager, unless otherwise noted. You must run the Create Planning Flexfields program beforehand for the flexfields used for setting penalty factors to be operational. Please see [Appendix B, Oracle ASCP Flexfields](#) for additional details. Finally, please refer to on page 5-65, [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:

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

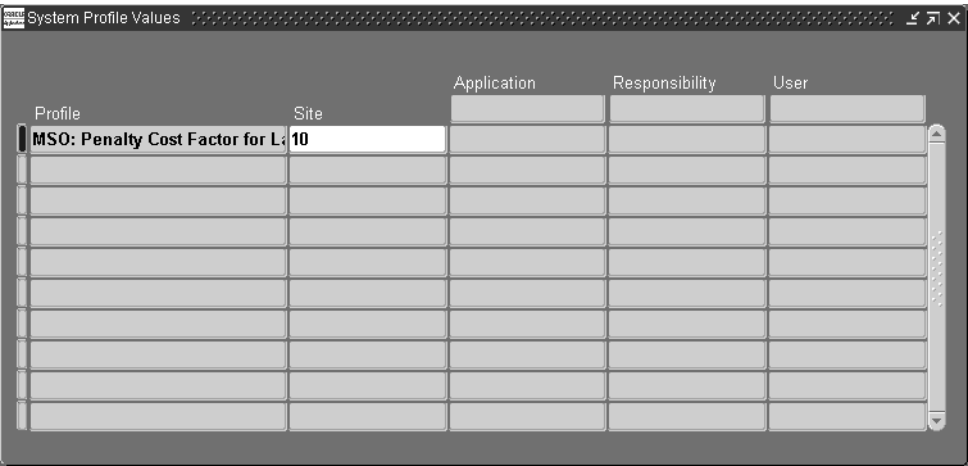
Exceeding material capacity %		Exceeding resource capacity %	
Exceeding transportation capacity %		Demand lateness %	

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



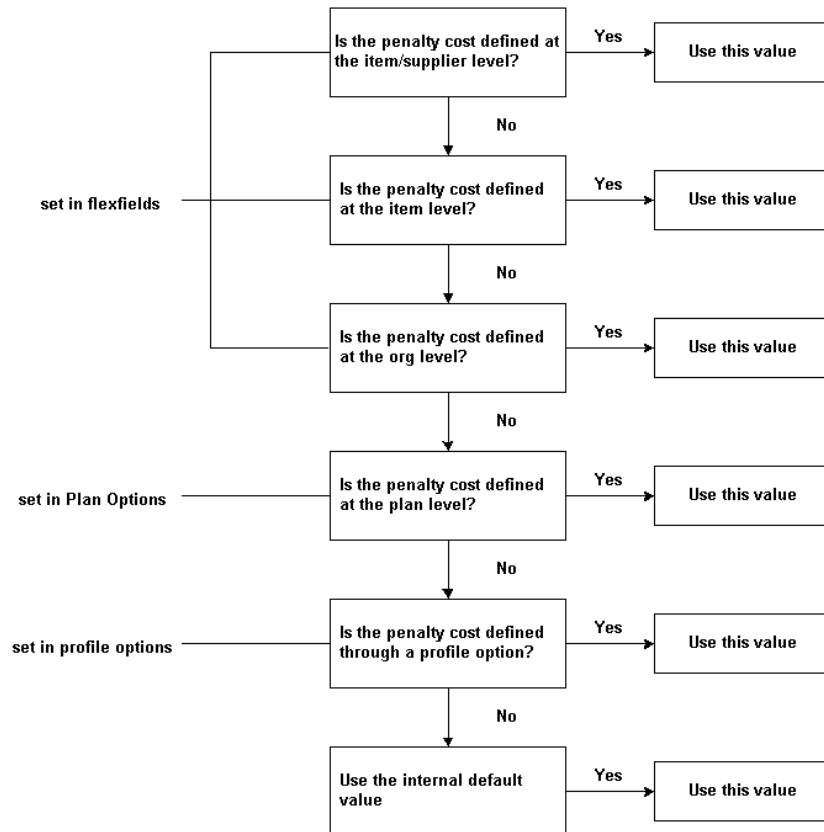
Profile	Site	Application	Responsibility	User
MSO: Penalty Cost Factor for L	10			

- 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

The screenshot shows a window titled "System Profile Values" with a table containing five columns: Profile, Site, Application, Responsibility, and User. The first row of the table has the text "Factor for Exceeding Material C" in the Profile column. The Site column is currently empty. There are several other empty rows below the first one. A vertical scrollbar is visible on the right side of the table.

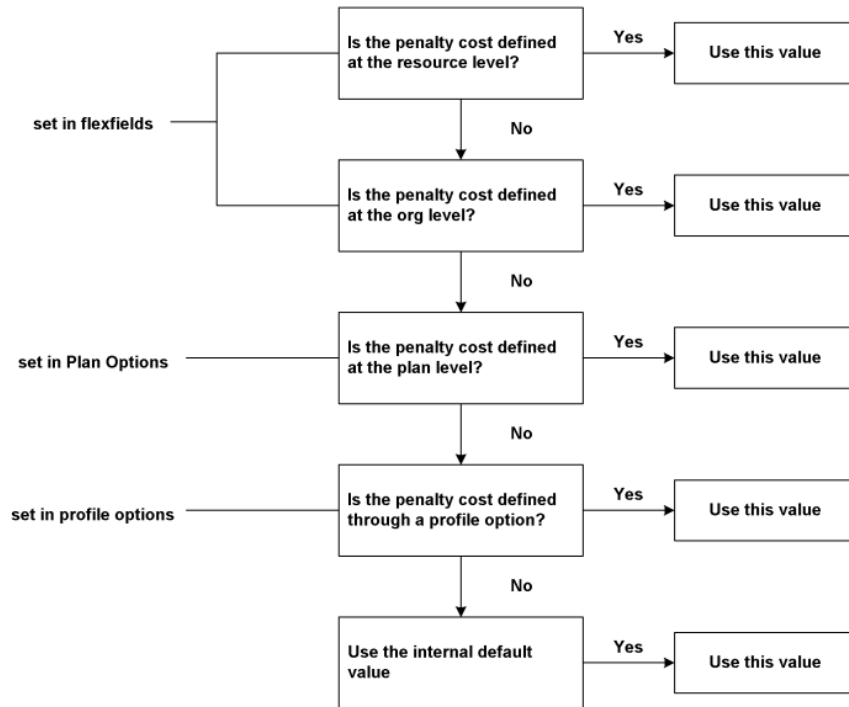
Profile	Site	Application	Responsibility	User
Factor for Exceeding Material C				

- 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

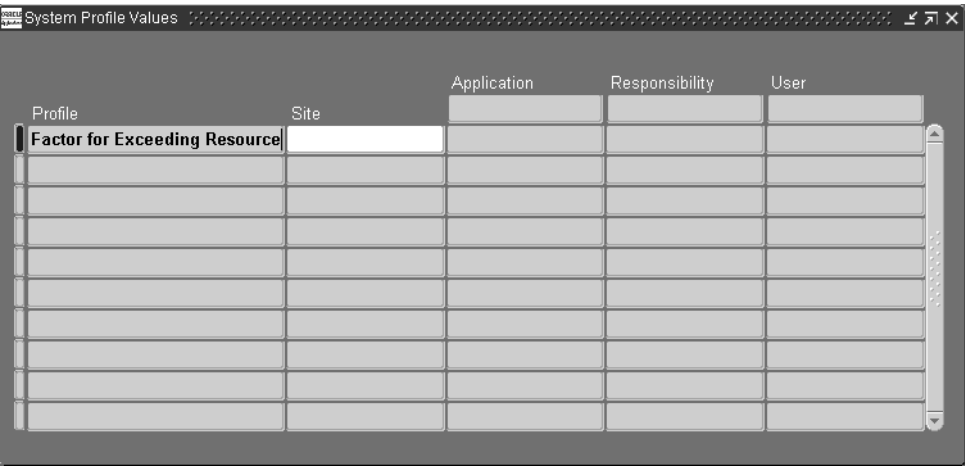
Exceeding material capacity %		Exceeding resource capacity %	
Exceeding transportation capacity %		Demand lateness %	

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 unfirmed 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. Oracle ASCP provides online interactive simulation planning so you can rapidly simulate changes and respond to changing conditions. 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.”](#)

Exception Messages

This chapter includes:

- [Overview of Exception Messages](#) on page 9-2
- [Viewing Exceptions](#) on page 9-8
- [Understanding Exceptions](#) on page 9-12
- [Exception Diagnosis and Resolution](#) on page 9-75

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

- Order at risk due to material shortage
- Order at risk due to resource shortage
- Late supply pegged to sales order
- Late supply pegged to forecast
- 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

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

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
- Supplier 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

Planning Exception Sets (M1)

Name

Sensitivity Controls

Excess Quantity

Repetitive Variance

%

Under-utilization

%

Over-utilization

%

User-Defined Time Fence (Days)

Exception Time Periods

Shortage Exceptions

Excess Exceptions

Resource Under-utilized Exceptions

Resource Over-utilized Exceptions

Overpromised Exceptions

Repetitive Variance Exceptions

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

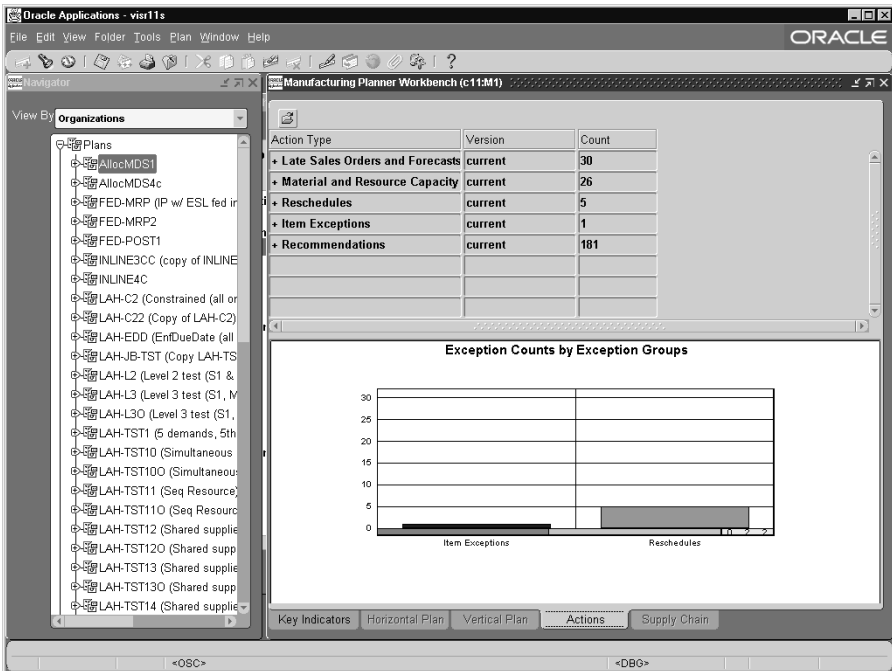
Overview

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.

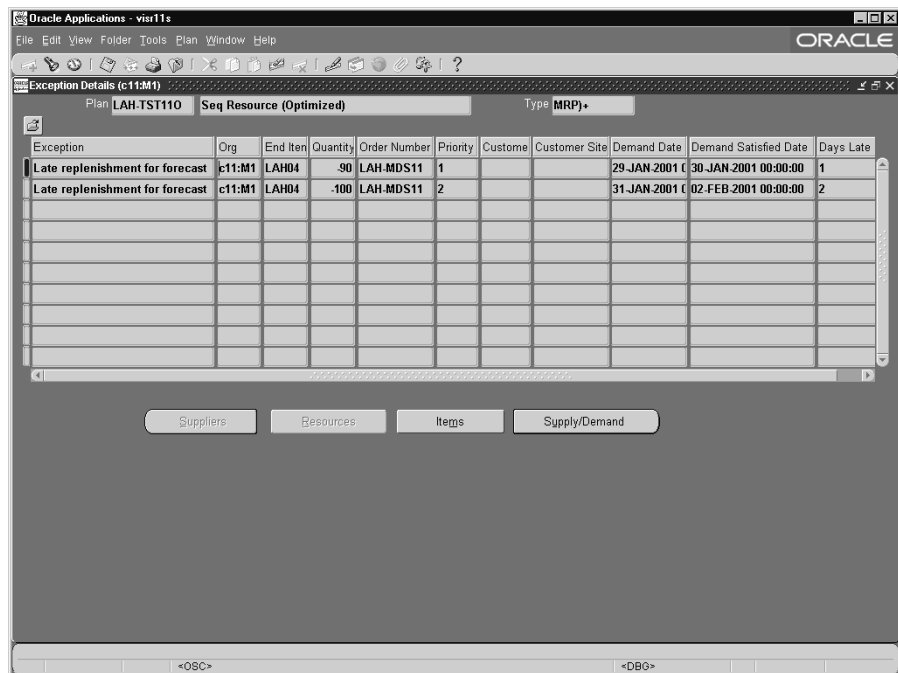
To sort exceptions

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.

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

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: Order at risk due to material shortage	Yes	No	No	No	No
2: Order at risk due to resource shortage	Yes	No	No	No	No
3: Late supply pegged to sales order	Yes	No	No	No	No
4: Late supply pegged to forecast	Yes	No	No	No	No
5: Past due sales orders	Yes	Yes	Yes	Yes	Yes
6: Past due forecast	Yes	Yes	Yes	Yes	Yes
7: Late replenishment for sales order	No	Yes	Yes	Yes	No
8: Late replenishment for forecast	No	Yes	Yes	Yes	No
9: Early replenishment for sales order	No	Yes	Yes	Yes	No
10: Early replenishment for forecast	No	Yes	Yes	Yes	No

1: Order 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 considers all the buy supplies for the items that satisfy this end demand order. If the dock date of the buy supply is on a date on which the supplier capacity is overloaded, the planning engine issues this message.

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

2: Order 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 an end demand is at risk due to a resource capacity shortage.

The planning engine considers all the make supplies for the items that satisfy this end demand order. If the planning engine schedules a resource requirement supply on a date on which the resource capacity is overloaded, the planning engine issues this message.

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

3: 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 9–2 Item A Late Supply Pegged to Sales Order Planning Scenario

Schedule Entity	1	...	5	6	7	8	9	10	11	12	13	14	15
Org D1: Forecasts	-	-	-	-	-	-	50	-	-	-	-	30	-
Org M1: Dependent demand	-	-	-	-	50	-	-	-	-	30	-	-	-

Table 9–2 Item A Late Supply Pegged to Sales Order Planning Scenario

Schedule Entity	1	...	5	6	7	8	9	10	11	12	13	14	15
Org M1: Sales orders	-	-	-	-	50	-	-	-	-	30	-	-	-
Org M1: Supply orders	-		100	-	-	-	-	-	-	-	-	-	-
Org M1: Planned orders	-	-	-	-	-	-	-	-	-	-	-	-	60

Information Displayed

The information displayed for this exception message is:

- Organization: For the supply order
- End Item: Sales order line item
- Quantity: For the supply order
- Order Number: For the sales order
- Priority
- Customer
- Customer Site
- Due Date: For the supply order
- Demand Date: The demand due date
- End Demand Date: The sales order line due date
- Days Late: Due Date - Demand Date. This calculation uses calendar days rather than manufacturing calendar working days.

4: 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.

5: 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

6: 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

7: 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.

8: 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.

9: 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

10: 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

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 9–3 *Exception Availability for Exception Group Material and Resource Capacity*

Exception Message	Available In Unconstrained Plans	Available In Constrained Plans with Enforce Demand Dates	Available In Constrained Plans with Enforce Capacity Constraints	Available In Optimized Plans	Available In Inventory Optimization
1: Material constraint	No	No	Yes	Yes	Yes
2: Resource constraint	No	No	Yes	Yes	Yes
3: Resource overloaded (1)	Yes	Yes	Yes	Yes	Yes
4: Supplier capacity overloaded (1)	Yes	Yes	Yes	Yes	Yes
5: Resource underloaded	Yes	Yes	Yes	Yes	Yes
6: Batch was started with less 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.

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 the suggested dock date.

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:

- Item
- Supplier
- Supplier Site
- Org: For supply order
- Constraint Date: For lead time violation, plan start date. For supplier capacity violation, the date at which the supplier capacity is overloaded.
- Overload

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.

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.

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

The information displayed for this exception message is:

- Resource
- Dept/Line
- Org: Of the resource
- Start Constraint Date: The start date of the planning time bucket in which the resource is overloaded. This field does not show the start date of the activity.
- End Constraint Date: The start date of the last planning time bucket in which the resource is overloaded. As long as Overload remains the same in successive planning time buckets, the planning engine uses the same exception and extends the End Constraint Date. This field does not show the end date of the activity.
- Overload: Required Capacity - Available Capacity

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

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

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.

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.

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

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

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: $\text{Required Capacity} / \text{Maximum Batch Capacity}$
- Required Capacity: For all activities in the batch in the unit of measure of the item's volume

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 9–4 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 resource constraint	No	No	Yes	Yes	Yes
2: Transportation resource's weight overloaded (1)	Yes	Yes	Yes	Yes	Yes
3: Transportation resource's volume overloaded (1)	Yes	Yes	Yes	Yes	Yes

1: Transportation resource constraint

Explanation

This exception appears when the planning engine detects unavailability of transportation 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 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.

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 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 resource constraint exception message for the 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

2: Transportation resource's weight overloaded

Explanation

This exception message appears when, in a planning time bucket, the transportation resource required weight capacity is more than the transportation resource available weight capacity.

The plan parameter Resource Capacity includes the transportation resources. In an enforce capacity constraints plan with Resource Constraints cleared and Material Constraints selected, the planning engine may calculate transportation resource load and issue exception messages.

If you do not want to use transportation capacity as a constraint, either leave its definitions blank (the planning engine assumes infinite capacity) or enter a large amount. Since a large amount affects plan performance, we recommend leaving its definitions blank.

There are differences among the plan types:

- Unconstrained: The planning engine issues this exception frequently because unconstrained plans do not consider transportation capacity.
- Constrained - Enforce due dates and Optimized - Enforce due dates: The planning engine issues this exception if overloading the transportation resource capacity is the only way to meet the demand date.
- Constrained - Enforce capacity constraints and Optimized - Enforce capacity constraints: The planning engine issues this exception when firm jobs overload the transportation capacity.

The calculation for:

- Transportation resource required weight capacity is Shipment quantity * Item weight
- Utilization percent is (Required Capacity / Available Capacity) * 100

For example, transportation resource TR1 has available weight capacity of 100 LB per day.

The physical attributes of item A are:

- Weight: 1 LB
- Volume: 1 F3 (cubic feet)

There is a shipment of item A1 for quantity 1000 of Item A1 on 3 January from organization M1 to organization M2.

In an unconstrained plan, the planning engine:

- Schedules this shipment on 3 January to satisfy the demand on time
- Issues this Transportation resource's weight overloaded exception message with overload is 900 (1000 required - 100 available)

Information Displayed

The information displayed for this exception message is:

- To Org: The destination organization
- Ship Method
- From Date: The start date of the planning time bucket in which the resource is overloaded
- To Date: The start date of the last planning time bucket in which the resource is overloaded. As long as Quantity remains the same in successive planning time buckets, the planning engine uses the same exception and extends the End Constraint Date.
- Quantity: Utilization percentage

3: Transportation resource's volume overloaded

Explanation

This exception message appears when, in a planning time bucket, the transportation resource required volume capacity is more than the transportation resource available volume capacity.

The plan parameter Resource Capacity includes the transportation resources. In an enforce capacity constraints plan with Resource Constraints cleared and Material Constraints selected, the planning engine may calculate transportation resource load and issue exception messages.

If you do not want to use transportation capacity as a constraint, either leave its definitions blank (the planning engine assumes infinite capacity) or enter a large amount. Since a large amount affects plan performance, we recommend leaving its definitions blank.

There are differences among the plan types:

- Unconstrained: The planning engine issues this exception frequently because unconstrained plans do not consider transportation capacity.

- Constrained - Enforce due dates and Optimized - Enforce due dates: The planning engine issues this exception if overloading the transportation resource capacity is the only way to meet the demand date.
- Constrained - Enforce capacity constraints and Optimized - Enforce capacity constraints: The planning engine issues this exception when firm jobs overload the transportation capacity.

The calculation for:

- Transportation resource required volume capacity is Shipment quantity * Item volume
- Utilization percent is (Required Capacity / Available Capacity) * 100

For example, transportation resource TR1 has available volume capacity of 100 F3 per day.

The physical attributes of item A are:

- Weight: 1 LB
- Volume: 1 F3 (cubic feet)

There is a shipment of item A1 for quantity 1000 of Item A1 on 3 January from organization M1 to organization M2.

In an unconstrained plan, the planning engine:

- Schedules this shipment on 3 January to satisfy the demand on time
- Issues this Transportation resource's volume overloaded exception message with overload is 900 (1000 required - 100 available)

Information Displayed

The information displayed for this exception message is:

- To Org: The destination organization
- Ship Method
- From Date: The start date of the planning time bucket in which the resource is overloaded
- To Date: The start date of the last planning time bucket in which the resource is overloaded. As long as Quantity remains the same in successive planning time buckets, the planning engine uses the same exception and extends the End Constraint Date.

- Quantity: Utilization percentage

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 9–5 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 9–6 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.

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 9–7 Item A Items Below Safety Stock Planning Scenario

Schedule Entity	Past	1	2	3	4
Org M1: Sales orders	200	-	-	-	150
Org M1: Safety stock level	-	73	73	73	45
Org M1: Planned orders	-	-	-	-	395

Information Displayed

The information displayed for the exception message is:

- Organization
- Item
- Item Description
- From Date: The start date of the planning time bucket with projected available balance below safety stock.
- To Date: The start date of the last planning time bucket with projected available balance below safety stock. As long as Quantity remains the same in successive planning time buckets, the planning engine uses the same exception and extends the To Date.
- Quantity: Projected Available Balance - Specified Safety Stock

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 9–8 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.

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 9–9 Exception Availability for Exception Group Reschedules

Exception Message	Available In Unconstrained Plans	Available In Constrained Plans with Enforce Demand Dates	Available In Constrained Plans with Enforce Capacity Constraints	Available In Optimized Plans	Available In Inventory Optimization
1: Past due orders	Yes	Yes	Yes	Yes	No
2: Orders to be rescheduled out	Yes	Yes	Yes	Yes	No
3: Orders to be cancelled	Yes	Yes	Yes	Yes	No
4: Orders to be rescheduled in	Yes	Yes	Yes	Yes	No
5: Orders with compression days (1)	Yes	Yes	Yes	Yes	No
6: Orders scheduled to next inventory point	Yes	Yes	Yes	Yes	No

The planning engine follows certain rules when it recommends rescheduling buy item scheduled receipts.

If the buy item scheduled receipt order date is within the planning horizon, the planning engine:

- Recommends reschedule out if needed
- Recommends reschedule in if needed unless the recommendation, if accepted, would make the scheduled receipt order date past due.

If the buy item scheduled receipt order date is past due, the planning engine:

- Never recommends reschedule in
- May recommend reschedule out if the scheduled receipt is pegged to a demand with a due date that is later than the scheduled receipt current due date
- Never recommends reschedule out for the reason that the scheduled receipt order date or start date is past due
- Never recommends buy order reschedule out for the reason that the scheduled receipt causes insufficient supplier capacity between the plan start date and the scheduled receipt old supply dock date

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**

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**

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 9–10 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 9–10 Item A Orders To Be Canceled Planning Scenario

Schedule Entity	1	2	3	4	5	6	7	8
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

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 9–11 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

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

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 9–12 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

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 9–13 Exception Availability for Exception Group Substitutes and Alternates Used

Exception Message	Available In Unconstrained Plans	Available In Constrained Plans with Enforce Demand Dates	Available In Constrained Plans with Enforce Capacity Constraints	Available In Optimized Plans	Available In Inventory Optimization
1: Planned order uses alternate BOM/routing	Yes (2)	Yes	Yes	Yes	Yes
2: Planned order uses substitute components	No	Yes	Yes	Yes	Yes
3: Planned order uses alternate resources	No	Yes	Yes	Yes	Yes
4: Order sourced from alternate facility	No	Yes	Yes	Yes	Yes
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

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

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

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

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

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.

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 9–14 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

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

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

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 9–15 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: Supplier 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

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

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

4: Supplier 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 9–16 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

Table 9–16 Item A1 Supplier Split Percentages Violated Planning Scenario

Schedule Entity	3 January	4 January	5 January	6 January	7 January
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 Supplier 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

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 9–17 Exception Availability for Exception Group Recommendations

Exception Message	Available In Unconstrained Plans	Available In Constrained Plans with Enforce Demand Dates	Available In Constrained Plans with Enforce Capacity Constraints	Available In Optimized Plans	Available In Inventory Optimization
Batches	Yes	Yes	Yes	Yes	Yes
Discrete Jobs	Yes	Yes	Yes	Yes	Yes
Flow Schedules	Yes	Yes	Yes	Yes	Yes
Jobs	Yes	Yes	Yes	Yes	Yes
Purchase Requisitions	Yes	Yes	Yes	Yes	Yes

Explanation

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

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

Information Displayed

The information displayed in the Supply/Demand window is:

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

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

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

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

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.

Identifying Root Causes of Late Demand

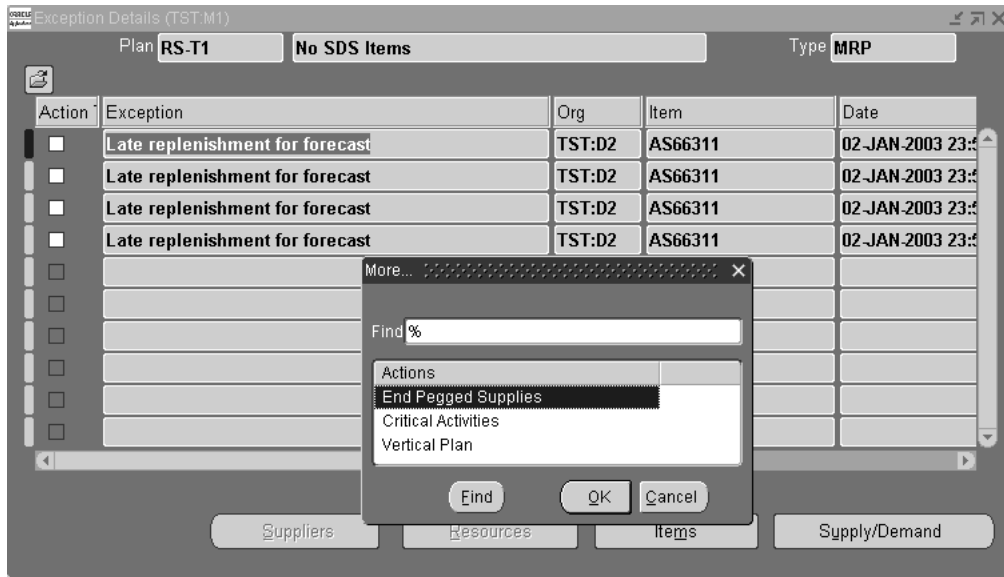
Overview

To obtain more information about the root causes of the late demand (Late replenishment for sales order and Late replenishment for forecast), use the following Planner Workbench windows:

- 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

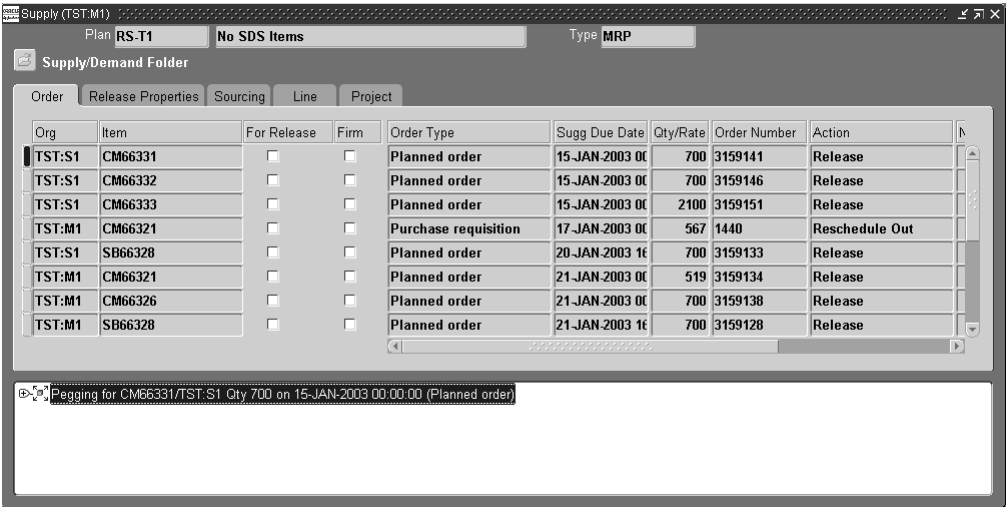
1. Access any of the following windows:
 - Exception Details window for Late replenishment for sales order or Late replenishment for forecasts.
 - Exception Details window for Material constraint or Resource constraint. Right-click and exception and select Related Exceptions. View Late replenishment for sales orders and Late replenishment for forecasts.
 - Supply/Demand window or Demand window for an item. Select a late demand.
2. Right-click, select More, then select End Pegged Supplies or Critical Activities. If you select End Pegged Supplies from the Supply/Demand window, the Planner Workbench displays the information in the already open Supply/Demand window.



End Pegged Supplies

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



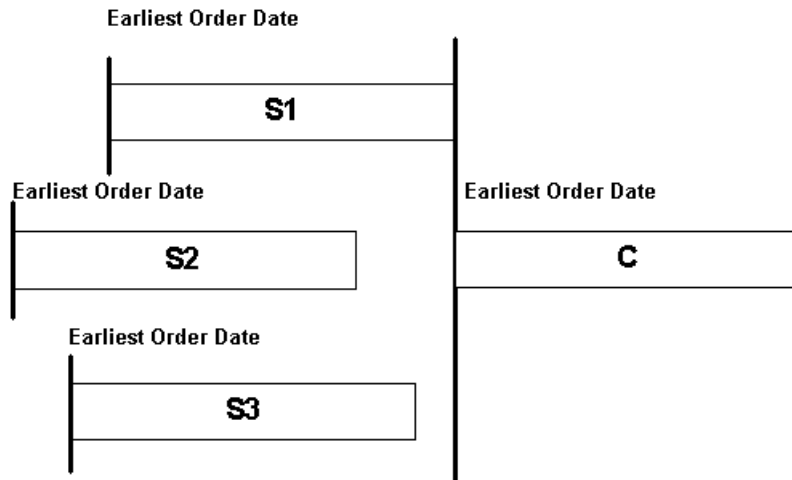
End Pegged Supplies Window Additional Fields

Earliest Order Date

The earliest possible date that you can start the order, given plan constraints. This can be earlier or the same as Suggested Order Date.

The two dates are usually different when 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. The planning engine sets Suggested Order Date later to avoid inventory build-up.

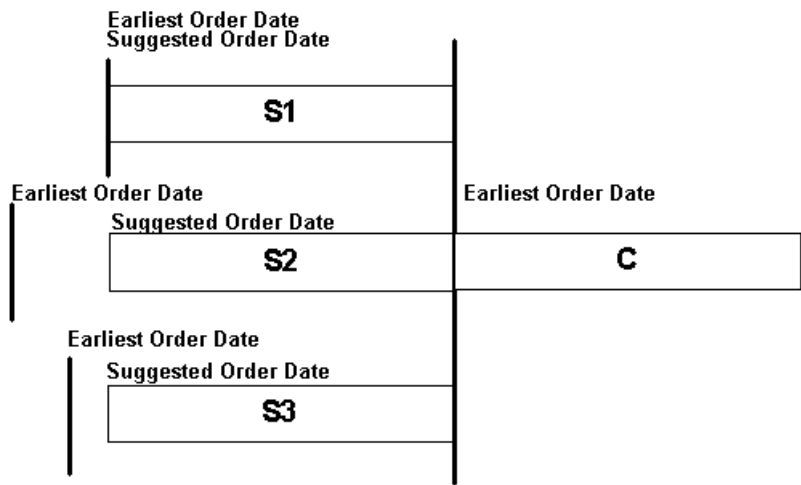
In this diagram, item C is made from three supplies (S1, S2, and S3). The planning engine forward detailed schedules the supplies from their earliest possible start date.

Figure 9–4 Earliest Order Date

In this diagram, the planning engine has realigned the operations so that the orders are closer to the needed dates for the next level and set the Suggested Order Date for the supplies. S2 and S3 now have different Earliest Order Date and Suggested Order Date.

Depending on the plan options, the planning engine may do other rescheduling which this scenario does not discuss.

Figure 9–5 Suggested Order Date



Earliest Completion Date

The date that the order can finish if you start it on 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. Previous breaks in the capacity profile (for example, holidays) may create capacity availability breaks that result in this order’s operation durations stretching as they fit in around these breaks.

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 supplies, this indicates its level on the supply chain bill of material. The higher the number, the lower the supply is on the bill of material.

Critical Activities

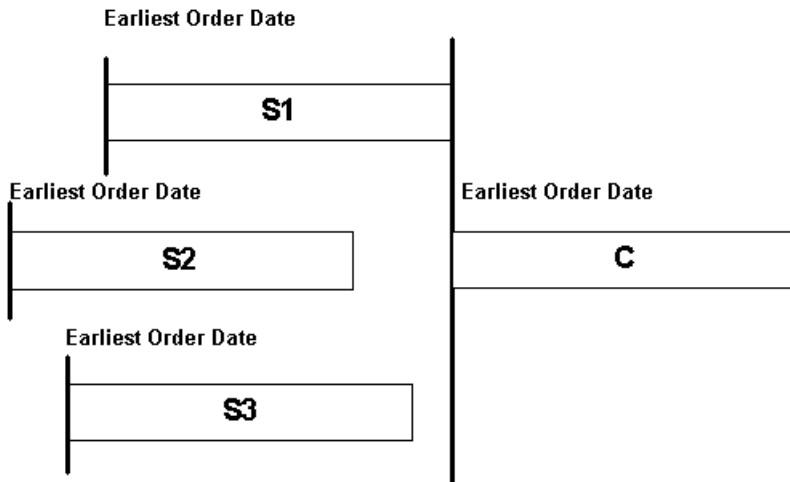
A critical activity is an entity that is:

- Pegged to a late demand
- The most constraining at its stage (level) in the end item multi-level bill of material. The most constraining activity is the one that most restricts the lower (earliest) bound of the earliest order date of its next highest level supply.

It can be any of the following entities:

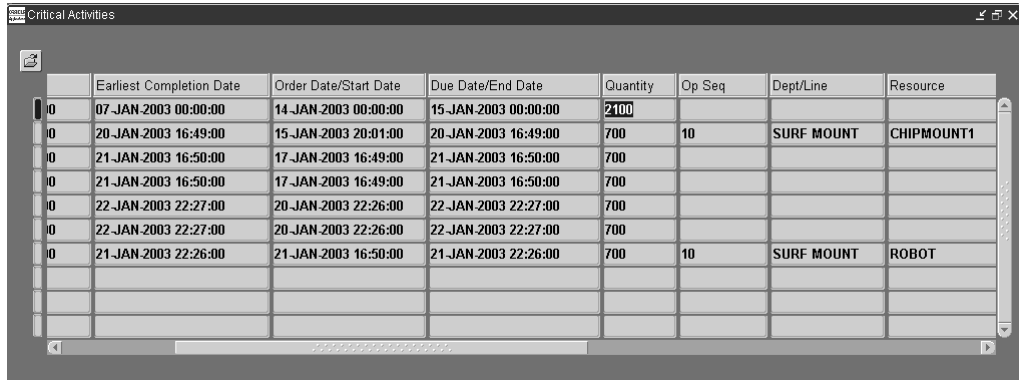
- A specific activity of a resource
- A buy supply
- A transfer supply

In the following diagram, item C is made from items S1, S2, and S3 and resources R1, R2, and R3. The critical activity for C is supply S1, the entity that most restricts the lower (earliest) bound of its (C's) earliest order date.

Figure 9–6 Supply as Critical Activity

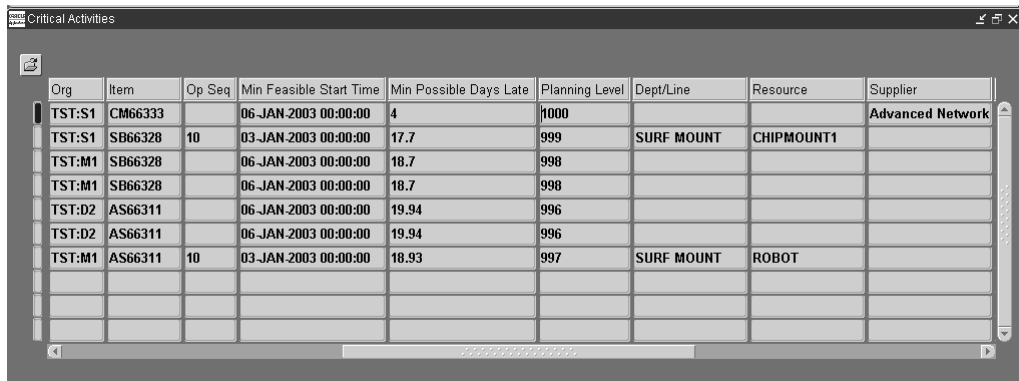
In these windows, you can see the specific issues which result in a late replenishment exception message on item AS66311. In instance:organization TST:S1, there are two critical activities:

- 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)

Resolution Suggestions

This section describes resolution suggestions for exception messages.

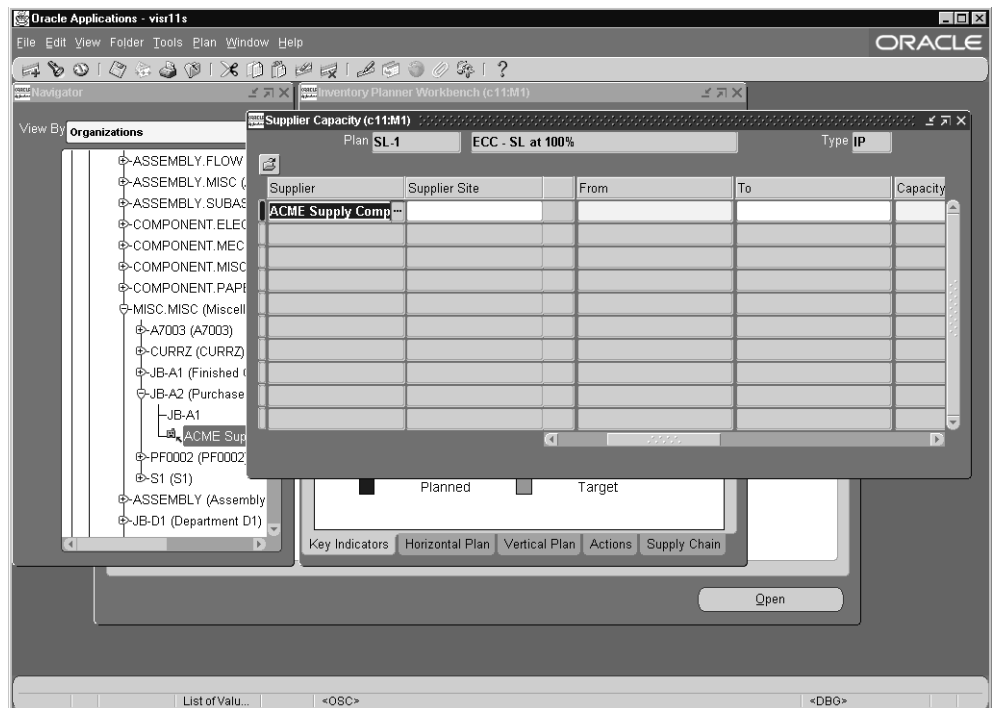
Late Sales Orders and Forecasts Exception Group

1: Order at risk due to material shortage

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 9–7 *Supplier Capacity*



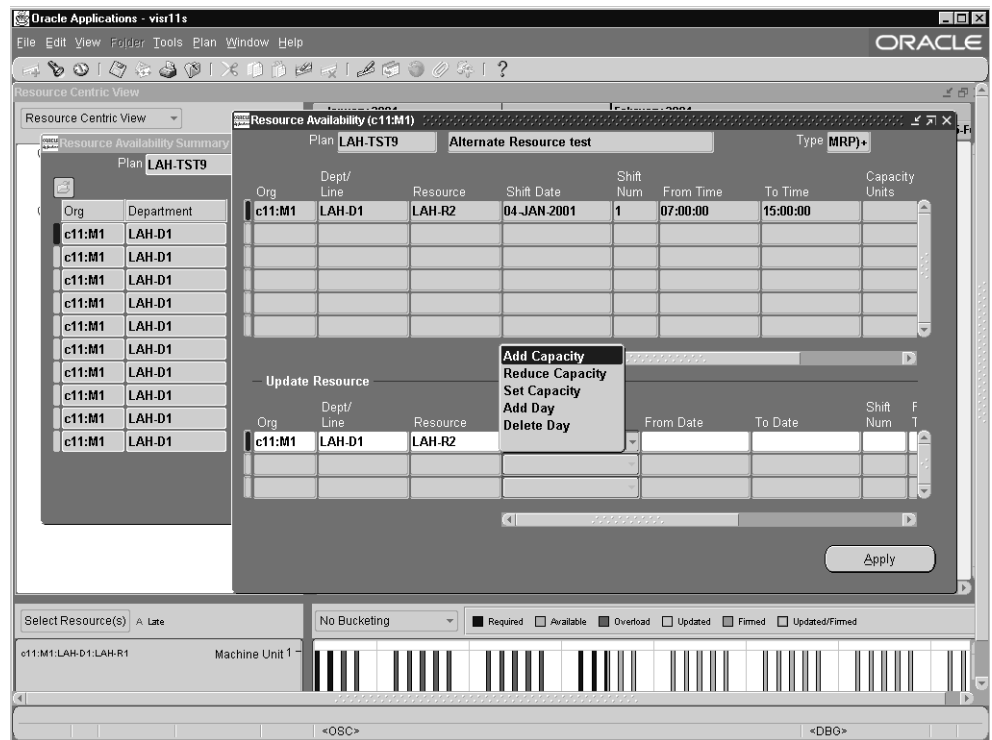
- Using an alternate supplier: Change the supplier in the sourcing rule
- Using a substitute item: Change the supply order bill of material

- 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: Order at risk due to resource shortage

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 9–8 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: Late supply pegged to sales order and 4: Late supply pegged to forecast

Consider:

- Expediting the late supply
- Adjusting the sales order line schedule date or forecast entry date

5: Past due sales orders

Consider revising the sales order line schedule date.

6: Past due forecast

Consider:

- Deleting the entry from the forecast
- Revising the forecast due date

7: Late replenishment for sales order and 8: Late replenishment for forecast

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](#) 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

9: Early replenishment for sales order and 10: Early replenishment for forecast

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

Material and Resource Capacity Exception Group

1: Material constraint

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

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

Consider:

- Using resolution suggestions for the Resource constraint exception message
- Adjusting the exception set Over-utilization

4: Supplier capacity overloaded

Consider:

- Using resolution suggestions for the Material constraint exception message
- Adjusting the exception set Over-utilization

5: Resource underloaded

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

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

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**1: Transportation resource constraint, 2: Transportation resource's weight overloaded, and 3: Transportation resource's volume overloaded**

Consider:

- Adjusting your transportation resource capacity
- Using a different ship method
- Using a different shipping calendar

Shortages and Excess Exception Group**1: Items with a shortage**

Consider:

- Expediting the late supply
- Adjusting the sales order schedule date

2: Items below safety stock

Consider expediting supply orders.

3: Items with excess inventory

Consider:

- Canceling unneeded supply orders
- Transferring the material to another facility

Reschedules Exception Group

1: Past due orders

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, 3: Orders to be cancelled, and 4: Orders to be rescheduled in

Consider reviewing the recommendations for the item and then rescheduling the order out, cancelling the order, or 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

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

This exception message is for information.

Substitutes and Alternates Used Exception Group

1: Planned order uses alternate BOM/routing, 2: Planned order uses substitute components, 3: Planned order uses alternate resources, 4: Order sourced from alternate facility, 5: Order sourced from alternate supplier, and 6: Demand satisfied using end item substitution

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

1: Items with a shortage in a project/task

Consider reviewing and correcting supply and demand imbalances with the project and task managers.

2: Items allocated across projects/tasks

This exception message is for your information.

3: Items with excess inventory in a project/task

Consider:

- Cancelling unneeded supply orders
- Transferring the material to another project

Item Exceptions Exception Group

1: Items with negative starting on hand

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

Consider creating or modifying an actual demand to use the material.

3: Items with no activity

Consider changing the item planning method to Not planned.

4: Supplier split percentage violated

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

Consider firming or releasing the planned order. For more information, see [Implementing Planning Recommendations](#).

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 9–9 Preference Set Search Page (Top)

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[Plan Comparison](#) [Comparison Settings](#)

Preferences [Filter Criteria](#)

Preference Set Search

Search

Please choose a Preference Set and Press Go Button

Preference Set

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 9–10 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

Cancel

Save

Display Report

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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 9–11 Filter Criteria Page

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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
☐	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
☐	*	*		

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.

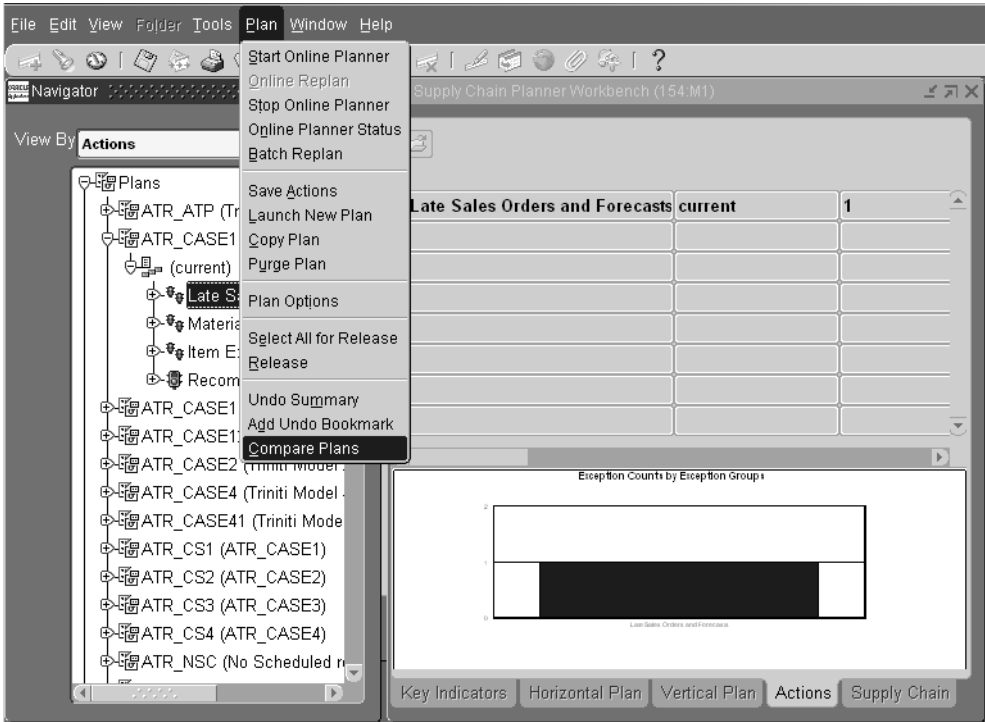
Viewing Plan Comparison

You can access plan comparisons in several ways and display tabular, graphical, and plan options information.

To access the Plan Comparison page from Planner Workbench

- 1. In Planner Workbench, select a plan name from the left tree pane.
- 2. On the menu bar, select Plan.
- 3. Select Compare Plans.

Figure 9–12 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 9–13 Plan Comparison Page

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Exceptions [Plan Options](#)

Exception Group Summary

Search

Please enter the following, and select the "Go" button.

Plan A

Plan B

Preference Set

[Go](#) [Create/Edit Preferences](#)

Exception Groups

Exception Group	Plan A only	Plan B only	Changed Exceptions	Common Exceptions	Total Plan A Count	Total Plan B Count

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To compare two plans

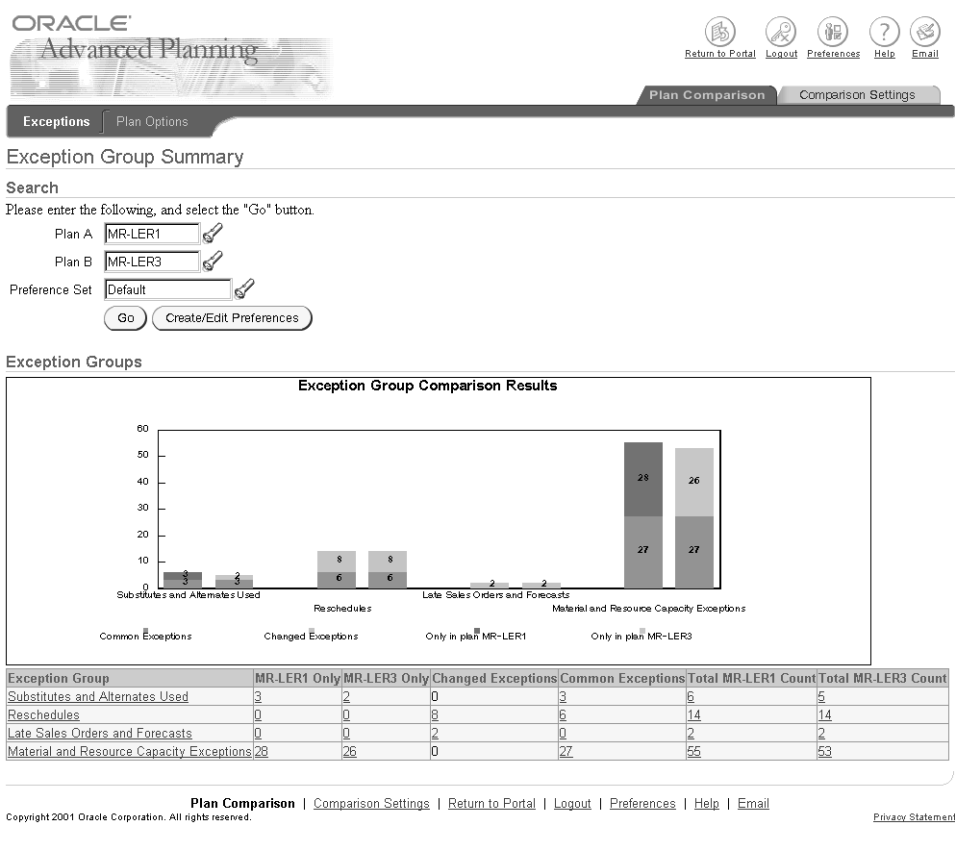
1. Access the Plan Comparison page from the Planner Workbench or from the Navigator.
2. In the Exceptions tab, enter or select the plan names in Plan A and Plan B.
3. Enter or select the preference set.

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 9–14 Exception Group Summary Page



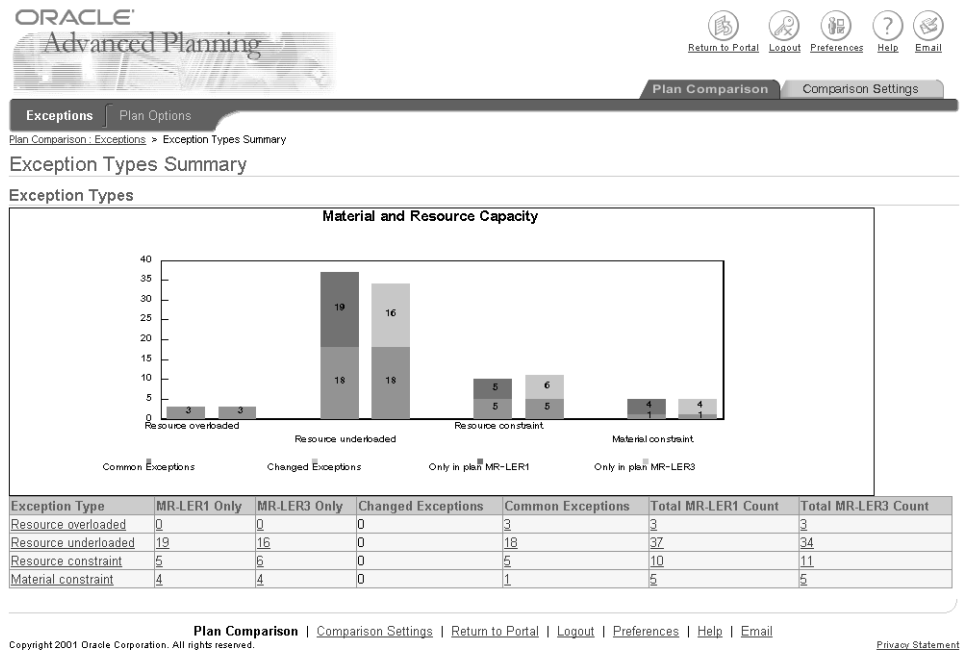
The page shows the exception count for the exception groups for the two plans according to the preference set.

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.

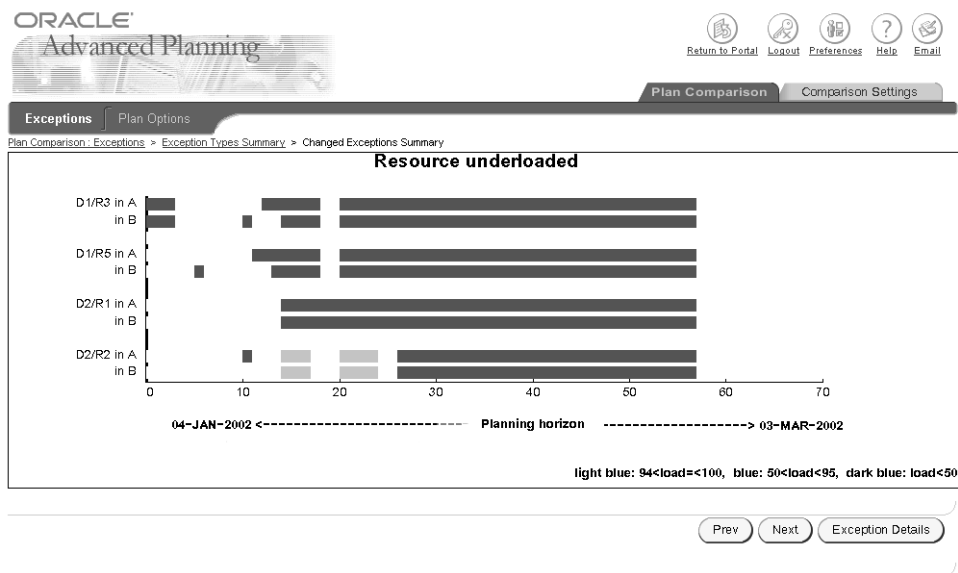
Figure 9–15 Exception Types Summary Page

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

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

The exception details graph appears.

Figure 9–16 Exception Details Page (Graphical)



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

Figure 9–17 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	DeptVLine	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 9–18 Plan Options Page

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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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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

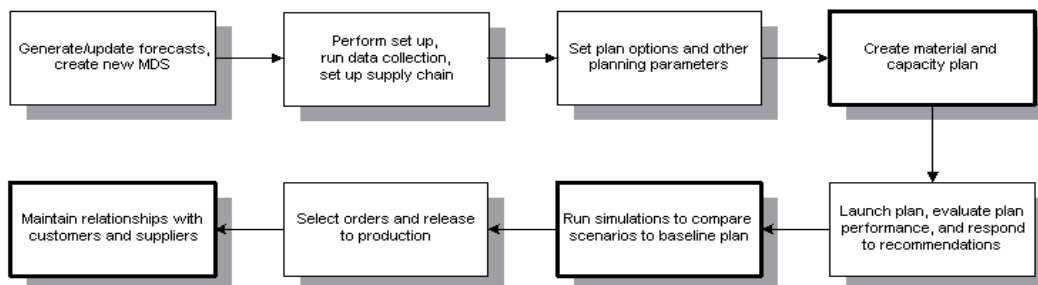
Based on the results of your analysis, online simulations, and plan comparisons, you can implement changes in the execution system:

- If you use an Oracle Applications Release 11*i* source instance, make changes there.
- If you use Oracle Applications Release 10.7 or 11, 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.

Planner Workbench

This chapter includes:

- [Overview of Planner Workbench](#) on page 10-2
- [Tailoring the User Interface](#) on page 10-11
- [Using the Left Pane and the Navigation Tree](#) on page 10-16
- [Using the Right Pane and the Navigation Tree](#) on page 10-18
- [Pegging](#) on page 10-41
- [Viewing the Supply Chain](#) on page 10-61
- [Implementing Planning Recommendations](#) on page 10-64
- [Reviewing a BOM or Supply Chain Bill](#) on page 10-67
- [Interactive Scheduling Using the Gantt Chart](#) on page 10-68
- [Planning Detail Report](#) on page 10-89

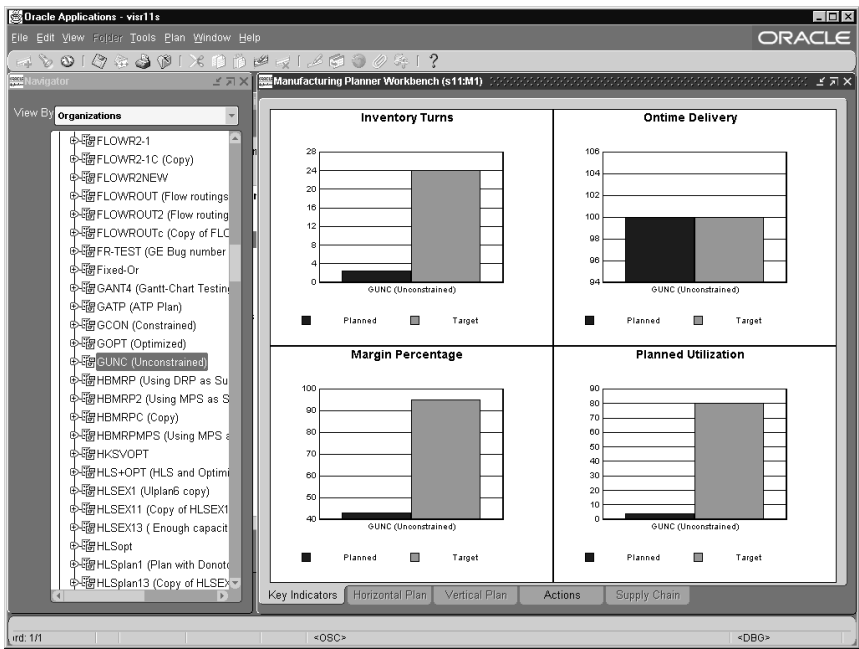


Overview of Planner Workbench

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 tree controls the context that is displayed in the right pane. The information shown in the right pane is aggregated to the level of the node selected in the left pane. For instance, if Organization is selected in the left pane then every tab in the right pane shows information aggregated for the organization. If the aggregated information cannot be displayed then the tab is disabled.

If you select more than one node in the left pane, the right pane displays information for both nodes selected. For instance, if you select two items in the left pane then the Horizontal Plan shows details for both items listed consecutively.

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.

You can select multiple items using Control-Click.

Drill Down

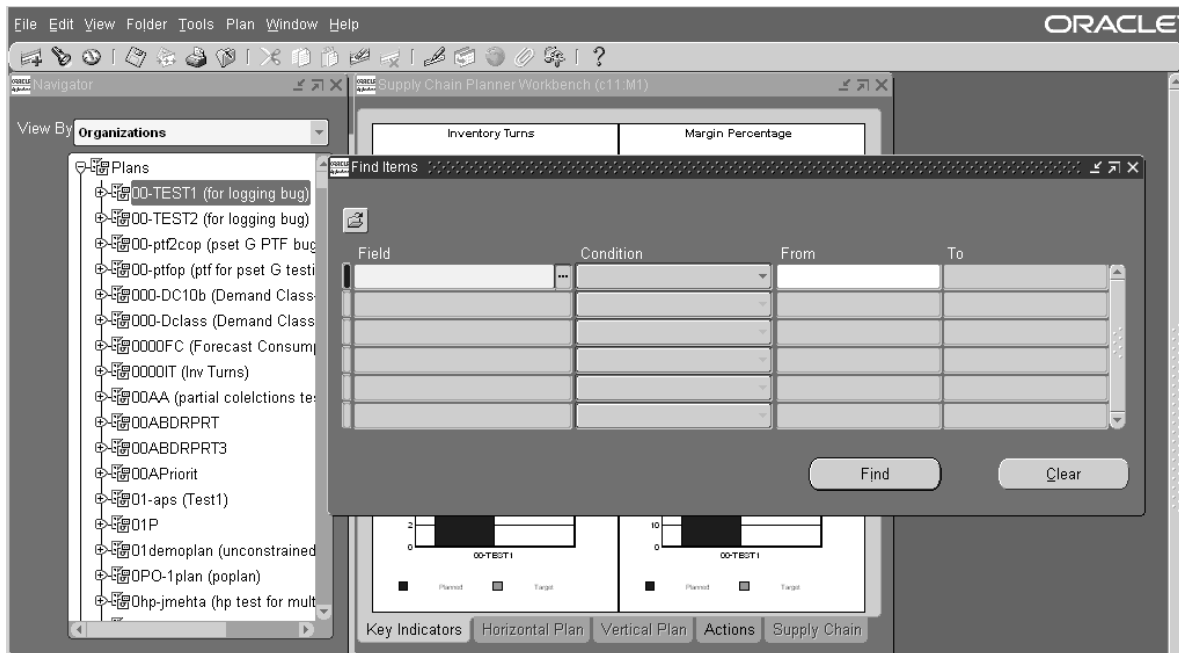
In any window with summary information like actions summary or horizontal plan, you can drill down to more detailed information by double-clicking on an element. This feature lets you do the following:

- Drill down on action messages to view details of a particular action.
- Drill down to different levels the Items, Organizations, and Resources tabs 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 tab, drill down from the Horizontal Plan to view supply/demand details. When working in the Resources tab, drill down from the Horizontal Plan to view resource availability.
- When working in the Items or Organizations tab, drill down from the Vertical Plan to view supply/demand details.

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 10–2 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

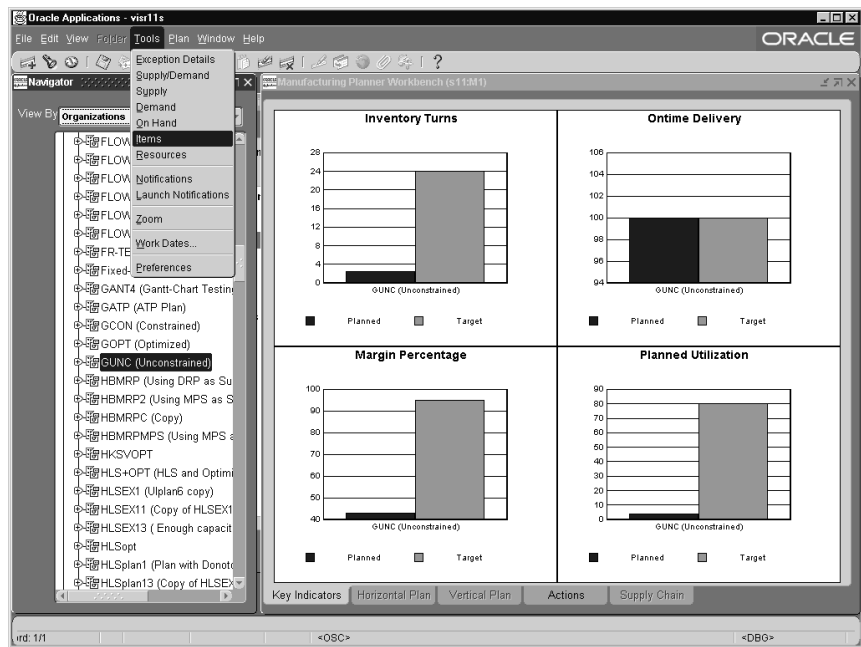
- Forecast Control
 - Item
 - MRP Planning Method
 - Make or Buy
 - Nettable Quantity
 - Non Nettable quantity
 - Organization
 - Planner
 - Primary Supplier
 - Repetitive
 - Standard Cost
 - WIP Supply Type
3. To retrieve all records, leave all fields blank and choose Find.
 4. To retrieve a subset 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.

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.

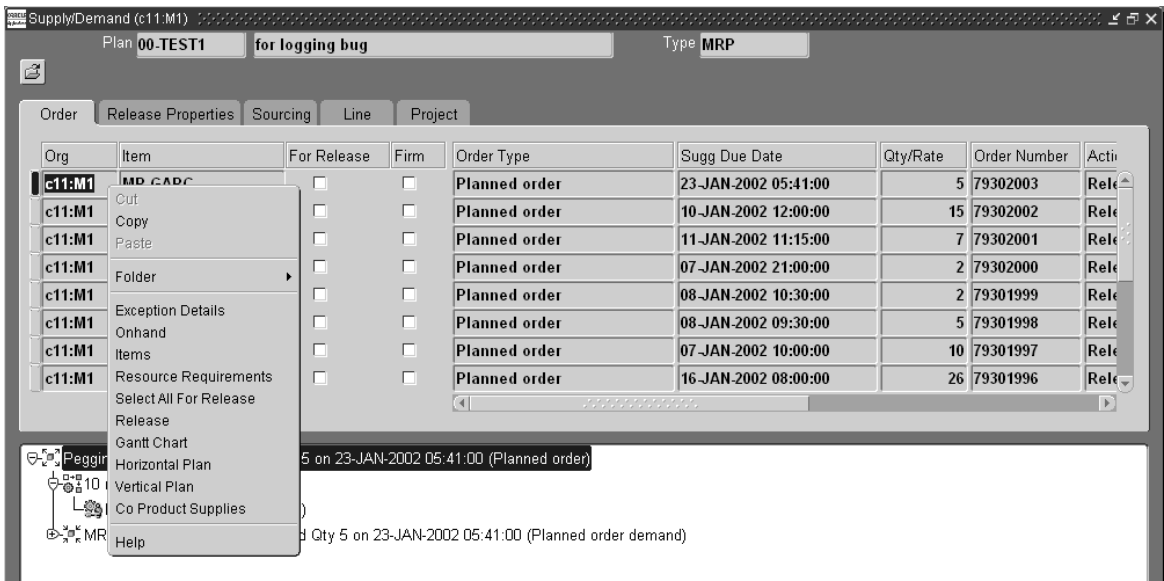
Figure 10–3 The Planner Workbench with Tools Menus Displayed



Right-Click Menu Options

From any window in the Planner Workbench, you can access menu options via the [right-click] button. [Right-click] menu options are context sensitive, and different depending on the window or selected screen element.

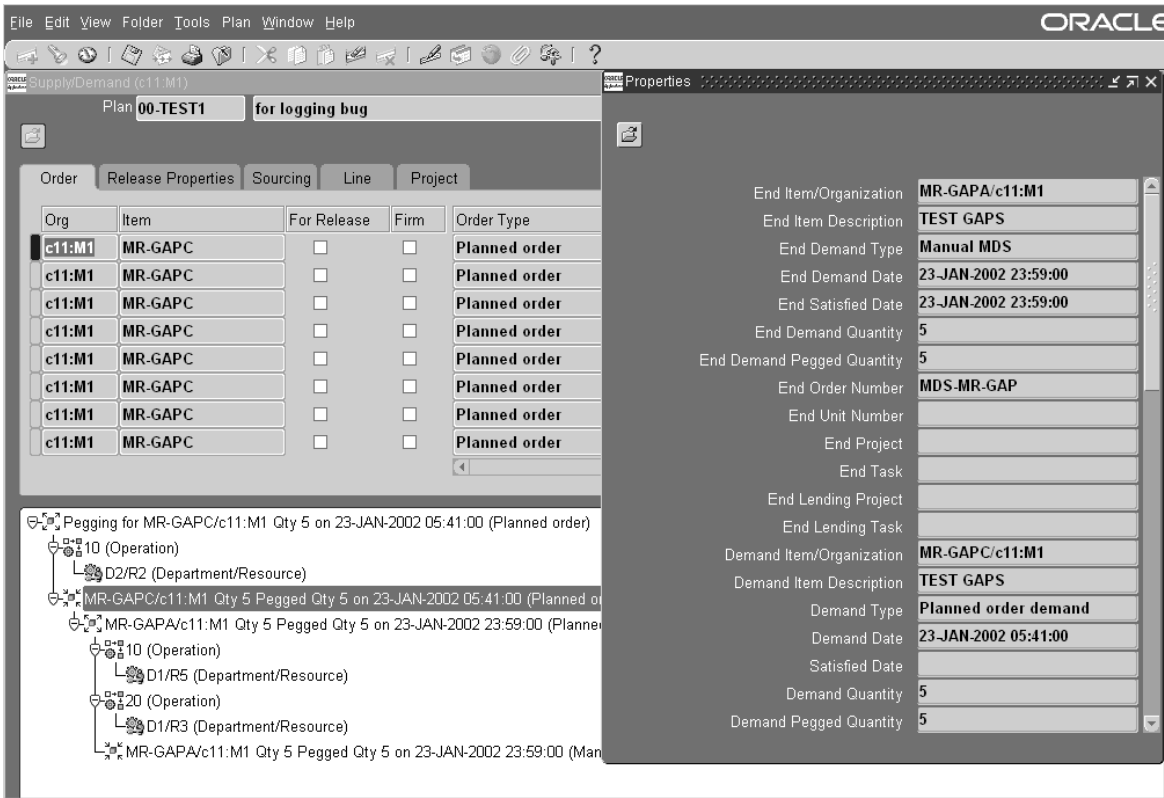
Figure 10–4 Right-Click Menu Options Available in the Supply/Demand window



Properties Window

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

Figure 10–5 Displaying Properties for a Planned Order Demand in the Pegging Tree



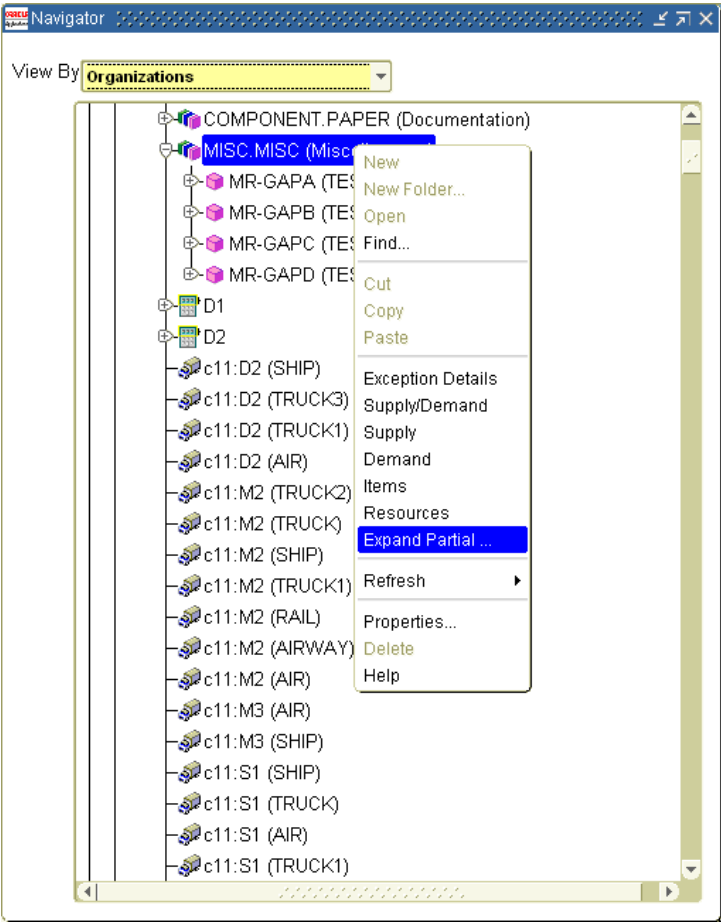
Expand Partial

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 left pane.
2. Select a category node, such as Organizations or Items (please note that this has not been implemented for View By: Suppliers).
3. Right-click on an item in the left pane.
A menu appears.

Figure 10–6 Right-Click menu



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

Figure 10–7 Enter Reduction Criteria



Enter Reduction Criteria for Long List

Item

OK Cancel

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

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

4. Select Cancel to close the 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
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	Set up work dates for your plan.
Tools	Preferences	Set preferences.
Plan	Start Online Planner	Start online planner

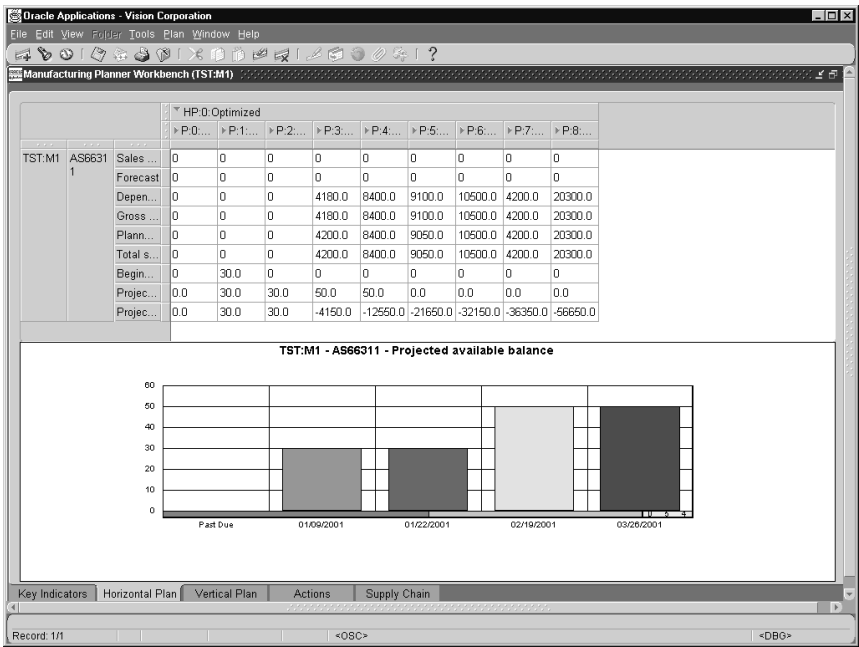
Menu	Menu Option	Description
Plan	Online Replan	Run net change replan.
Plan	Stop Online Planner	Stop online planner
Plan	Online Planner Status	View online plan status.
Plan	Batch Replan	Run replan in batch mode.
Plan	Save Actions	Save actions related to your plan.
Plan	Launch New Plan	Launch new plan
Plan	Copy Plan	Copy your baseline plan before running a new plan.
Plan	Purge Plan	Delete the plan.
Plan	Plan Options	Set plan options.
Plan	Select All for Release	Release all orders.
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

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 left and right panes. You can also maximize the right pane independent of the left pane.

Figure 10–8 Maximizing the Right Pane



Customize Columns

You can add, hide columns, resize, and move columns on the horizontal plan and folder windows.

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 10–9 Material Plan Tab

The screenshot shows the 'Preferences' window with the 'Material Plan' tab selected. The 'Display Buckets' section has 'Days' set to 1, 'Weeks' to 0, and 'Periods' to 0. The 'Independent Demand Type' is set to 'MDS'. The 'Display Factor' is 1, and 'Decimal Places' is 0. 'Show Graph' is set to 'Yes'. A list of plan information types is shown with checkboxes: Sales Orders, Forecast, Dependent Demand, Expected Scrap, Other Independent Demand, Gross Requirements, WIP, Purchase orders, Requisitions, In transit, Payback Supply, In receiving, Planned Orders, Total Supply, Beginning On Hand, Projected Available Balance, Safety Stock, Available to Promise, Current Scheduled Receipts, Projected On Hand, Expired Lots, and Payback Demand. Most are checked.

3. Enter Display Buckets, Independent Demand Type, Display Factor, Decimal Places, Show Graph and check each type of plan information you want to display in your material plan.
4. Choose the Capacity Plan tab.
5. Check each type of plan information you want displayed in your capacity plan.
6. Choose the Supplier Plan tab.
7. Check each type of plan information you want displayed in your capacity plan.
8. Choose the Transportation tab.
9. Check each type of plan information you want displayed in your capacity plan.
10. Choose the Other tab.
Supply/Demand details display.
11. Enter a Cutoff Date and Job Status.

When the Planner Workbench creates discrete jobs from implemented planned orders, it assigns the job status you enter in the Preferences window.

12. 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.

13. 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.

14. Select the Default Left Tab and Default Right Tab under General.**15. Choose Apply to use your preference selections for the current session only.****16. Choose Reset to use your previously saved selections.**

Using the Left Pane and the Navigation Tree

The left pane contains a hierarchical tree viewable by the following categories:

- Actions
- Items
- Organizations
- Projects
- Resources
- Suppliers

Choose a tree category from the list of values View by at the top of the left pane. The following sections show the drill down information for each left pane category.

Actions Category

Plans > Versions > Exception Groups ...

For exception sets other than Recommendations,

... > Exceptions > Organizations > Items

For Recommendations exception set,

... > Scheduled Receipt Type > Organizations > Items

Items Category

Plans > Product Families/Models/Option Classes or Categories > Items ...

... > Organizations > Components/Departments/Lines/Transportation Resources

... > Approved Suppliers

Organizations Category

Plans > Organizations ...

... > Product Families/Models/Option Classes or Categories > Items >
Components/Approved Suppliers

... > Departments > Resources (owned) > Items > Components/Approved Suppliers

... > Transportation Resources

Projects Category

Plans > Organizations ...

... > Planning Groups > Common > Items

... > Items > Planning Groups > Common

Resources Category

Plans > Organizations > Department Classes, Resource Groups, Lines, or
Transportation Resources > Departments > Resources > Items

Suppliers Category

Plans > Approved Suppliers > Categories > Items Organizations

Using the Right Pane and the Navigation Tree

The right pane contains summary information in tables and graphs, including:

- Key Indicators
- Horizontal Plan
- Vertical Plan
- Actions
- Supply Chain

You control the context of the right pane by highlighting one or more nodes on the tree. You can also use the Find window on either the left or right panes to further limit the context. From the right pane, you can drill down to more detailed information.

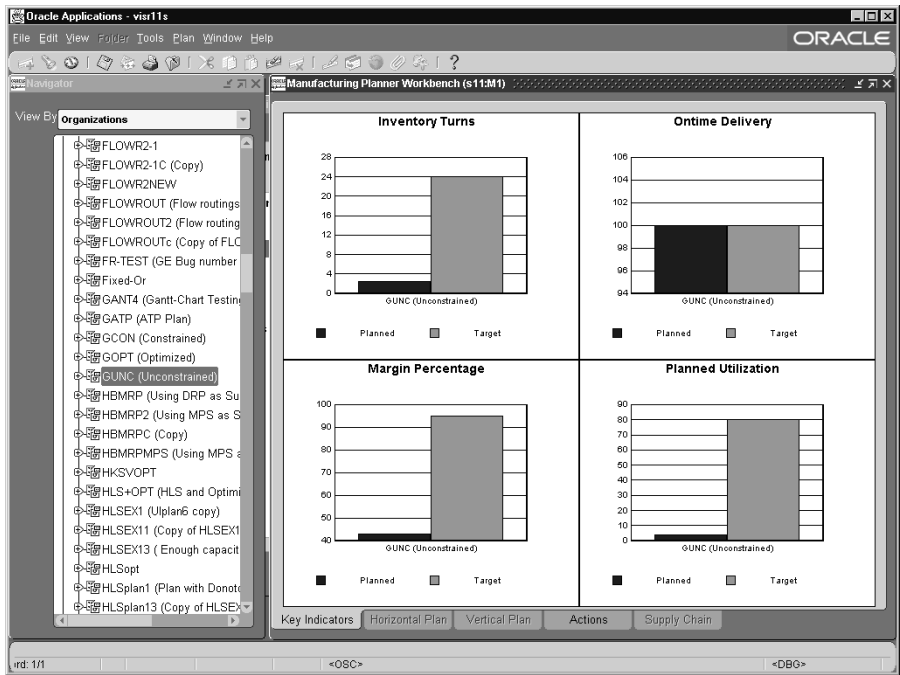
Key Performance Indicators Tab

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
- 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 10–10 The KPIs Summary Chart in the Planner Workbench



To view KPIs

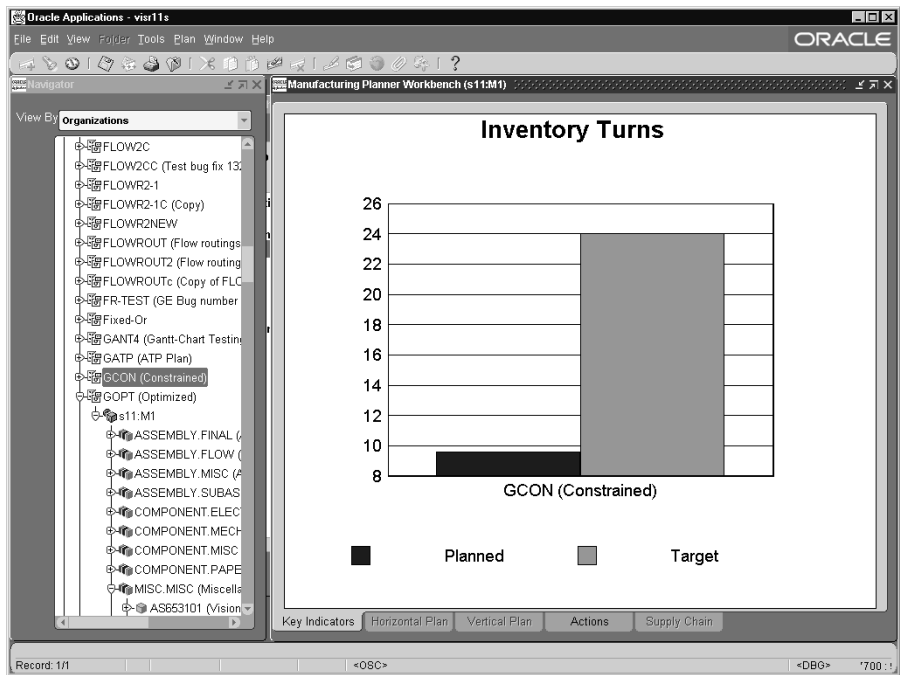
1. Select a Plan, an Item, an Org, or a Product Family from the tree in the left pane.
2. Select Key Indicators in the right pane.

The right pane displays KPIs for the selected Plan, Item, Org, or Product Family.

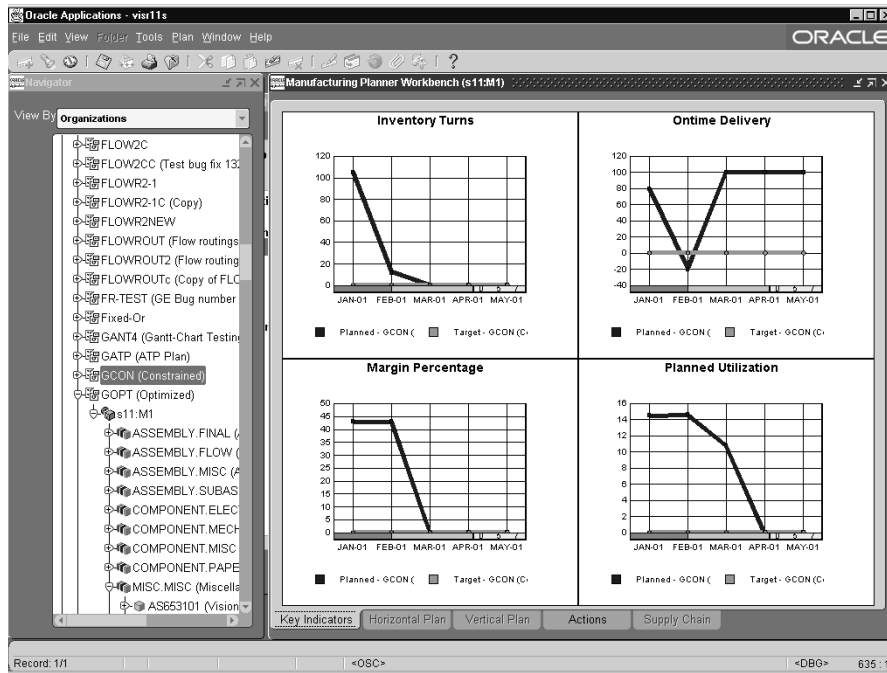
To view an enlarged version of a KPI graph

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 10–11 An Enlarged View of the Ontime Delivery KPI Bar Chart



Additional display options for each sub-window in the summary chart are available via the [right-click] menu. For instance, you can display KPI information in a trend chart.

Figure 10-12 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.

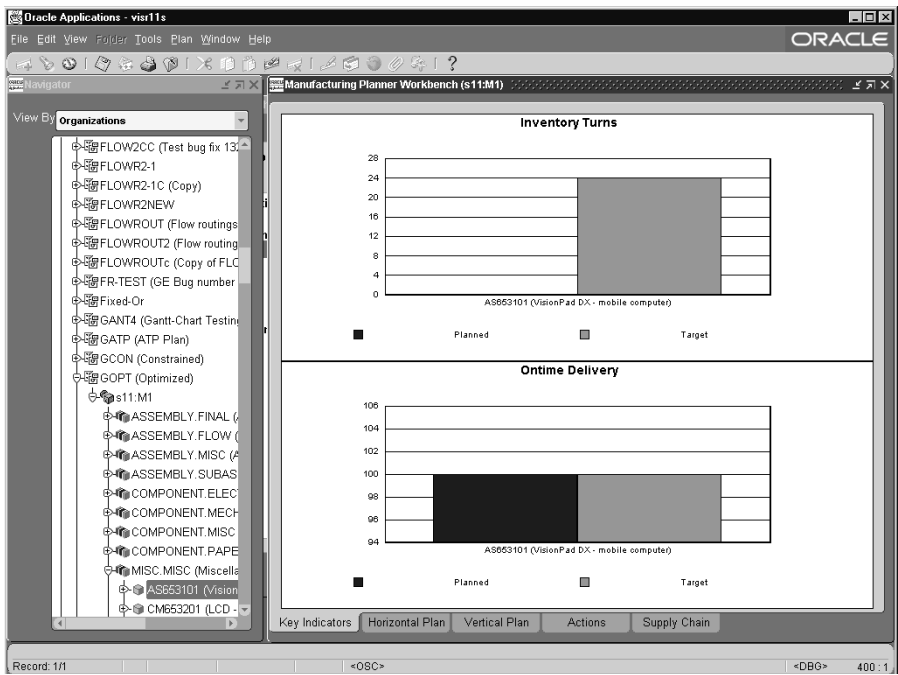
Margin percentage is available at the following nodes:

- 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.

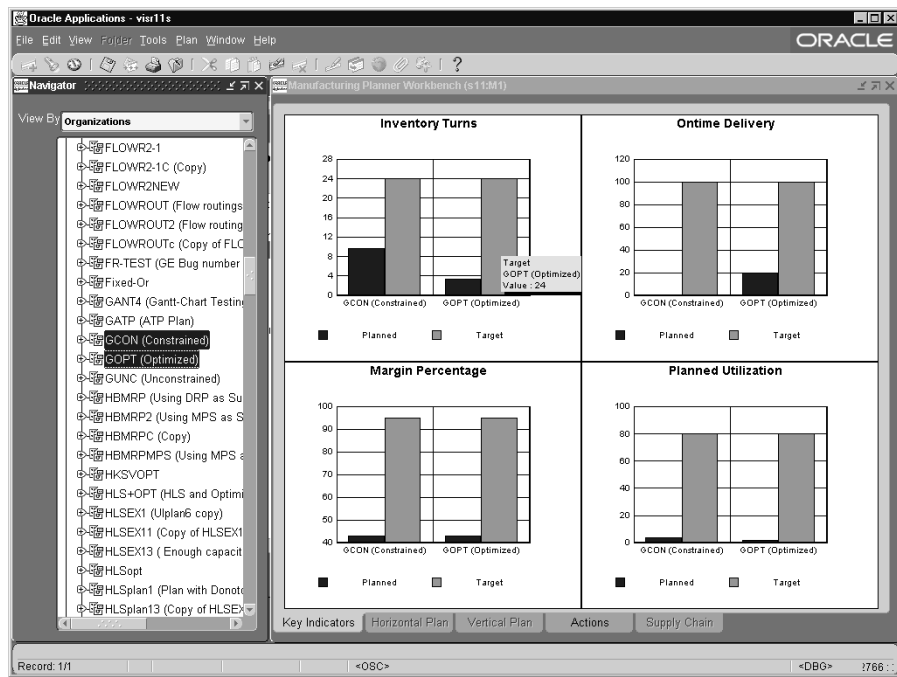
Figure 10–13 Viewing KPIs at the Item Level



Comparing KPIs for Multiple Plans

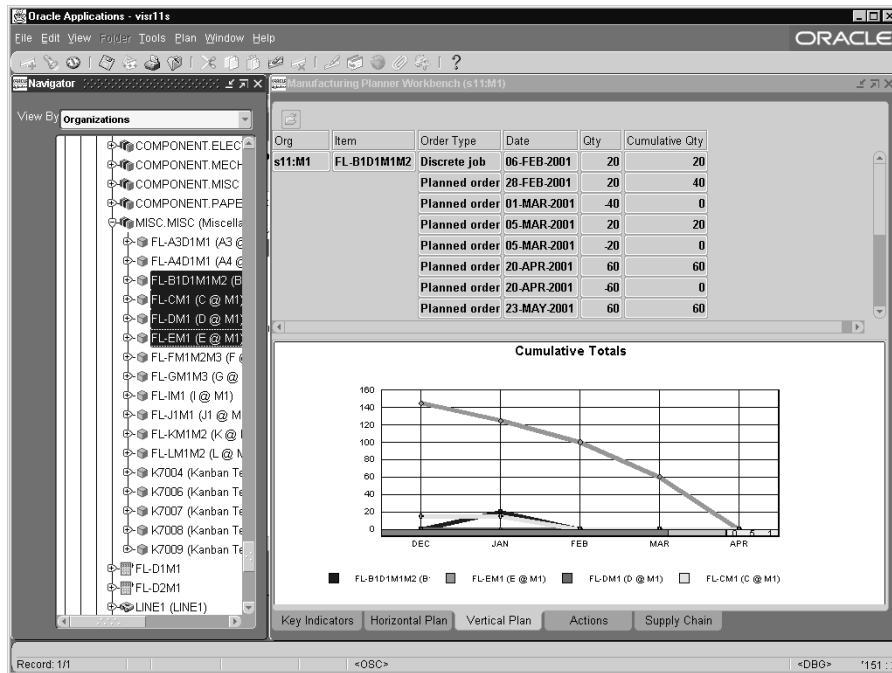
KPIs of multiple plans can be compared in the summary chart by selecting two or more plans in the left pane.

Figure 10–14 Comparing KPIs for Multiple Plans



Horizontal Plan and Vertical Plan Tabs

You can display your plan information vertically or horizontally.

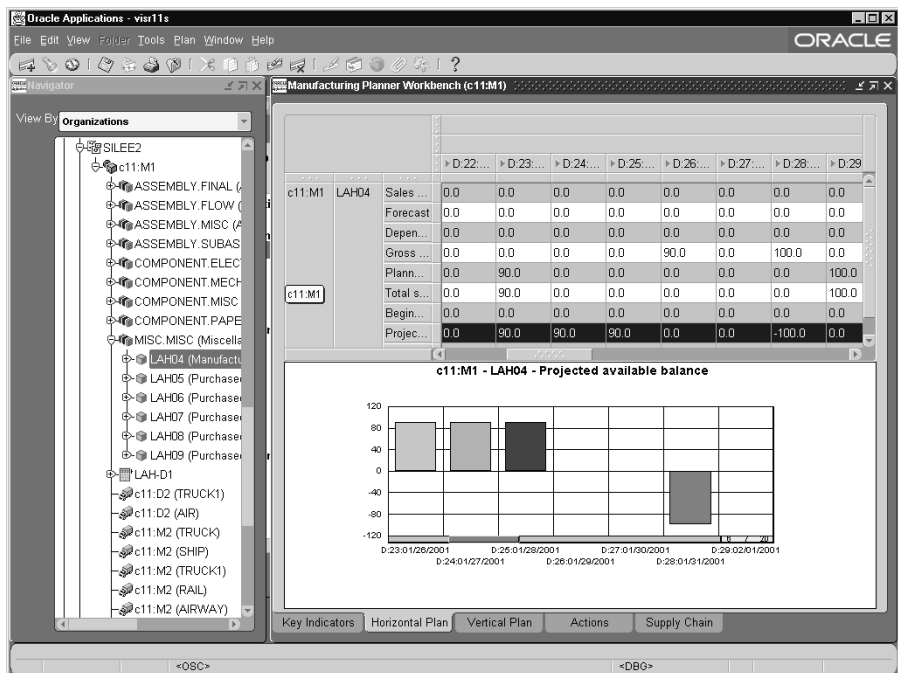
Figure 10-15 Vertical Display

The Vertical Plan view is only enabled for an Item-Org context and it displays the activity by item over time in a vertical format (non-bucketized).

To display your plan vertically

1. Select one or more items from the tree in the left pane.
2. In the right pane, choose the Vertical Plan tab.

Figure 10–16 Horizontal Display



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

To display your plan horizontally

1. Select one or more items, resources, lines, transportation resources, or suppliers from the tree in the left pane.
2. In the right pane, choose the Horizontal Plan tab.

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

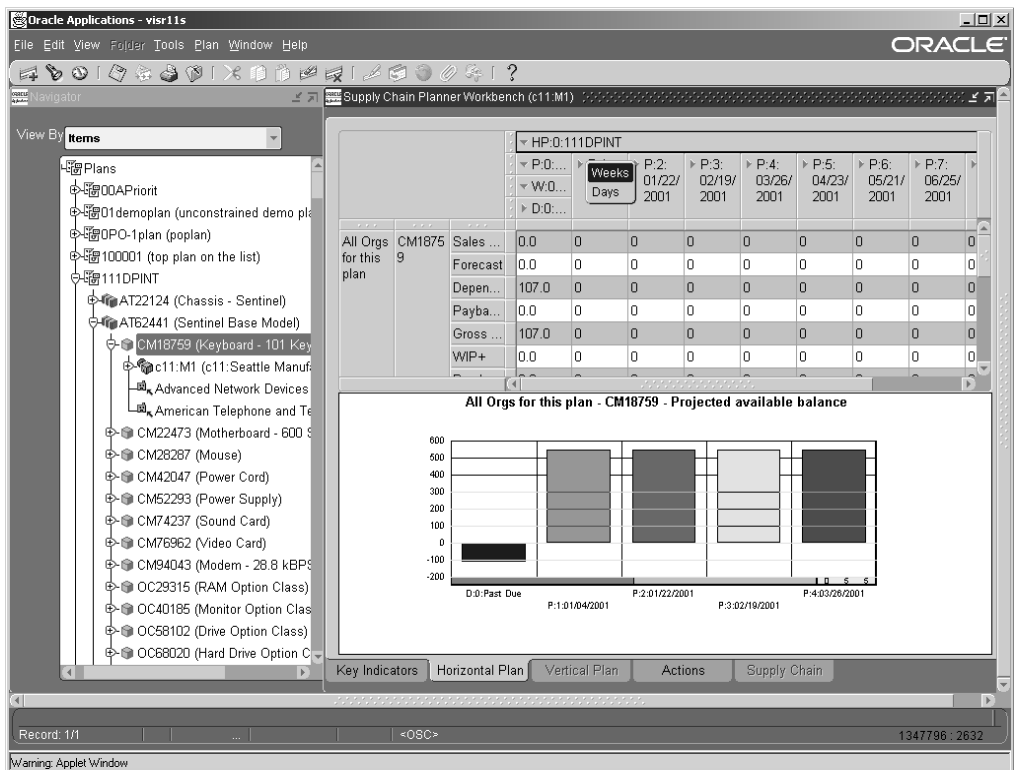
1. From the Navigator, choose Supply Chain Plan > Workbench.

The Supply Chain Planner Workbench appears.

2. In the View By field in the left pane, select Items.
3. Drill down to the item you want in the left pane. You can select one or more items.
4. Select the Horizontal Plan tab in the right pane.

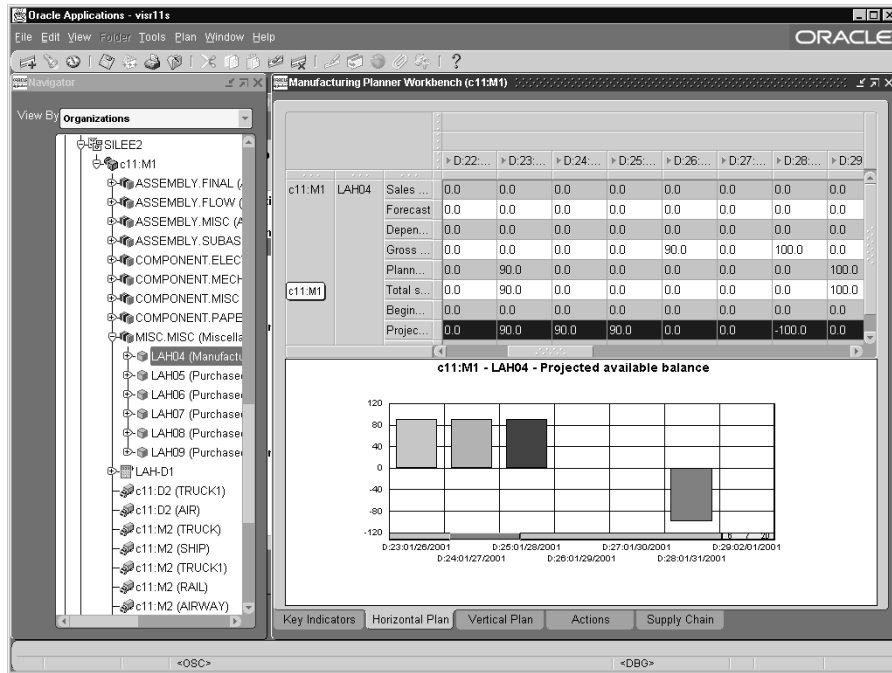
The horizontal plan information is displayed in a pivot table that enables you to drill down from aggregate to periods to weeks to days.

Figure 10-17 Horizontal Plan tab



Dynamically Define Graphs

Define graphs by selecting which pieces of information to graph.

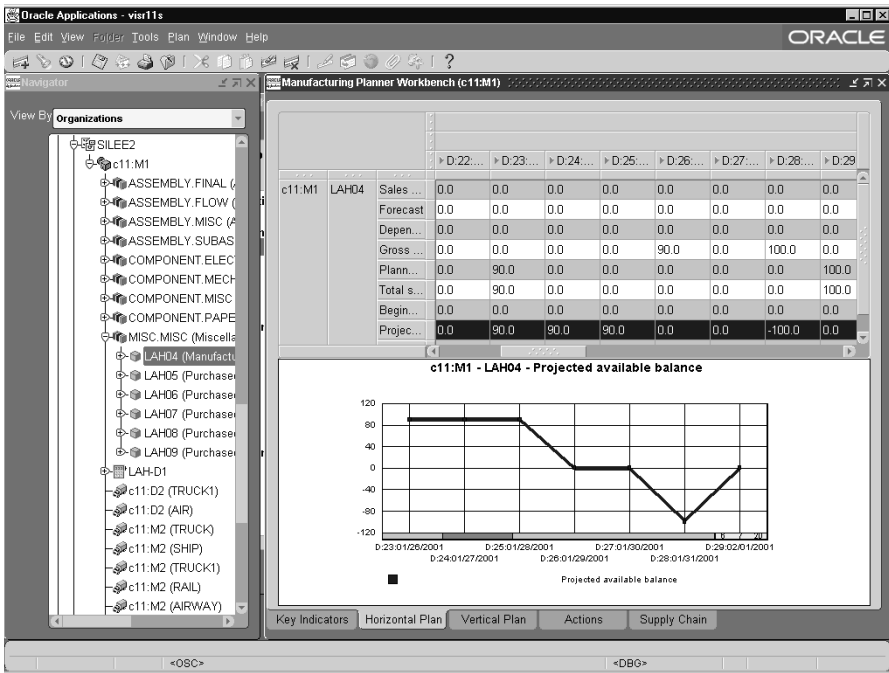
Figure 10–18 Dynamically Define Graphs**To define information to be graphed**

1. In the right pane, choose the Horizontal Plan tab.
Plan data appears in a horizontal plan.
2. Select the plan parameters you wish 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 (see above) you can change the chart type using the [right-click] menu. For instance, if you have displayed a bar chart and you wish to display a line graph, select [right-click] > Line Chart.

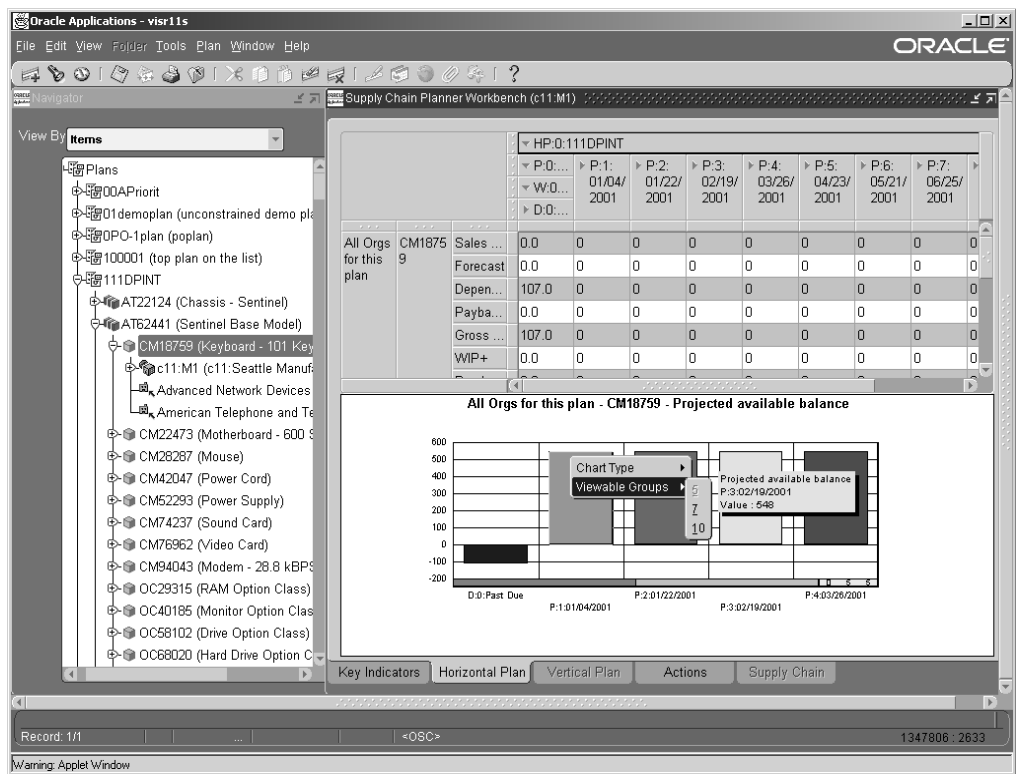
Figure 10–19 Dynamically Choose Types of Graphs



To change the number of periods being displayed in the graph

1. Right-click on the graph and select Viewable Groups. The choices are 5, 7, and 10, with 5 as the default.

Figure 10-20 Viewable Groups



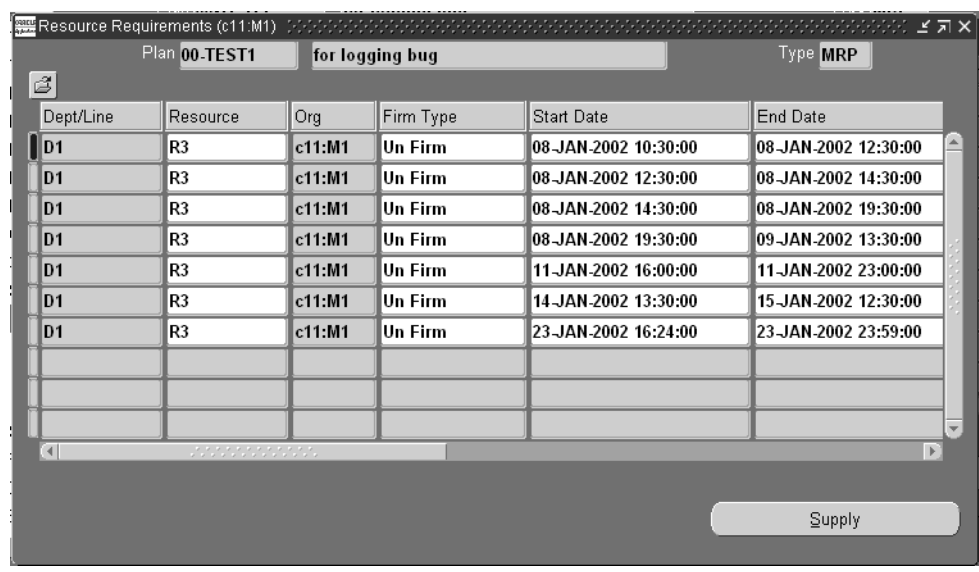
View Available Capacity

Horizontal Capacity Plan The Horizontal Plan tab displays the Horizontal Capacity Plan for resources and resource type nodes.

To view Resources

1. [Right-click] on an item in the navigation tree then choose the Resources option.
The Resources window displays.

Figure 10-22 Resource Requirements window



To view Resource Availability

1. From the Resources window choose Availability.
The Resource Availability Summary window appears.

Figure 10–23 Resource Availability Summary window

Org	Dept/Line	Resource	From Date	To Date	Total Available	UOM
c11:M1	D1	R3	04-JAN-2002	04-JAN-2002	16	HR
c11:M1	D1	R3	07-JAN-2002	07-JAN-2002	16	HR
c11:M1	D1	R3	08-JAN-2002	08-JAN-2002	16	HR
c11:M1	D1	R3	09-JAN-2002	09-JAN-2002	16	HR
c11:M1	D1	R3	10-JAN-2002	10-JAN-2002	16	HR
c11:M1	D1	R3	11-JAN-2002	11-JAN-2002	16	HR
c11:M1	D1	R3	14-JAN-2002	14-JAN-2002	16	HR
c11:M1	D1	R3	15-JAN-2002	15-JAN-2002	16	HR
c11:M1	D1	R3	16-JAN-2002	16-JAN-2002	16	HR
c11:M1	D1	R3	17-JAN-2002	17-JAN-2002	16	HR

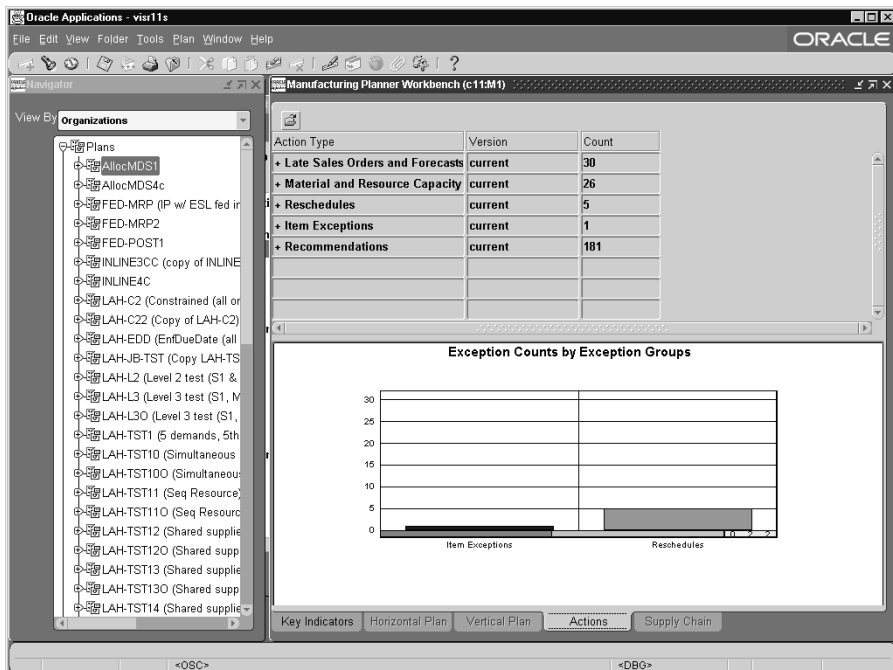
Identifying Capacity Problems Use exception messages or the horizontal capacity plan to view overloaded resources.

Actions/Exceptions Tab

The Actions tab and tree segregates all of the actions that require immediate attention. The Actions tree contains all of the recommended new orders due to be executed within a user defined time window, as well as all exception messages requiring 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 in the Items or Organization tree.
- 2. In the right pane, choose the Actions tab.

Figure 10–24 Exception 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 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.

To view exception details

Drill down on an exception message. The Exception Details window appears.

Figure 10–25 *Exception Details window*



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. If you select several different exceptions, the generic default folder appears.

Note: 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.

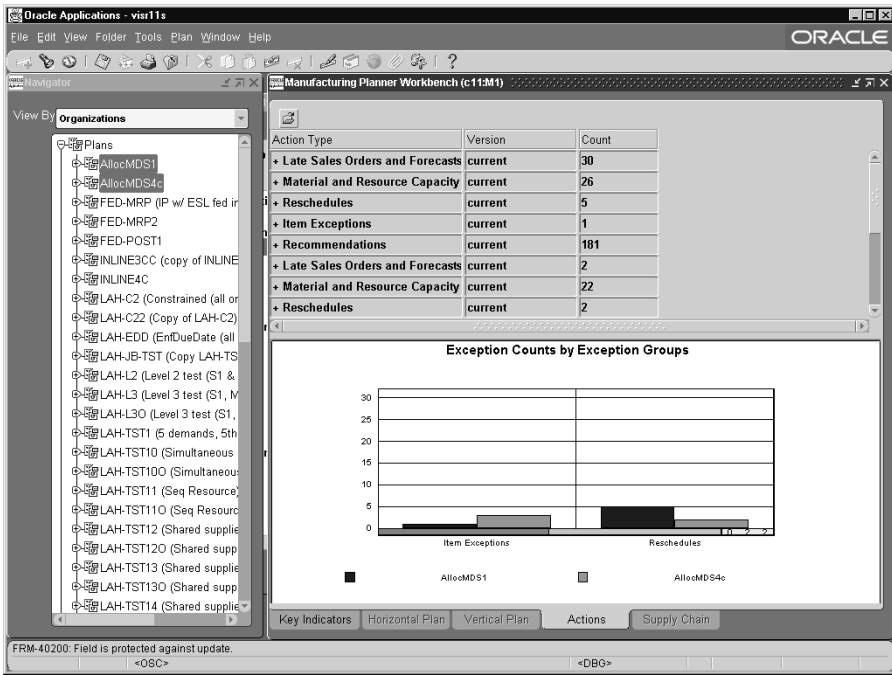
Related exceptions appear in the Exception Details window.

To graphically compare exceptions for multiple plan scenarios

1. Select the plans you wish to compare in the tree navigator in the left pane.

- 2. In the right pane, choose the Actions tab.
- 3. View comparison of the exception messages.

Figure 10–26 Comparing Exceptions



- 4. View details of action.

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 will determine what buttons are available.

Right Mouse 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

Using the Drill Down Windows

Supply/Demand Window

The Supply/Demand window displays information about supplies and demands and shows pegging information. It 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 through the Orders tab folder function.

Safety Stock Window

The Safety Stock window shows time phased safety stock.

To access the Item Safety Stock window, 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.

Pegging

Overview

This section discusses:

- Standard pegging
- Priority pegging
- FIFO pegging
- Priority/FIFO pegging
- Enabling pegging checklist
- Viewing pegging information

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.

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.

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

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 10–1 Enabling Pegging Modes

Pegging Mode	Plan Option - Priority Pegging	Profile Option - MSC: Use FIFO Pegging
Standard	Cleared	No
Priority	Selected	No
FIFO	Cleared	Yes
Priority/FIFO	Selected	Yes

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.

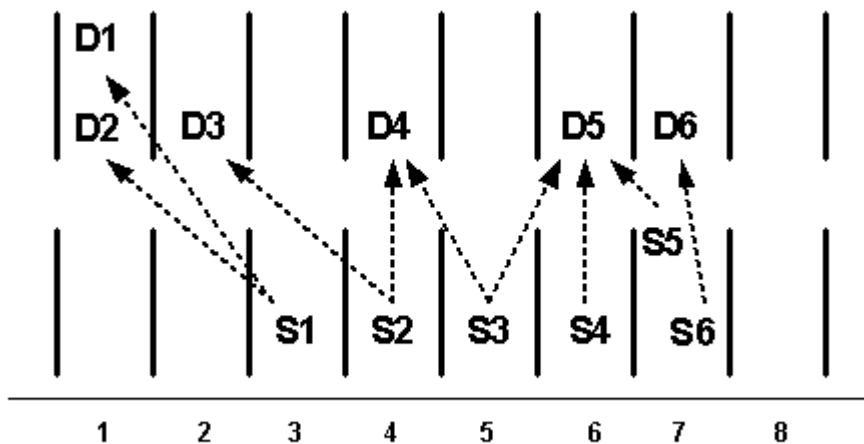
Second Pass

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	

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:

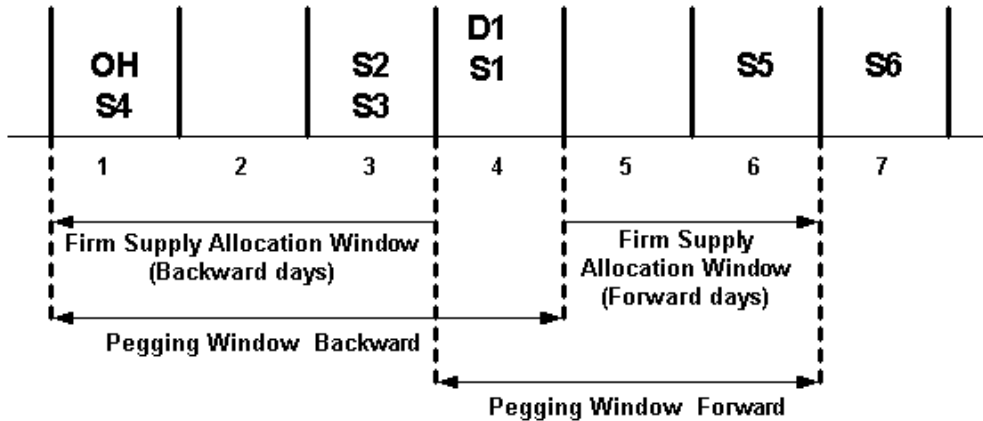
- Sorts on-hand by the lot expiration date and then quantity in ascending order. Pegs demand to on-hand before other firm supplies of day 1 when the firm supply allocation window includes day 1.
- Firm supplies are not sorted on any given date.

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 10–27 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.

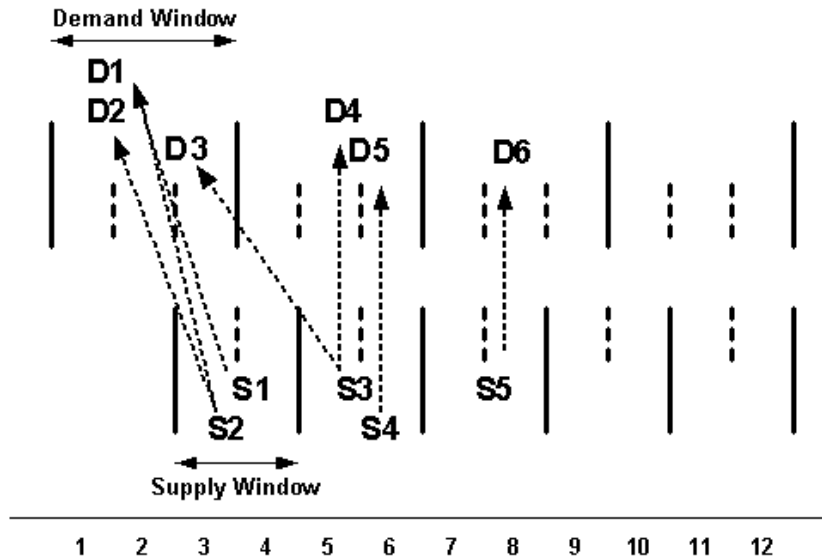
Third Pass Example

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 10–28 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
Sales order 1 (100 - 25)				75 (1)
Sales order 2 (100 - 0)			100 (2)	
Planned order (firm)	10 [25]	5 [25]		
Planned order (non-firm)	50	35	75	

The diagram illustrates the pegging process with arrows connecting entities across days (1 to 4). The arrows show the following connections:

- From **Planned order (firm)** to **Sales order 1**: A dashed arrow from day 1 (quantity 10) to day 4 (quantity 75).
- From **Planned order (firm)** to **Sales order 2**: A dashed arrow from day 2 (quantity 5) to day 3 (quantity 100).
- From **Planned order (non-firm)** to **Sales order 1**: A dashed arrow from day 2 (quantity 35) to day 4 (quantity 75).
- From **Planned order (non-firm)** to **Sales order 2**: A dashed arrow from day 3 (quantity 75) to day 3 (quantity 100).
- From **Planned order (non-firm)** to **Planned order (firm)**: A dashed arrow from day 1 (quantity 50) to day 1 (quantity 10).
- From **Planned order (non-firm)** to **Planned order (firm)**: A dashed arrow from day 2 (quantity 35) to day 2 (quantity 5).

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
Sales order 1 (100 - 40)						60 (1)
Sales order 2 (200 - 30)	170 (2)					
Work order (firm)			30			
Planned order (non-firm)	40	100				60

The diagram illustrates the FIFO pegging process. Dashed arrows 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 split as follows: 40 from Planned order to Sales order 1, 100 from Planned order to Sales order 2, and 30 from Work order to Sales order 2. The Sales order 1 has a remaining demand of 60 (1) on day 6, and the Sales order 2 has a remaining demand of 170 (2) on day 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

FIFO/Priority Pegging

The priority 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.

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 [Item Attribute Controls](#) in *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.

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 left pane.
2. Navigate Tools > Supply/Demand.
3. In the Supply/Demand window, the pegging tree appears in the bottom half of the window.

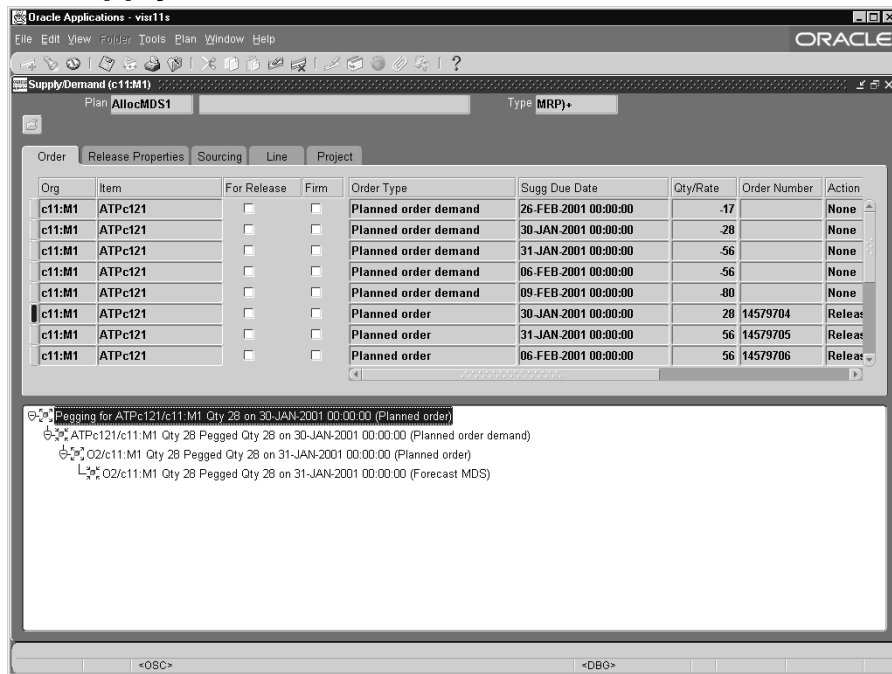
The default display for viewing pegging from demand to supply is supply order details and end item demand order information. The default display for viewing pegging from supply to demand is supply order details, immediate parent demand information, and end item demand information.

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.

Viewing the Supply Chain



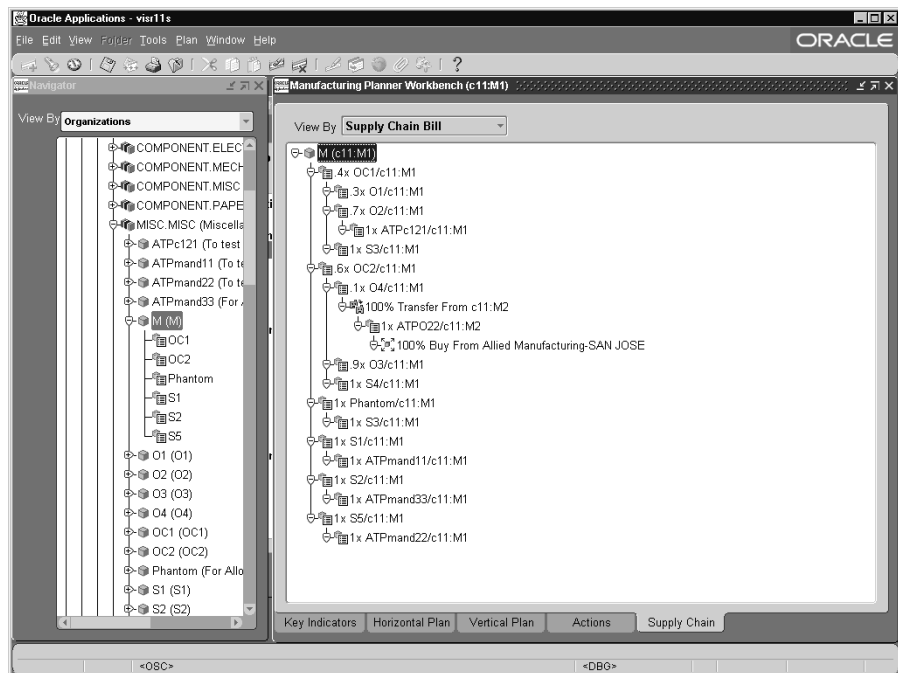
You can view contextual supply chain and where used information for an item graphically.

To view Supply Chain or Where Used information

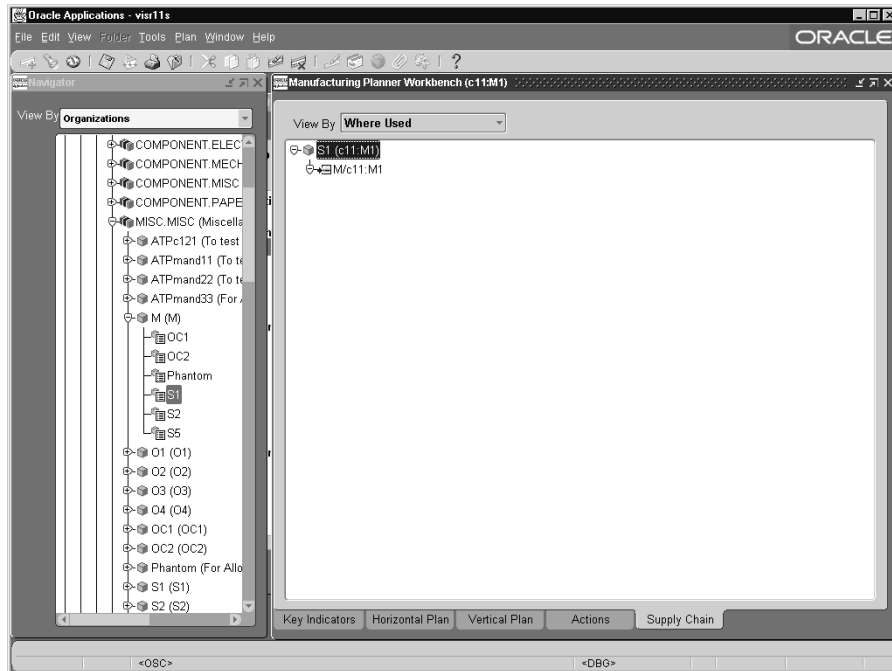
1. Drill down to an end item in the left pane.
2. Select the Supply Chain tab in the right pane.

A graphical representation of the item's supply chain bill appears.

Figure 10–29 An Item’s Supply Chain Bill



Use the drop down list to view where used information for a component of this end item.

Figure 10–30 *Where Used Information for an End Item*

Implementing Planning Recommendations

The Actions Summary view displays both recommendations and exceptions. The recommendations are divided into orders that must be released and future orders. In the Preferences window (Tools > Preferences), you can specify the time frame in days for which to show recommendations.

To implement planning recommendations, choose Tools > Preferences.

Creating and Implementing Firm Planned Orders

Accessing and Executing Planned Orders Directly

You can access a subset of planned orders for a specified time period or other user defined sort criteria using the Supply/Demand window. You can release all planned orders using a Release All feature or you can individually select planned orders for release.

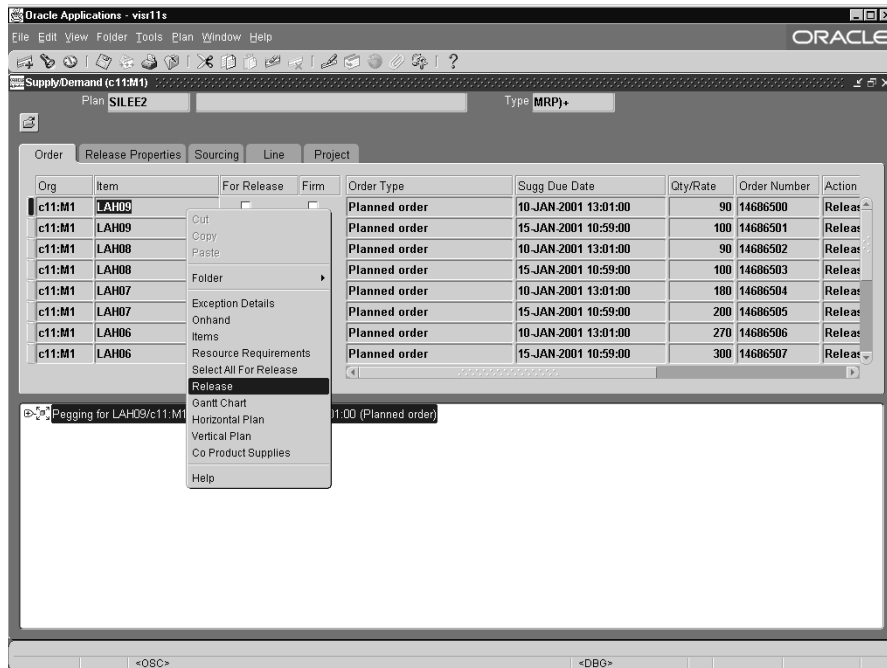
To access and execute planned orders

1. Select Actions tab > Recommendations.
2. Drill down to Purchase Requisitions or Discrete Jobs.
3. To firm a planned order, drill down to detail, then select the firm check box.

Releasing Recommendations

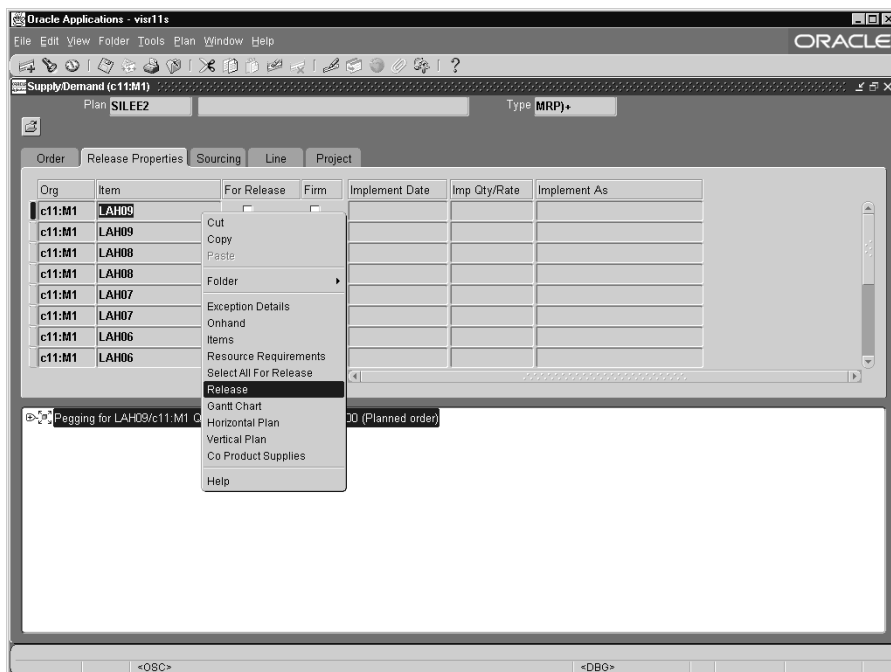
To release recommendations

1. In the right pane, choose Actions tab > Recommendations.
2. Drill down to Purchase Requisitions or Discrete Jobs.
3. Press [right-click] >Release to select the record(s) to release.

Figure 10-31 Releasing Recommendations**To modify release properties (optional)**

1. Drill down to Supply / Demand.
2. Modify release properties on Release Properties tab.
3. Press [right-click] >Release to select Release.

Figure 10–32 Modifying Release Properties



Releasing All Recommendations

To release all recommendations

1. In the right pane, choose Actions tab > Recommendations.
2. Drill down to Purchase Requisitions or Discrete Jobs.
3. Press [right-click] >Select All for Release to release all.
4. Make necessary changes and save.

Reviewing a BOM or Supply Chain Bill

The tree structure makes it easy to go down levels on a bill of material. When viewing by Organization, you can left click 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.

You can use the Where Used functionality in the Items window to find out where the item is used.

To review a BOM

1. In the left pane of the Navigator, choose Items from the drop-down menu.
2. Choose the item for which to view a bill of materials.
3. Drill down in the Navigation tree.

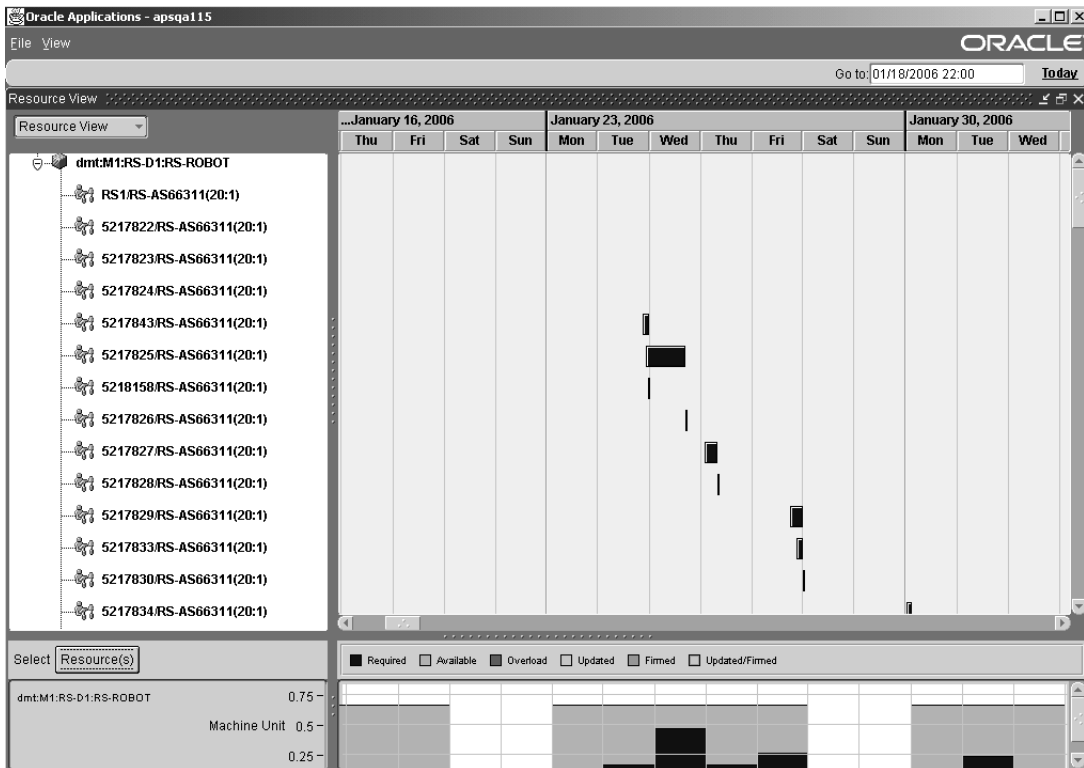
Interactive Scheduling Using the Gantt Chart

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 below:

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 button
Left pane, Planner’s workbench	Select a resource>[right-click]>Gantt Chart

Figure 10–33 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

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.

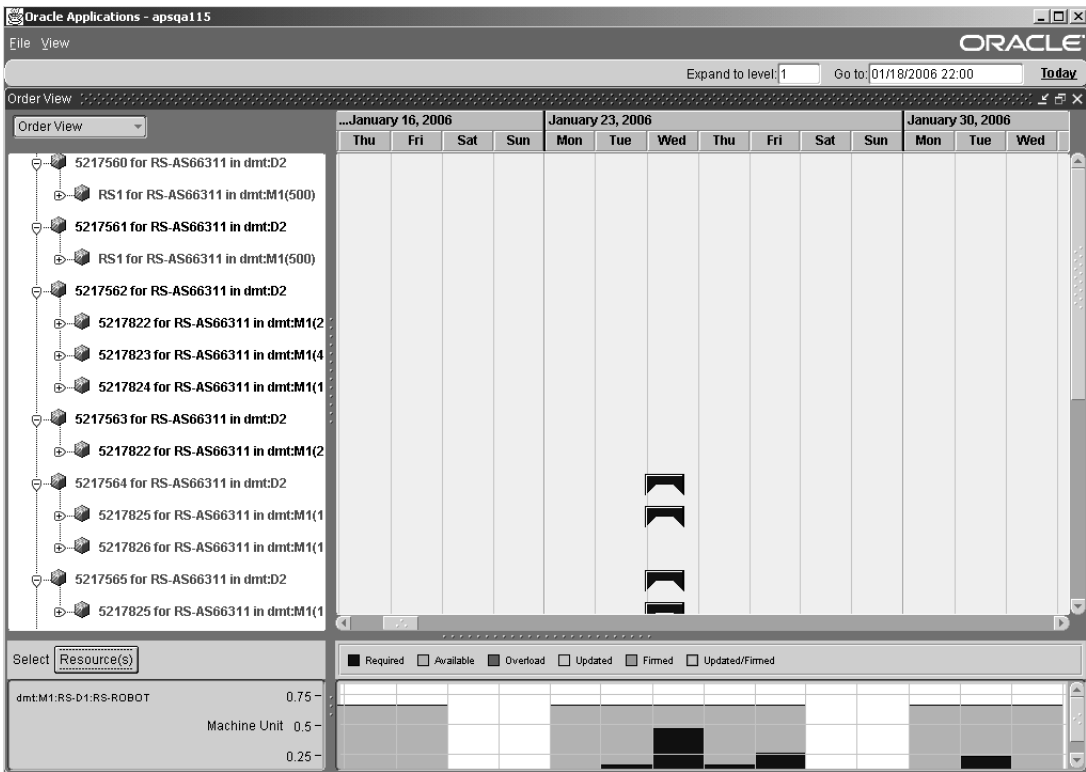
The Order-Centric View

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 10-34 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.

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.

Color Codes

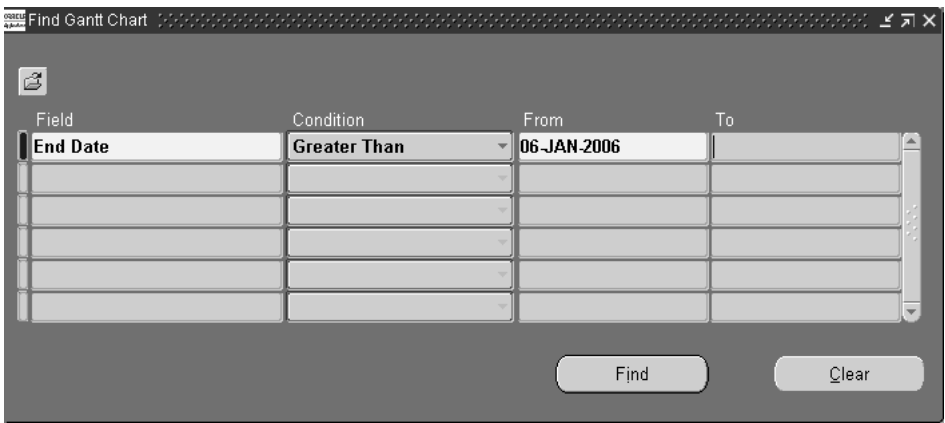
Operations in the Gantt Chart are color-coded according to the following scheme:

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 10–35 Find Window

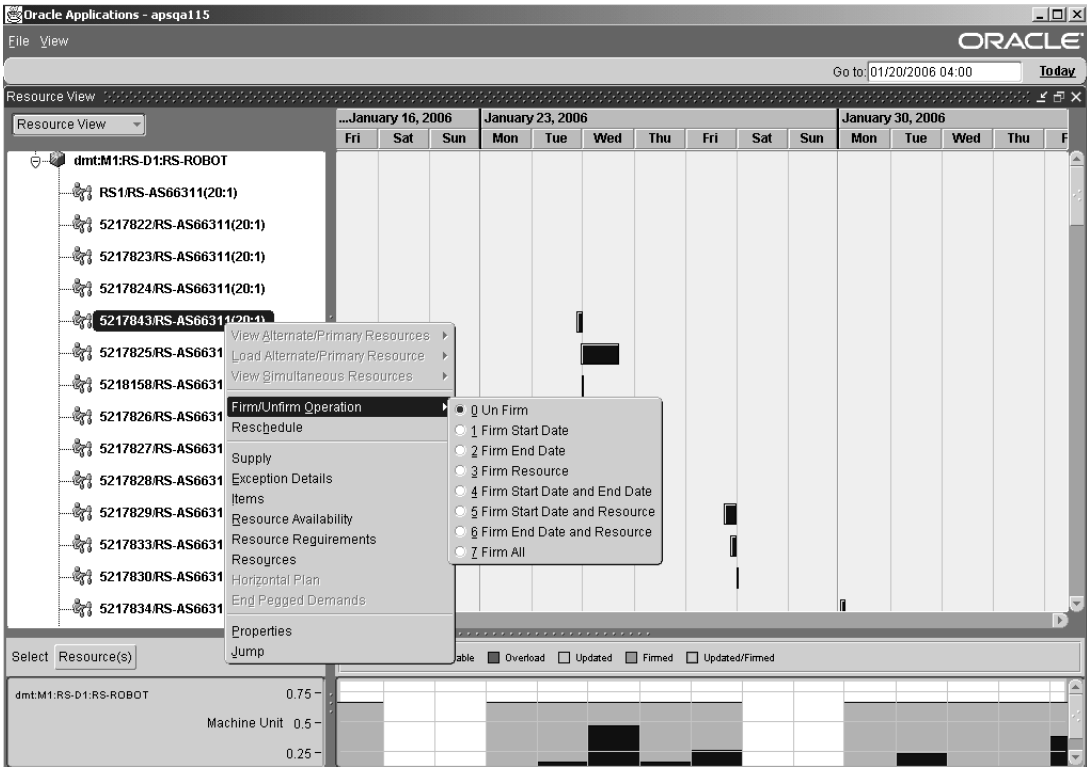


Right-Click Menu Options

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

[Right-Click] Menu Options	Description
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
Resources	Open the Resources window



Viewing Information on an Operation

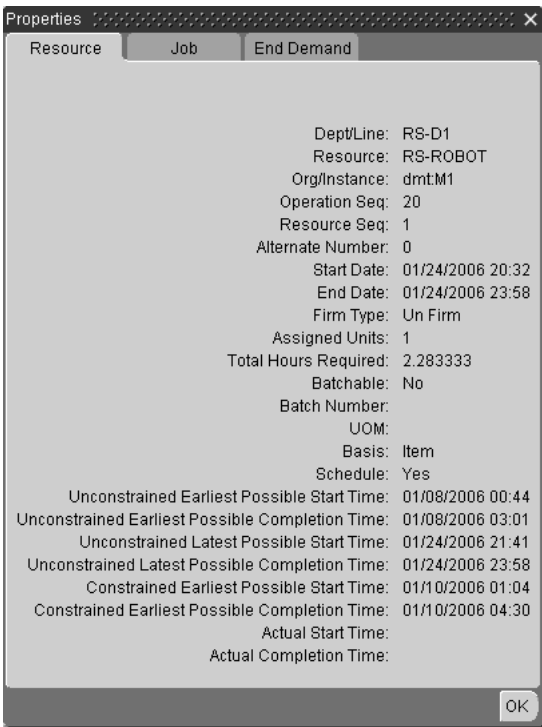
You can view information on orders and operations via the Properties window or resource Tool Tips.

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 10–36 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.

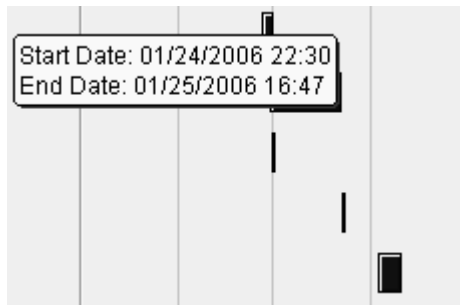
The properties for the Resource tab (only for the activity node) are: department/line, resource name, org/instance, operation sequence, resource sequence, alternate number, firm type, start time, end time, assigned units, and total hours required.

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.

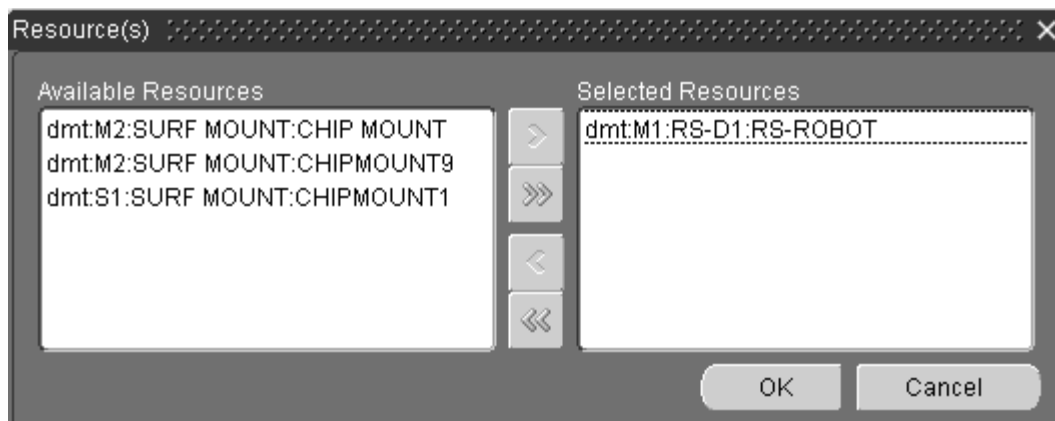
Figure 10-37 The Resource Tool Tip



Specify Resources to Plot in the Lower Pane

To select resources to plot

1. Click Select Resource(s) in the lower pane.

Figure 10–38 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.

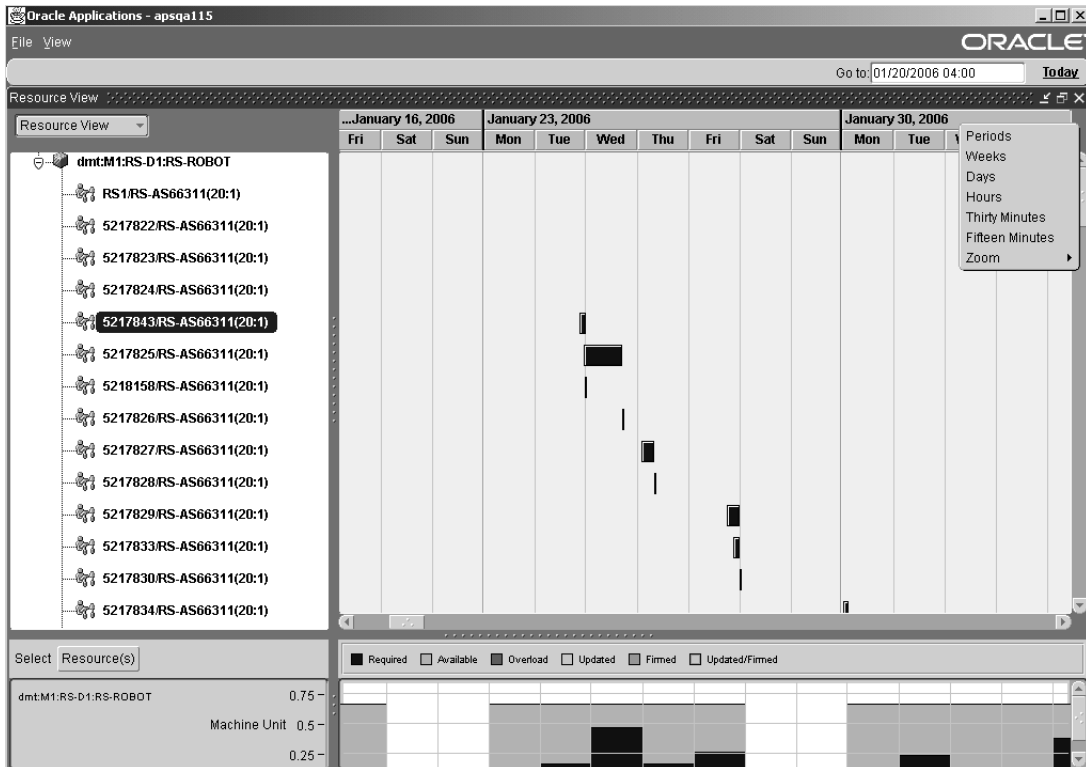
Specifying Time Buckets

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

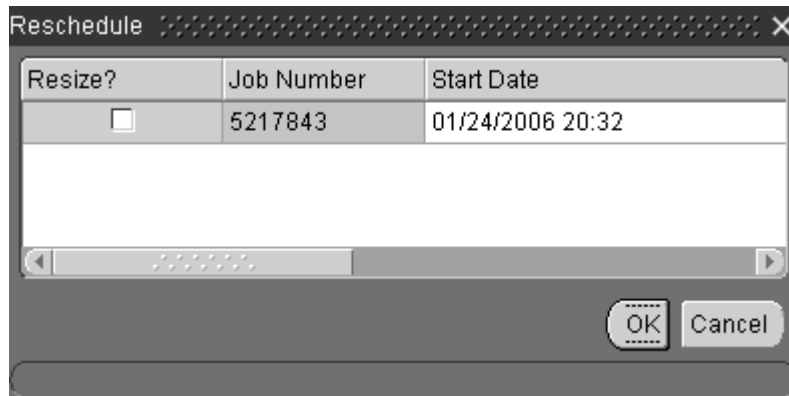
Figure 10–39 Time Buckets

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 10-40 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

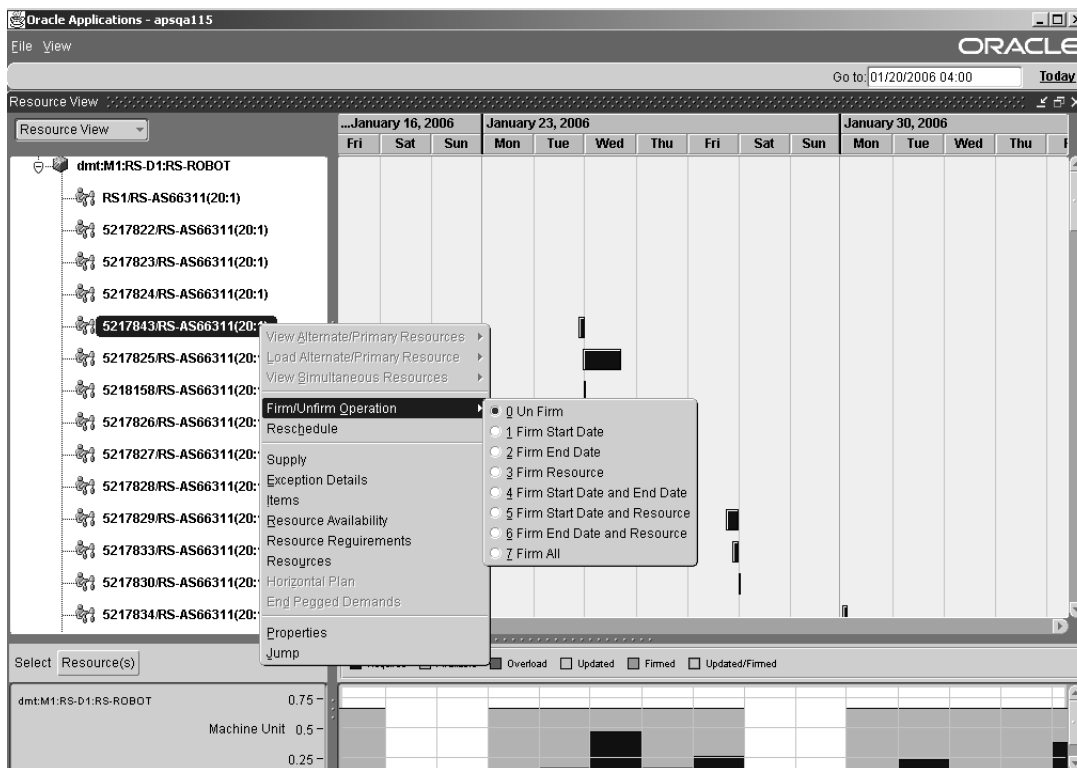
1. Select the activity.
2. Drag the right end of the activity bar to a desired end date. After resizing, the activity can be firmed.

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 10–41 Firm Option



Note: When you move an operation, it is automatically firmed by start date. When you offload an operation, it is automatically firmed by resource.

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

Note: This functionality is available only in the resource-centric view.

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.

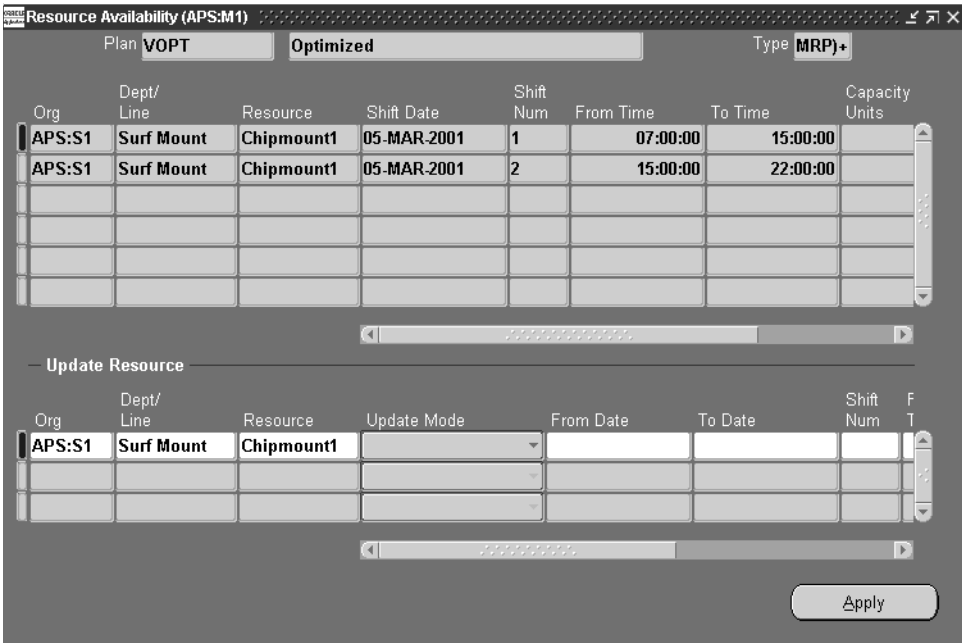
Figure 10–42 The Resource Availability Summary window

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 10–43 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.

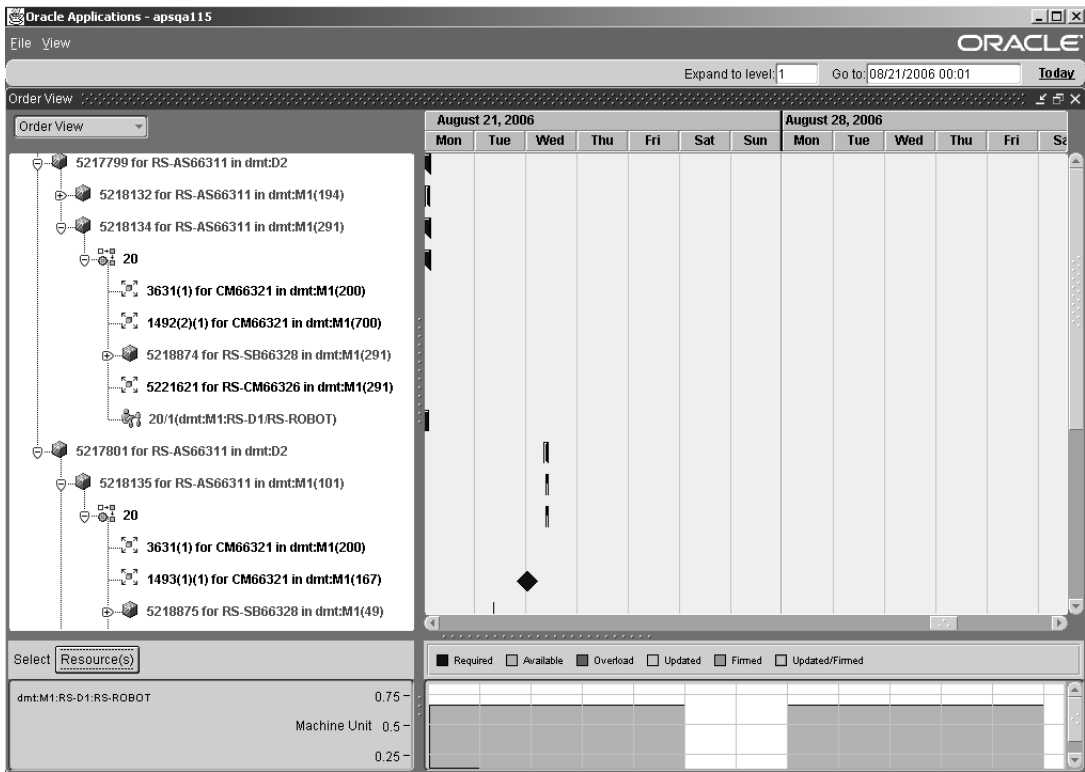
Gantt Chart Pegging

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.

Figure10-44 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.

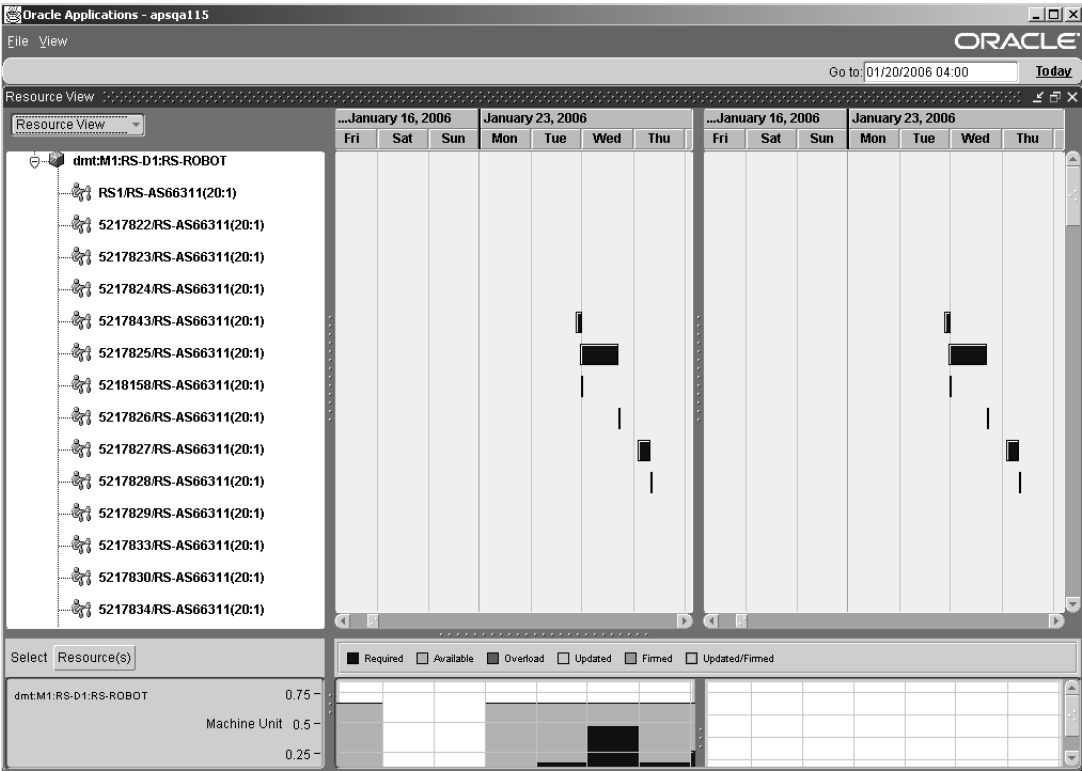
Vertical Split/Merge

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 its 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 10-45 Vertical Split/Merge



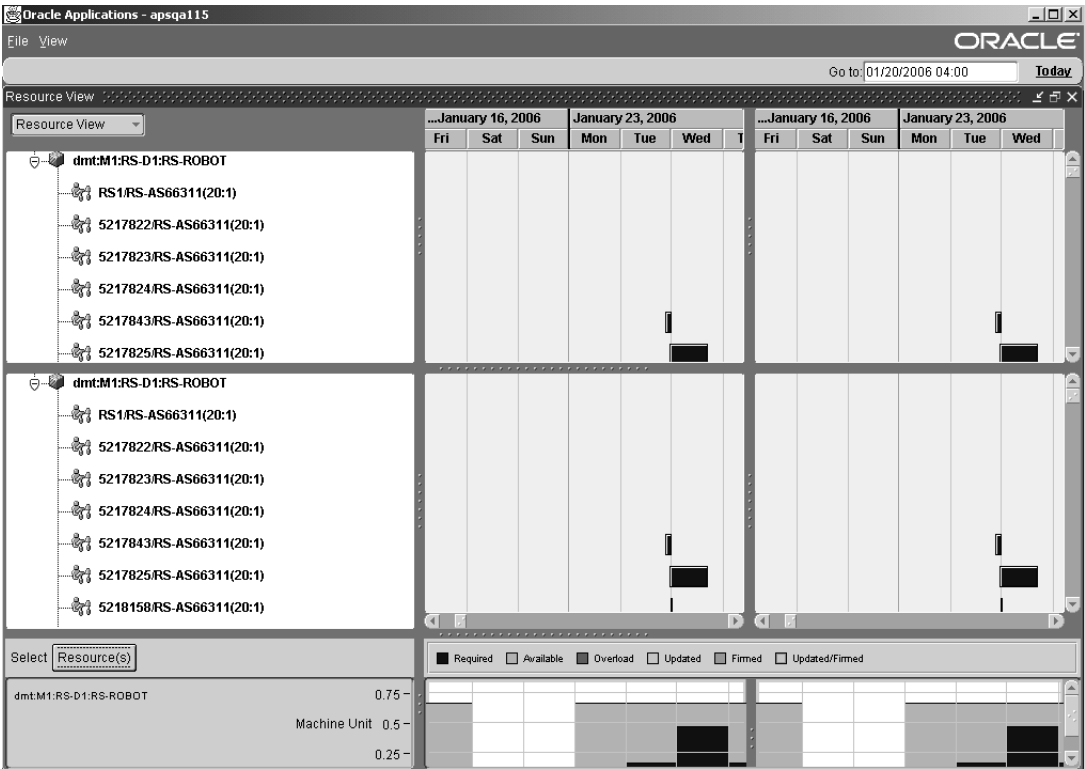
Horizontal Split/Merge

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 10–46 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 10–47 Planning Detail Report

The screenshot shows a window titled "Planning Detail Report". It contains two main sections: "Parameters" and "Reporting Dates".

Parameters Section:

- Plan:
- Org: Condition: From: To:
- Category Set: Condition: From: To:
- Category: Condition: From: To:
- ABC Class: Condition: From: To:
- Item: Condition: From: To:
- Planner: Condition: From: To:
- Buyer: Condition: From: To:
- Supplier: Condition: From: To:
- Planning Group: Condition: From: To:
- Project: Condition: From: To:
- Resource Group: Condition: From: To:
- Dept/Line: Condition: From: To:
- Resource: Condition: From: To:

Reporting Dates Section:

- From Date:
- To Date:

At the bottom right, there are two buttons: "Clear" and "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.

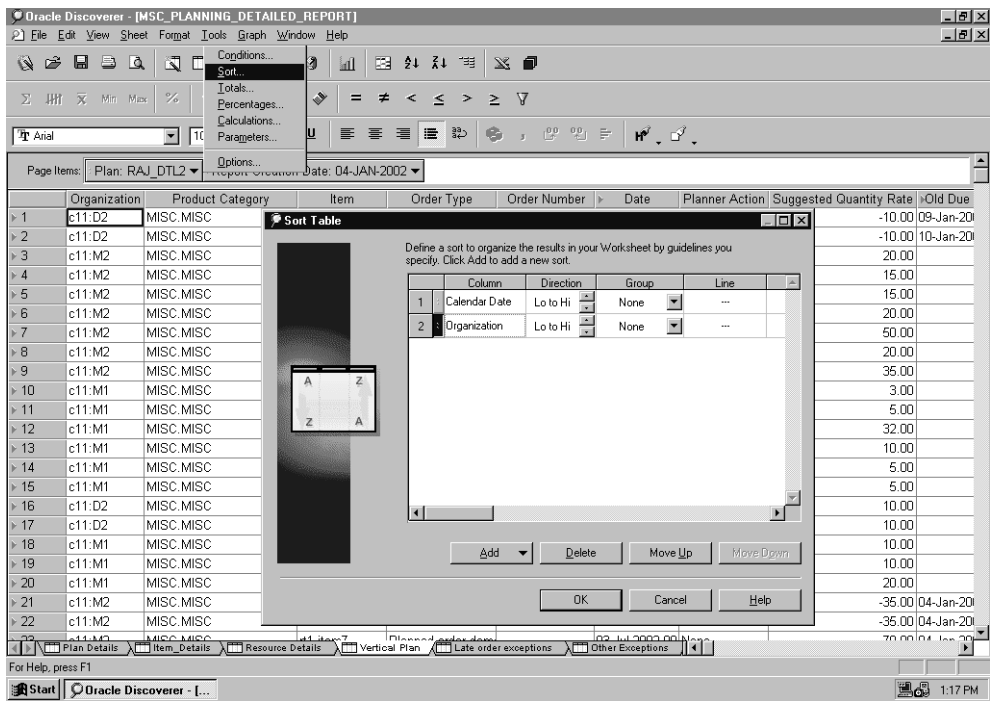
Figure 10-48 Item Details Worksheet

Organization	Product Category	Item	Description	Unit Of Measure	ABC Class	Preprocessing Lead Time, Days	Pr
c11.M1	MISC.MISC	rt1-item4	rt1-item4	Ea		0	
c11.M1	MISC.MISC	rt1-item3	rt1-item3	Ea		0	
c11.M1	MISC.MISC	rt1-item2	rt1-item2	Ea		0	
c11.M1	MISC.MISC	rt1-item1	rt1-item1	Ea		0	
c11.M2	MISC.MISC	rt1-item4	rt1-item4	Ea		0	
c11.M2	MISC.MISC	rt1-item7	rt1-item7	Ea		0	
c11.M2	MISC.MISC	rt1-item6	rt1-item6	Ea		0	
c11.M2	MISC.MISC	rt1-item5	rt1-item5	Ea		0	
c11.D2	MISC.MISC	rt1-item1	rt1-item1	Ea		0	

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 10–49 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 10–50 Vertical Plan worksheet, sorted

Oracle Discoverer - [MSC_PLANNING_DETAILED_REPORT]

File Edit View Sheet Format Tools Graph Window Help

Page Items: Plan: RAJ_DTL2 Report Creation Date: 04-JAN-2002

	Organization	Product Category	Item	Order Type	Order Number	Date	Planner Action	Suggested Quantity Rate	Old Due
> 1	c11.D2	MISC.MISC	rt1-item1	Manual MDS	rt1-mds2	09-Jan-2002 00	None	-10.00	09-Jan-2002
> 2	c11.D2	MISC.MISC	rt1-item1	Manual MDS	rt1-mds2	10-Jan-2002 00	None	-10.00	10-Jan-2002
> 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-2002
> 6	c11.M1	MISC.MISC	rt1-item1	Planned order dem:		30-Oct-2002 00	None	-10.00	03-Jan-2002
> 7	c11.M1	MISC.MISC	rt1-item2	Planned order dem:		30-Oct-2002 00	None	-20.00	04-Jan-2002
> 8	c11.M1	MISC.MISC	rt1-item3	Planned order dem:		30-Oct-2002 00	None	-20.00	04-Jan-2002
> 9	c11.M1	MISC.MISC	rt1-item4	Planned order dem:		30-Oct-2002 00	None	-40.00	04-Jan-2002
> 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-2002
> 22	c11.M2	MISC.MISC	rt1-item6	Planned order dem:		03-Jul-2002 00	None	-35.00	04-Jan-2002
> 23	c11.M2	MISC.MISC	rt1-item7	Planned order dem:		03-Jul-2002 00	None	-70.00	04-Jan-2002

Plan Details Item Details Resource Details Vertical Plan Late order exceptions Other Exceptions

Start Oracle Discoverer - [...

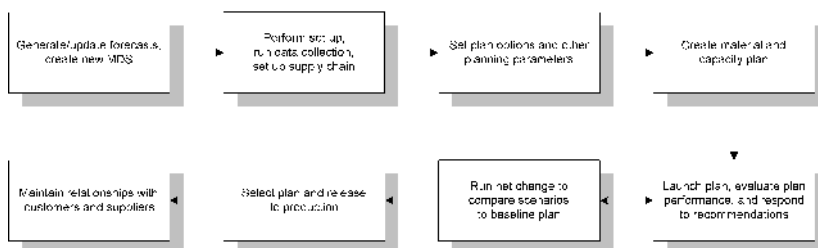
1:13 PM

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 11-16
- [Setting Constraints for Different Plan Types](#) on page 11-19
- [Rules Used in Constrained Plans](#) on page 11-20
- [Engineering Change Orders Use-Up Effectivity](#) on page 11-40

A Day in the Life of a Planner



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*.

Note: Effectivity can be set not only at the date level, but also at the unit number level.

Engineering Changes (ECOs)

Oracle ASCP evaluates the engineering change orders as of their scheduled effective date. You can order material and plan resources that you need for new revisions ahead of time.

Note: The planning process only suggests implementing engineering change orders when the unconstrained start date of the planned order is later than the effective date. Oracle ASCP does not suggest a planned order using an ECO if the planned order needs to start before the effective date of the ECO.

For a pending ECO, you can specify whether to include the engineering changes during the planning process. Set the MRP Active Flag to Yes in the Engineering Change Order window if you want the planning process to consider the engineering changes on the ECO.

Oracle ASCP considers engineering changes when generating component requirements for planned orders and suggested repetitive schedules. The quantity specified by an engineering change order is considered if the scheduled effective date of the ECO is before the suggested start date of the order. For additional information, see [Engineering Change Orders Use-Up Effectivity](#) on page 11-40.

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.

Note: You can manually add a negative requirement to a non-standard job in Oracle Work in Process to manage components that result in disassembly. You could use this option for repairing assembly units. It lets you track the item that is issued to the job as available supply on completion of the repair job.

Product Families

Product families improve plan performance, letting you plan further down the plan horizon. You can do the following at the product family level:

- specify demands
- run planning and scheduling
- create supplies

For more information, see *Oracle Master Scheduling MRP and Oracle Supply Chain Planning User's Guide*.

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.

Note: The planning process ignores order modifiers for items that have a phantom supply type.

Note: Order modifiers for supplied items may be defined by their suppliers.

For additional information, please refer to Items, General Planning Attribute Group and MPS/MRP Planning Attribute Group in the *Oracle Inventory User's Guide*.

Fixed 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.

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.

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** **Sentinal Upgrade Board Assembly** UOM: **Ea**

Alternate: Date: **06-JAN-2006 00:02:31**

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

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

Item Seq	Operation Seq	Component	Planning %	Yield	Enforce Integer Req.	Include In Cost Rollup	Type	Status
10	1	CM33132	100	1	Up	☒	Purchased item	Active
20	1	CM33243	100	1	Down	☒	Purchased item	Active
						☐		
						☐		
						☐		

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.

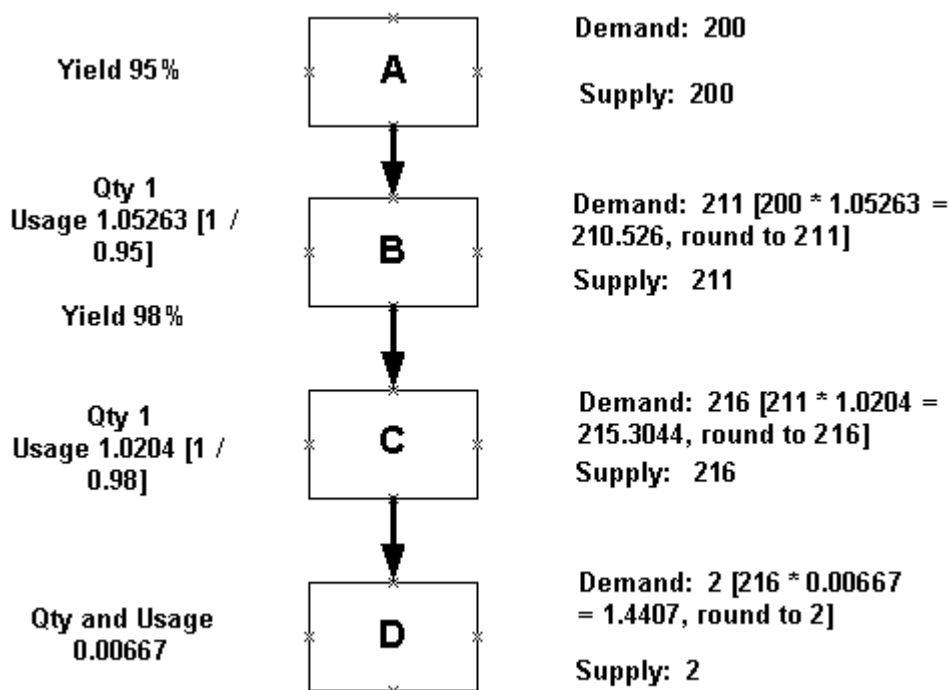
In the following situations, the planning engine honors your instruction:

- 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 the *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 the *Oracle Bill of Materials User’s Guide*.

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 the *Oracle Bill of Materials User’s Guide*.

The data collection process calculates resource availability as follows:

- Resource availability (shift) = Capacity units (shift) * Hours available (shift)
- Resource availability (resource) = Sum of resource availability for all shifts

For example, resource P has 192 available hours per day:

- Shift 1: 96 hours per day (12 Capacity units (shift) * 8 Hours available (shift))
- Shift 2: 80 hours per day (10 Capacity units (shift) * 8 Hours available (shift))
- Shift 3: 16 hours per day (2 Capacity units (shift) * 8 Hours available (shift))

The planning engine uses the resource units for the resource if the shift resource units is blank or 0. It does not use instance-specific capacity information that you specify for Oracle Manufacturing Scheduling; it uses only the total available resource units. If you neither specify a resource as available 24 hours nor assign shifts, the collection process does not calculate available capacity and the planning engine schedules the resource as available 24 hours.

View the resource unit information both on the collections workbench and on the planner workbench.

You can also record capacity changes to specific shifts with simulation sets—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 the *Oracle Bill of Materials User’s Guide*.

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.

Demands

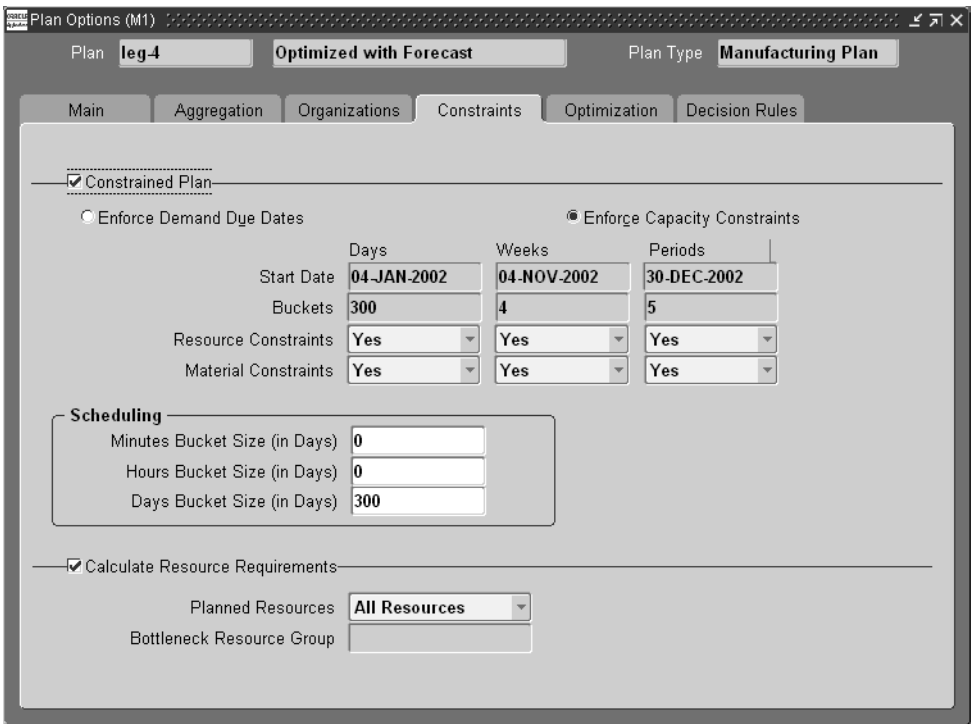
You can specify priority rules by ordering demands. Scheduling is performed on a demand by demand basis.

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 11–1 The Constraints Tab in the Plan Options window



- 3. Using the drop-down menus, set Resource or Material Constraints to Yes or No based on your business requirements.

Note: To generate exception messages related to material resource capacity, you must select the Constrained Plan checkbox.

For more information on setting constraints prior to launching plans, see *Defining Plans*.

Note: You cannot update the Start Date and End Date. The End Date is calculated based on your time bucket settings.

Setting Hard and Soft Constraints

Oracle ASCP lets you prioritize how you enforce Capacity Constraints or Demand Due Dates. Whichever constraint takes precedence over the other is the hard constraint; the other is the soft constraint. If you choose to enforce Demand Due Dates (setting Demand Due Dates as a hard constraint), then resources are used and possibly overloaded to satisfy demand due dates. In this case, Oracle ASCP returns overloaded exception messages.

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

Note: You must choose one and only one type of constraint.

To set hard and soft constraints

1. From the Navigator, select Supply Chain Plan > Options.
The Plan options window appears.
2. Select the Constraints tab.

Figure 11–2 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

Note: When Demand Priorities are not specified, the default priorities of the various demand types are (in order): sales order, forecast, and safety stock.

- Alternate BOMs will not be considered
- Alternate routings will not be considered
- Substitute items will not be considered

If MSO: Enable Decision Rules is set to Yes, then when running a constrained but not optimized plan, the following rules are used:

- Demand Priorities are respected

Note: When Demand Priorities are not specified, the default priorities of the various demand types are (in order): sales order, forecast, and safety stock.

- Alternate BOMs are considered
- Alternate routings are considered
- Substitute items are considered

For additional information, please refer to [User-Defined Alternate Decision Rules](#) 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.
- 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.

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.

$$\text{Elongation factor} = (60 - 15) / 60 = 0.75$$

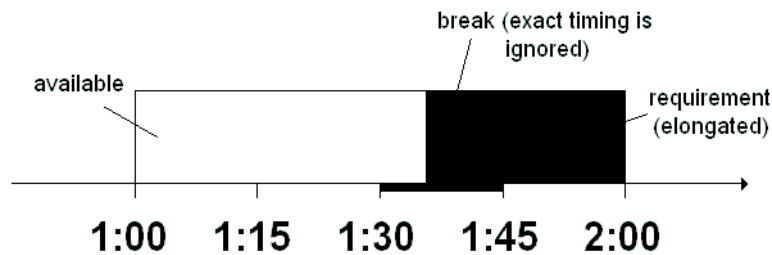
If there is a resource requirement of 18 minutes, due at 2:00, by using the elongation factor, the requirement duration is calculated to be:

$$\text{Requirement duration} = 18 / 0.75 = 24 \text{ minutes}$$

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 11–3 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).

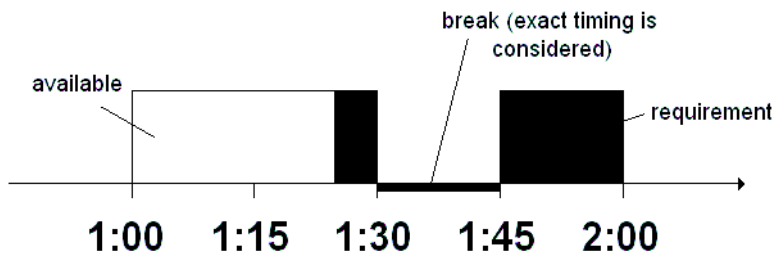
Once again there is a resource requirement of 18 minutes, due at 2:00.

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 11–4 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.

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 11–5 System Profile Values

Profile	Site	Application	Responsibility	User
MSO: Allow Partial Demand Co	All End Demands			

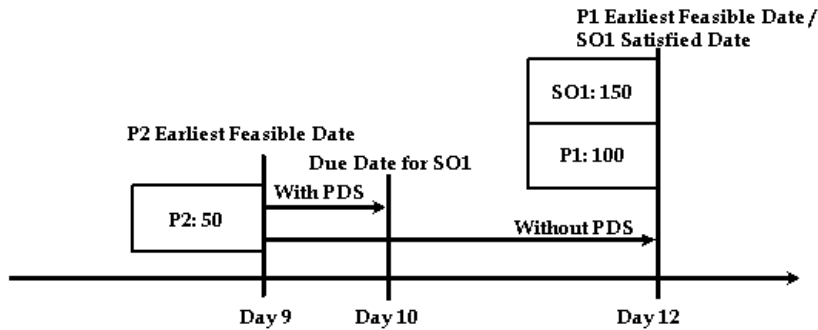
Set the MSO: Allow Partial Demand Completion profile option to any of the following values:

- 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 11–6 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 11–7 *Exception Details form*

[illegible]

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.**

Planning Time Fence

This feature reduces short-term fluctuations in the plan output. The planning time fence (PTF) helps Oracle ASCP generate a stable supply chain plan for manufacturing shops and helps companies to honor contractual commitments with external suppliers. PTF is a time parameter associated with an organization-item. The functionality associated with PTF can be summarized as follows:

- Oracle ASCP does not create any new planned orders with start dates within PTF.
- Oracle ASCP does not Reschedule In any orders into the PTF.
- Orders within PTF are Rescheduled Out based on a profile option setting.
- Oracle ASCP does not suggest any changes for firm orders and orders pegged to firm orders.
- Excess and Shortage exceptions are generated within the time fence.
- If you select the Enforce Demand Due Dates option, Oracle ASCP can violate the PTF.

When determining whether a supply is inside the PTF, ASCP uses the criteria in the following table:

For this type of order	a supply is inside the PTF if...
Make planned orders	the start date of the first resource sequence within the first operation sequence is less than or equal to the PTF
Buy planned orders	the dock date is less than or equal to the PTF
Transfer planned orders	the dock date is less than or equal to the PTF
Purchase planned orders	the dock date is less than or equal to the PTF
External requisitions	the dock date is less than or equal to the PTF
Internal requisitions	the start date is less than or equal to the PTF
Flow schedules	the start date less than or equal to the PTF

For discrete and lot-based jobs, supply is considered at the operation level. Any operation sequence with a start date less than or equal to the PTF is considered to be inside the PTF; any operations sequence with a start date greater than the PTF is considered to be outside the PTF.

To enable PTF functionality

1. Sign in using the System Administrator responsibility.
2. From the Navigator, select Profile > System.
The Find System Profile Values window appears.
3. Enter the name of the profile you want to find and select the Find button.

The System Profile Values window appears with the profile selected.

Figure 11–8 System Profile Values

Profile	Site	Application	Responsibility	User
MRP:Create Time fence	Yes			

4. Use the following table to establish settings for the following profile options in the System Profile Values form:

Profile	Setting
MRP: Create Time Fence	Set this option to Yes if you need firm purchase orders or work orders to create a natural time fence. If you set this option to No, the planning engine will not create a time fence at a firm purchase order or work order. The default value for this profile option is Yes.
MRP: Firm Planned Order Time Fence	Set this option to Yes if you need firm planned orders to create a natural time fence. If you set this option to No, the planning engine will not create a time fence at a firm planned order. The default value for this profile option is Yes.
MRP: Firm Requisitions Within Time Fence	Set this option to Yes if you do not want the requisitions to be rescheduled. The default value for this profile option is No.
MSO: Firm Operations/Orders Within Time Fence	If you set this option to Yes, all operations of an order with start dates within the PTF will be treated as firm. Any operation with a start date outside of the PTF will not be considered as firm and can be moved. If you set this option to No, operations with start dates within the PTF can be rescheduled out (not rescheduled in). The default value for this profile option is No.

5. Switch responsibility to Manufacturing and Distribution Manager.

6. From the Navigator, select Inventory > Items > Master Items.
The Master Item window appears.
7. Select the MPS/MRP Planning tab. Select the Planning Time Fence.

Figure 11–9 The Master Item window

Master Item (V1)

Organization: V1 Vision Operations

Item: AS72111

Description: Envoy Deluxe Laptop

Display Attributes: Master (selected), Qrg, All

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

Planning Method: MPS planning

Forecast Control: Consume and derive

Pegging: End Assembly / Soft Pegging

☒ Round Order Quantities

☐ Planned Inventory Point

☐ Repetitive Planning

Overrun: %

Acceptable Rate +: 0

Acceptable Rate -:

Exception Set:

Shrinkage Rate:

Acceptable Early Days:

MPS Planning

☐ Calculate ATP

Reduce MPS:

Planning Time Fence: User-Defined (selected from dropdown: Cumulative Mfg. Lead Time, Cumulative Total Lead Time, Total Lead Time, User-Defined)

Demand Time Fence:

Release Time Fence:

Days: 1

8. Set the PTF item attribute.
You can specify any number of days as the PTF. You can also select manufacturing lead time or total lead time as the PTF.
9. Switch responsibility to Advanced Supply Chain Planner.
10. From the Navigator, select Supply Chain Plan > Options.
11. Select your plan.
The Plan Options window appears.

Figure 11–10 Plan Options window

Plan Options (M1)

Plan **leg-4** Optimized with Forecast Plan Type **Manufacturing Plan**

Main Aggregation Organizations Constraints Optimization Decision Rules

Planned Items **Demand schedule ...** Assignment Set **LEG:Large Plan**

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

End Item Substitution Set Overwrite **All** Demand Class

☐ Demand Time Fence Control ☒ Append Planned Orders

☐ Planning Time Fence Control ☐ Move Jobs to PIP

☒ Lgt for Lot

Default Forecast Consumption Days

Backward Days Forward Days

☒ Enable Pegging

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

Hard Pegging Level **None**

12. Select the Planning Time Fence Control checkbox to enable the PTF functionality with respect to the item-specified time fence at the plan level (see scenarios at the end of this section).

The following scenarios show how firmed supplies create a natural time fence:

Scenario 1:

MRP: Create Time Fence set to Yes

Planning Time Fence Control is unchecked

Firmed purchase orders and work orders create a natural time fence. The item time fence is ignored.

Scenario 2:

MRP: Create Time Fence set to Yes

Planning Time Fence Control is checked

Firmed purchase orders and work orders create a natural time fence. The time fence is set to the maximum of natural time fence and item time fence.

Scenario 3:

MRP: Create Time Fence set to No

Planning Time Fence Control is checked

Firmed purchase orders and work orders do not create a natural time fence. The time fence is set to the specified item time fence.

Scenario 4:

MRP: Firm Planned Order Time Fence set to Yes

Planning Time Fence Control is unchecked

Firmed planned orders create a natural time fence. The item time fence is ignored.

Scenario 5:

MRP: Firm Planned Order Time Fence set to Yes

Planning Time Fence Control is checked

Firmed planned orders create a natural time fence. The time fence is set to the maximum of natural time fence and item time fence.

Scenario 6:

MRP: Firm Planned Order Time Fence set to No

Planning Time Fence Control is checked

Firmed planned orders do not create a natural time fence. The time fence is set to the specified item time fence.

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.

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

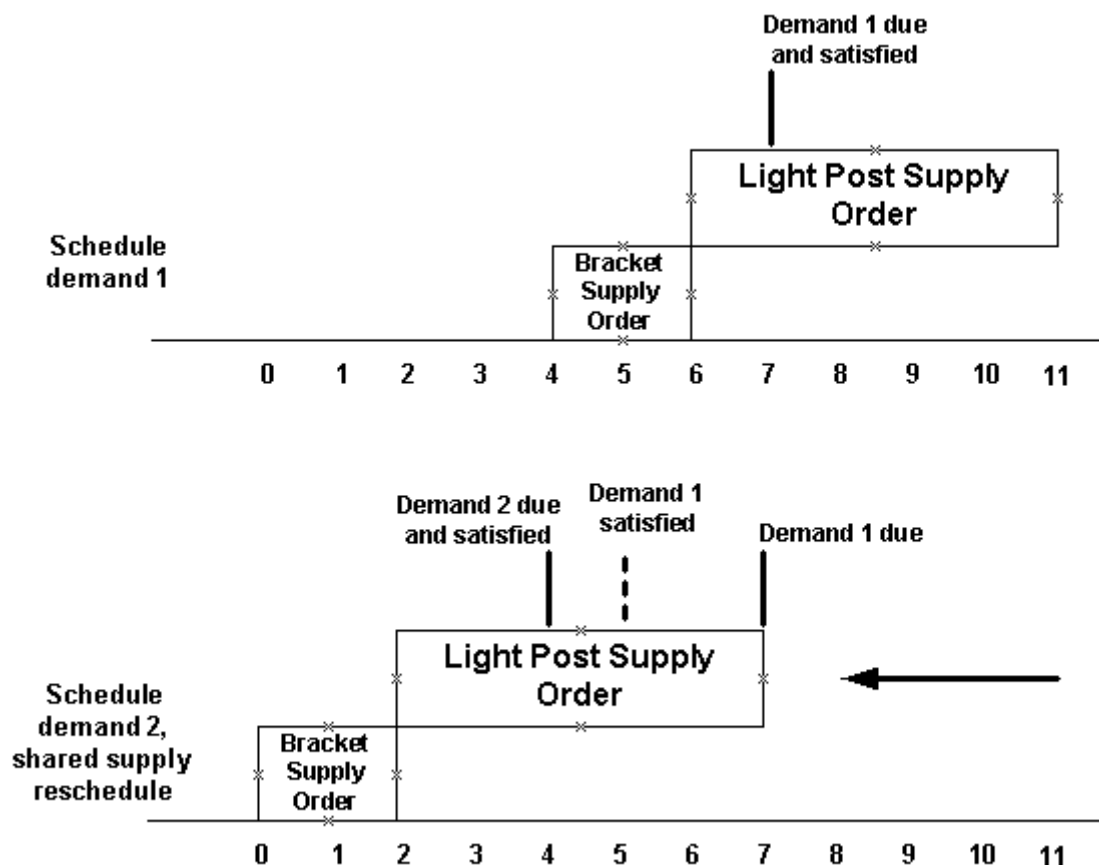
For example, the last process to produce light posts is to have a welder attach a purchased bracket to a light post subassembly. The welder can attach 100 brackets a day.

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.

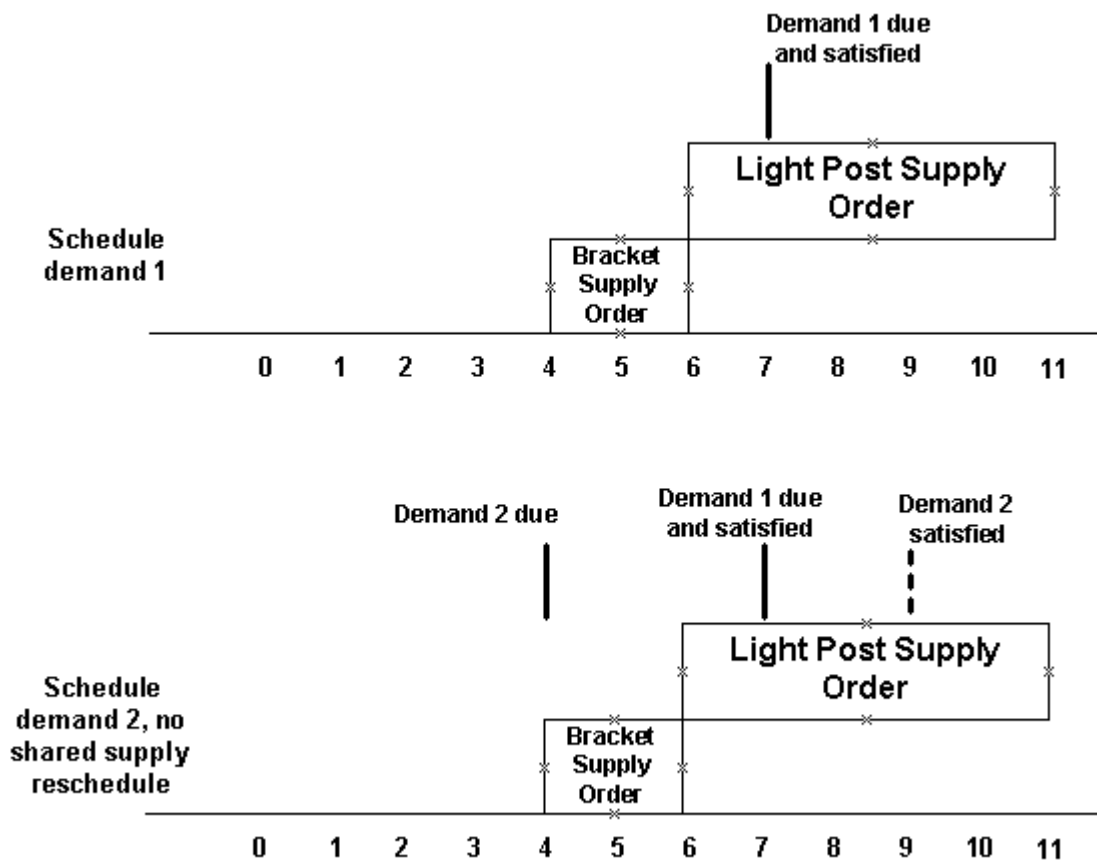
For example, the last process to produce light posts is to have a welder attach a purchased bracket to a light post subassembly. The welder can attach 100 brackets a day.

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.

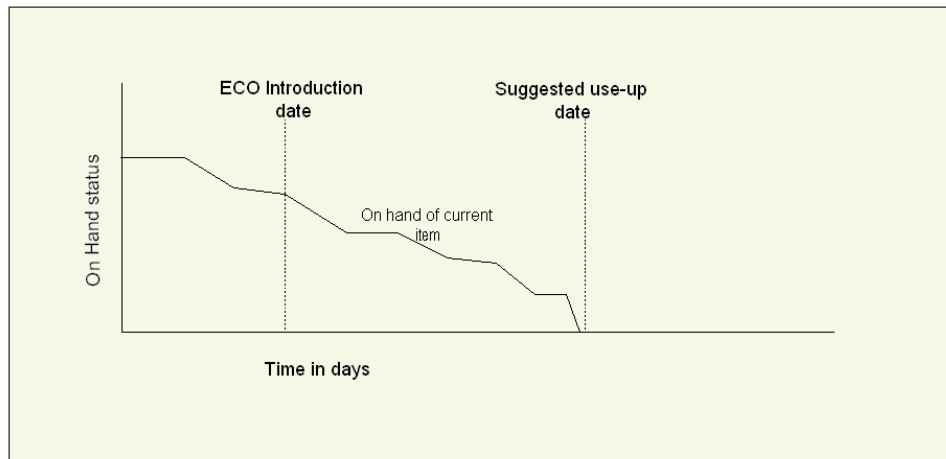
The higher the integer, the more impact there is on plan performance. The value -1 has the most impact.

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 11–11 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 11–12 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.

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 12-29
- [Oracle Process Manufacturing](#) on page 12-32
- [Oracle Shop Floor Management](#) on page 12-43

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.

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.

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 10.7 and 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.

Phantom Routings are included for all phantom items in an organization based on the settings of the Organization level parameter use phantom routings in Oracle Bills of Material. An additional parameter inherit phantom operation sequence set at the inventory organization level in Oracle Bills of Material determines whether components of phantom items will retain their operation sequence or inherit them from the parent

Note: The combination of use phantom routings = Y and inherit phantom operation sequence = N is not supported.

The following figure and table summarize the different behavior of a phantom item and its components associated with settings of the two parameters, according to the example that follows.

Figure 12–1 Bill of Material Structure for Assembly A

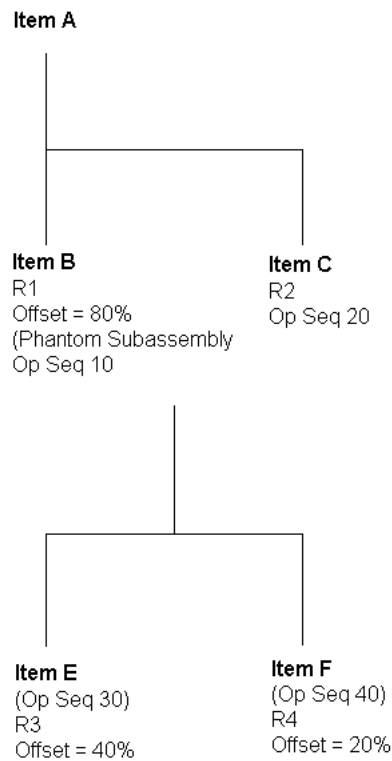


Table 12–1

Release	Use Phantom Routing	Inherit Phantom Op Seq	Behavior
10.7	Yes	Yes	Not supported
10.7	Yes	No	Not supported
10.7	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

Release	Use Phantom Routing	Inherit Phantom Op Seq	Behavior
10.7	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.
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.
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	Resource requirements generated for R1, R2, R3 and R4. Due dates of Items E and F are calculated based on offset percentage of Op Seq 10.
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.

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](#).

Example

Note: The following example assumes that you are either using 10.7 or 11.0 Oracle Applications.

- Assumption: Primary resource has a priority of 0
- Principal Flag: 1 - Yes (primary resource); 2 - No (alternate resource)

Note: When multiple resources are required for the same operation, one and only one must be marked as primary resource.

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)
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)

Table 12–3 Scenario 2:

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)
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.

Note: The project control level for all project manufacturing organizations must be the same for all organizations in the supply chain project planning scenario.

Group Netting

The netting logic can include a group of projects. Excess supply in one project can be reserved against demand for another project belonging to the same planning group. For this, set the reservation level to planning group. If reservation level is set to project then it is not group netting.

Borrow Payback

Two order types have been created in Project Planning to distinguish demand and supply resulting from a borrow/payback transaction in Project Manufacturing:

- Payback Demand

- Payback Supply

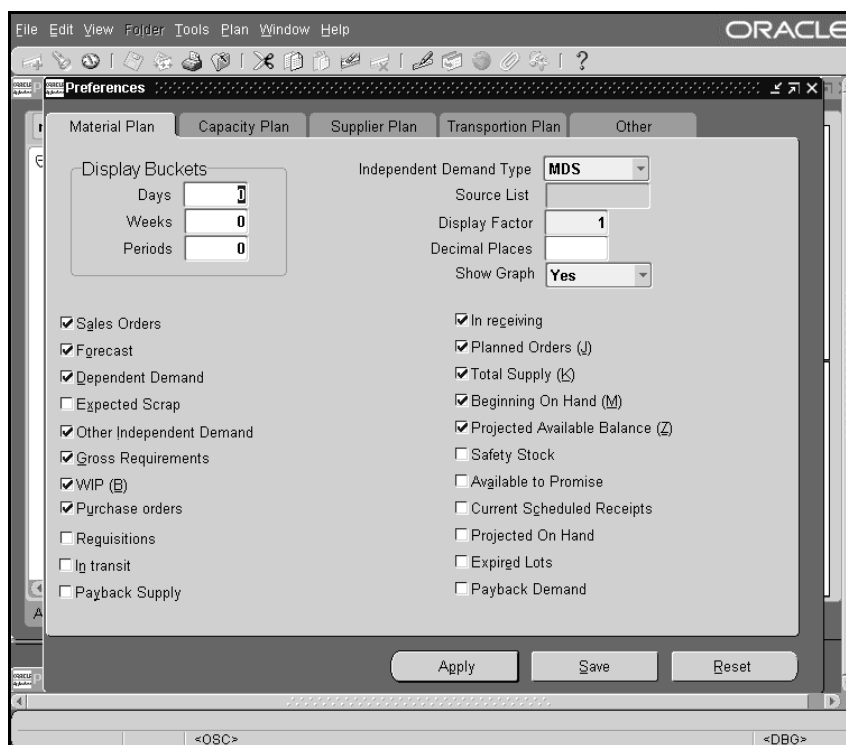
You can search for borrow/payback demand/supply using these order types. You can also see these order types on the Planner Workbench.

Planner Workbench

You can view payback demand created in the borrowing project and payback supply created in the lending project for an Item in the horizontal material plan and the Supply/Demand window in the Planner Workbench.

A scheduled payback transaction is considered as a new type of supply called payback supply for the lending project and a new type of demand called payback demand for the borrowing project. The scheduled payback date is used as the supply and demand date.

In the Preferences window, you can choose to display the payback demand and payback supply for the horizontal material plan.

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	☐	☐	SEIGRP	SEIBAN1	APS01
11i:P1	P943	☐	☐		Asean Pumps	APS01
11i:P1	P943	☐	☐			APS05
11i:P1	P943	☐	☐	SEIGRP	SEIBAN2	APS04
11i:P1	P943	☐	☐		Asean Pumps	APS01
11i:P1	P943	☐	☐		Pacific Pumps	APS04
11i:P1	P943	☐	☐	SEIGRP	SEIBAN1	APS01
11i:P1	P943	☐	☐	SEIGRP	SEIBAN1	APS01
11i:P1	P943	☐	☐		Pacific Pumps	APS04
11i:P1	P943	☐	☐			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

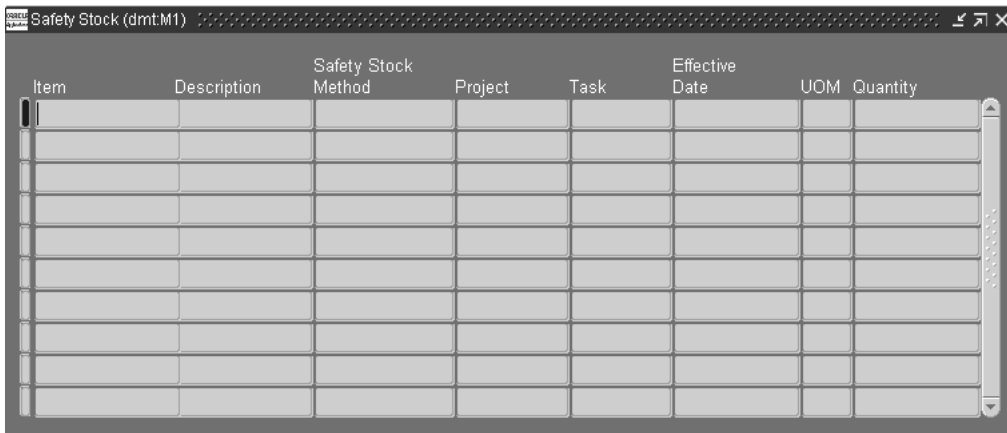
For safety stock information, see [Constraint Types](#) on page 11-3.

You can see safety stock information with project/task references in the:

- Planner Workbench, Horizontal Plan window, Projects view; see [Horizontal Plan and Vertical Plan Tabs](#) on page 10-24: 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](#) on page 10-41: 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.

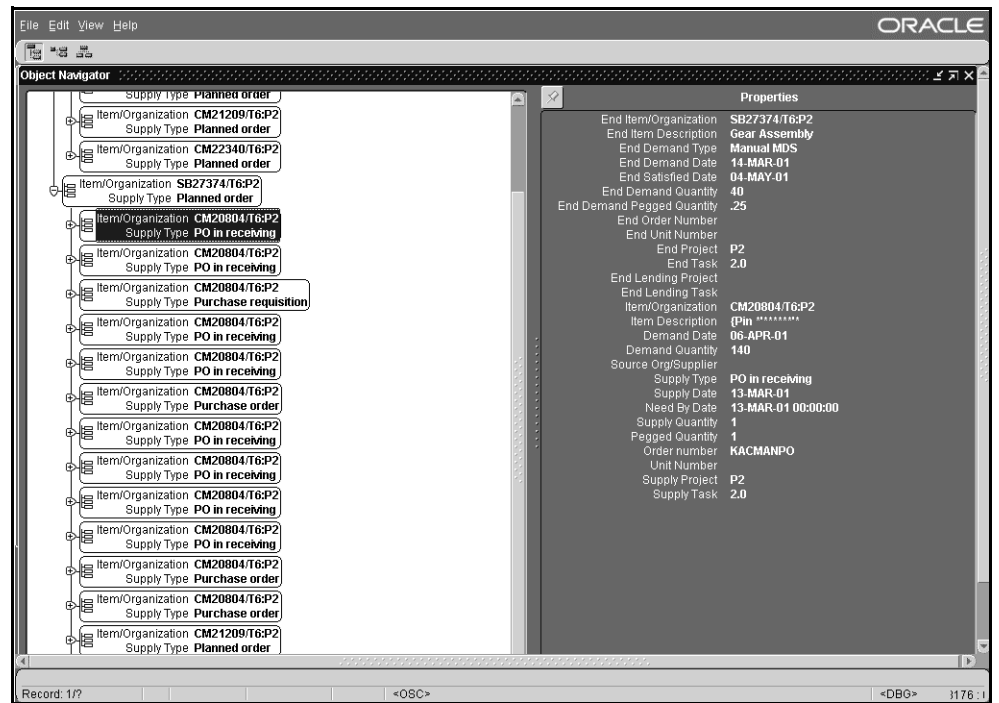
Oracle ASCP Setup

- 1. Define Plan Options by choosing Tools > Pegging.
- 2. Complete the following options in the Pegging window.

Table 12–13

Option	Description
Reservation Level	This option determines the method of pre-allocation of project supply to project demand. You can choose to reserve based on: ■ 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. ■ 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. ■ 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. ■ None This is a nonproject plan.
Hard pegging level	This option determines if the project or project-task references will be added to planned orders. This is applicable to hard pegged items only for which the pegging attribute must be hard pegging or End Assembly/ Hard Pegging. For soft pegged items, no project references are associated. These work independent of the reservation level options.

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.

Note: Order modifiers are applied before project netting calculations.

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.

Note: You need to run the Push Plan Information concurrent program to see planned orders as valid inputs for flow schedules.

Oracle ASCP includes flow schedules to be considered as supplies.

The processes to define, implement, and maintain Oracle Flow Manufacturing are:

- Demand Management
- Line Design & Balancing
- Line Scheduling & Sequencing
- Production Execution
- Kanban Planning and Execution

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.

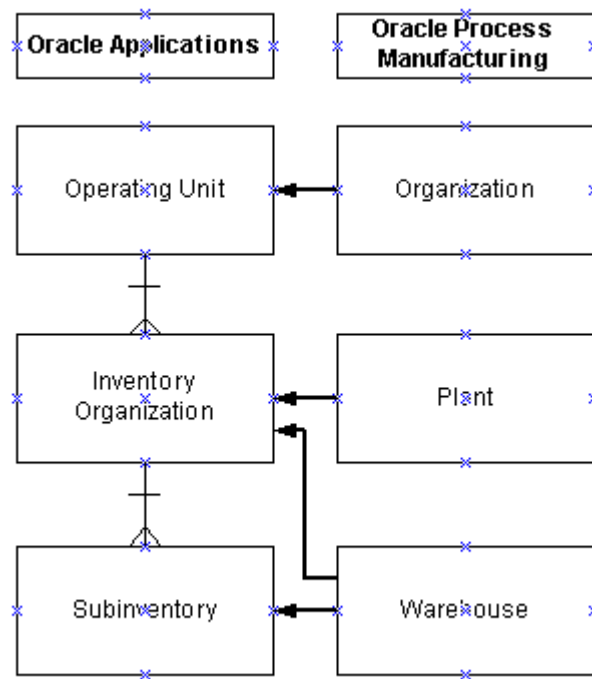
The data used to plan materials and capacity exists in the OPM schema. This data is used by the Oracle ASCP Planning Server. Oracle ASCP uses Inventory, Production, Formula, Planning, and Sales data from OPM and purchasing data from Oracle Applications. The user can run multiple plans and manage materials 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 additional details, see Organizations Field Reference in the *OPM 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 additional details, see Organizations Field Reference in the *OPM 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 additional details see Setting Up Plant Warehouse Relationships in the *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 additional details see Setting Up Plant Warehouse Relationships in the *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 additional details, see Organizations Field Reference in the *OPM System Administration User's Guide*. The navigation path to the screen in the OPM application is OPM > System Administration > HR Organizations)
- 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 additional details, please refer to Setting Up Plant Warehouse Relationships in the *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide*.
2. OPM > System Administration > Organizations. For additional details, please refer to Organizations in the *OPM 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 additional details, please refer to Defining an MPS Schedule in the *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 additional details, please refer to Forecasting in the *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 additional details, please refer to Forecast Schedule Association Field References in the *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide*.

Forecast information created and linked to an MPS schedule in OPM is used by Oracle ASCP to create the master demand schedule. The forecasts used by the MPS schedule are specified on the Forecast Schedule Association form. A forecast can contain any number of items in various warehouses, but the schedule only uses those items that are valid to consume for a warehouse according to the Plant Warehouses form.

Note: Because one forecast can be used in multiple MPS schedules, be careful not to duplicate the demand for an item in a warehouse.

Integrating Production Orders With Oracle ASCP

Oracle ASCP views pending OPM production orders as a source of supply and demand. Oracle ASCP can only view pending OPM production orders (firm planned orders, pending batches, and work-in-process batches) for those items that have a item/warehouse/plant relationship defined on the Plant Warehouses form.

You must turn on Production Operations Control (POC) for a plant and you must define a resource warehouse for a plant if you want to create capacity plans for the plant. Do this for the desired Organization on the OPM Organizations form. (For additional details, see Organizations in the *OPM 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 Recommendations on page 10-64 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.

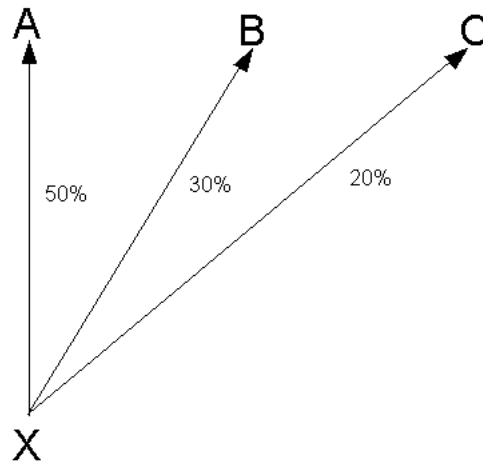
Note: Lot-based Jobs are referred to as Discrete Jobs in the Planner's Work Bench

Coproducts

This feature is available with the integration of APS and Oracle Shop Floor Management (OSFM).

In some production environments, an item may turn into one or more parent items depending on the process control, test results, raw material quality, etc. Such a relationship is defined by defining coproducts. OSFM allows you to specify multiple possibilities of assemblies (parents) that may be derived from a single part.

You can set up coproducts using Oracle OSFM. To explain this with an example, consider the diagram below. A, B, and C are coproducts produced from raw material X. The figures in % are the expected mix of production of coproducts.



Coproducts

Coproducts 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.

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.

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.

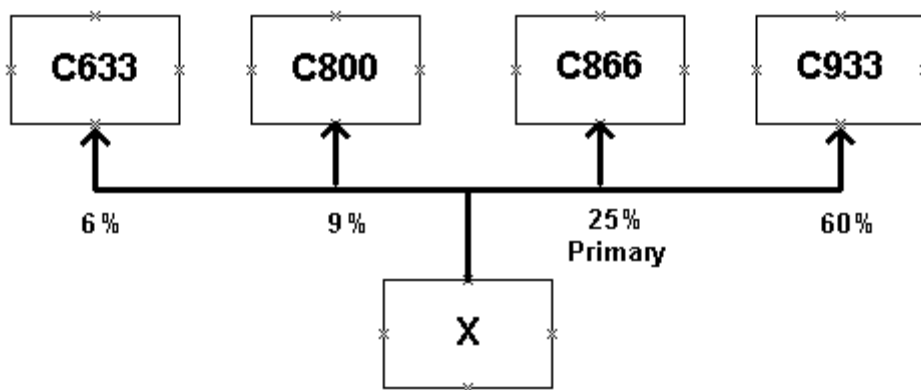
Requirement Integer Quantities

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:

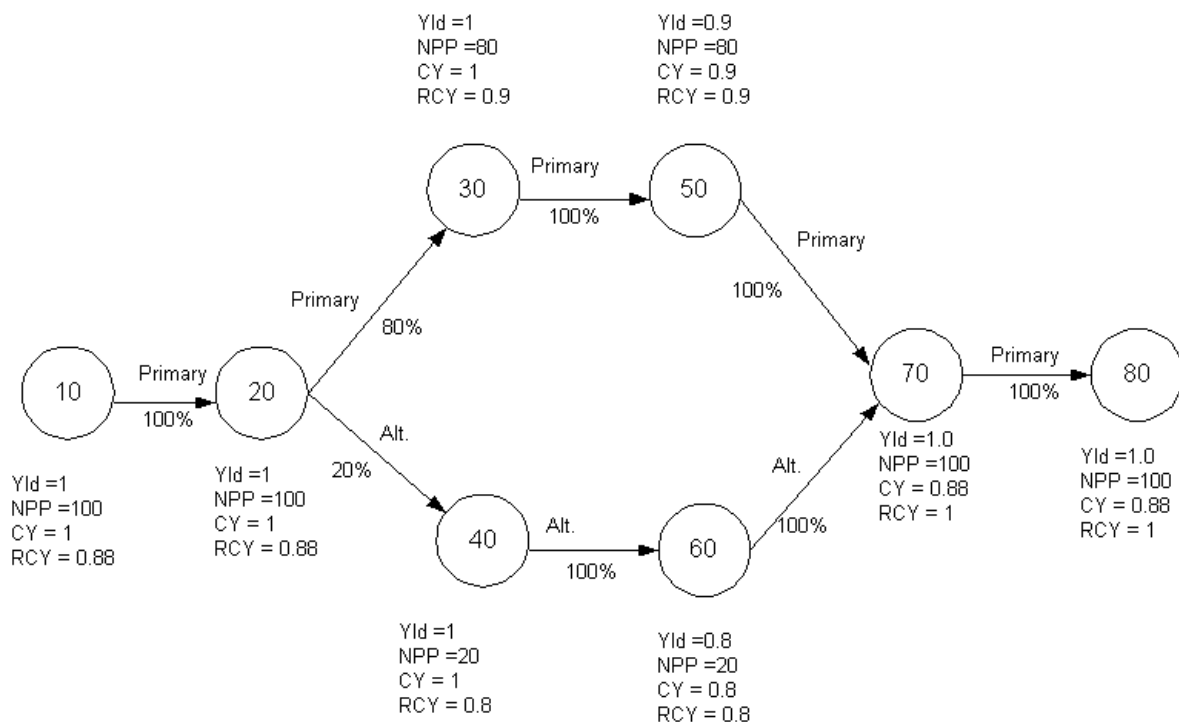
- C633: 2
- C800: 3
- C866: 12
- C933: 25

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.

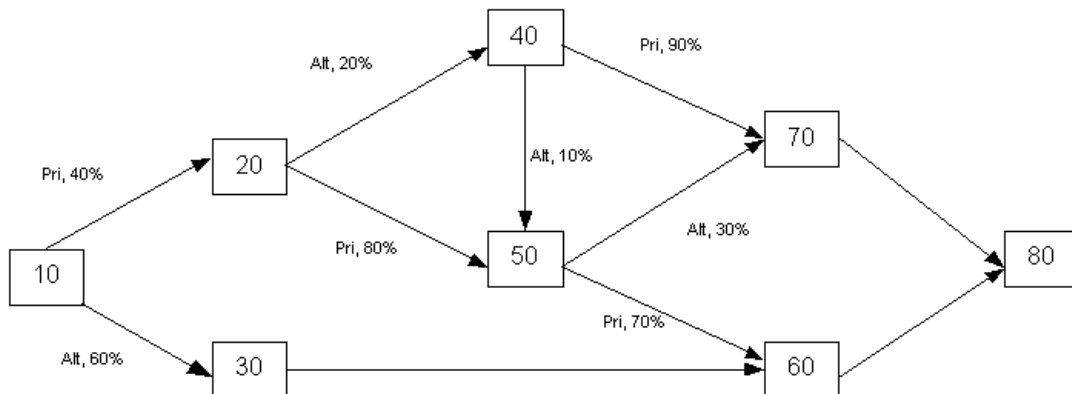
Network Routing Support in Planning

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: Order Qty * RCY * 0.8 (NPP) * Qty Per Assembly.

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 13-9

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 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 multiorg 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. 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 and Derive.

Planning Process

You can explode the forecast entries of ATO models into its component requirements during the planning process. If the forecast control is set to None and Consume, 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 and Derive, the planning engine does not explode the requirements down because it has been exploded once during forecast explosion process.

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 ASCP places the sales order demands for Models, Sub Models, option classes, optional items, and mandatory components specific to your order configuration. The planning process further explodes the demand down from Standard Items and plans for components below if there are any.

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

Item	Org	Demands
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
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 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
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*.

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
- [Sourcing Rules](#) on page 14-6
- [Planning](#) on page 14-9
- [Global Order Promising](#) on page 14-11
- [Execution](#) on page 14-12
- [Known Limitations](#) on page 14-13

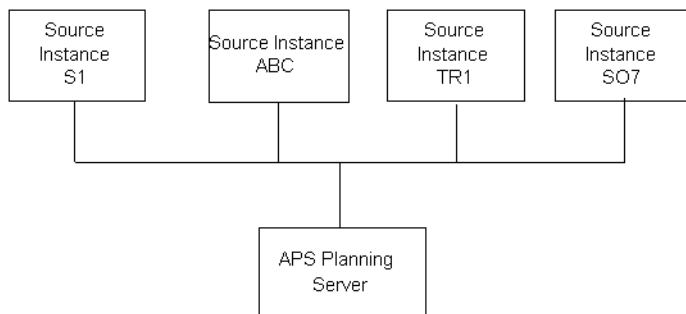
Overview of Cross-Instance Planning

This section provides a brief explanation on how Oracle APS supports cross-instance planning and available-to-promise. Cross-instance planning is defined as defining, running, and executing a single plan across multiple source instances and is a key feature for companies that implement a hub-and-spoke planning model.

Instances

The Oracle Advanced Planning Suite can plan a single instance or multiple instances. An instance is a database and set of applications. In order to explain cross-instance planning, we will distinguish between source and destination instances. Source instances hold the source data, like items, bill of materials, actual orders, and so on. Source instances can be Oracle Applications instances (release 10.7, 11.0, and 11i) or legacy systems. The destination instance is generally referred to as the APS Planning Server. Using the Planning Server, planners collect source information from the source instances, run, analyze, and simulate plans, and implement planned orders. Collection against an Oracle Applications source instance works out-of-the-box, whereas for legacy systems, a customized collection must be developed as part of the implementation.

The picture below will be used to illustrate the concept of cross-instance planning as supported by Oracle APS.

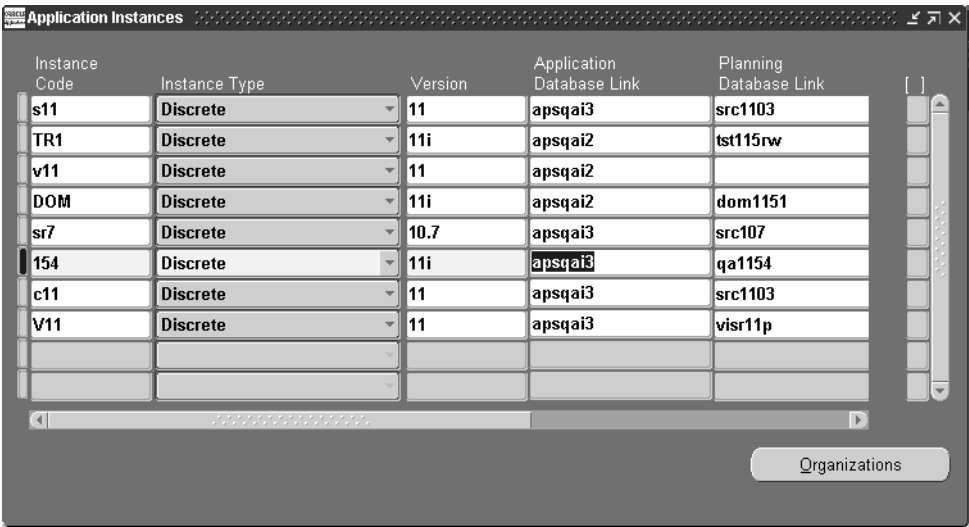


The diagram represents four source instances (S11, ABC, TR1, and S07) and a planning server. To set up cross-instance planning, an administrator has to register the source instances in the planning server. This is a two-step process:

1. Establish a database link between the source instances and the APS planning server.
2. Log in as Advanced Supply Chain Planner.
3. From the Navigator window, choose Setup > Instances.

The Applications Instances window appears.

Figure 14–1 Application Instance window



The screenshot shows a window titled "Application Instances" with a table containing the following data:

Instance Code	Instance Type	Version	Application Database Link	Planning Database Link
s11	Discrete	11	apsqai3	src1103
TR1	Discrete	11i	apsqai2	tst115rw
v11	Discrete	11	apsqai2	
DOM	Discrete	11i	apsqai2	dom1151
sr7	Discrete	10.7	apsqai3	src107
154	Discrete	11i	apsqai3	qa1154
c11	Discrete	11	apsqai3	src1103
V11	Discrete	11	apsqai3	visr11p

At the bottom right of the window is a button labeled "Organizations".

- 4. Use the Instances window to register the source instances. This window allows you to define Planning Database Links used to pull data from the source instances to the Planning Server, and Application Database Links used to release planning recommendations from the Planning Server back to the source instances.

Collections

Before running plans on the planning server, the source data (planning related data and transactional data) needs to be collected. In our example, a user would run collections to collect from the four source instances. These collections can run in parallel using Oracle Applications standard concurrent processing features.

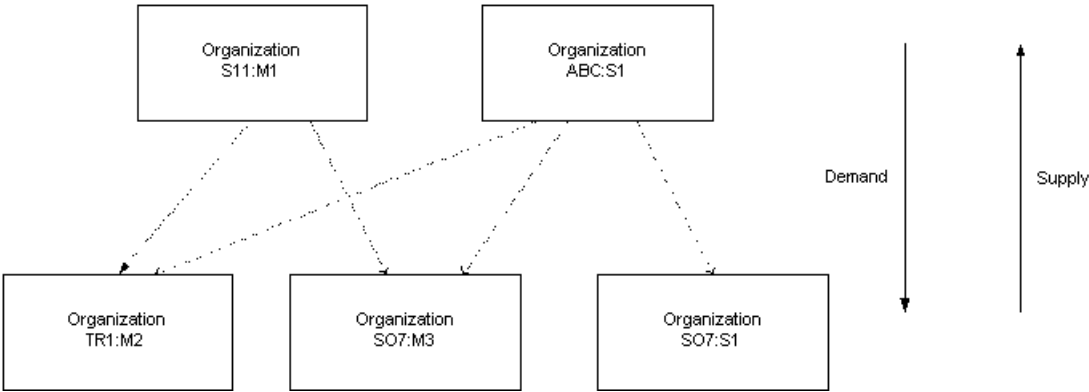
Note: For net-change collections, only changed data or new data is collected.

This architecture improves the collections process cycle time dramatically. For example, if the Discrete Job transactions are the only data that frequently change, you could collect only the changes in Work In Process transactions without recollecting data that was unchanged from the previous collection.

Sourcing Rules

Sourcing Rules (Bills of Distribution) enable sourcing across instances. A planner assigns sourcing rules to items to determine how items are being sourced.

The sourcing and the assignments for cross instance planning are done within the planning server. For example, the following diagram represents five instance-org combinations sharing materials. The rectangles in the diagram represent the instance-orgs. The first three letters in each of the rectangles represent the instance name; the two letters after the semicolon represent the organization name within that instance. For example, “ABC:S1” refers to instance ABC, organization S1.



The setup described in the following table is used to define sourcing rules as represented in the diagram above:

Sourcing Rule/ BOD	Receiving Org	Shipping Org	Allocation %	Intransit Lead Times
BOD100	S11:M1	TR1:M2	25%	3
BOD100	S11:M1	S07:M3	75%	10
BOD100	ABC:S1	TR1:M2	60%	1
BOD100	ABC:S1	S07:M3	15%	5
BOD100	ABC:S1	S07:S1	25%	10

Once the sourcing rules are assigned to the items, the system is ready to start running plans.

To set up Sourcing Rules

1. From the Navigator, choose Sourcing > Sourcing Rules.

Figure 14–2 The Sourcing Rule window

Sourcing Rule (c11:M1)

Name

Description []

☐ All Orgs ☐ Planning Active

☐ Org

Effective Date

From Date To Date []

Shipping Organization

Type	Org	Supplier	Supplier Site	Allocation % Rank	Shipping Method	Intransit Time	[]

2. Define your sourcing rules. These are the rules that dictate a pattern of sourcing from suppliers and inventory organizations across multiple instances.

To assign Sourcing Rules

1. From the Navigator, choose Sourcing > Assign Sourcing Rules.
The Sourcing Rule/Bill of Distribution Assignments window appears.

Figure 14–3 Sourcing Rule/Bill of Distribution Assignments window

Sourcing Rule / Bill of Distribution Assignments

Assignment Set

Description

Assignments

Assigned To	Instance/Org	Customer	Customer Site	Item / Category

Purge

Copy from...

View Sourcing Rule/BOD

View Supply Chain Bill

- 2. Use this window to assign sourcing rules defined above to either an item in an organization, a category of items in an organization, an item, an organization, or an instance.

Planning

The next step in the process is to define a plan that spans multiple instances. This is achieved by entering all instance-orgs that need to be used in planning at the plan option level.

Referring back to the example: choose all the five instance-org combinations along with valid demand and supply schedules.

The assignment set, as mentioned previously, needs to be set as a plan option. Once the plan is run, the planned orders generated at S11:M1 and ABC:S1 will have sources per the sourcing rules/BOD that were defined. For example, TR1:M2, S07:M3, and S07:S1 will be shown as sources (depending on the type of plan you run). The combination of sourcing rules/BODs, bills of material, and routings create what, in Oracle terminology, we call a supply chain bill. In the example described above, the independent demand will be exploded throughout the entire multiple instance supply chain and appropriate planned supply will be created for each component at each level of the supply chain bill.

To define a plan

1. From the Navigator, choose Supply Chain Plan > Options.
2. Select a plan.

The Plan Options window appears with the Main tab selected.

Figure 14–4 Plan Options window

Plan Options (M1)

Plan **leg-4** Optimized with Forecast Plan Type **Manufacturing Plan**

Main

Aggregation

Organizations

Constraints

Optimization

Decision Rules

Planned Items

Demand schedule ...

Assignment Set

LEG:Large Plan ...

Material Scheduling Method

Order Start Date

Demand Priority Rule

End Item Substitution Set

Overwrite

All

Demand Class

☐ Demand Time Fence Control

☒ Append Planned Orders

☐ Planning Time Fence Control

☐ Move Jobs to PIP

☒ Lgt for Lot

Default Forecast Consumption Days

Backward Days

Forward Days

☒ Enable Pegging

☒ Peg Supplies by Demand Priority

Reservation Level

None

Hard Pegging Level

None

Please refer to [Chapter 5, Defining Plans](#), for more information on how to define a plan.

Global Order Promising

When performing global order promising based on planning data with cross-instance sourcing, the available-to-promise calculation uses the supplies generated in the plan to evaluate availability. If there is a need for more supply, the capable to promise calculation uses cross-instance sourcing and goes through the supply chain bill to evaluate the capability to produce, and returns a valid availability date.

Execution

Although most of the execution happens at the source, the integration between the source instance and the planning server is initiated at the planning server. As a result of the plan run, you will see planned orders in the Planner Workbench with sources across instances as described in planning section. Considering the current and source organizations from the table below, the current organization is the organization at which the planned order is generated (the ship-to organization) and source organization is the organization from which you are going to source the planned order (the ship-from organization).

Item	Current Org	Source Org
A	S11:M1	TR1:M2
B	s11:M1	S07:M3
C	ABC:S1	TR1:M2
D	ABC:S1	S07:M3

When the plan is executed, output from the planning process is communicated back to the source instances. Output includes recommendations in the form of new purchase requisitions and discrete jobs, as well as other recommendations such as reschedules to existing entities like purchase orders. If you release the planned orders for item A, B, C, or D, internal purchase requisitions are created at the respective source organizations. The creation of sales orders, shipments, in-transit shipments, receipts, and so on, across instances are defined manually.

Known Limitations

The following limitations for cross-instance planning are currently known:

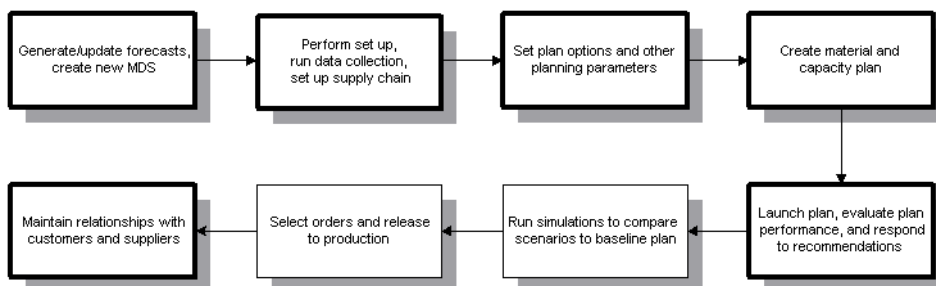
- The Planner Workbench currently releases the requisition as an internal requisition, rather than an external requisition.
- When releasing the requisition, it is not always clear which supplier maps to the internal-org.
- Conversion of financial data to the base currency is not supported in the current release.
- There is a time difference you set up when you define the instances: the planning engine will currently not add or subtract the time difference to the snapshot data from the source.
- Currently, you cannot create and collect transactions across instances to the Planning Server.

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 15-36
- [Viewing Output](#) on page 15-49
- [Reviewing Exception Messages](#) on page 15-56

A Day in the Life of a Planner



Overview of Inventory Optimization

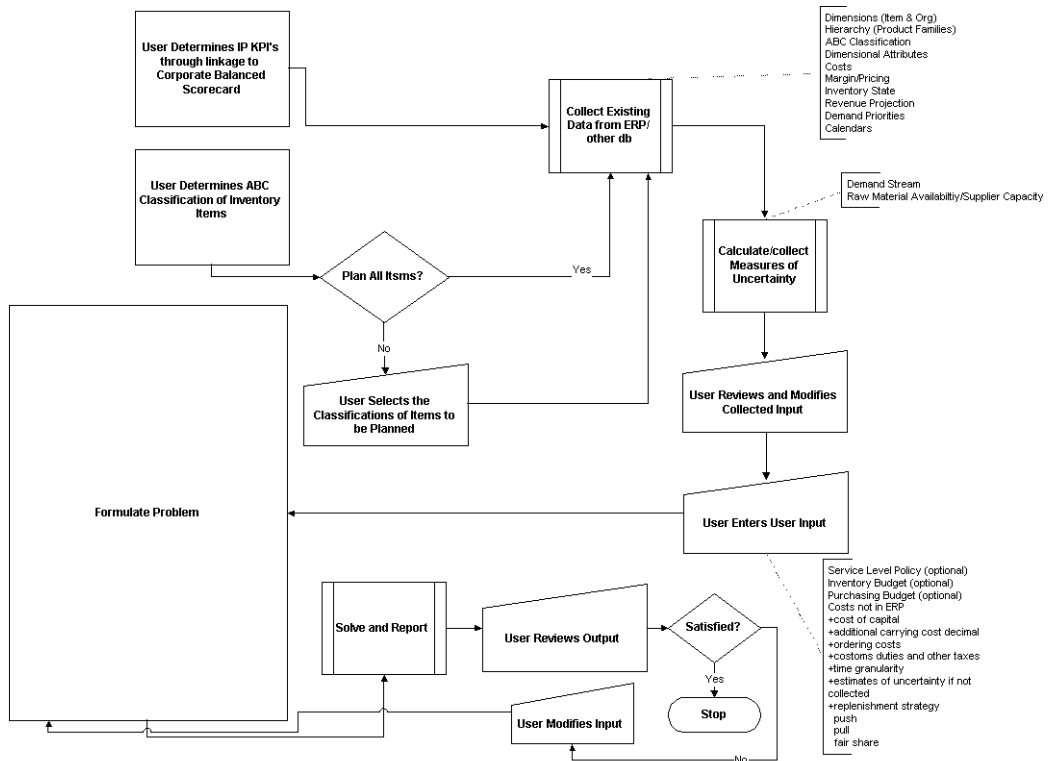
Oracle Inventory Optimization enables you to optimize your strategic inventory investment decisions by helping you to identify optimal inventory stocking levels, order quantities, order frequency, and other operational policies given a set of requirements and objectives.

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 R10.7
- 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.

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.

Defining an Inventory Plan

This section describes features that help 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

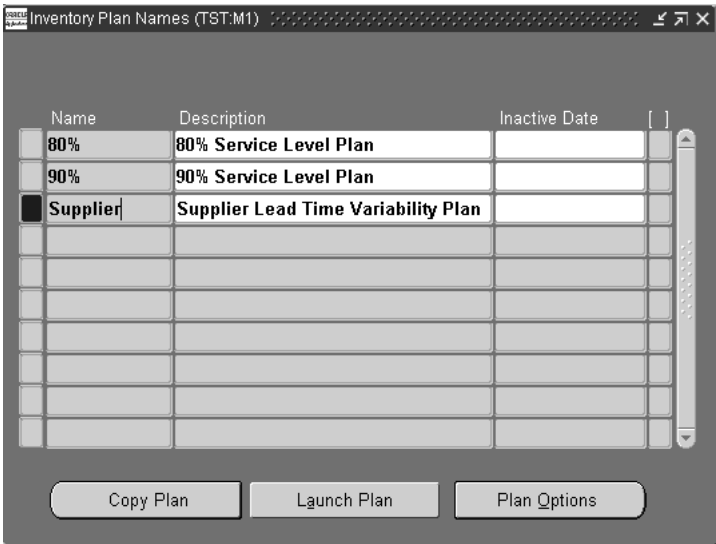
To run an inventory plan, the following prerequisites are required:

- 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.



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.

Plan Options (TST:M1)

Plan: **Supplier** **Supplier Lead Time Variability Plan**

Planned Items: **Class AA** Assignment Set: **TST:ASET-IO**

Aggregation Organizations Constraints Optimization

Plan Start Date: **11-FEB-2002** Plan End Date: **27-JUL-2003**

	Days	Weeks	Periods
Start Date	11-FEB-2002	18-FEB-2002	18-AUG-2003
Buckets	0	75	0
Items	Items	Items	Items
Resources	Individual	Individual	Individual
Routings	Routings	Routings	Routings

4. Continue setting plan options and parameters.

For more information, see

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:

- Aggregation
- Organizations
- Constraints
- Optimization

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.

The Aggregation Tabbed Region

Plan Options (TST:M1)

Plan

Supplier

Supplier Lead Time Variability Plan

Planned Items

Class AA

Assignment Set

TST:ASET-IO

Aggregation

Organizations

Constraints

Optimization

Plan Start Date

11-FEB-2002

Plan End Date

27-JUL-2003

	Days	Weeks	Periods
Start Date	11-FEB-2002	18-FEB-2002	18-AUG-2003
Buckets	0	75	0
Items	Items	Items	Items
Resources	Individual	Individual	Individual
Routings	Routings	Routings	Routings

This table describes the fields and options.

Object	Description
Plan Start Date	If you have not run the plan, choose a start date for your plan; the default is today. If you have run the plan, this displays the planning horizon start date of the latest 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.

The Organizations Tabbed Region

Plan Options (TST:M1)

Plan

Supplier

Supplier Lead Time Variability Plan

Planned Items

Class AA

Assignment Set

TST:ASET-IO

Aggregation

Organizations

Constraints

Optimization

Organizations

Add All Authorized Orgs

Org	Description	Net WIP	Net Reservations	Net Purchases	Bill Of Resource	Simulation Set
TST:M1	TST:Seattle Manufactur	☒	☒	☒		SS-ASCP
TST:M2	TST:Boston Manufacturi	☒	☒	☒		SS-ASCP
TST:S1	TST:Chicago Subassem	☒	☒	☒		SS-ASCP

Demand Schedules

Supply Schedules

Scenario Set	Name	Description	Type	Probability
1	FS-M1-SV	Supplier Vari	CST	1

Name	Description	Type

This table describes the fields and options.

Object	Description
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.
Description	The name of the organization.

Object	Description
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.
Bill of Resource	Select Bill of Resources from the list of values.
Simulation Set	Select a Simulation Set from the list of values. A simulation set is a set of adjustments to the base availability calendar of a resource, and is defined via the Oracle Bills of Material Department Resources form. You can define different simulation sets to model different availability scenarios (for example, the base availability calendar reflects 5 day operations; simulation set 1 reflects working 6 day operations; simulation set 2 reflects 7 day operations). The planning engine applies the simulation set to all resources in the organization.
Demand Schedules	Select the names of demand schedules, forecasts, and plans that drive this plan.
Scenario Set	Enter the ID for the scenario set with which the forecast is associated. See Setting Demand Variability.
Probability	Enter the probability or confidence factor for the forecast.
Supply Schedules	Select the name of supply schedules that participate in this plan.

This table describes the fields and options.

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Object	Description
Enforce Demand Due Dates	Select to enforce 100% service level on all demands in lieu of material and resource capacity constraints. For more information, see, on page 11-19, Setting Constraints for Different Plan Types .
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 11-19, Setting Constraints for Different Plan Types .
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.
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 (TST:M1)

Plan

Supplier

Supplier Lead Time Variability Plan

Planned Items

Class AA

Assignment Set

TST:ASET-10

Aggregation

Organizations

Constraints

Optimization

☒ Optimize

☐ Enforce Sourcing Constraints

Objectives

Maximize inventory turns

0

Maximize plan profit

0

Maximize on-time delivery

0

Plan Level Penalty Factors

Exceeding material capacity %

10

Exceeding resource capacity %

10

Exceeding transportation capacity %

10

Demand lateness %

Service Level %

80

This table describes the fields and options.

Penalty factors are plan level values that:

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

Object	Description
Optimize	The default is selected and grayed out.
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.
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.

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.

To view the end date for your inventory plan

1. Navigate to the Planner Workbench.
2. Choose Plan Options > Aggregation tab.

The Aggregation tab appears showing the end date for your inventory plan.

Figure 15–1 The Aggregation Tab

Plan Options (c11:M1)

Plan: Post-Run1 ESL: 95% Type: IP

Options Aggregation Optimization Organizations

Start Date: 04-JAN-2001 End Date: 05-AUG-2001

	Days	Weeks	Periods
Bucket Size	0	30	0
Items	Items	Items	Items
Resources	Individual	Individual	Individual
Routings	Routings	Routings	Routings

☒ Plan Capacity (K)

	Days	Weeks	Periods
Resource Constraints	Yes	Yes	No
Material Constraints	Yes	Yes	No

Note: The start date is hard coded as the sysdate.

Specifying 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. Navigate to the Planner Workbench.
2. Choose Plan Options > Aggregation tab.

Figure 15–2 The Aggregation tab

	Days	Weeks	Periods
Start Date	04 JAN 2001		05 AUG 2001
Bucket Size	1	30	0
Items	Items	Items	Items
Resources	Individual	Individual	Individual
Routings	Routings	Routings	Routings
☒ Plan Capacity (K)			
Resource Constraints	Yes	Yes	No
Material Constraints	Yes	Yes	No

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 plan 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.

Specifying Resource Aggregation Levels

You can specify resource aggregation levels for each of the three planning time horizons.

To set the resource aggregation levels for a time horizon

1. Navigate to the Planner Workbench.
1. Choose Plan Options > Aggregation tab.
2. 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 planned either individually or in aggregate. Selecting Individual resource planning will generate plans down to the individual resource level and will consider the available capacity of each resource in the plan recommendations.

Selecting Aggregate resource scheduling will consider 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 the *Oracle Bill of Materials User’s Guide*.

Specifying 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. Navigate to the Planner Workbench.
1. Choose Plan Options > Aggregation tab.
2. 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.

You can set aggregation levels for modeling items, resources, alternates and routings in your inventory plan. 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.

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 Demand Due Dates**

Enforce a 100% service level on all demands in the plan. Material and resource capacity will be exceeded beyond their availability if necessary.

- **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 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 11-17, [Setting Hard and Soft Constraints](#)

To set Oracle Inventory Optimization constraints, choose one of the enforcement check boxes in the Options tab:

Figure 15–3 The Options Tab

Plan Options (c11:M1)

Plan: **Post-Run1** | **ESL 95%** | Type: **IP**

Options | Aggregation | Optimization | Organizations

☐ Previous ☒ Current

Assignment Set: **Post-Assign-A** | Org Selection: **Multiple Organiza** | Overwrite: **All**

☒ Enforce Service Level Constraints
☐ Enforce Demand Due Dates
☐ Enforce Capacity Constraints

Planned Items: **Class A**
 Planned Resources: **All Resources**
 Bottleneck Resource Group:

Specifying Plan Objectives

Multiple optimization objectives can be met by assigning weights to each. This is done using the Optimization tab, assigning weights to each optimization objective.

For more information on the Optimization tab, see on page 15-18, [The Optimization Tab](#).

Figure 15–4 The Optimization Tab

Plan Options (c11:M1)

Plan: **Post-Run1** | **ESL-95%** | Type: **IP**

Options | Aggregation | **Optimization** | Organizations

☒ Optimize

—Objectives—

Maximize inventory turns	1
Maximize plan profit	0
Maximize on-time delivery	0

—Plan Level Defaults—

Exceeding material capacity %	30	Exceeding resource capacity %	30
Exceeding transportation capacity %	30	Demand lateness %	20
Service Level %	95		

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 factors are considered:

- Revenue from independent demands
- Item cost
- Resource cost
- Inventory carrying cost
- Transportation cost

Maximize Ontime Delivery This objective maximizes ontime delivery by trying to ensure that all demand is met ontime. Penalty factors specify the relative importance of demands when maximizing ontime delivery.

Note: If your goal is to determine the least amount of inventory required to enforce the service level constraint, this can be achieved by, first, specifying the maximum weight to the inventory turns objective; and second, setting enforce service level constraints to Yes. You do this by selecting the Enforce Service Level Constraints check box in the Options tab of the Plan Options window.

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.

Note: Scenario sets are planned separately.

To set demand variability

1. Choose Plan Options > Organizations tab.

Figure 15–5 The Organizations tab

Plan Options (c11:M1) Plan Post-Run1 ESL:95% Type IP

Options Aggregation Optimization Organizations

— Organizations

Org	Description	Net WIP	Net Reservations	Net Purchasing	Include Sales Order	Bill Of Resource
c11:M1	c11:Seattle Manufacturi	☒	☒	☒	☒	
c11:S1	c11:Chicago Subassemi	☒	☒	☒	☐	
c11:M2	c11:Boston Manufacturi	☒	☒	☒	☐	

— Demand Schedules — Supply Schedules

Scenario Set	Name	Description	Type	Probability	Name	Description	Type
1	RO-FCSET-A		FCST	.3			
1	RO-FCSET-B		FCST	.4			
1	RO-FCSET-C		FCST	.3			

- 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.

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

Note: Safety stock is not calculated if there is no demand and supply variability.

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
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	$0.8/2.2 = 0.364$

Scenario Set	Forecast Set	Probability (entered)	Probability (used)
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

Table 15–5 FCST1: Forecast Set 1/FC1: Forecast 1

Item	Quantity	Date
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
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.

Supply Schedules

To specify sources of supply

1. Navigate to the Planner Workbench.
2. Choose Plan Options > Organization tab.

Figure 15–6 The Organizations Tab

Plan Options (c11:M1)

Plan: **Post-Run1** ESL: **95%** Type: **IP**

Options Aggregation Optimization **Organizations**

Organizations

Org	Description	Net WIP	Net Reservations	Net Purchasing	Include Sales Order	Bill Of Resource
☒ c11:M1	c11:Seattle Manufacturing	☒	☒	☒	☒	
☐ c11:S1	c11:Chicago Subassembly	☒	☒	☒	☐	
☐ c11:M2	c11:Boston Manufacturing	☒	☒	☒	☐	

Demand Schedules

Scenario Set	Name	Description	Type	Probability
☒ 1	RO-FCSET-A		FCST	.3
☐ 1	RO-FCSET-B		FCST	.4
☐ 1	RO-FCSET-C		FCST	.3

Supply Schedules

Name	Description	Type

3. Select the supply schedule 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.

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*.

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 15–7 Allocation Rule window

Allocation Rule

Name:

Description:

Effective Date

From Date: To Date:

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.

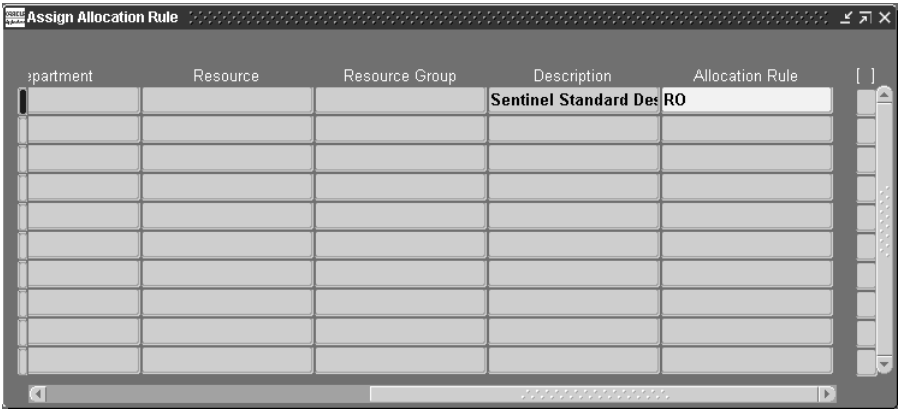
Figure 15–8 Assign Allocation Rule window

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 15–9 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 15–10 Items window

Master Item (V1)

Action Edit Query Go Folder Special Help

Organization **V1 Vision Operations**

Item **AS18947**

Description **Sentinel Multimedia** [-9]

MPS/MRP Planning

Planning Method

Forecast Control

Pegging

☒ Round Order Quantity

☐ Repetitive Planning

Acceptable Rate + **0**

Acceptable Rate - **0**

Planning Time Fence **User-Defined** Days **1**

Demand Time Fence Days

Release Time Fence Days

Items

Late Demands Penalty

Material Over-Capacity Penalty

Service Level **98**

Clear Cancel OK

Reduce MPS

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 15–11 Assign Allocation Rule window

The screenshot shows a window titled "Assign Allocation Rule". It contains a table with the following columns: "Assign To", "Item", "Category", "Department", and "Resource". The "Assign To" column has a dropdown menu with "Item Category" selected. The "Category" column has the value "PF-YP". There are several empty rows below the first row. A scrollbar is visible on the right side of the table.

- 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 15–12 The Assign Allocation Rule window, Allocation Rule field

The screenshot shows the same window, but with the "Allocation Rule" column visible. The "Allocation Rule" column has the value "RO". The other columns are "Department", "Resource", "Resource Group", and "Description". There are several empty rows below the first row. A scrollbar is visible on the right side of the table.

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 15–13 Customer Information window

The screenshot shows the 'Customers - Standard' window with the following data:

Customer Name	Business World	Number	1000
Alternate Name		Taxpayer ID	68-98876532
Tax Registration Num		Active	☒

The 'Customer Information' sub-window is open, showing:

Classification	?
Use	Cust
Profile Class	Aver
Class	High
Tax Code	
Tax Rounding	Near
GSA	☐
Salesperson	Howard Sprague
FOB	Destination
Price List	Business World
Warehouse	
D & B Number	
Service Level	38
Ship Partial	Yes
Carrier	
Order Type	
Freight Terms	
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 15–14 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

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 15–15 Assign Allocation Rule window

Assign To	Item	Category	Department	Resource
Global				

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 Optimization tab to define the Plan service level. For more information, refer to on page 15-18, [The Optimization Tab](#).

Figure 15–16 The Optimization Tab

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.

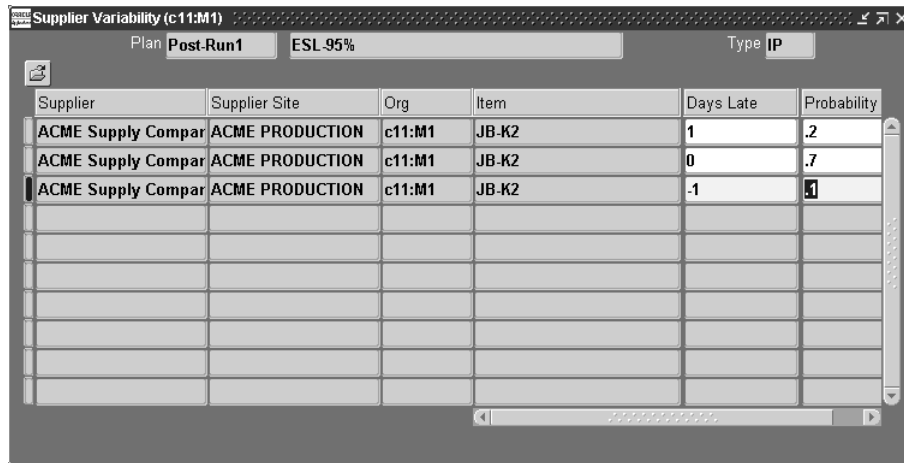
Note: You can only input supplier lead time variability information in the planning server.

To set supplier lead time variability

1. Navigate to the Planner Workbench.

2. Choose Supplier from the drop down menu in the left pane.
3. Drill down to and select an item underneath a supplier in the left pane.
4. Choose [Right mouse click] > Supplier Variability.

Figure 15–17 The Supplier Variability window



Supplier	Supplier Site	Org	Item	Days Late	Probability
ACME Supply Compar	ACME PRODUCTION	c11:M1	JB-K2	1	.2
ACME Supply Compar	ACME PRODUCTION	c11:M1	JB-K2	0	.7
ACME Supply Compar	ACME PRODUCTION	c11:M1	JB-K2	-1	.1

5. Use the information in the following table to complete the fields in this window (all other fields are populated automatically).

Object	Description
Days Late	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	The probability expressed as number between 0 and 1 corresponding to each estimation of days late for the item. The probabilities should sum to equal 1.0.

Note: Select your supplier in the left pane 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.

Note: Specifying input penalty costs for late demand and specifying input service level are mutually exclusive.

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 15–18 *Supplier Capacity window*



Supplier Capacity (c11:D2)

Plan **Collection** Type

Supplier	Supplier Site	Penalty Cost Factor	Supplier Price	Delivery C
Allied Manufacturin ...				

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.

Note: You can set targets for all Performance Indicators except Margin and Cost Breakdown.

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

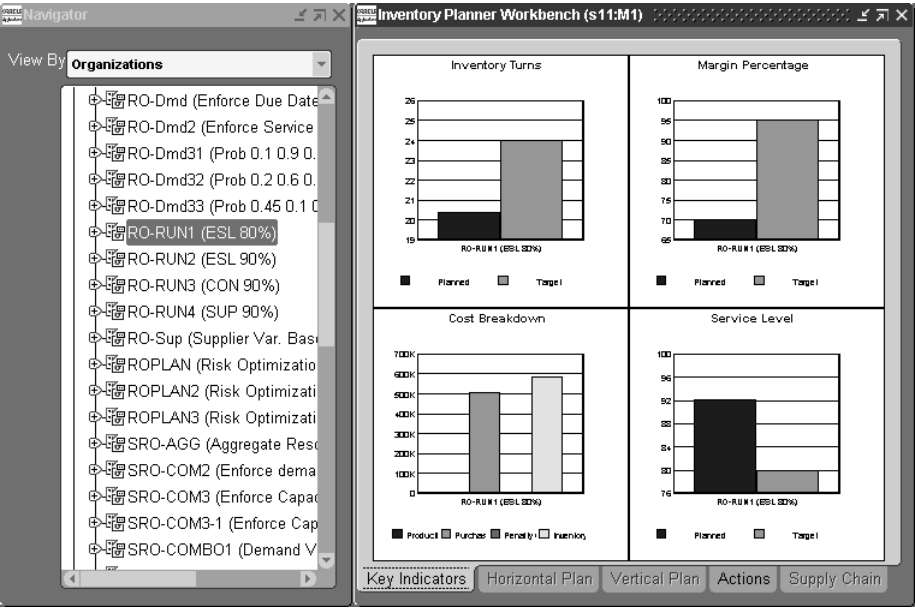
Refer to [Chapter 10, Planner Workbench](#) for more information on viewing horizontal and vertical plans.

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

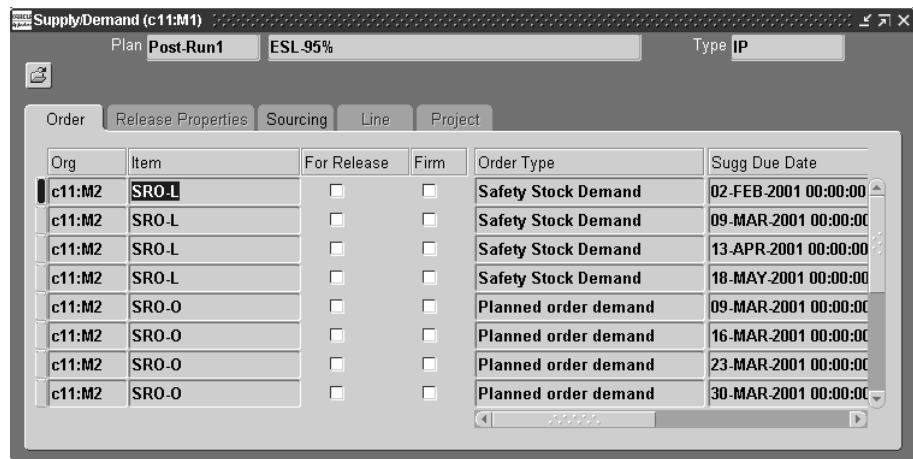
Figure 15–19 The KPIs Summary Chart in the Planner Workbench



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 15–20 The Supply/Demand window


The screenshot shows the 'Supply/Demand (c11:M1)' window. At the top, there are fields for 'Plan' (Post-Run1), 'ESL' (95%), and 'Type' (IP). Below these are tabs for 'Order', 'Release Properties', 'Sourcing', 'Line', and 'Project'. The 'Order' tab is active, displaying a table with the following data:

Org	Item	For Release	Firm	Order Type	Sugg Due Date
c11:M2	SRO-L	☐	☐	Safety Stock Demand	02-FEB-2001 00:00:00
c11:M2	SRO-L	☐	☐	Safety Stock Demand	09-MAR-2001 00:00:00
c11:M2	SRO-L	☐	☐	Safety Stock Demand	13-APR-2001 00:00:00
c11:M2	SRO-L	☐	☐	Safety Stock Demand	18-MAY-2001 00:00:00
c11:M2	SRO-O	☐	☐	Planned order demand	09-MAR-2001 00:00:00
c11:M2	SRO-O	☐	☐	Planned order demand	16-MAR-2001 00:00:00
c11:M2	SRO-O	☐	☐	Planned order demand	23-MAR-2001 00:00:00
c11:M2	SRO-O	☐	☐	Planned order demand	30-MAR-2001 00:00:00

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.

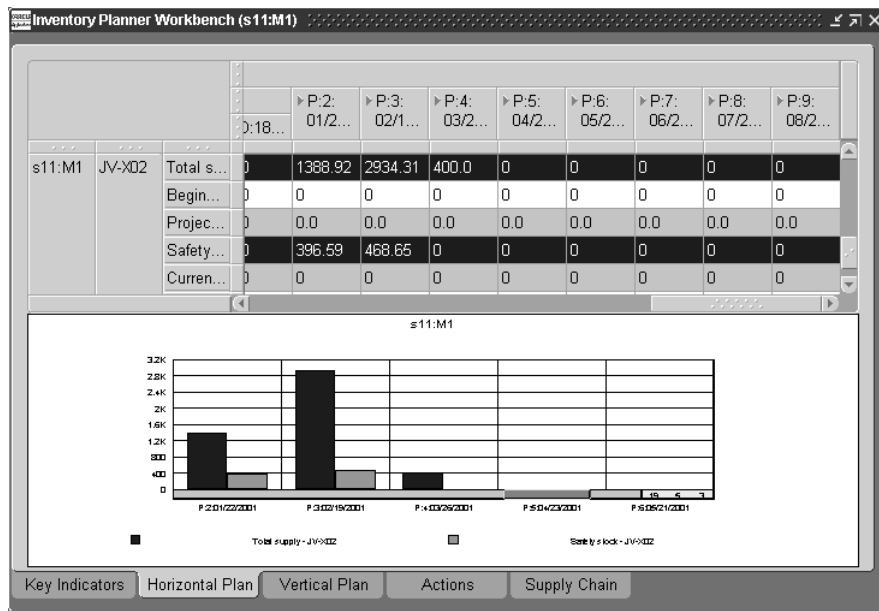
Oracle Inventory Optimization calculates and displays both constrained safety stocks and unconstrained target safety stocks.

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 15–21 The Horizontal Plan window

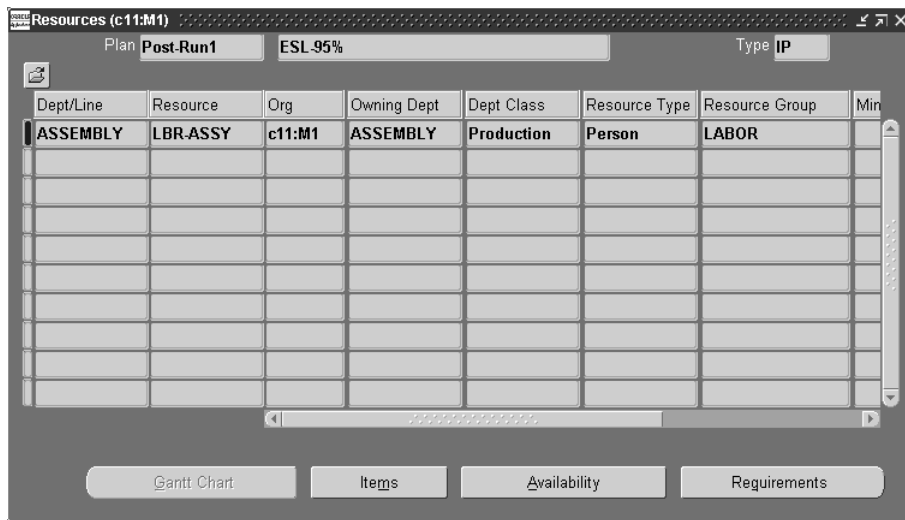
Resource Requirements

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 15-22 *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

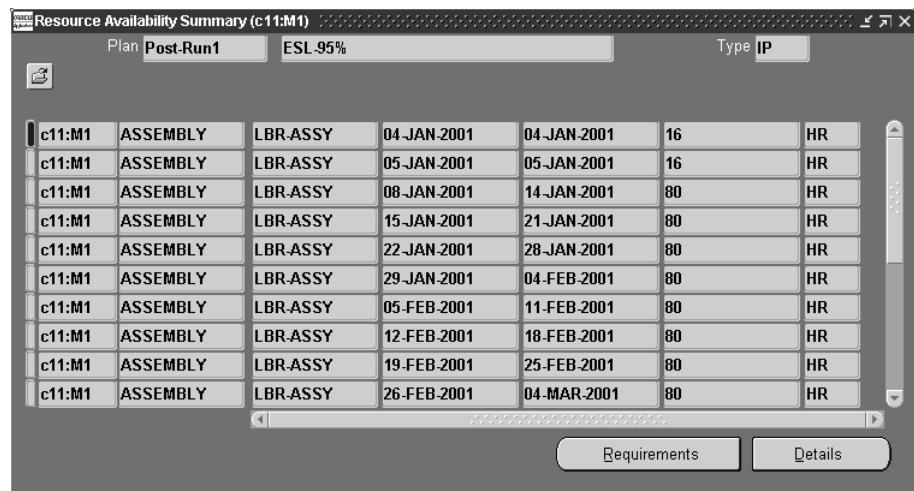
You can view time-phased material and resource availability for all items/resources in your inventory plan.

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 15–23 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: Item ID, Item Name, Resource Name, Start Date, End Date, Quantity, and Unit. The table contains 11 rows of data for item c11:M1, all of which are ASSEMBLY resources (LBR-ASSY). The dates range from 04-JAN-2001 to 04-MAR-2001, and the quantities are 16, 16, 80, 80, 80, 80, 80, 80, 80, 80, and 80 respectively. At the bottom right, there are two buttons: "Requirements" and "Details".

Item ID	Item Name	Resource Name	Start Date	End Date	Quantity	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

Business Topics

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 16-78
- [Key Performance Indicators](#) on page 16-83

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	☐		
PS4001	PS1001	Substitute	☐		
			☐		
			☐		
			☐		
			☐		
			☐		
			☐		
			☐		
			☐		

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 Simulate Possible Substitutions 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.

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	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. 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. NOTE: Once you enter customer-specific substitution rule for any item, you will have to specify all the relationships applicable to that customer explicitly because no generic rules will be applied to that customer.
Address	Choose the address for the customer location.
Type	View only field that shows the type of location (currently, only shows Ship to).
From and To	You can specify effective dates for substitution at a customer level. If you specify effective dates at customer level for a substitution relationship, the effective dates you might have specified at the in the Planning Details window and the Item Relationship window will be ignored.

Substitution Set-Up Examples

Use the following information to set up various substitution scenarios.

To set up substitution across many dates/effectivities

1. Fill out the Item Relationships window as shown in the following table:

From Item	To Item	Relationship type	Reciprocal
A	B	Substitute	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

Items (dmt.M1)

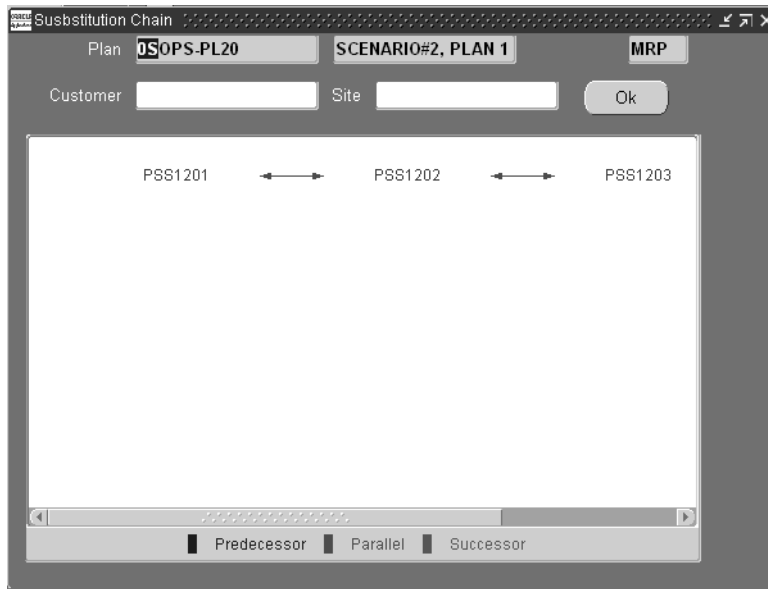
Plan **PSS-S3** COPY OF PSS-2 (4/25 9:30AM) Type **MRP**

Item	Org	BOM Item Type	Pegging	Preprocessing LT	Processing LT	Po
PSS1201	dmt:M1	Standard	End Assembly/Soft Pe	0	1	0
PSS1201	dmt:M2	Standard	End Assembly/Soft Pe	0	1	0

Buttons: Destinations Sources Where Used Components Co-Product

Buttons: Routing Operations Safety Stock Substitutes

5. Select an item.
6. Select the Substitutes button. Please note that multiselects are not allowed. If you select several items, the Substitutes button will be greyed out.
The Substitution Chain window appears.

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:

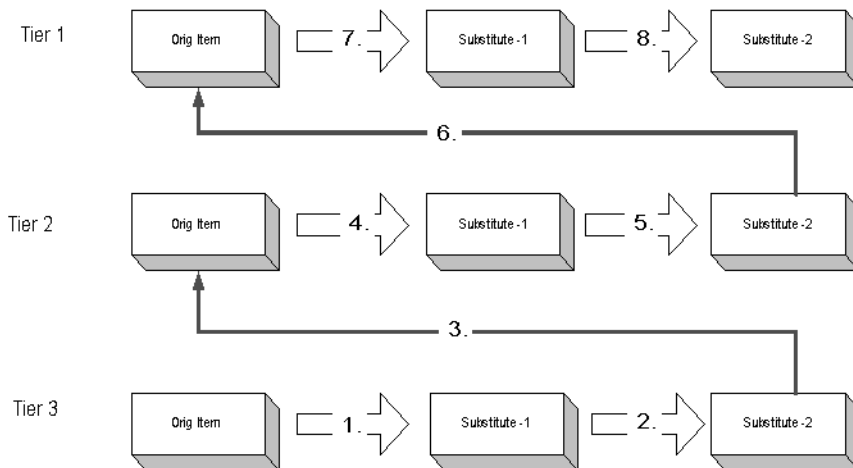
- searching the supply chain
- chaining

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:

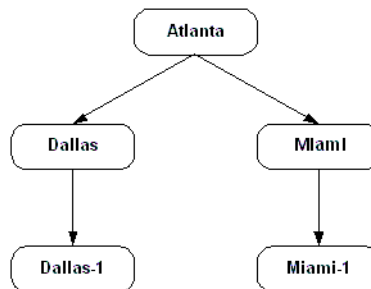
- you look for demanded and substitute/s within the same organization before going across to other organizations to fetch demanded item and substitute/s

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

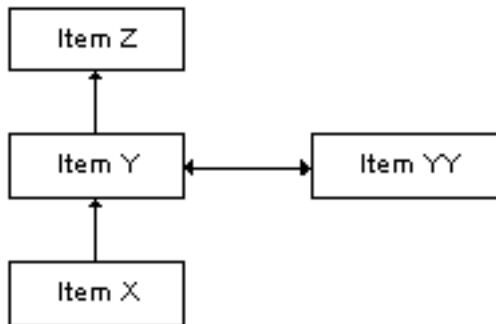
This section contains descriptions of substitution features available in Oracle ASCP. It contains information for the following features:

- 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.

Profile Option: Choice of Item for Which to Create Supplies in Substitute Relationship	Item Attribute: Create Supply	Result
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 Fullfillment 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.

Note: You must run a batch plan (as opposed to an online plan) to use substitution sets.

Transfer of Demands on to Substitute Supplies

The ability to show pegging and supply/demand details if you have substitution supply identified for a demand is important because the items that bear supply and demand are different.

One of the ways the display can be clearly shown is when you transfer the demand from original item to the substitute item for all substitutions.

Example 11 The following table shows the supply and demand for items A and B. In this example, 30 units of item B can use 25 units of item A and 5 units of its own supply to satisfy this demand.

Record Type	Item	Day 1
Demand	A	0

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 Fullfillment 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 Fullfillment. 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.

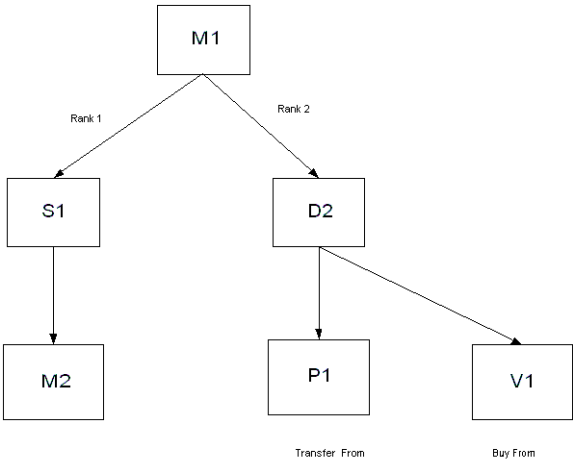
As shown in the following table, the demand on Day 2 has two supplies to consider: 60 units of its own supply on Day 50 and supply of a substitute item on Day 2. The preference is to substitute right away, i.e., apply substitute supply of 60 units on Day 2 to satisfy the demand for 60 units of item A. 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.

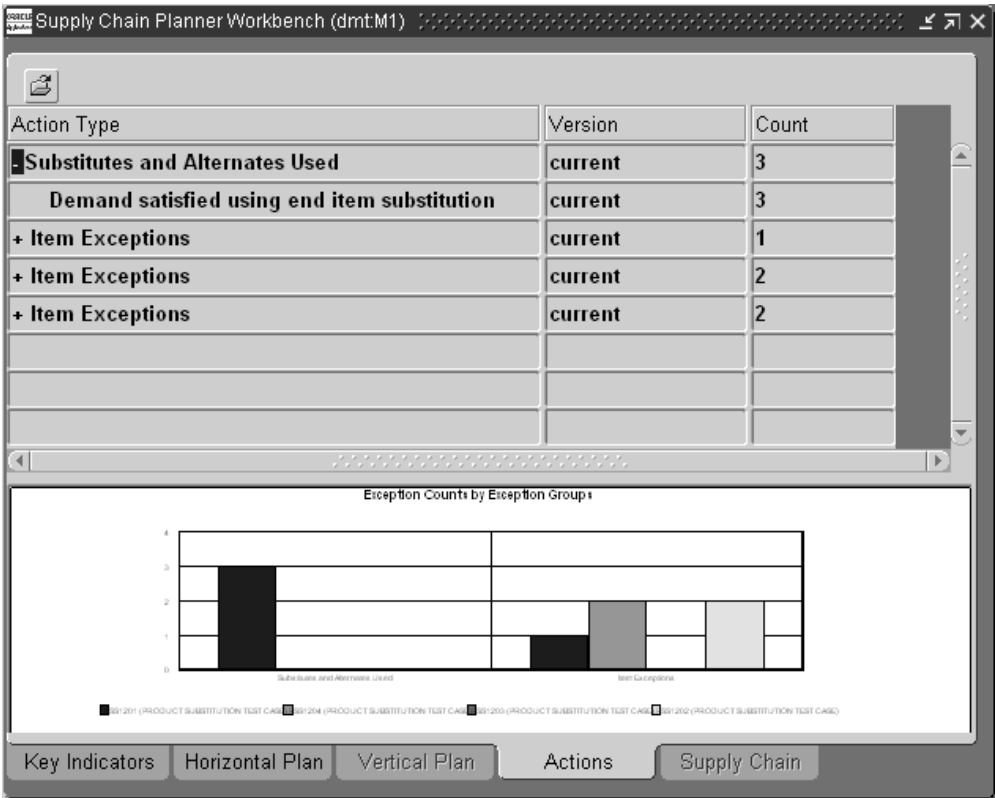
Exception Messages

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.

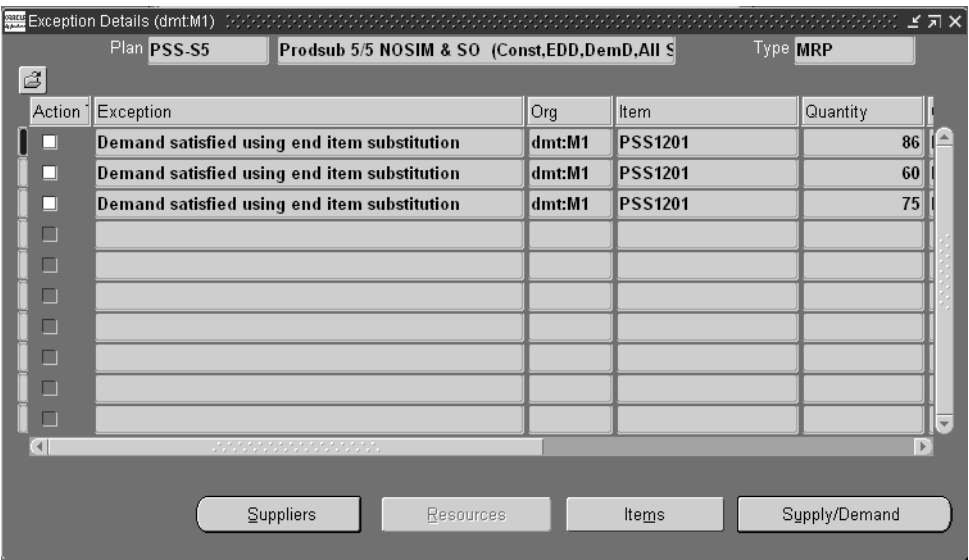
Figure 16–6 Exception Message



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.

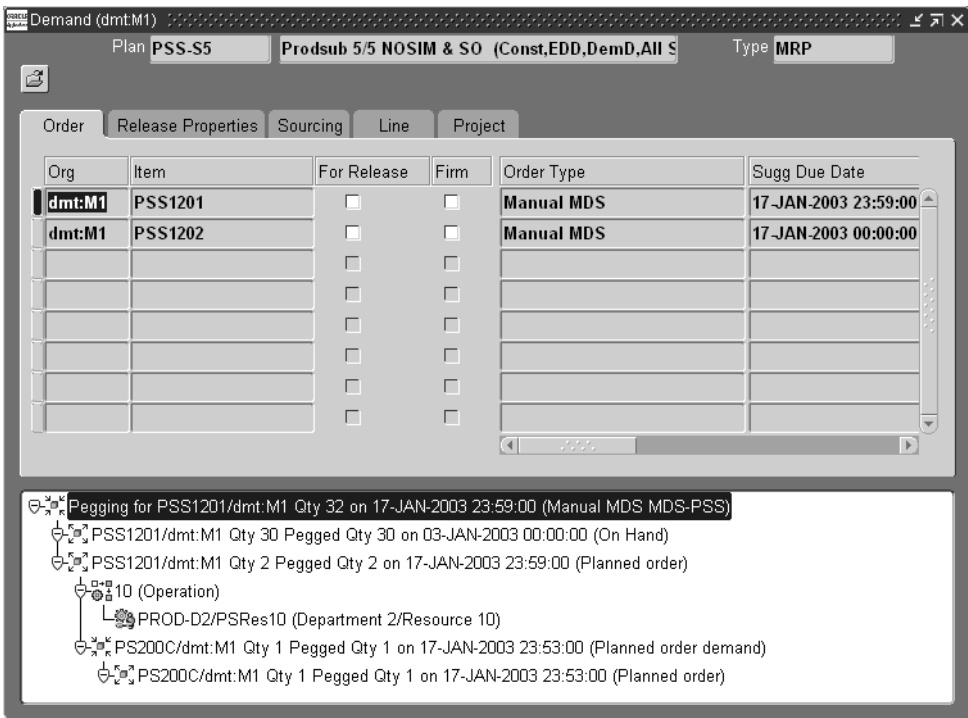
Field	Description
Org.	Organization in which the exceptions occurred
Item	The item for which you received the demand, the exception is for this item.
Quantity	The quantity on the original order
Order number	Sales Order Number or MDS/Forecast name for the From item
Substitute item/s	This is the item to 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:

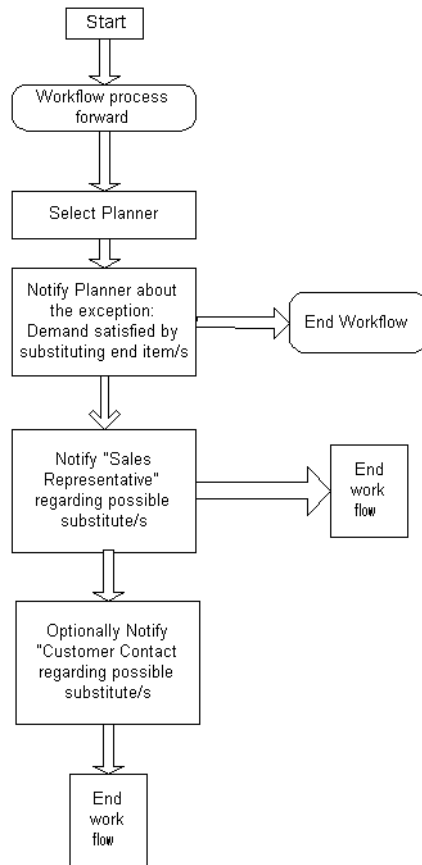
- 10 units of demand for Plug in Card 100
- 40 units of demand for Plug in Card 150
- 50 units of demand for Plug in Card 200

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)

PlanPSS-S1Prods 5/1 (Const,EDD,Demand,All)Plan TypeManufacturing Plan

MainAggregationOrganizationsConstraintsOptimizationDecision Rules

Planned ItemsDemand schedule ...

Material Scheduling MethodOrder Start Date

End Item Substitution SetDEFAULT

Assignment SetKCC - NEW PSUB ASS

Demand Priority Rule

OverwriteAll

Demand Class

☐ Demand Time Fence Control

☐ Planning Time Fence Control

☒ Append Planned Orders

☐ Move Jobs to PIP

☒ Lot for Lot

Default Forecast Consumption Days

Backward DaysForward Days

☒ Enable Pegging

☒ Peg Supplies by Demand Priority

Reservation LevelNone

Hard Pegging LevelNone

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.

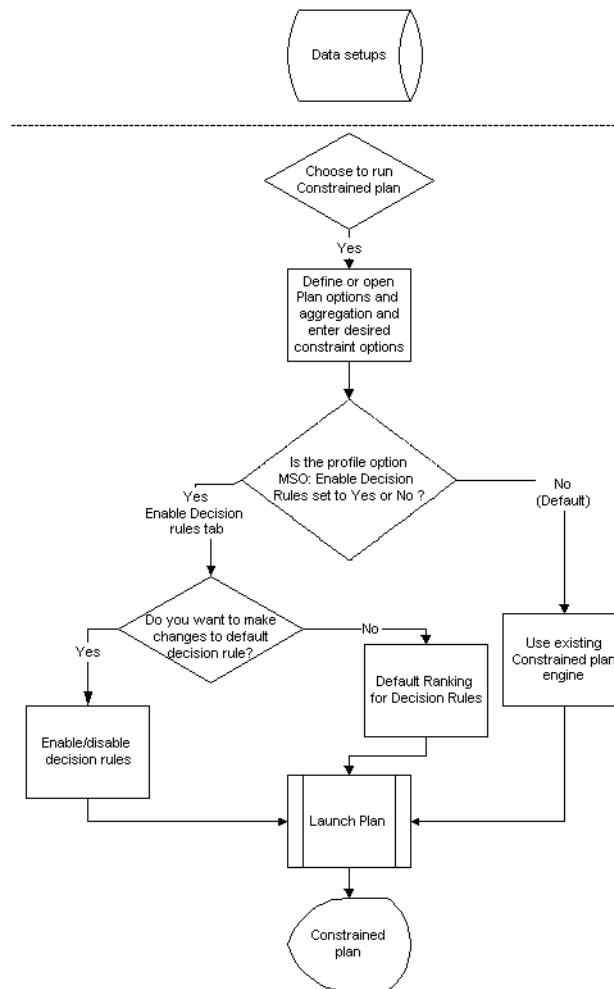
You can enable and disable the decision rules for constrained plans. These decision rules are used to derive the constrained plan, while honoring your preferences. If any of the rules are disabled, then the planning engine will not have the ability to look for supply pertaining to these rules.

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. Launch the constrained plan.

The following diagram is an illustration of these steps.



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*.

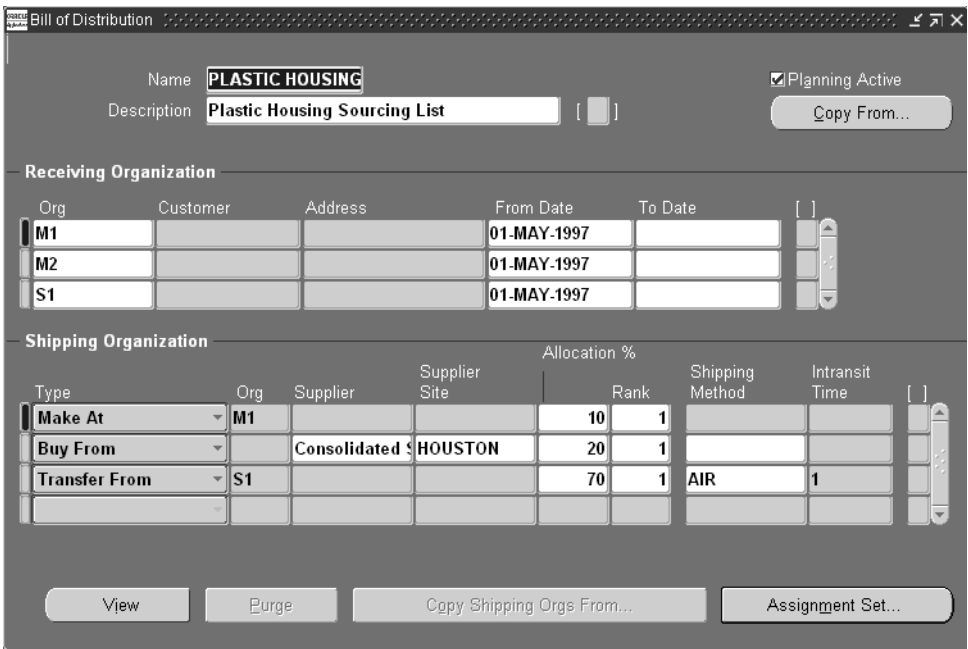
Figure 16–10 Sourcing Rule

The screenshot shows the 'Sourcing Rule (M1)' window. At the top, there are fields for 'Name' (Router) and 'Description' (Router Sourcing Rule). To the right, there are radio buttons for 'All Orgs' and 'Org', and a checkbox for 'Planning Active'. Below these is a 'Copy From...' button. The 'Effective Date' section has 'From Date' (27-AUG-1997) and 'To Date' fields. The 'Shipping Organization' section contains a table with columns: Type, Org, Supplier, Supplier Site, Allocation % (Rank), Shipping Method, and Intransit Time. The table lists four entries, all with 'Buy From' as the type and 'Star Gate Ltd' as the supplier. The bottom of the window has buttons for 'View', 'Purge', 'Copy Shipping Orgs From...', and 'Assignment Set...'.

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		

The second screen shot shows rank using Bill of Distribution.

Figure 16–11 Bill of Distribution



Bill of Distribution

Name: **PLASTIC HOUSING**

Description: **Plastic Housing Sourcing List** []

☒ Planning Active Copy From...

Receiving Organization

Org	Customer	Address	From Date	To Date
M1			01-MAY-1997	
M2			01-MAY-1997	
S1			01-MAY-1997	

Shipping Organization

Type	Org	Supplier	Supplier Site	Allocation % Rank	Shipping Method	Intransit Time
Make At	M1			10 1		
Buy From		Consolidated S	HOUSTON	20 1		
Transfer From	S1			70 1	AIR	1

View Purge Copy Shipping Orgs From... Assignment Set...

Substitute component: You can define the priority of the substitute component. By default, planning tries to minimize the use of substitutes. Also, the planning engine has an inbuilt 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

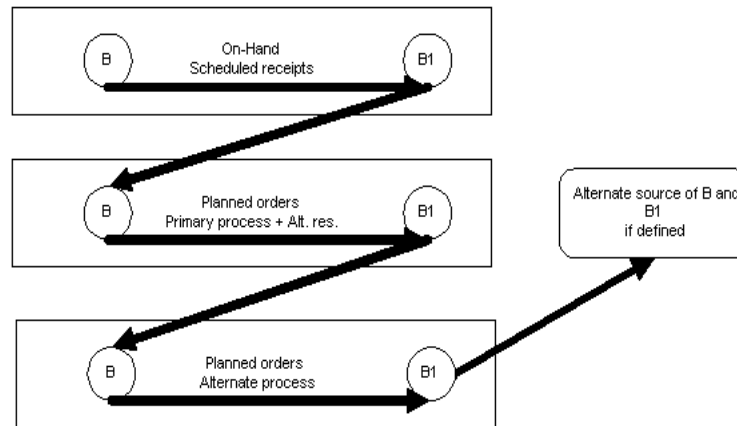
Clear

Help

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

Operation Alternate Resources (M1) - 10

Item: **SB68415** Alternate:

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

Resource Seq.: **10** Resource Code: **LBR-**

Alternate Resources

Main | Scheduling | Costing

Replacement Group	Resource	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.

Note: For information on End-Item Substitutions, please refer to [End-Item-Level Substitution](#) on page 16-3.

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.

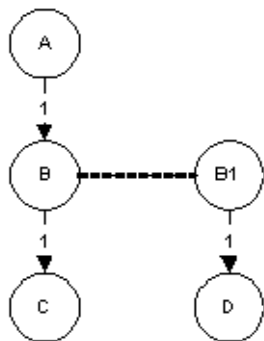
Selection of Alternates for OSFM

This section contains two scenarios that describe the selection of alternates for network routing based on:

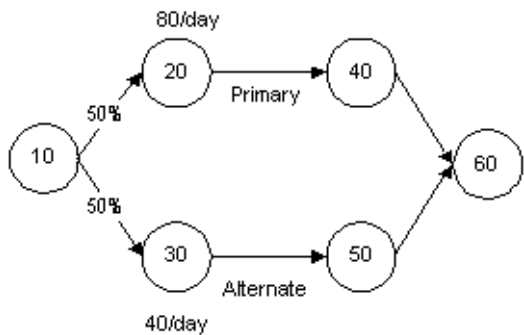
- Primary Path
- Planned Percentage

(For additional information, please see [on page 12-51, 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.

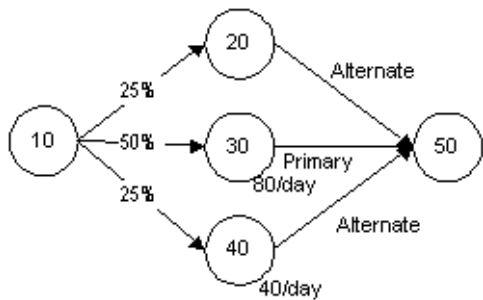
The following diagram shows the BOM for Item A where B1 is the substitute for B.



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.)

Note: The site level profile option MSO: Enable Decision Rules has no bearing on an optimized plan. The Decision Rules tab in the Plan Options window is always available for an optimized plan.

User Procedures

The following steps and diagram outline the procedures used to select alternates for an optimized plan. The steps provide a more in-depth explanation for the procedures shown in the diagrams.

To select alternates using 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

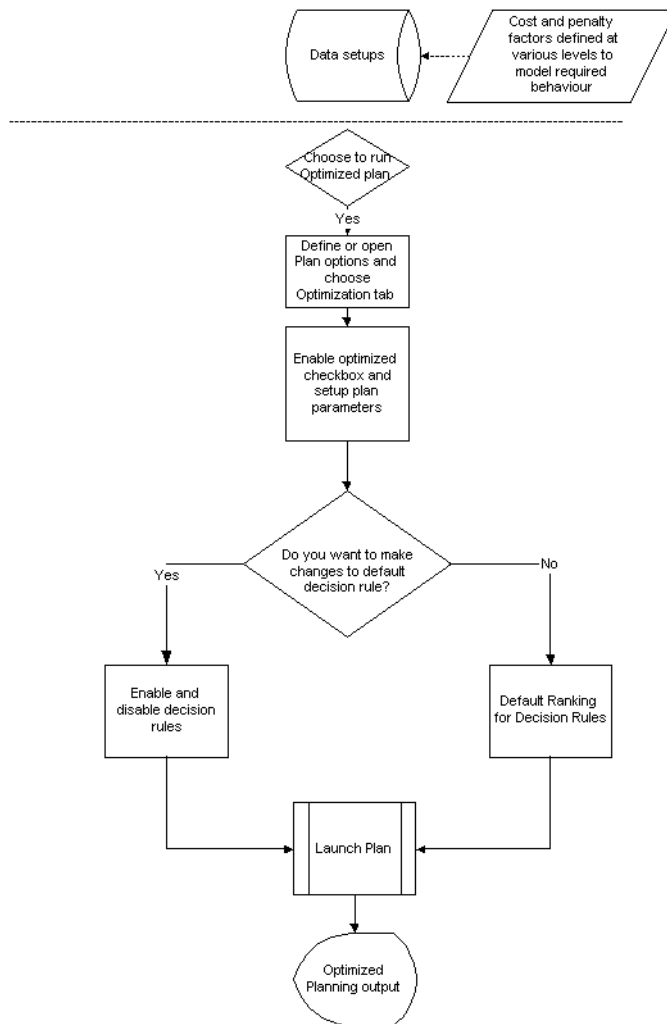
are disabled, then the planning engine will not look for supply pertaining to these rules.

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. Launch the plan.

The following diagram is an illustration of these steps.



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.

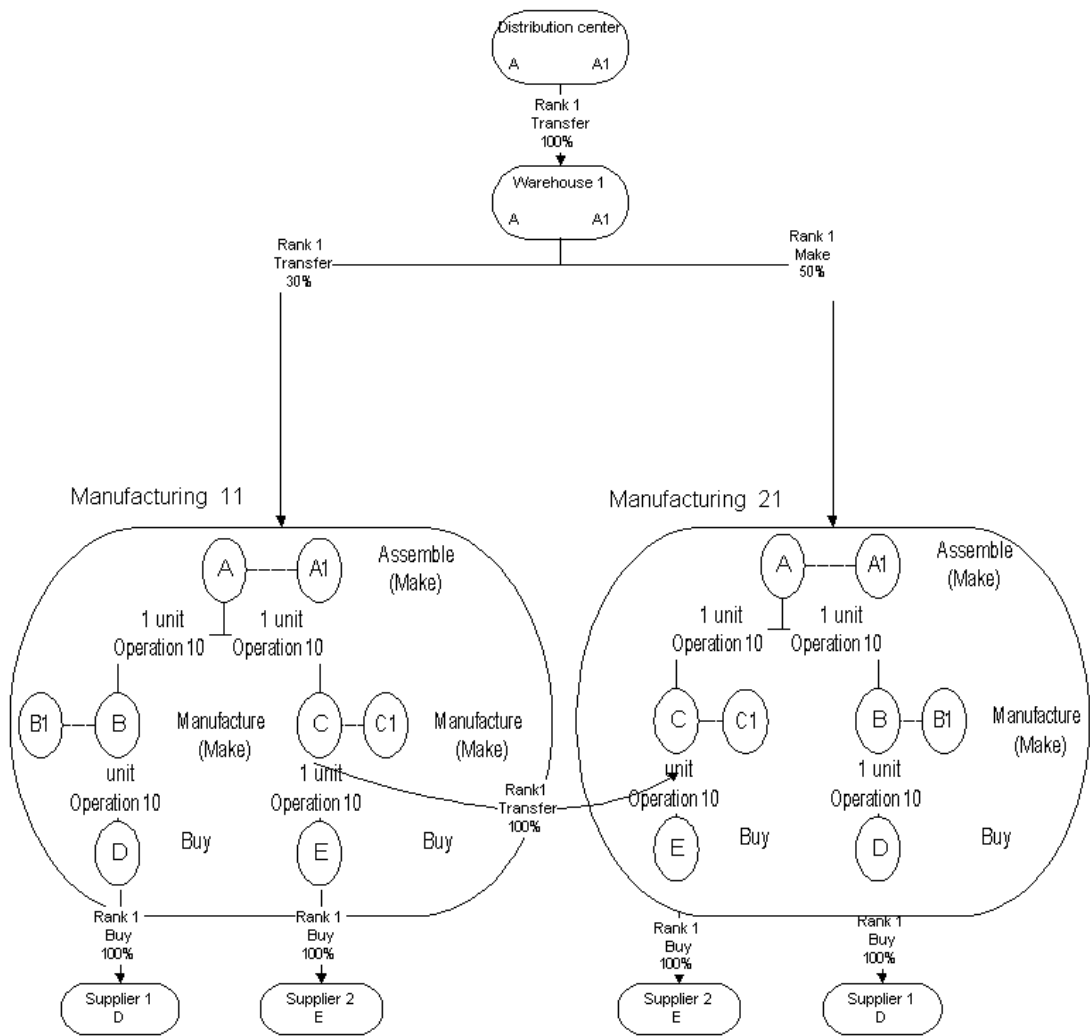
Planning Search Logic

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

Supply chain for item A



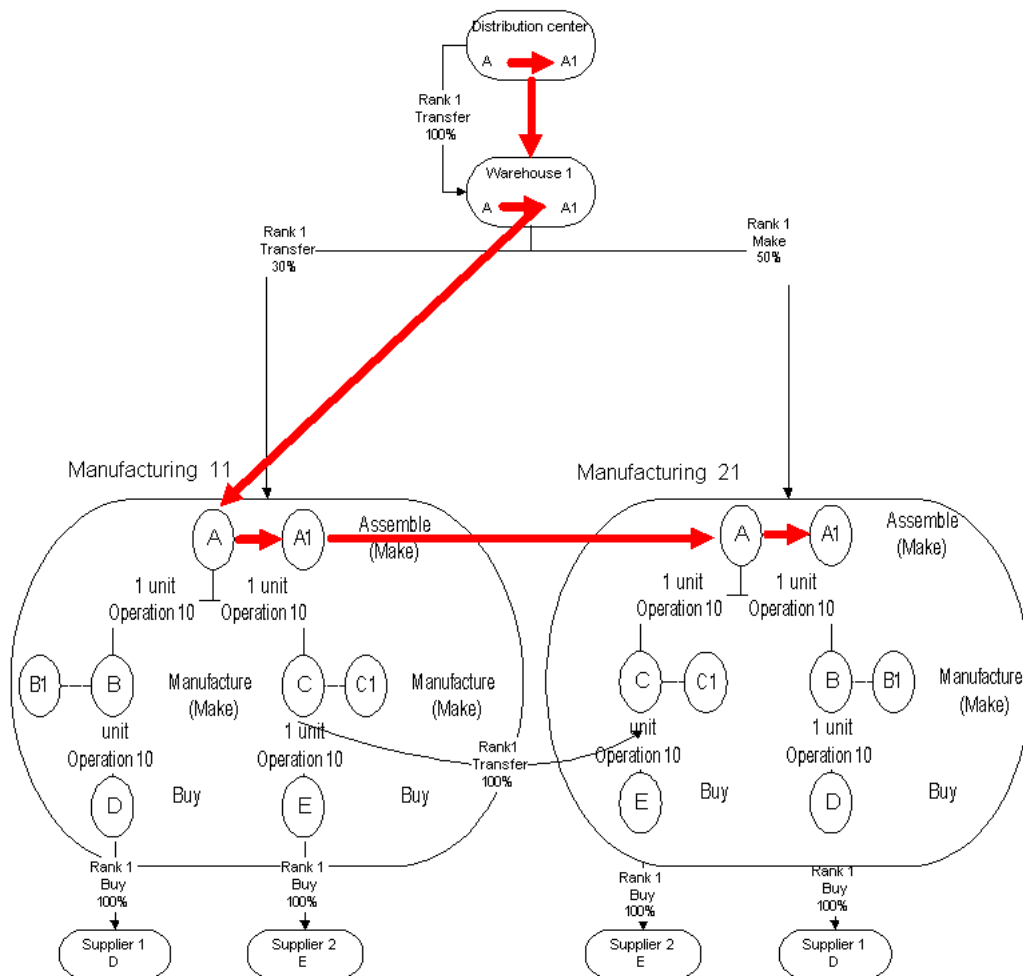
Note: For make items the sourcing rule is to make at the organization in question, except for C at Manufacturing 11, where Transfer is rank 1 and make is Rank 2.

The planning engine searches on-hand quantity and schedules receipts (item A and end item substitute A1) across each tier before creating new planned orders for the demanded item. (Please refer to End Item Substitution chapter). To look for on-hand quantity and scheduled receipts of the demanded item and the end-item substitute, ASCP uses the search logic as specified below.

1. Distribution center for item A
2. Distribution center for item A1
3. Warehouse 1 for item A
4. Warehouse 1 for item A1
5. Manufacturing 11 for item A
6. Manufacturing 11 for item A1
7. Manufacturing 21 for item A
8. Manufacturing 21 for item A1

The following diagram illustrates the tier-by-tier search logic for on-hand quantity and scheduled receipts for end items.

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 16-72), C (Refer to [Planning for C at Manufacturing 11](#) on page 16-73), D (Refer to [Planning for D at Manufacturing 11](#) on page 16-74), and E (Refer to [Planning for E at Manufacturing 11](#) on page 16-74)
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 16-73), C (Refer to [Planning for C at Manufacturing 21](#) on page 16-74), D (Refer to [Planning for D at Manufacturing 21](#) on page 16-74), E (Refer to [Planning for E at Manufacturing 21](#) on page 16-74)
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 16-74)
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 16-74)
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 16-74)
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 16-74)
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.

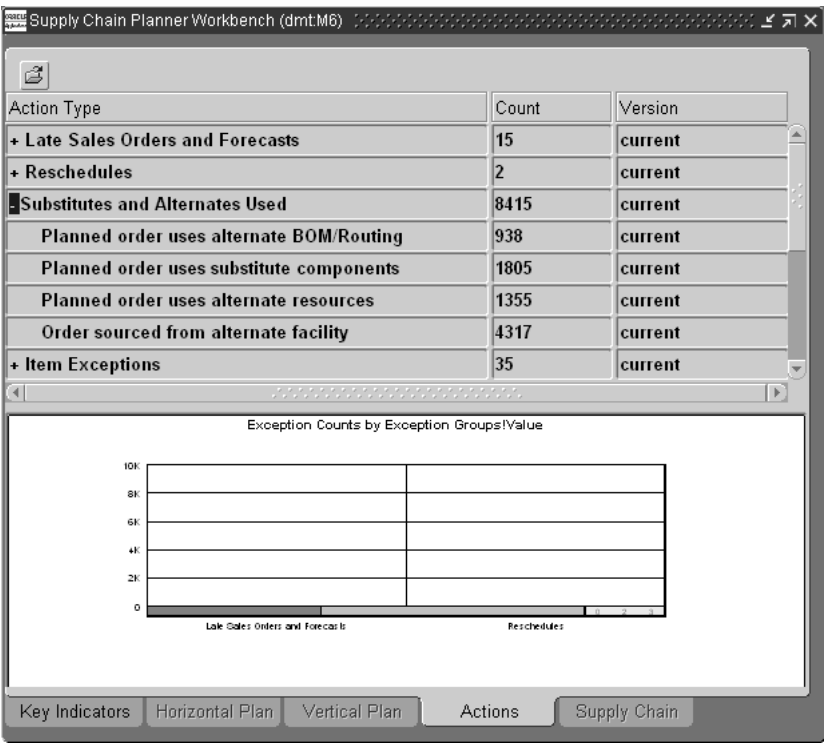
If you look at just the pegging for D1, 50 units of the substitute component is not used. Instead, 50 units of the alternate BOM/routing is pegged to D1. Therefore, it looks as if ASCP has broken the user-defined sequence. But, if the demand was for only 150 units, then the supply would be 100 units of item B and 50 units of substitute component B1, which follows the user-defined sequence.

Exception Messages

Once the planning engine runs, you may find several instances where the engine has recommended alternates. When this happens, an exception message is generated. Typical flow may consist of analyzing exceptions generated by the plan, drilling into the details of exceptions, analyzing supply demand records using Supply/Demand window, vertical plan and pegging. Users may access the horizontal plan to get a detailed understanding of the demands placed on the alternates, supplies received as a part of the user-defined decision rule, and analyze possibilities of improving the solution based on their knowledge.

Exception Display When the system suggests the use of alternates, it also generates required exception messages referencing the type of alternates used. These exceptions are summarized in the Substitutes and Alternates Used exception group. The following screen shot shows a typical exception message.

Figure 16-16 Exception Message



Organization Security

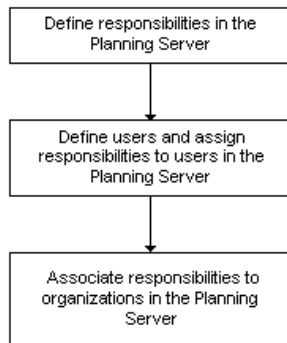
This feature restricts plan information access to authorized individuals. Oracle ASCP allow users to associate job responsibilities to organizations for security purposes. This ensures that you see/change planning data in an organization only if you have a job responsibility associated with the organization.

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

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Assign Organizations to Responsibilities

Responsibility: Advanced Supply Chain Planner

Available Organizations		Assigned Organizations
A1	>	AC1
B1	>>	AC2
R1	Move All	ARP
dmt:PKD	<	ARS
v11:VC5	Remove	AT1
	<<	AV1
	Remove All	AV2
		AVG
		CH1
		CL2

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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 shown below. The system restricts accessing and viewing plans to authorized users of the owning organization.

Figure 16–18 Supply Chain Plan Names

Name	Description	Plan Type	Inactive Date
AAMP	for par col	Production Plan	03-JAN-2003
AG_DP	AGILENT DEMAND PRIORITY TESTING	Production Plan	
DCDC		Production Plan	
JCUOMMDS		Production Plan	03-JAN-2003
JCaIMDS		Production Plan	03-JAN-2003
JPCMDS		Production Plan	03-JAN-2003
JCaIMDS		Production Plan	03-JAN-2003
KS-BOR		Production Plan	03-JAN-2003
KS-INF		Production Plan	03-JAN-2003
KS-MDPR21		Production Plan	03-JAN-2003

Copy Plan Launch Plan Plan Options

Plan Options Form

In the Organizations tab of the Plan Options form there is a button called Add All Authorized Orgs, as show below.

Figure 16–19 Plan Options, Organization tab

Plan Options (M1)

Plan: **leg-4** Optimized with Forecast Plan Type: **Manufacturing Plan**

Main Aggregation **Organizations** Constraints Optimization Decision Rules

— Organizations —

Add All Authorized Orgs

Org	Description	Net WIP	Net Reservations	Net Purchases	Plan Safety Stock	Include Sales Order
M1	Seattle Manufacturing	☒	☒	☒	☒	☒
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐

— Demand Schedules — — Supply Schedules —

Name	Description	Type	Inter Plant
ABC1		FCST	☐
			☐
			☐

Name	Description	Type

Subinventory Netting

When you select this button, all user-authorized organizations are displayed in the Org field.

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

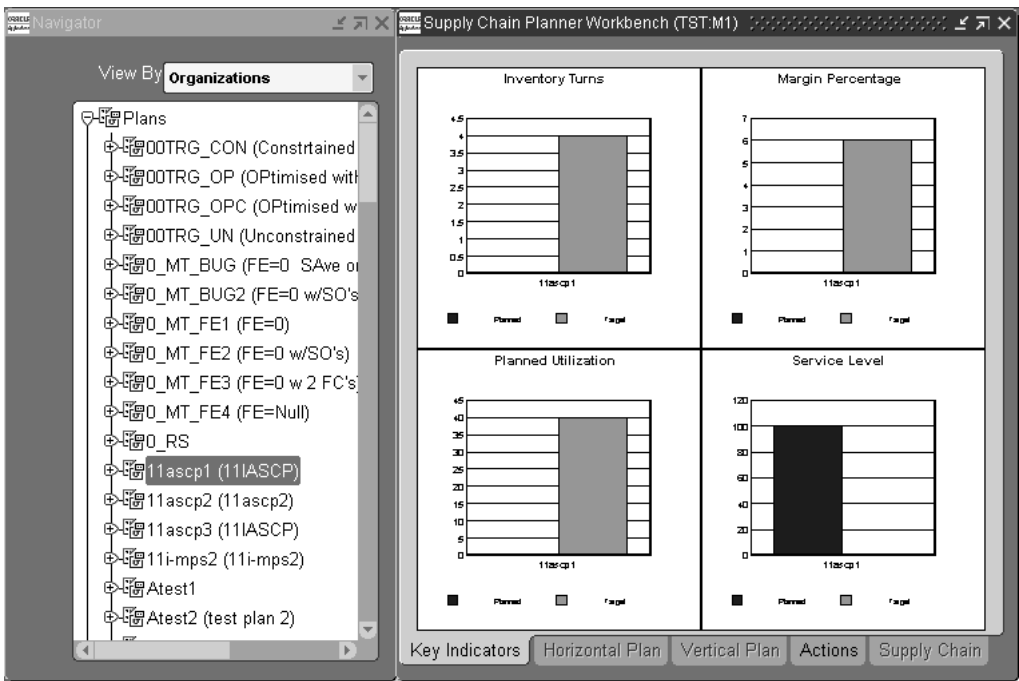
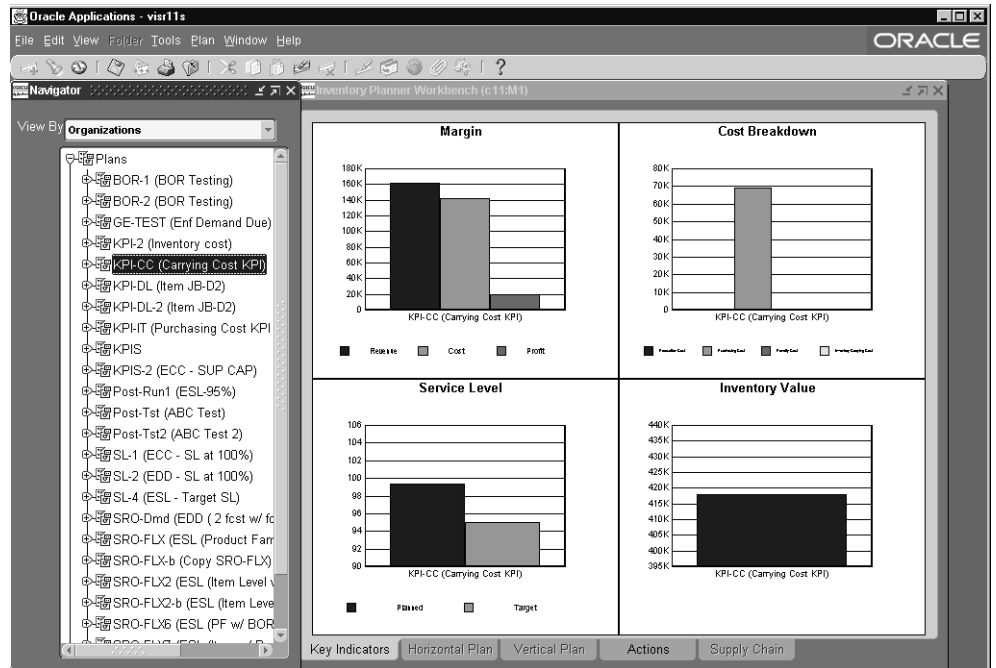


Figure 16–2 Oracle Inventory Optimization Key Performance Indicators



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 $[t_1, t_2]$

Note: These calculations use standard costs of items. Standard cost systems use a single value to cost all material and resource transactions in inventory and work in process systems.

Margin Percentage

Margin Percentage is the net difference between planned revenues and planned production costs.

Margin Percentage = $\{[(\text{total shipment units}) * (\text{standard price}) * (\text{standard discount})] - [(\text{total shipment units}) * (\text{standard cost})]\} / [(\text{total shipment units}) * (\text{standard price}) * (\text{standard discount})]$

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 = $(\text{Hours of capacity actually used} / \text{Available hours of capacity}) * 100$

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 = $\text{Sum of [Planned Utilization for all Planning time buckets]} / \text{Number of Planning time buckets}$

Plan level Planned Utilization does not include supplier utilization.

On Time Delivery

Customer service level or delivery performance are calculated as follows:

$$((\text{Total number of orders} - \text{Number of late orders}) * 100) / \text{Total number of orders}$$

Margin

Margin is calculated as follows:

$$\text{Top Assembly Margin} = (\text{total shipment units}) * (\text{standard price}) * (\text{standard discount}) - (\text{total shipment units})(\text{standard cost})$$

$$\text{Aggregate Level Margin} = \text{Sum of margin of top assemblies}$$

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:

$$\text{Production Cost} = \text{Sum of (Resource time needed * Resource Cost) for all resources in the organization.}$$

Inventory carrying cost is calculated based on average inventory level in each time bucket. Inventory carrying is calculated as follows:

$$\text{Inventory Carrying Cost (period i)} = \text{Average inventory of period i} * \text{carrying cost percent}$$

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 (Demand quantity satisfied by due date / Demand quantity) * 100.

This table shows a calculation for item A independent demands for each BIS period and the rollup to item A.

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	-

Table 16-2 Service Level KPI Calculation

Item	BIS period	Demand		Demand		Service Level
		Due Date	Quantity	Quantity	Due Date	
-	1 February - 28 February	-	-	-	-	94% [(190 + 280) / (200 + 300)] * 100 = (470 / 500) * 100
-	-	10 February	200	190	-	-
-	-	20 February	300	280	-	-

You can:

- Display planned service level vs. target service level for plans, organizations, and items
- Drill down to a graph showing service level trend

If there is no demand, the service level is 100%; service level 0% would raise an unnecessary exception.

In an unconstrained plan, the service level is always 100%.

Inventory Value

A graphical representation of the least risk inventory values at the intersection of the levels in the hierarchies that you have selected for inventory planning (e.g., item or product family and organization by month) are displayed in a time-phased view.

Note: For more information on using KPIs, refer to [Chapter 10, Planner Workbench](#).

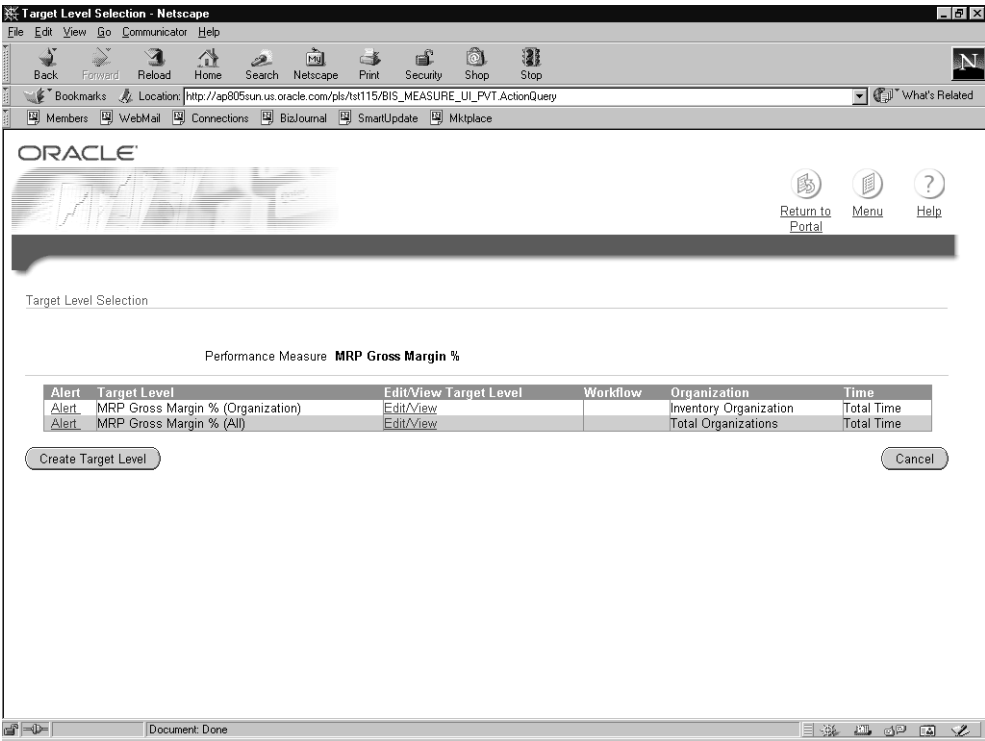
KPI Setup

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.

Note: If you are using the 10.7 version of Oracle Applications, there is no user interface available for setting up these targets. A custom program is needed to input these targets.

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.

Profile Options

This appendix includes:

- [Introduction](#) on page A-2
- [MRP Profile Options](#) on page A-4
- [MSC Profile Options](#) on page A-9
- [MSO Profile Options](#) on page A-22
- [MSR Profile Options](#) on page A-39
- [INV Profile Options](#) on page A-40

Introduction

There are several types of profile options in Oracle Advanced Planning. The types include:

- MRP profile options
- MSC profile options
- MSO profile options
- MSR profile options
- INV profile options

The following sections contain tables which list the profile option names and their corresponding descriptions.

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 2.1×10^9 . 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.

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. Used by Oracle MRP.
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 Time-out	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
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 MATO Demand	Yes/No	Yes	Calculates demand at the manufacturing organization when set to Yes for multi-level ATO. When set to no, demand is not calculated at the manufacturing organization and consumption does not occur correctly.
MRP: Calculate Plan Performance	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
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: Complete Supply Chain ATP	-	-	Not used by Oracle Advanced Planning.
MRP: Compute Sales Order Changes	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
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. Used by Oracle MRP.
MRP: Consume Forecast	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.

Profile Option Name	Valid Values	Default Value	Description
MRP: Consume MDS	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Consume MPS	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
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. Used by Oracle MRP.
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. Used by Oracle MRP.
MRP: Default DRP Plan Name	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Default Forecast Date	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Default Forecast Name	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Default Plan Name	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Default Schedule Name	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Default Sourcing Assignment Set	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Demand Time Fence Days	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Enhanced Exception	-	-	Not used by Oracle Advanced Planning.
MRP: Environment variable to set path for MRP files	Text	Null	Specifies appropriate path for the MRP files. If this profile option is not used, files are written to \$MRP_TOP/\$APPLOUT.

Profile Option Name	Valid Values	Default Value	Description
MRP: Firm Internal Req Transferred to OE	Yes/No	Yes	When set to Yes, all internal requisitions transferred to Oracle Order Management are automatically firmed by Oracle Advance Supply Chain Planning. No reschedule in or out recommendations are generated for these internal requisitions in subsequent plan runs. When set to No, the generated reschedule in/out recommendations for internal requisitions are transferred to Oracle Order Management. Automatically changes dates of internal sales orders in the Planning Workbench to reflect internal requisition dates in reschedule in/out recommendations minus transit lead times. Users must set up procedures to reschedule internal requisitions and internal sales orders in the source instance.
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	Yes/No	No	Set to Yes to prevent requisitions from rescheduling within the time fence.
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. Used by Oracle MRP.
MRP: Maintain Original Schedule Version	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: MPS Relief Batch Size	-	-	Not used by Oracle Advanced Planning.
MRP: MPS Relief Direction	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: New Planner Backward Compatibility	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Old Sales Orders Cutoff Days	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Perform Planning Manager Functions in Loads	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
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.

Profile Option Name	Valid Values	Default Value	Description
MRP: Planner Workers	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Planning Manager Batch Size	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Planning Manager Max Workers	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Planning Manager Run First Time	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
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: Recommend action within PTF	Yes/No	Yes	Used by unconstrained planning. When set to Yes recommendations are generated inside the planning time fence.
MRP: Repetitive Past Due Supply Days	-	-	Not used by Oracle Advanced Planning.
MRP: Requisition Load Group Option	All on One, Buyer, Planner, Vendor, Category, Item, One Each	Null	Indicates group by option used when loading requisitions using the Planner Workbench form. Valid values are: ■ All on One: Creates one purchase requisition for all recommended orders. ■ Buyer: Creates one purchase requisition for buyer. Within each requisition, creates one line for each planned order for the buyer. ■ Planner: Creates one purchase for planner. Within each requisition, creates one line for each planned order for the buyer. ■ Vendor: Creates one purchase requisition for each vendor. Within each requisition, creates one line for each planned order for the vendor. ■ Category: Creates one purchase requisition for each category of items. Within each requisition, creates one line for each planned order for the category. ■ Item: Creates one purchase requisition for each inventory item. Within each requisition, creates one line for each planned order for the item. ■ One each: Creates a purchase requisition for each planned order.
MRP: Retain Dates Within Calendar Boundary	Yes/No	No	Determines whether to pull dates outside the calendar boundary into calendar horizon.
MRP: RHX Check Profile	-	-	Not used by Oracle Advanced Planning.
MRP: Round Source Entries	-	-	Not used by Oracle Advanced Planning.

Profile Option Name	Valid Values	Default Value	Description
MRP: Snapshot Pause for Lock (Minutes)	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
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. Used by Oracle MRP.
MRP: Time Fence Warning	-	-	Not used by Oracle Advanced Planning. Used by Oracle MRP.
MRP: Trace Mode	Yes/No	No	Determines whether trace is enabled for all Oracle Advanced Supply Chain Planning processes.
MRP: Use Direct Load Option	Yes/No	No	Determines whether load worker can use the direct load option instead of conventional loads.
MRP: Use Ship Arrived Flag	Yes/No	No	Determines whether sales orders are automatically viewed as arrived at a customer site after transit lead time has expired. You can manually update the ARRIVED_FLAG in SO_PICKING_HEADERS. Used when a customer is modeled as an organization. Valid Values are: ■ Yes: Use arrived flag in SO_PICKING_HEADERS. ■ No: Use transit time between source and the destination organizations.

MSC Profile Options

The following table lists and defines the MSC profile options available with Oracle Advanced Planning.

Profile Option Name	Valid Values	Default Value	Description
MSC: 64-bit Planner Platform	Yes/No	No	Set to Yes for the supported 64-bit platforms (HP-UX and Sun Solaris 2.8).
MSC: Action Allowed on ATP 24x7 Plan While Running	Yes/No	Yes	This profile option controls whether you can access and make changes to the ATP plan while it is running in 24x7 mode. The changes you make to the plan while it is running will not be reflected in the refreshed plan. If you set this profile option, consider setting MSC: ATP Synchronization Downtime (minutes). This is a site level profile option.
MSC: Aggregate Resource Name Flexfield Attribute	Integer ≥ 0	Null	Stores flexfield column name that contains its value in the corresponding table. See Flexfield Attributes for more information.
MSC: Allocated ATP forward Consumption	Reduce future supply from lowest priority and Reduce available supply from any priority	Reduce future supply from lowest priority	This profile controls the forward consumption method for allocated available to promise using the user-defined allocation percentage method. The values are: - 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. - 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. This is a site level profile option.
MSC: Apply Lot Modifiers in Weekly/Period Buckets	Yes/No	Null	Determines whether order modifiers are considered when creating planned orders for weekly or period time buckets. A Yes value considers order modifiers in these calculations. A No value does not consider order modifiers in these calculations
MSC: ATP Allocation Method	User-Defined Allocation Percentage, Demand Priority	Null	Determines the allocation method used by ATP. This is a site level profile. Valid values are: ■ User-Defined Allocation Percentage ■ Demand Priority

Profile Option Name	Valid Values	Default Value	Description
MSC: ATP Assignment Set	Text	Null	Indicates name of the assignment set for Oracle Global Order Promising to use to identify all the possible shipping organizations. Oracle Global Order Promising uses this assignment set if profile MRP: ATP Assignment Set is Null on the ERP instance. Users can update it the at site level in the Planning instance.
MSC: ATP Capacity Allocation	Yes/No	No	Set it to No. You should only set it to Yes under specific instruction from Oracle Applications development.
MSC: ATP Debug Mode	Debug Only, Debug and Database Trace, Database Trace Only, None	Null	Determines whether to enable debug messages within Oracle Global Order Promising. You can update it at the user level. Valid values are: ■ Debug Only: ATP generates a log file for an ATP request. ■ Debug and Database Trace: ATP generates a log file and a database trace file. ■ Database Trace Only: ATP generates a database trace file. ■ None: ATP does not generate log file or database trace file.
MSC: ATP Infinite Time Fence Pad	Integer >=0	Null	Oracle Global Order Promising adds the number of days specified in this profile option to the infinite time fence you specify in an ATP rule. It inflates the infinite time fence by that number of days. 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. This is a site level profile option.
MSC: ATP Synchronization Downtime (minutes)	Integer > 0	Null	You may need to set this profile option if you run available to promise in 24x7 mode. When new sales orders come in while the synchronization process is running, the process can run for a long time if the order volume is high. Available to promise cannot switch to the new plan until the process finishes. 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. This is a site level profile option.
MSC: Auto-Release Compression Days Tolerance	Integer >= 0	Null	Indicates the number of compression days allowed for the automatic release of planned orders.
MSC: Batchable Flag	-	-	Not used.

Profile Option Name	Valid Values	Default Value	Description
MSC: Batching Window	-	-	Not used.
MSC: Choice of Item for Which to Create Supplies in Substitute Relationship	Demanded Item, Highest Level Item, Follow Item Attributes	Demanded Item	Determines the item for which Oracle Global Order Promising and Oracle Advanced Supply Chain Planning creates planned supplies when item substitution relationships are specified. 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. When you have a substitution chain A --> B --> C, and this profile option is set to Highest Level Item, it is expected that Oracle Advanced Planning creates supply for item C. Item C must be enabled in the organization where you are trying to create supply. If item C is not enabled in the organization, Oracle Advanced Planning creates supply for item B (the next highest level item in the substitution chain) and does not create supply for item C.
MSC: Class Hierarchy	Demand/ Customer	Demand	Indicates which allocation hierarchy to use. Users can update at the site level. Valid values are: ■ Demand Class: User-defined, single-level hierarchy. ■ Customer Class: Three levels: customer class, customer, and site.
MSC: Closest Quantity Pegging	-	-	Not used.
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.
MSC: Consume Forecast Inside Demand Time Fence	Yes/No	No	When set to No, demand time fence control is implemented prior to forecast consumption. Forecast entries in the demand time fence are dropped as demand statements and not used for consumption. 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.

MSC Profile Options

Profile Option Name	Valid Values	Default Value	Description
MSC: Cost of Using a BOM/ Routing Flexfield Attribute	-	-	Not used.
MSC: CP Debug Level	Debug - Off, Debug - On, or Debug - High	Debug - High	Controls the level of detail in the concurrent program log messages for Oracle Collaborative Planning. Off: No debug messages generated On: Short debug messages generated High: Detailed debug messages generated.
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: Debug Level	-	-	Not used.
MSC: Debug Module	-	-	Not used.
MSC: Default Workbench Height			Specify the default workbench height. Can be defined at the site level.
MSC: Default Workbench Width			Specify the default workbench width. Can be defined at the site level.
MSC: Degree of Parallelism for Index Creation	Integer >= 0	0	Controls the use of parallel workers in data collections. Specifies how many parallel workers to use when creating indexes.
MSC: Demand Priority Flexfield Attribute	Integer >= 0	Null	Stores the value of the attribute column that controls the demand priority. See Flexfield Attributes for more information.
MSC: Enable Allocated ATP	Yes/No	No	Use this profile options to indicate whether allocated order promising is used. Users can update this profile at the site level.
MSC: Enable ATP for Phantom Components	Yes/No	No	If you set to Yes, Oracle Global Order Promising treats phantom items like standard items and net their supply and demand. If you set to No, Oracle Global Order Promising explodes phantom items to their components and performs availability check for the components only. This is a site level profile option.

Profile Option Name	Valid Values	Default Value	Description
MSC: Enable ATP Summary Mode	Yes/No	No	Enables the summarization of supply / demand data for performance improvement. This is a site level profile. Valid values are: ■ Yes: Enable ATP Summary Mode ■ No: Disable ATP Summary Mode.
MSC: Enable ATP Workflow			Controls the generation of workflow notifications to send to the planner. This is a site level profile. Valid values are: ■ Yes: Generate ATP Workflow Notifications ■ No: Do not generate ATP Workflow Notifications
MSC: Enable Diagnostic ATP	-	-	Not used; replaced by ATP Tools menu option.
MSC: Enable Enhanced Sourcing	Yes/No	Yes	Enables enhanced sourcing logic that considers historical allocations and allows the splitting of planned orders to achieve target sourcing percentages. Rank 2 buy sources are considered if supplier capacity is exhausted for rank 1 sources. 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.
MSC: Enable Priority Pegging	-	-	Not used; replaced by plan option.
MSC: Firm Internal Requisition Time Fence	Yes/No	No	Controls whether the planning engine firms internal requisitions. If the profile option is Yes, it firms all internal requisition.
MSC: Firm Intransit and PO in Receiving Supplies	Yes/No	Yes	By default (value Yes), the planning engine considers intransit and purchase order in receiving supplies as firm. If you are an unconstrained plan and this profile option is No, the planning engine generates reschedule recommendations for these types of supplies. These recommendations are informational only and cannot be implemented from the Planner Workbench. This is a user level profile option.
MSC: Forecast Priority Flexfield Attribute	Integer >= 0	Null	Stores the value of the attribute column that will control the forecast priority. See Flexfield Attributes for more information.
MSC: Gateway URL to External Application	-	-	Not used.
MSC: Hour UOM	Text	HR	Specifies unit of measure. Can be defined at the site level.

Profile Option Name	Valid Values	Default Value	Description
MSC: Inflate WIP Resource Requirements	Yes/No	No	This profile option specifies whether Oracle Advanced Supply Chain Planning should consider resource efficiency and utilization for released discrete jobs in Oracle Work in Process: - Yes: The collections process engine inflates resource usages by resource efficiency and utilization during collections while the resource durations remain unchanged. The planning engine uses the inflated resource usages for scheduling and they affect the final schedule. - No: The collections process does not inflate resource usages.
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: Map Server Host	-	-	Not used.
MSC: Map Server Port	-	-	Not used.
MSC: Maximum Capacity	-	-	Not used.
MSC: Minimum Capacity	-	-	Not used.
MSC: MPS Auto-Firm All Planned Orders	Yes/No	Yes	This profile options specifies how the planing engine deals with master production schedule firm planned orders: -- Yes: All planned orders in the master production schedule are automatically firmed and not rescheduled during a batch replan. - No: Use the same behavior as distribution requirements plans and material requirements plans When a master production schedule is a demand schedule for another plan, the planning engine treats all planned orders in the demand schedule plan are treated as firm. This is the same as it treats planned orders in distribution requirements plans and material requirements plans that are demand schedules for other plans. This profile option applies only to master production schedule plans. You can set it at the site and user levels.
MSC: Net Change Temp Dir	Text	Null	Stores the location of image cache used in the Plan Comparison Report. Indicate the location in the following format: <directory>@<subdir> where <directory> This must match the absolute path of the OA_MEDIA environment variable and <subdir> is the name of a subdirectory under the OA_MEDIA directory. The subdirectory must have write permissions for all.

Profile Option Name	Valid Values	Default Value	Description
MSC: New Forecast Auto Plan	A valid plan name in Oracle Advanced Supply Chain Planning	Null	The plan launched in Oracle Advanced Supply Chain Planning when Oracle Collaborative Planning receives a supplier's forecast. Oracle recommends that this plan be an unconstrained plan.
MSC: New Planner Backward Compatibility	Yes/No	No	Determines whether phantom items are planned as standard items or if they are planned to components. ■ Yes: Phantoms are planned as standard items. ■ No: Phantoms are exploded to their components and supplies are not planned for the phantom.
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: Operator Company Name	Not applicable	Not applicable	Used by Oracle Collaborative Planning.
MSC: Peg Firm Supply First	-	-	Not used.
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: Planning Currency	-	-	Not used.
MSC: Pre-Flush	-	-	Not used.
MSC: Priority for Substitute Items Flexfield Attribute	Integer >= 0	Null	This profile option stores the name of the flexfield column that contains the value in the corresponding table. See Flexfield Attributes for more information.
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 Flexfield Attributes for more information.
MSC: Priority of Alternate Resources for an Operation Flexfield Attribute	Integer >= 0	Null	This profile option stores the name of the flexfield column that contains the value in the corresponding table. See Flexfield Attributes for more information.
MSC: Purchase Order Dock Date Calculation Preference	Need By Date and Promise Date	Promise Date	This profile option specifies the purchase order line date that the planning engine uses as the material arrival (dock) date: - Promise Date: If the Promise Date is not available, the planning engine uses Need by Date so that unacknowledged purchase orders consume supplier capacity. - Need By Date: Existing purchase orders do not consume supplier capacity. This is a site level profile option.

Profile Option Name	Valid Values	Default Value	Description
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.
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: - Yes: Restrict the releases or schedule changes selected to those created by this User. - 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.
MSC: Resource Group for a Line Flexfield Attribute	Integer >= 0	Null	This profile option stores the name of the flexfield column that contains the value in the corresponding table. See Flexfield Attributes for more information.
MSC: Resource Type for an Operation Flexfield Attribute	-	-	Not used.
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.

Profile Option Name	Valid Values	Default Value	Description
MSC: Share Plan Partitions	Not applicable	Not applicable	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. 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.
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: Source Instance ID	-	-	Not used.
MSC: Source Setup Required	Not applicable	See Automatic Calculations .	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 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%.
MSC: Split Planned Orders for Scheduling Flexibility	Yes/No	Yes	Determines whether planned orders that were split during optimization processing will be consolidated prior to scheduling. Possible values are: Yes: Do not consolidate orders prior to scheduling.No: Consolidate orders when possible prior to scheduling.

Profile Option Name	Valid Values	Default Value	Description
MSC: Supplier Capacity Accumulation (multiplier)	Numeric value > 0; may be larger than 1	1	This profile option is a multiplier to ASL Lead Time. The planning engine uses it to derive the date when capacity accumulation begins for a supplier. 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. This is a site level profile option.
MSC: Suppress Exception for Selection of Alternates	Yes/No	No	Controls whether the planning engine generates exceptions related to alternate bills of material and routings. If the profile option is No, it does not generate those exceptions.
MSC: Temp Index Extent Size (Bytes)	Number	1000000 (1 meg)	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).
MSC: Temp Table Extent Size (Bytes)	Number	1000000 (1 meg)	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).
MSC: Unit of Measure	-	-	Not used.
MSC: Use FIFO Pegging	Yes/No	No	If this profile option is Yes, the planning engine uses FIFO pegging. 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. 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. 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). This is a user level profile option.
MSC: Vertical View Default Query	Not applicable	Not applicable	Used by Oracle Collaborative Planning.
MSC: VMI Default Query	Not applicable	Not applicable	Used by Oracle Collaborative Planning.

Profile Option Name	Valid Values	Default Value	Description
MSC: Wait Time to Obtain Lock on Table/Partition for Snapshot Delete Worker	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.

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 Percentage	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: 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.
MSD: Customer Attribute	Descriptive flexfield column names	Null	This is a source profile option used to selectively bring the customer names into Oracle Demand Planning to improve the system performance. This profile holds the descriptive flexfield column name that is used to indicate if a customer in the Customers table will be used by Oracle Demand Planning. Only those customers in the Geography dimension that have this flexfield populated will be collected. This profile option value is one of the attribute columns of the RA_CUSTOMERS entity, which indicates whether or not the customer will be used for demand planning purposes. In the customers table, you need to reflect this in a descriptive flexfield. All of the source views for the geography dimension that use the RA_CUSTOMERS entity filter using this attribute column. If the profile option is not provided, then no filtering will occur. If the profile option is provided, then only the entities in the geography dimension that have the attribute in the RA_CUSTOMERS entity specified as Yes will be collected. To set up Key Customers, go to the Customer setup screen in Oracle Applications. Select the relevant customer and set an available flexfield column to Yes. For example, if you use attribute10, then you need to use this information in the MSD profile option setup also. Also, in the source instance, set up the following information for profile option value MSD_CUSTOMER_ATTRIBUTE: list of values from ATTRIBUTE1 to ATTRIBUTE15.

Profile Option Name	Valid Values	Default Value	Description
MSD: Master Organization	Master organizations	Null	This profile option is used to select a master organization, if there are multiple master organizations. The item attributes pertaining to the selected master organization are used by Oracle Demand Planning.
MSD: One Step Collection	Yes/No	No	This profile option controls the number of steps in the data collection process. Valid values are: Yes: indicating that the collection programs should take the data directly into the Fact Tables in a single step. 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.

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	Controls the maximum number of slices to which supply can be rescheduled. Accepts values from -1 to maximum number of slices. Controls the maximum number of slices to which supply can be rescheduled. Supply is not rescheduled after this maximum even when demand will be delayed. Possible values include: ▪ -1: Reschedule to last slice ▪ 0: Does not reschedule. 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.
MSO: Allow Partial Demand Completion	All End Demands, Sales Orders, or None	None	Enables supply orders to individually schedule for partial satisfaction of a demand when demand is split across several supply orders. Valid values include: ▪ All End Demands: Enable Partial Demand Satisfaction for all independent demands (forecasts, sales orders, and MDS entries). ▪ Sales Orders: Enable Partial Demand Satisfaction for all Sales Order demand only. ▪ None: Schedules all supplies to coincide with completion date (latest supply date) to meet demand. This functionality can be enabled for all independent demands or only for Sales Orders.

Profile Option Name	Valid Values	Default Value	Description
MSO: Allow Schedule Gaps for Shared Supplies	Yes/No	No	This profile option controls the scheduling of shared supplies (scheduled receipts, firm planned orders, and planned orders with multiple demands pegged to them). - 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. 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. 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. 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. - 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. This is a user level profile option.
MSO: Alternate Process Penalty	Number > 0	See Automatic Calculations .	Specifies weight for alternate process objective in optimization. This value is specified as a number greater than 0, and is an internal value.
MSO: Alternate Resource Penalty	Number > 0	See Automatic Calculations .	Specifies weight for alternate resource objective in optimization.
MSO: Alternate Source Penalty	Number > 0	See Automatic Calculations .	Specifies weight for alternate source objective in optimization.
MSO: Batching Type	-	-	Not used.

Profile Option Name	Valid Values	Default Value	Description
MSO: Big M Value for SCO	-	-	Not used.
MSO: Calculate Constraint Exceptions	Yes/No	No	Determines whether constraint exceptions are calculated for plans with Enforce Capacity Constraints selected.
MSO: Capacity Units recalculation Threshold	Any value between 0 and 1	0	The planning engine schedules supplies in two phases: - Backward schedule: From demand due date to see if demand can be met on time. - Forward schedule: If the backward schedule results in a late demand, the forward schedule from the plan start date meet demands with minimum lateness. At the end of the forward schedule phase, the planning engine adjusts the schedule to remove gaps between supplies (right justification). It may move a supply to occur at a time where there are more resource units available than there were in its previously scheduled time. If this profile option is 1, the planning engine considers assigning more resource units to the supply. For example, this profile option is 0.5. The planning engine considers changing the number of resource units if the current capacity units value is less than $0.5 * \text{Max assigned units}$ on the routing for the item. If this profile option is 0, the planning engine does not consider assigning more resource units. This is a user level profile option.
MSO: Check Redundant Constraints	0 and 1	See Automatic Calculations .	Specifies location and removal of redundant constraints.
MSO: Choice of Supply for Substitution	All Supplies, Excess Supplies	All Supplies	Determines which supplies are considered by the Planning Engine for substitution. Valid values are: ■ All Supplies: Oracle Advanced Supply Chain Planning takes supplies belonging to substitute items even when there is demand for substitute items. Demand priorities drive the allocation. ■ Excess supplies - Oracle Advanced Supply Chain Planning takes supplies belonging to substitute items only if it finds that the supply from the substitute item is in excess. Oracle Advanced Planning performs regular netting logic within the Substitution Window and find that excess can be offered for substitution. The native demand satisfaction has priority only within the Substitution Window. After the Substitution Window demand priorities drive the substitution. Oracle Order Promising does not honor this profile option. Oracle Order Promising always honors native demand satisfaction logic.

Profile Option Name	Valid Values	Default Value	Description
MSO: CPLEX Crash Parameter	-1, 0, and 1	See Automatic Calculations .	Determines how objective coefficients are used to select basis.
MSO: CPLEX Refactor Rate	Integer ≥ 0	See Automatic Calculations .	Specifies the value of the parameter to control the refactor rate.
MSO: CPLEX Scaling Factor	-1, 0, and 1	See Automatic Calculations .	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.
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 Forecasts	Beginning of Day or End of Day	End of Day	This profile option determines the forecast timestamps that Oracle Advanced Supply Chain Planning uses to plan. It applies to forecast scenarios from Oracle Demand Planning, master demand schedule forecasts, and manual master demand schedule entries. The timestamp denotes the time by which supplies to meet the demand must be available to be considered on time: - Beginning of Day: Supplies must be available at 00:00 - End of Day: Supplies must be available at 23:59 This profile option does not apply to sales orders.
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 Type Priority	-	-	Not used.
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: Dual Simplex Parameter	0, 1, 2, 3, and 4	See Automatic Calculations .	Gradient parameter for dual simplex.

Profile Option Name	Valid Values	Default Value	Description
MSO: EDD Scheduling Window Control	Any value between 0 and 1	0.5	This profile option is applicable to constrained plans with enforce demand due dates. The planning engine calculates an actual scheduling window for each resource activity and supply. The actual window is defined by the dates: - Latest Possible completion time (LPCT): Determined by the start time of downstream activities that have already been scheduled. - Earliest Allowable Completion Time (EACT): Calculated by the planning engine which accounts for the unscheduled upstream activities and how much time those activities need. If this profile option is the default value, the planning engine uses the calculated EACT. 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. 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. This is a user level profile option.
MSO: Enable Decision Rules	Yes / No	No	The profile option enables User Defined Decision Rules. ■ Yes: Use the user-defined decision rules. ■ No: User defined decision rules are not allowed. The Plan Options tab, Decision Rules, is disabled. 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.
MSO: Firm Operations/Orders 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: Firm Supply Allocation Window (Backward days)	Integers >=0	1	The allocation of firm supplies to demands is based on demand priorities within the Firm Supply Allocation window. Set this window using system level profile options. This window is derived dynamically for each demand; it starts with the demand due date and goes backwards to the window size.

Profile Option Name	Valid Values	Default Value	Description
MSO: Firm Supply Allocation Window (Forward days)	Integers ≥ 0	Null	The allocation of firm supplies to demands is based on demand priorities within the Firm Supply Allocation window. Set this window using system level profile options. This window is derived dynamically for each demand; it starts with the demand due date and moves forwards to the window size. This pegs demands to firm supplies that are scheduled after the demand date. After searching backward, it searches forward by the number of days set by this profile option, pegging the supply with the nearest (earliest) schedule to the unallocated demand quantity. This can cause supplies to be late for the demand due date.
MSO: Floating Point Precision for Increments of Shift Start/End Times Within a Planning Bucket	-	-	Not used.
MSO: Floating Point Precision for Order Q	-	-	Not used.
MSO: Floating Point Precision for Order Quantities	Number > 0	100	Internal multiplier for order quantities. Can change the value depending on precision desired. Verify that the product of the floating point precision and the number does not exceed the maximum integer size handled by the machine. See Floating Point Precision for more information.
MSO: Floating Point Precision for Planning Bucket Efficiency	Not applicable	Not applicable	This has been changed to MSO: HLS Granularity Precision.
MSO: Floating Point Precision for Transportation Capacities (Volume)	Number > 0	100	Internal multiplier for transportation lane capacities by volume, by day. Can change the value depending on precision desired. Verify that the product of the floating point precision and the number does not exceed the maximum integer size handled by the machine. See Floating Point Precision for more information.
MSO: Floating Point Precision for Transportation Capacities (Weight)	Number > 0	100	Internal multiplier for transportation lane capacities by weight, by day. Can change the value depending on precision desired. Verify that the product of the floating point precision and the number does not exceed the maximum integer size handled by the machine. See Floating Point Precision for more information.
MSO: Floating Point Precision for Usage in Routings	Number > 0	100	Internal multiplier for order quantities. Can change the value depending on precision desired. Verify that the product of the floating point precision and the number does not exceed the maximum integer size handled by the machine. See Floating Point Precision for more information.

Profile Option Name	Valid Values	Default Value	Description
MSO: Generate Shared Supply Exceptions	Yes/No	No	The planning engine schedules demands in slices; each slice contains a set of demands in a time period. Sometimes, a supply is pegged to two demands (shared supply) that are each in different slices. 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. 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. This is a user level profile option.
MSO: Global Batchable Flag	Yes/No	No	Enables resource batching functionality for order scheduling. Valid values are: ■ Yes: Enable resource batching functionality. ■ No: Do not enable resource batching functionality.
MSO: Global Time Limit	Number > 0	See Automatic Calculations .	Parameter used to set global time limit for halting optimization.
MSO: Heuristic type	Look Ahead	Look Ahead	Determines which heuristic to use. The look-ahead heuristic reserves time for lower priorities so the schedule begins with the tasks of higher priorities. This is a site level profile option.
MSO: HLS Flat Files Path	Text	Null	Specifies the directory to store the Planning Engine debugging data files.
MSO: HLS Granularity Precision	-	-	Not used.
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%).

Profile Option Name	Valid Values	Default Value	Description
MSO: Late Demands Exceptions Tolerance Minutes	Integer > 0	0	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 entered 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 its supplies 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 Automatic Calculations .	Parameter to set the list size for pricing candidates.
MSO: LP Constraint Batch Size	-	-	Not used.
MSO: LP Markowitz Coefficient	Number between 0.0001 and 0.99999	See Automatic Calculations .	Sets the Markowitz Coefficient.
MSO: LP Optimization Algorithm	0=primal simplex, 1=dual simplex, 2=hybrid barrier primal, 3=hybrid barrier dual	0	Determines which optimization algorithm is used. Can be defined at the site level. See Automatic Calculations for more information on the default value for this profile option.
MSO: Maximum Activity Duration	Number > 0	See Automatic Calculations .	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.

Profile Option Name	Valid Values	Default Value	Description
MSO: Maximum Allowable Days Late	Integer > 0	300	Limits the number of days by which a demand or unfirmed scheduled receipt can be moved out when optimization is turned on. This value is used only to improve performance and reduce the size of the plan for the optimization component of the Planning Engine. Scheduling moves demands and unfirmed scheduled receipts out as long as necessary. Can be defined at the site level. Note: Set this to a number as large as the typical planning horizon to avoid unusual results.
MSO: Maximum Allowable Days Late before Forecast Expiration	Integer > 0	Null	Oracle Advanced Supply Chain Planning uses this profile option when planning supplies for forecast scenarios from Oracle Demand Planning, master demand schedule forecasts, and manual master demand schedule entries. When a forecast or master demand schedule entry cannot be completely satisfied within the allowable days late, the planning engine does not plan supplies for the quantity that is late by this many days. The profile option does not apply to sales orders.
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 Lead Time Factor	-	-	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 Automatic Calculations for more information.
MSO: Maximum Number of Pull for Operation	Integer > 0	8 operations	When an operation cannot be scheduled on a certain day, the Scheduling Engine attempts to schedule it on an earlier date (for backward scheduling). This profile option controls how many days are tried in this manner. Many days result in lower performance. Can be defined at the site level. See Automatic Calculations for more information.

Profile Option Name	Valid Values	Default Value	Description
MSO: Maximum Operations Per Slice	Integer > 0	3000 operations	Determines the number of operations which can be scheduled in a slice. Limits the problem size in a slice and can be a limiting factor in determining the number of demands that can be scheduled in a slice
MSO: Maximum Resource Over-Capacity	Number > 0	5	Assigns resource slacks when it does not find the resource available and it is forced to use slacks. The Scheduling Engine initiate the resource slack from 0 to maximum assigned units and will jump to this number if no solution is possible. This limits the number of tries to assign the resource slack. Can be defined at the site level. See Automatic Calculations for more information.
MSO: Maximum Simplex Iterations	Integer > 0	See Automatic Calculations .	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 Orders	Yes/No	No	Nets all firmed supply available in any future period before creating new planned orders.
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.
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 Backtracks Allowed	-	-	Not used.

Profile Option Name	Valid Values	Default Value	Description
MSO: Optimization Advanced Start	0 and 1	Null (internally defaulted as a value of 1)	This profile option controls whether the planning engine should be set to use advanced start (profile option value 1). This means that the optimization engine uses certain values from a previous run of the plan; it sees improved performance by reusing certain computations. This is an optimization engine profile option and should not be changed under ordinary circumstances.
MSO: Optimization Daily Aggregation Buckets	Integer > 0	Null	Specifies the Daily Aggregation Time Bucket to be used by the Planning Engine if the profile option MSO: Use Optimization Internal Time Aggregation is set to True.
MSO: Optimization Weekly Aggregation Buckets	Integer > 0	Null	Specifies the Weekly Aggregation Time Bucket to be used by the Planning Engine if the profile option MSO: Use Optimization Internal Time Aggregation is set to True.
MSO: Peg By-product Supplies	Yes/No	Yes	Yes: Pegging is considered when scheduling operations with by-product supply. Scheduling of these operations respects demand for the by-product and demand for the main product. After scheduling these operations, the by-product supply date is updated to reflect the operation scheduled date. No: By-Product Supplies are not pegged to demands For constraint-based plans. Set this profile option to No with items that are components on the supply chain bill of materials and that are by-product on a different level of the same supply chain bill of materials. Selecting No prevents the planning engine from continuous looping between the component demand and the by-product supply.
MSO: Penalty Cost Factor for Exceeding Item Material Capacity Flexfield Attribute	Integer >= 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes 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 Flexfield Attributes for more information.

Profile Option Name	Valid Values	Default Value	Description
MSO: Penalty Cost Factor for Exceeding Org Resource Capacity Flexfield Attribute	Integer ≥ 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes for more information.
MSO: Penalty Cost Factor for Exceeding Org Transportation Capacity Flexfield Attribute	Integer ≥ 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes for more information.
MSO: Penalty Cost Factor for Exceeding Resource Capacity	0 and 1	Null (internally defaulted as a value of 1)	Denotes a factor for plan profit computations that is invoked only when the plan profit parameter for optimization has a value greater than 0. The penalty cost factor is multiplied by the resource cost to give the cost of overloading a particular resource.
MSO: Penalty Cost Factor for Exceeding Resource Capacity Flexfield Attribute	Integer ≥ 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes for more information.
MSO: Penalty Cost Factor for Exceeding Transportation Capacity Flexfield Attribute	Integer ≥ 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes for more information.
MSO: Penalty Cost Factor for Late Demands	Number > 0	None	Defines a penalty cost factor common to all demands. The demands include sales orders, forecasts and safety stock. Can be defined at the site level.
MSO: Penalty Cost Factor for Late Forecasts Flexfield Attribute	Integer ≥ 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes for more information.
MSO: Penalty Cost Factor for Late Item Demands Flexfield Attribute	Integer ≥ 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes for more information.
MSO: Penalty Cost Factor for Late Org Demands Flexfield Attribute	Integer ≥ 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes for more information.
MSO: Penalty Cost Factor for Late Sales Orders Flexfield Attribute	Integer ≥ 0	Null	Stores the flexfield column name that contains the value in the corresponding table. Setup performed only during application install. See Flexfield Attributes for more information.
MSO: Preprocessing Aggregator Fill	Integer > 0	See Automatic Calculations .	Preprocessor aggregator fill.
MSO: Preprocessing Aggregator Limit	Integer > 0	See Automatic Calculations .	Parameter to control preprocessing aggregator limit.

Profile Option Name	Valid Values	Default Value	Description
MSO: Preprocessing Flag for LP Matrix	0 and 1	See Automatic Calculations .	Contains the presolve indicator.
MSO: Preprocessor LP Compression	-	-	Not used.
MSO: Primal Simplex Parameter	-1, 0, 1, 2, 3, and 4	See Automatic Calculations .	Gradient parameter for primal simplex algorithm.
MSO: Primal/Dual Preprocessing Reduction	0, 1, 2, and 3	See Automatic Calculations .	Used by optimization.
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	-	-	Not used.
MSO: Reschedule Jobs Out to Reduce Carrying Inventory	Yes/No	Yes	This profile option involves right justifying standard and lot-based discrete jobs when rescheduling them out to line up with other supplies for the job. When there is a constraint, the planning engine always moves the jobs based on the constraint. When there are no constraints, you have the option to instruct the planning engine to right justify the jobs: - Yes: The planning engine attempts to schedule the job as late as possible for one or more demands. - 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. This profile option does not apply to other order types, for example, purchase orders and purchase requisitions.
MSO: Reschedule Shared Supply to Influence Batching	Yes/No	No	Determines whether the Planning Engine schedules shared supplies early to avoid item-based resource constraints prior to batch resources. Valid values are: ■ Yes: Considers whether scheduling shared supplies early will allow subsequent resource batching. A Yes value improves the scheduled utilization of batch resources by considering earlier constraints. ■ No: Schedules resource batching when supplies are available.

Profile Option Name	Valid Values	Default Value	Description
MSO: Resource Adjustment Factor For Improved Offloading to Alternates	A number between and including 0 and 1	Null (internally defaulted as a value of 1)	The factor that the planning engine uses to reduce the resource availability when making the sourcing decision. For example, if the factor is set to 0.8, the resource availability is reduced by 20% and the planning engine uses more of the alternate processes. Then, at the time of scheduling, planning has more flexibility.
MSO: Resource Batching Strategy	Nearest Date/ Level Utilization	Nearest Date	Selects order scheduling strategy used in resource batching. Valid values are: ■ Nearest Date: Schedules orders to load resources nearest the due date of the order. ■ Level Utilization: Schedules orders to level utilization of the resource.
MSO: Resource Group for the Line Flexfield Attribute	Integer >= 0	Null	Stores the name of the flexfield column that contains the value in the corresponding table. This setup is only performed during application install. See Flexfield Attributes 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 >=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	-	-	Not used.
MSO: SCO Dual Variables Tolerance	Numeric	0.000000001	Parameter used internally for optimization. Consult Oracle Development and Oracle Support before modifying this profile option.
MSO: SCO Reduced Cost Tolerance	Numeric	0.000000001	Parameter used internally for optimization. Consult Oracle Development and Oracle Support before modifying this profile option.
MSO: Simplex Feasibility Tolerance	a number between e-9 and e-4	See Automatic Calculations .	Parameter to set the simplex feasibility tolerance.
MSO: Simplex Optimality Tolerance	a number between e-9 and e-4	See Automatic Calculations .	Parameter to set the optimality tolerance for the simplex algorithm.
MSO: Simplex Perturbation Constant	Number greater than e-8	See Automatic Calculations .	Parameter to set the simplex perturbation constant.
MSO: Simplex Perturbation Limit	Integer > 0	See Automatic Calculations .	Parameter for the simplex perturbation limit.

Profile Option Name	Valid Values	Default Value	Description
MSO: Simplex Perturbation Parameter	0 and 1	See Automatic Calculations .	Provides a perturbation constant for the Planning Engine. Sets the amount by which the Planning Engine perturbs the upper and lower bounds on the variables when a problem is perturbed.
MSO: Simplex Presolve Limit	-1, 0, and integer > 0	See Automatic Calculations .	Parameter to set the limit on the number of pre-solves.
MSO: Simplex Singularity Repair Limit	Integer > 0	See Automatic Calculations .	Parameter to set the simplex singularity repair limit.
MSO: Solve Dual Problem	0 and 1	See Automatic Calculations .	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: STL Buffer Size	-	-	Not used.
MSO: Substitute Item Penalty	Number > 0	None	Defines an internal penalty weight for substitute item objective in supply chain optimization.
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: Use Breaks in Calculation of Unconstrained Scheduling Windows	Yes/No	Yes	The planning engine calculates an unconstrained scheduling window for each resource activity and supply in a plan. The scheduling window is defined by the dates: - Unconstrained Earliest Possible Start Time (UEPST) - Unconstrained Earliest Possible Completion Time (UEPCT) - Unconstrained Latest Possible Start Time (ULPST) -Unconstrained Latest Possible Completion Time (ULPCT). 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. If this profile option is No, the planning engine does set any of these dates during a break if the calculation places it there. This is a user level profile option.

Profile Option Name	Valid Values	Default Value	Description
MSO: Use Collections Start Time	Yes/No	Yes	This profile option controls whether the planning engine should compute and use the resource availability either from the start time of the collections process (value Yes) or from the start time of the resource availability process calculations (value No). The resource availability calculation begins after all the data is collected from the source. This profile option also controls whether the plan uses the resource availability either from the collections start time if the collections and plan are run on the same day (value Yes) or from the time when the plan is launched (value No). For example, collections starts at 0600 hours, the resource availability computation starts at 0800 hours, and the plan run starts at 1400 hours: - 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. - 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.
MSO: Use Default Timestamp for Sales Orders	Beginning of Day, End of Day, or Retain Sales Order Timestamps	End of Day	This profile option determines the sales order line timestamps that Oracle Advanced Supply Chain Planning uses to plan. The timestamp denotes the time by which supplies to meet the demand must be available to be considered on time: - Beginning of Day: Supplies must be available at 00:00 - End of Day: Supplies must be available at 23:59 - 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. This profile option does not apply to forecasts.

Profile Option Name	Valid Values	Default Value	Description
MSO: Use SCO Time Aggregation	True/False	False	Determines whether the Planning Engine should use different aggregate time buckets than specified in the aggregation settings of the plan options. The Planning Engine use the values defined in the plan options. You can specify large values for daily and weekly buckets for Planning Engine output, but this increases Planning Engine calculation time. Valid values are: ■ True: The Planning Engine uses aggregate time buckets specified in MSO: Optimization Daily Aggregation Buckets and MSO: Optimization Weekly Aggregation Buckets. The period time bucket is derived. ■ False: The Planning Engine uses the same aggregate time buckets as specified in the Aggregation tab of the Plan Options window.

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: 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: ■ Probabilities: Demand uncertainty is stated in terms of a (non-cumulative) probability distribution. ■ Cumulative Probabilities: Demand uncertainty is stated in terms of a cumulative probability distribution.

INV Profile Options

The following table lists and defines the INV profile options in Oracle Advanced Planning.

Profile Option Name	Valid Values	Default Value	Description
INV: Capable to Promise	ATP/CTP Based on Planning Output, ATP Based on Collected Data	ATP Based on Collected Data	This is a site level profile. Valid values are: ■ 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. ■ ATP Based on Collected Data: set the profile to this value if you want to use collected data for order promising.
INV: External ATP	Not applicable	Not applicable	Only 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.

B

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 10.7 and 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:

- 10.7
- 11
- 11i

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 R11i provides fields in the Inter-Location Transit Time window for setting load weight and load volume. These fields are not available in Releases 10.7 and 11.0. You should use flexfields to set these values when running either Release 10.7 or 11.0.

Creating Demand Priority Flexfield Numbers Manually

To Create Demand Priority Flexfield Number Manually

For 11 and later

1. From sysadmin 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

Field	Enter
Window Prompt	Demand Priority
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).

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.

Business Object	Flat File Loader's File Name Option	Control Files
Bill of Materials	Bills of Material Headers	MSC_ST_BOMS.ctf
Bill of Materials	Bills of Material Components	MSC_ST_BOM_COMPONENTS.ctf
Bill of Materials	Component Substitutes	MSC_ST_COMPONENT_SUBSTITUTES.ctf
Items	Items	MSC_ST_SYSTEM_ITEMS.ctf
Routings	Routings	MSC_ST_ROUTINGS.ctf
Routings	Routing Operations	MSC_ST_ROUTING_OPERATIONS.ctf
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

Business Object	Flat File Loader's File Name Option	Control Files
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.ctf
Requisitions	Requisition Supplies	MSC_ST_SUPPLIES_REQ.ctf
On hand	On-hand Supplies	MSC_ST_SUPPLIES_ONHAND.ctf
Intransit	Intransit Supplies	MSC_ST_SUPPLIES_INTRANSIT.ctf
Purchase Order	Purchase Order Supplies	MSC_ST_SUPPLIES_PO.ctf
Supply forecast	Plan Order Supplies	MSC_ST_SUPPLIES_PLAN_ORDERS.ctf
Supply forecast	Plan Order Designators	MSC_ST_DESIGNATORS_PLAN_ORDERS.ctf

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

Business Object	Table	User-Defined Key (UDK)
UOM	MSC_ST_UNITS_OF_MEASURE	UOM_CODE, UNIT_OF_MEASURE (if null would be defaulted by UOM_CODE), COMPANY_NAME
UOM	MSC_ST_UOM_CLASS_CONVERSIONS	ITEM_NAME, FROM_UOM_CODE, FROM_UNIT_OF_MEASURE (defaulted from FROM_UOM_CODE if null), TO_UOM_CODE, TO_UNIT_OF_MEASURE, (defaulted from TO_UOM_CODE if null) COMPANY_NAME
UOM	MSC_ST_UOM_CONVERSIONS	ITEM_NAME, UOM_CODE, UNIT_OF_MEASURE (defaulted from UOM_CODE if null), COMPANY_NAME
Demand Class	MSC_ST_DEMAND_CLASSES	SR_INSTANCE_CODE DEMAND_CLASS, COMPANY_NAME,
Resources	MSC_ST_DEPARTMENT_RESOURCES	SR_INSTANCE_CODE, ORGANIZATION_CODE, RESOURCE_CODE, DEPARTMENT_CODE, COMPANY_NAME
Resources	MSC_ST_RESOURCE_SHIFTS	SR_INSTANCE_CODE, ORGANIZATION_CODE, RESOURCE_CODE, DEPARTMENT_CODE, SHIFT_NAME, COMPANY_NAME
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

Business Object	Table	User-Defined Key (UDK)
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

Business Object	Table	User-Defined Key (UDK)
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

Business Object	Table	User-Defined Key (UDK)
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

Business Object	Table	User-Defined Key (UDK)
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

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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